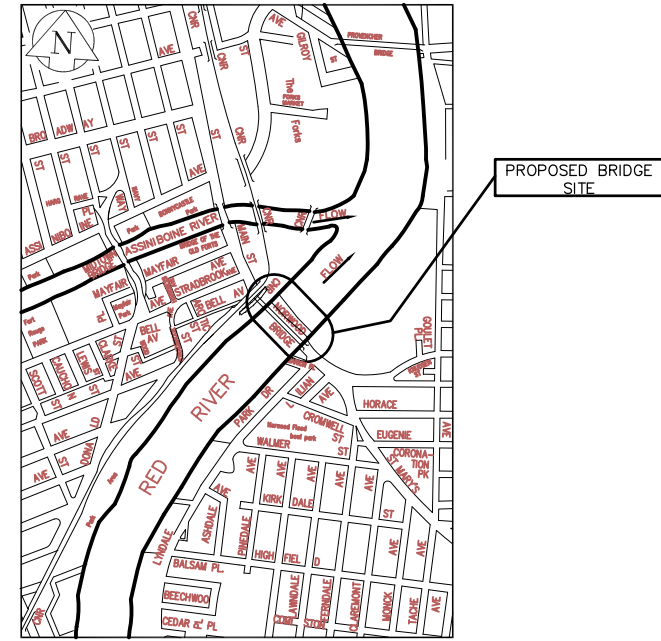




THE CITY OF WINNIPEG

STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

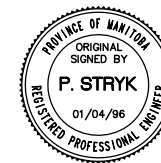


LOCATION PLAN

MAIN STREET AND NORWOOD BRIDGES PROJECT

NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

RFP P.D. NO. 96-050
BIDDING DRAWINGS



Reid Crowther & Partners Ltd.
Consulting Engineers

RELEASED FOR CONSTRUCTION BY :

ORIGINAL SIGNED BY L.S.W. LARKIN P. ENG. 1995-05-11
MANAGER OF BRIDGE ENGINEERING SERVICES DATE
L.S.W. LARKIN P. ENG.

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

SET NO. _____

C.O.W. NO. B103-97-01
R.C.P.L. NO. 61440-18-A1

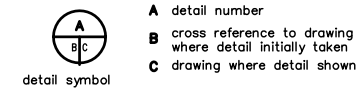
DRAWING LIST:

C.O.W. NO.	R.C.P.L. NO.	DESCRIPTION
B103-98-01	61440-18-01	DESIGN DATA AND DRAWING LIST
B103-98-02	61440-18-02	CANCELLED
B103-98-03	61440-18-03	GENERAL ARRANGEMENT OF PROPOSED WORKS PLAN, WEST ELEVATION AND TYPICAL SECTION
B103-98-04	61440-18-04	GENERAL ARRANGEMENT OF PROPOSED WORKS EAST ELEVATION AND TYPICAL SECTION AT PIER
B103-98-05	61440-18-05	FOUNDATION LAYOUT / LIMITS OF EXCAVATION AND WORKING POINTS
B103-98-06	61440-18-06	NORTH AND SOUTH ABUTMENTS / EXCAVATION AND BACKFILL
B103-98-07	61440-18-07	MISCELLANEOUS CONCRETE DETAILS
B103-98-08	61440-18-08	SUB-FOOTING / PIERS 1, 3 & 4 CONCRETE AND REINFORCING
B103-98-09	61440-18-09	SUB-FOOTING / PIER 2
B103-98-10	61440-18-10	PIER 1 CONCRETE
B103-98-11	61440-18-11	PIER 1 REINFORCING, SHEET 1 OF 2
B103-98-12	61440-18-12	PIER 1 REINFORCING, SHEET 2 OF 2
B103-98-13	61440-18-13	PIER 2 CONCRETE
B103-98-14	61440-18-14	PIER 2 REINFORCING, SHEET 1 OF 2
B103-98-15	61440-18-15	PIER 2 REINFORCING, SHEET 2 OF 2
B103-98-16	61440-18-16	PIER 3 CONCRETE
B103-98-17	61440-18-17	PIER 3 REINFORCING, SHEET 1 OF 2
B103-98-18	61440-18-18	PIER 3 REINFORCING, SHEET 2 OF 2
B103-98-19	61440-18-19	PIER 4 CONCRETE
B103-98-20	61440-18-20	PIER 4 REINFORCING, SHEET 1 OF 2
B103-98-21	61440-18-21	PIER 4 REINFORCING, SHEET 2 OF 2
B103-98-22	61440-18-22	MISCELLANEOUS METAL SHEET 1
B103-98-23	61440-18-23	MISCELLANEOUS METAL SHEET 2
B103-98-24	61440-18-24	STAINLESS STEEL SPHERICAL BEARINGS
B103-98-25	61440-18-25	GIRDER GEOMETRY
B103-98-26	61440-18-26	EXISTING NORWOOD BRIDGE
B103-98-27	61440-18-27	SOUTH RIVERWALK STAIRS PLAN
B103-98-28	61440-18-28	SOUTH RIVERWALK STAIRS SECTIONS AND DETAILS
B103-98-29	61440-18-29	SOUTH RIVERWALK STAIRS SECTIONS AND DETAILS
B103-98-30	61440-18-30	NORTH RIVERWALK STAIRS PLAN
B103-98-31	61440-18-31	NORTH RIVERWALK STAIRS SECTIONS AND DETAILS
B103-98-32	61440-18-32	NORTH RIVERWALK STAIRS SECTIONS AND DETAILS
B103-98-33	61440-18-33	SOUTH ABUTMENT CONCRETE SHEET 1 OF 3
B103-98-34	61440-18-34	SOUTH ABUTMENT CONCRETE SHEET 2 OF 3
B103-98-35	61440-18-35	SOUTH ABUTMENT CONCRETE SHEET 3 OF 3
B103-98-36	61440-18-36	SOUTH ABUTMENT REINFORCING SHEET 1 OF 3
B103-98-37	61440-18-37	SOUTH ABUTMENT REINFORCING SHEET 2 OF 3
B103-98-38	61440-18-38	SOUTH ABUTMENT REINFORCING SHEET 3 OF 3
B103-98-39	61440-18-39	EXPANSION JOINTS SHEET 1 OF 3
B103-98-40	61440-18-40	EXPANSION JOINTS SHEET 2 OF 3
B103-98-41	61440-18-41	EXPANSION JOINTS SHEET 3 OF 3
B103-98-42	61440-18-42	MISCELLANEOUS METAL SHEET 3
B103-98-43	61440-18-43	MISCELLANEOUS DETAILS
B103-98-44	61440-18-44	APPROACH SLABS CONCRETE DETAILS
B103-98-45	61440-18-45	APPROACH SLABS REINFORCING DETAILS
B103-98-46	61440-18-46	PEDESTRIAN HANDRAIL LAYOUT
B103-98-47	61440-18-47	OPEN PEDESTRIAN HANDRAIL LAYOUT AND DETAILS
B103-98-48	61440-18-48	SOLID PEDESTRIAN HANDRAIL LAYOUT AND DETAILS
B103-98-49	61440-18-49	ALUMINUM PEDESTRIAN HANDRAIL DETAILS
B103-98-50	61440-18-50	PEDESTRIAN HANDRAIL MISCELLANEOUS DETAILS
B103-98-51	61440-18-51	PEDESTRIAN HANDRAIL LIFE PRESERVER ENCLOSURE
B103-98-52	61440-18-52	SOUTH ABUTMENT RETAINING WALL AND MONUMENT BASE CONCRETE
B103-98-53	61440-18-53	SOUTH ABUTMENT RETAINING WALL REINFORCING SHEET 1 OF 2
B103-98-54	61440-18-54	SOUTH ABUTMENT RETAINING WALL REINFORCING SHEET 2 OF 2
B103-98-55	61440-18-55	NORTH ABUTMENT RETAINING WALL AND MONUMENT BASE
B103-98-56	61440-18-56	NORTH ABUTMENT RETAINING WALL REINFORCING SHEET 1 OF 2
B103-98-57	61440-18-57	NORTH ABUTMENT RETAINING WALL REINFORCING SHEET 2 OF 2
B103-98-58	61440-18-58	CANCELLED
B103-98-59	61440-18-59	CURB REINFORCING
B103-98-60	61440-18-60	CONDUIT LAYOUT
B103-98-61	61440-18-61	BRIDGE DECK GEOMETRY LAYOUT, SPANS 1-5
B103-98-62	61440-18-62	CONSTRUCTION JOINT LAYOUT
B103-98-63	61440-18-63	OBSERVATION DECKS AND LOOKOUTS, PLANS, ELEVATIONS AND SECTIONS
B103-98-64	61440-18-64	EAST ELEVATION SPAN 1-5
B103-98-65	61440-18-65	LIGHTING FIXTURES SECTIONS AND DETAILS
B103-98-66	61440-18-66	NAVIGATION LIGHTS
B103-98-67	61440-18-67	PIER 2 TOWER CONCRETE
B103-98-68	61440-18-68	PIER 2 TOWER REINFORCING SHEET 1 OF 2
B103-98-69	61440-18-69	PIER 2 TOWER REINFORCING SHEET 2 OF 2
B103-98-70	61440-18-70	EAST AND WEST CONCRETE TRAFFIC BARRIER
B103-98-71	61440-18-71	PRECAST CONCRETE TRAFFIC BARRIER DETAILS
B103-98-72	61440-18-72	PRECAST CONCRETE TRAFFIC BARRIER REINFORCING
B103-98-73	61440-18-73	EAST CAST-IN-PLACE CONCRETE TRAFFIC BARRIER REINFORCING
B103-98-74	61440-18-74	ALUMINUM TRAFFIC BARRIER RAIL DETAILS
B103-98-75	61440-18-75	PRECAST CONCRETE TRAFFIC BARRIER AND PRECAST PLANTER WALL STAGING
B103-98-76	61440-18-76	PRECAST CONCRETE PLANTER WALL CONCRETE AND REINFORCING
B103-98-77	61440-18-77	NORTH AND SOUTH PLANTER DETAILS
B103-98-78	61440-18-78	TRAFFIC BARRIER PLANTER DETAILS
B103-98-79	61440-18-79	TRAFFIC BARRIER PLANTER REINFORCING DETAILS
B103-98-80	61440-18-80	CANCELLED
B103-98-81	61440-18-81	CANCELLED

C.O.W. NO.	R.C.P.L. NO.	DESCRIPTION
B103-98-82	61440-18-82	BRICK PAVING KEY PLAN
B103-98-83	61440-18-83	BRICK PAVING ENLARGED PLANS
B103-98-84	61440-18-84	PLANTER IRRIGATION SYSTEMS LAYOUT AND DETAILS
B103-98-85	61440-18-85	SOUTH ABUTMENT TRANSFER BEAM SHEET 1 OF 2
B103-98-86	61440-18-86	SOUTH ABUTMENT TRANSFER BEAM SHEET 2 OF 2
B103-98-87	61440-18-87	PIER 1 TRANSFER BEAM SHEET 1 OF 2
B103-98-88	61440-18-88	PIER 1 TRANSFER BEAM SHEET 2 OF 2
B103-98-89	61440-18-89	PIER 2 TRANSFER BEAM SHEET 1 OF 2
B103-98-90	61440-18-90	PIER 2 TRANSFER BEAM SHEET 2 OF 2
B103-98-91	61440-18-91	PIER 3 TRANSFER BEAM SHEET 1 OF 2
B103-98-92	61440-18-92	PIER 3 TRANSFER BEAM SHEET 2 OF 2
B103-98-93	61440-18-93	PIER 4 TRANSFER BEAM SHEET 1 OF 2
B103-98-94	61440-18-94	PIER 4 TRANSFER BEAM SHEET 2 OF 2
B103-98-95	61440-18-95	NORTH ABUTMENT TRANSFER BEAM SHEET 1 OF 2
B103-98-96	61440-18-96	NORTH ABUTMENT TRANSFER BEAM SHEET 2 OF 2
B103-98-97	61440-18-97	PRECAST CONCRETE GIRDERS SPAN 1 SHEET 1 OF 2
B103-98-98	61440-18-98	PRECAST CONCRETE GIRDERS SPAN 1 SHEET 2 OF 2
B103-98-99	61440-18-99	PRECAST CONCRETE GIRDERS SPAN 2 SHEET 1 OF 2
B103-98-100	61440-18-100	PRECAST CONCRETE GIRDERS SPAN 2 SHEET 2 OF 2
B103-98-101	61440-18-101	PRECAST CONCRETE GIRDERS SPAN 3 SHEET 1 OF 2
B103-98-102	61440-18-102	PRECAST CONCRETE GIRDERS SPAN 3 SHEET 2 OF 2
B103-98-103	61440-18-103	PRECAST CONCRETE GIRDERS SPAN 4 SHEET 1 OF 2
B103-98-104	61440-18-104	PRECAST CONCRETE GIRDERS SPAN 4 SHEET 2 OF 2
B103-98-105	61440-18-105	PRECAST CONCRETE GIRDERS SPAN 5 SHEET 1 OF 2
B103-98-106	61440-18-106	PRECAST CONCRETE GIRDERS SPAN 5 SHEET 2 OF 2
B103-98-107	61440-18-107	CANCELLED
B103-98-108	61440-18-108	CONCRETE SIDEWALK BEAMS & REINFORCING SCHEDULE
B103-98-109	61440-18-109	DECK REINFORCING
B103-98-110	61440-18-110	LOOKOUT SOFFIT SLAB REINFORCING AND REINFORCING SCHEDULE
B103-98-111	61440-18-111	NORTH ABUTMENT CONCRETE SHEET 1 OF 3
B103-98-112	61440-18-112	NORTH ABUTMENT CONCRETE SHEET 2 OF 3
B103-98-113	61440-18-113	NORTH ABUTMENT CONCRETE SHEET 3 OF 3
B103-98-114	61440-18-114	NORTH ABUTMENT REINFORCING SHEET 1 OF 3
B103-98-115	61440-18-115	NORTH ABUTMENT REINFORCING SHEET 2 OF 3
B103-98-116	61440-18-116	NORTH ABUTMENT REINFORCING SHEET 3 OF 3
B103-98-117	61440-18-117	ELECTRICAL INTERIOR LIGHTING
B103-98-118	61440-18-118	FLOOD PROTECTION RETAINING WALL AND MODIFICATIONS TO #10 MAIN STREET
B103-98-119	61440-18-119	FLOOD PROTECTION RETAINING WALL AND STOP LOGS
B103-98-120	61440-18-120	STOP LOG DETAILS

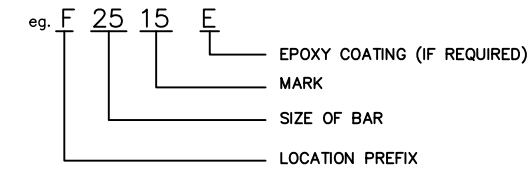
BRICK PAVING KEY PLAN
 BRICK PAVING ENLARGED PLANS
 PLANTER IRRIGATION SYSTEMS LAYOUT AND DETAILS
 SOUTH ABUTMENT TRANSFER BEAM SHEET 1 OF 2
 SOUTH ABUTMENT TRANSFER BEAM SHEET 2 OF 2
 PIER 1 TRANSFER BEAM SHEET 1 OF 2
 PIER 1 TRANSFER BEAM SHEET 2 OF 2
 PIER 2 TRANSFER BEAM SHEET 1 OF 2
 PIER 2 TRANSFER BEAM SHEET 2 OF 2
 PIER 3 TRANSFER BEAM SHEET 1 OF 2
 PIER 3 TRANSFER BEAM SHEET 2 OF 2
 PIER 4 TRANSFER BEAM SHEET 1 OF 2
 PIER 4 TRANSFER BEAM SHEET 2 OF 2
 NORTH ABUTMENT TRANSFER BEAM SHEET 1 OF 2
 NORTH ABUTMENT TRANSFER BEAM SHEET 2 OF 2
 PRECAST CONCRETE GIRDERS SPAN 1 SHEET 1 OF 2
 PRECAST CONCRETE GIRDERS SPAN 1 SHEET 2 OF 2
 PRECAST CONCRETE GIRDERS SPAN 2 SHEET 1 OF 2
 PRECAST CONCRETE GIRDERS SPAN 2 SHEET 2 OF 2
 PRECAST CONCRETE GIRDERS SPAN 3 SHEET 1 OF 2
 PRECAST CONCRETE GIRDERS SPAN 3 SHEET 2 OF 2
 PRECAST CONCRETE GIRDERS SPAN 4 SHEET 1 OF 2
 PRECAST CONCRETE GIRDERS SPAN 4 SHEET 2 OF 2
 PRECAST CONCRETE GIRDERS SPAN 5 SHEET 1 OF 2
 PRECAST CONCRETE GIRDERS SPAN 5 SHEET 2 OF 2
 CANCELLED
 CONCRETE SIDEWALK BEAMS & REINFORCING SCHEDULE
 DECK REINFORCING
 LOOKOUT SOFFIT SLAB REINFORCING AND REINFORCING SCHEDULE
 NORTH ABUTMENT CONCRETE SHEET 1 OF 3
 NORTH ABUTMENT CONCRETE SHEET 2 OF 3
 NORTH ABUTMENT CONCRETE SHEET 3 OF 3
 NORTH ABUTMENT REINFORCING SHEET 1 OF 3
 NORTH ABUTMENT REINFORCING SHEET 2 OF 3
 NORTH ABUTMENT REINFORCING SHEET 3 OF 3
 ELECTRICAL INTERIOR LIGHTING
 FLOOD PROTECTION RETAINING WALL AND MODIFICATIONS TO #10 MAIN STREET
 FLOOD PROTECTION RETAINING WALL AND STOP LOGS
 STOP LOG DETAILS

SECTIONS AND DETAILS



- A detail number
- B cross reference to drawing where detail initially taken
- C drawing where detail shown

REINFORCING MARK NUMBERING SYSTEM



LOCATION PREFIX

- F - FOUNDATION
- P - PIER, PRECAST PLANTER BARRIER, ABUTMENT PLANTERS, PLANTER WALL
- SA - SOUTH ABUTMENT
- NA - NORTH ABUTMENT
- AS - APPROACH SLAB
- R - RETAINING WALL AND FLOOD WALLS
- D - DECK
- H - HANDRAILING
- SW - SIDEWALK, SIDEWALK SUPPORT BEAMS
- ST - STAIRS
- G - GIRDER
- C - CURB
- T - TOWER, TRANSFER BEAMS
- B - CAST-IN-PLACE AND PRECAST BARRIER

REINFORCING NOTES

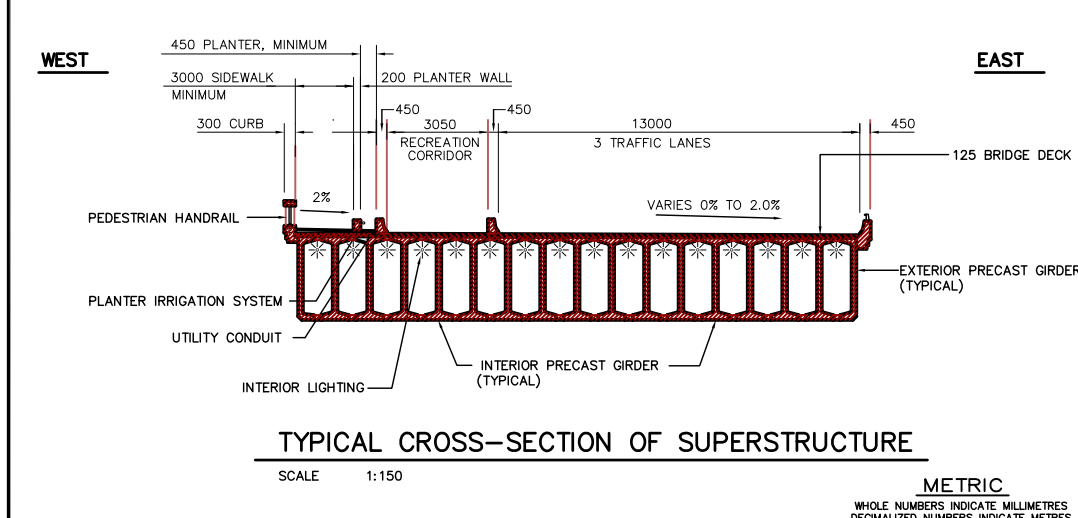
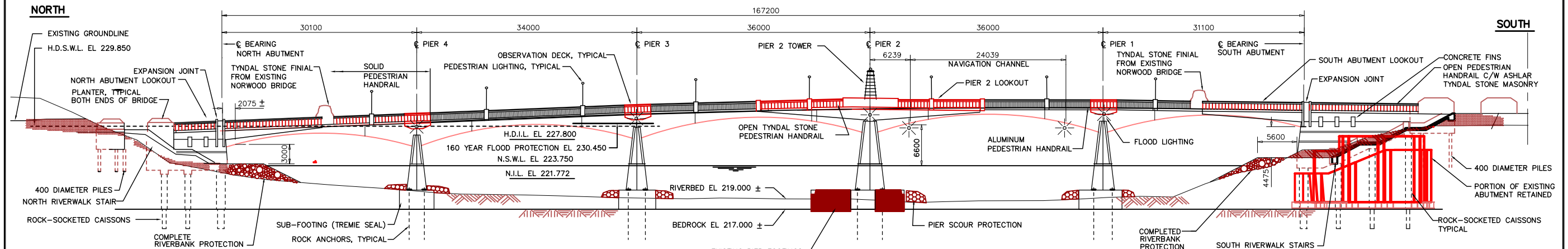
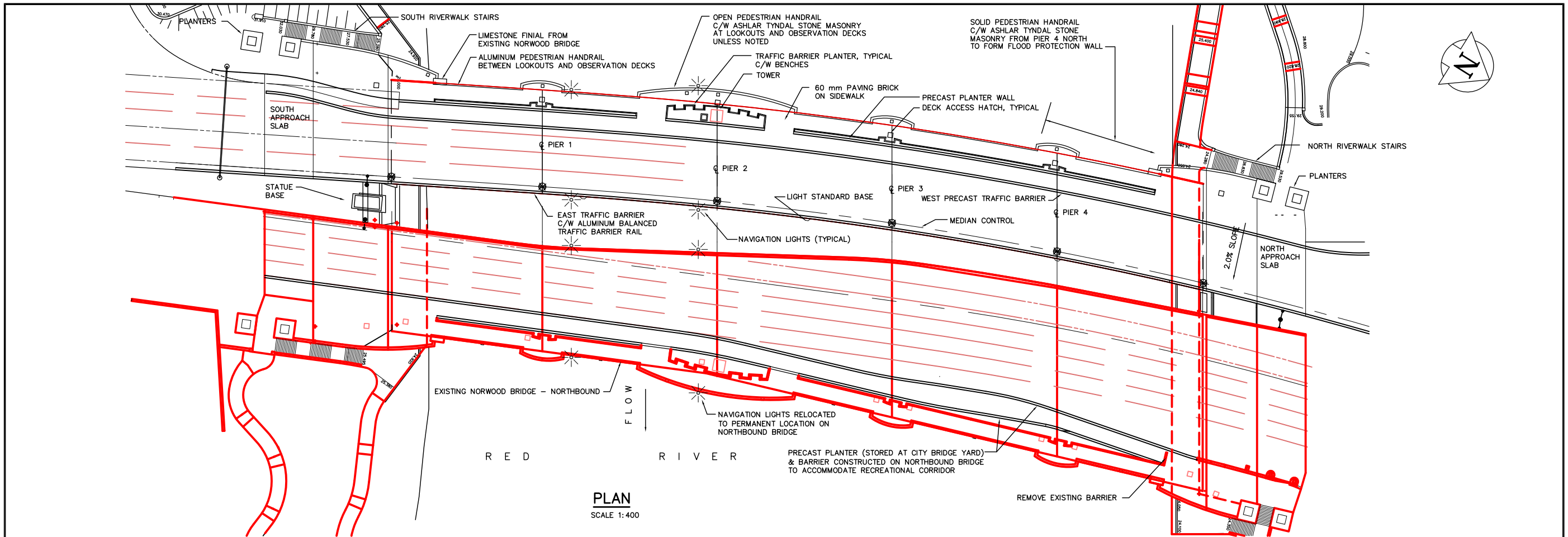
- REINFORCING SHOP DRAWINGS, FABRICATION AND PLACEMENT TO BE IN ACCORDANCE TO THE LATEST EDITION OF THE MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE
- BAR SHAPES AND BENDING TOLERANCES ARE AS PER ACI 315 (LATEST EDITION). NO DEDUCTION FOR BENDS IS REQUIRED. ALL LAP TO BE CLASS C BASIC TENSION LAP SPLICES FOR GRADE 400 MPa.
- REINFORCEMENT SHALL BE MARK NUMBERED USING A COLOUR CODED MARKING SYSTEM. NOT LESS THAN 10% IN EVERY GROUP
- EACH BUNDLE OF REINFORCEMENT SHALL BE TAGGED WITH THE CONSULTANT DRAWING NUMBER, LOCATION PREFIX AND BAR MARK. EXAMPLE: TAG NUMBER 61440-11-25 - F - 2515.

DESIGN DATA:

DESIGN SPECIFICATIONS	AASHTO STANDARD LRFD BRIDGE DESIGN SPECIFICATION 1994
LIVE LOADING	HSS 30 TRUCK / HS 30 LANE
CONCRETE	SUBSTRUCTURE (INCL. CAISSONS) - F _c = 30 MPa SUPERSTRUCTURE - F _c = 35 MPa
REINFORCING STEEL	CSA G30.18-M92, GRADE 400 ALL REINFORCING WITH THE SUFFIX "E" IS EPOXY COATED
ROCK ANCHORS	CSA G279-M1982, GRADE 835/1030 THREADBAR TENDONS C/W SINGLE AND DOUBLE CORROSION PROTECTION SYSTEM
STRUCTURAL STEEL	CSA G40.21-M92, GRADE 300W
CLEAR COVER TO REINFORCING STEEL	75 mm FOR CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 50 mm FOR CONCRETE EXPOSED TO DEICING CHEMICALS (TOP STEEL IN DECK, TRAFFIC BARRIERS, CURBS, SIDEWALKS) 40 mm ELSEWHERE
PRECAST CONCRETE	F _c = 35MPa DYWIDAG BARS F _y = 835MPa, F _u = 1030MPa

REID CROWTHER & PARTNERS LIMITED
 WINNIPEG
 AS CONSTRUCTED
 SIG.....DATE.....

LOCATION APPROVED UNDERGROUND STRUCTURES	B.M. ELEV.	DATE	DESIGNED BY	CHECKED BY	ENGINEER'S SEAL	THE CITY OF WINNIPEG STREETS AND TRANSPORTATION DEPARTMENT BRIDGE ENGINEERING DIVISION MAIN STREET AND NORWOOD BRIDGES PROJECT NORWOOD BRIDGE - SOUTHBOUND AND RELATED ROADWORKS	CITY DRAWING NUMBER
SURV. U/G STRUCTURES COMMITTEE			DESIGNED BY	CHECKED BY			B103-98-01
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.			DRAWN BY C.T.	APPROVED BY		SHEET 01 OF	
			HOR. SCALE: AS NOTED	AUTHORIZED BY DATE	CONSULTANT DRAWING NO. 61440-18-01	DESIGN DATA & DRAWING LIST REV-1	
			VERTICAL: AS NOTED	S. BRUNSPANER / SENIOR BRIDGE ENGINEER ACCEPTED FOR BRIDGE CONSTRUCTION BY: DATE:			
			NO. REVISIONS	DATE			



REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

WEST ELEVATION
SCALE 1:300

NOTES
CONTRACTOR TO MAINTAIN FLOOD PROTECTION TO EL 230.450 AT ALL TIMES.
SPAN LENGTHS AS SHOWN ARE MEASURED PERPENDICULAR TO CENTERLINE OF PIERS AND ABUTMENT BEARING. THE SUBSTRUCTURE IS SET OUT BY WORKING POINTS AND BEARING ANGLES AS INDICATED ON DRAWING 61440-18-05. THE SUPERSTRUCTURE IS SET OUT FROM HORIZONTAL AND VERTICAL GEOMETRIC CONTROL DATA AS SHOWN ON ROADWORK DRAWINGS 61440-18-08 & 13.
THIS PROJECT IS SET OUT BY CO-ORDINATE GEOMETRY BASED ON CONTROL MONUMENTS AS SHOWN ON ROADWORK 61440-18-04.

ABBREVIATIONS

N.S.W.L.	NORMAL SUMMER WATER LEVEL
N.I.L.	NORMAL ICE LEVEL
H.D.I.L.	HIGH DECILE ICE LEVEL
H.D.S.W.L.	HIGH DECILE SUMMER WATER LEVEL (160 YEAR FLOOD EVENT)

LOCATION APPROVED UNDERGROUND STRUCTURES

SURV. U/G STRUCTURES	DATE	COMMITTEE	B.M. ELEV.
2 AS CONSTRUCTED	10/13/99	KAA	
1 ISSUED FOR CONSTRUCTION	11/01/96	JFK	
0 ISSUED FOR REVIEW	10/22/96	C.T.	
NO. REVISIONS	DATE	BY	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.

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY	CHECKED BY
DRAWN BY	APPROVED BY
HOR. SCALE: AS NOTED	AUTHORIZED BY
VERTICAL: AS NOTED	DATE
	B. BRUNSPANER / SENIOR BRIDGE ENGINEER
	ACCEPTED FOR WRAY CONSTRUCTION BY: DATE:
	P. PLAZA / PROJECT MANAGER

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
GA WEBSTER
05/11/96
REGISTERED PROFESSIONAL ENGINEER

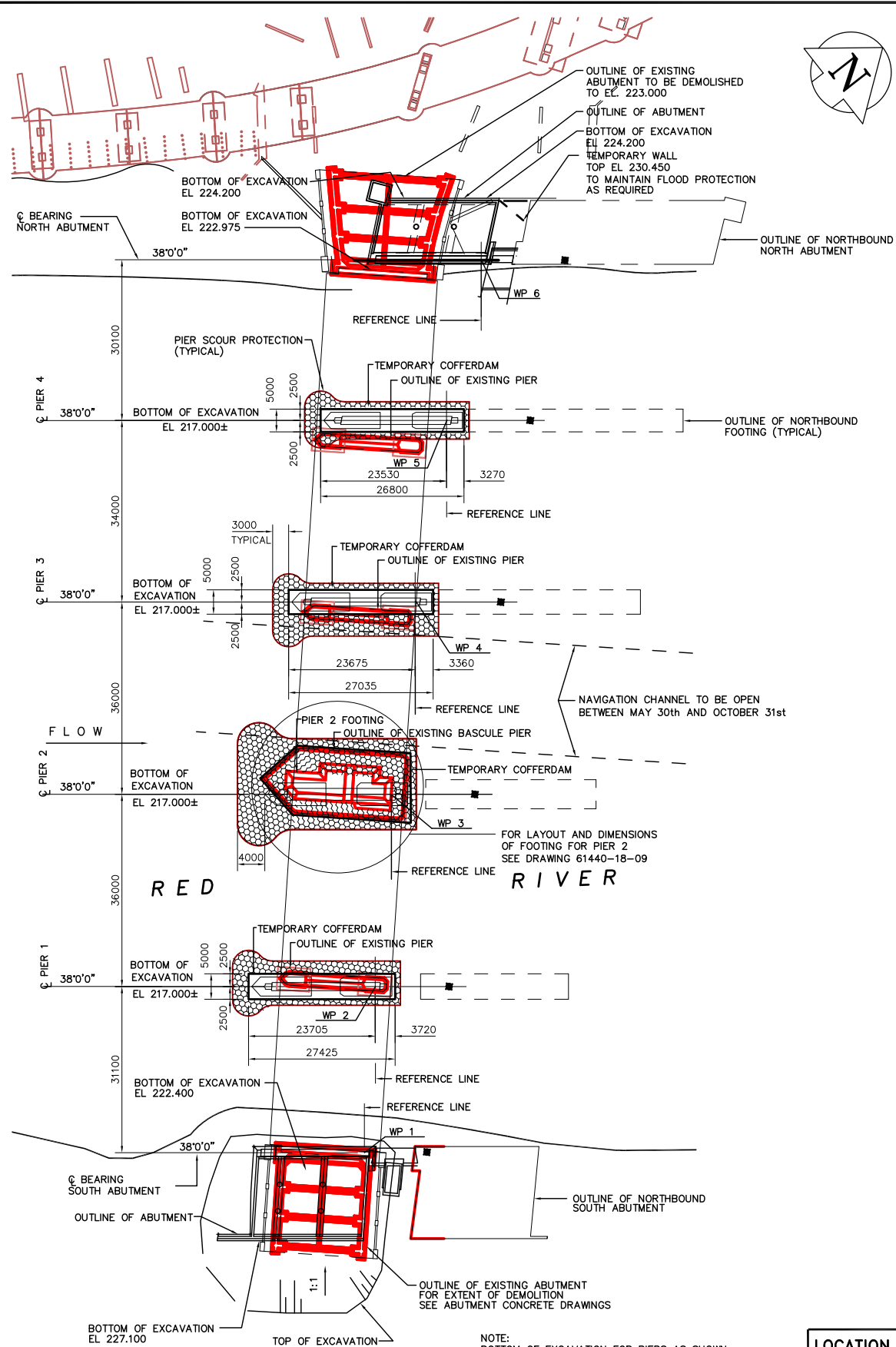
THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

GENERAL ARRANGEMENT OF PROPOSED WORKS
PLAN, WEST ELEVATION AND
TYPICAL SECTION

CITY DRAWING NUMBER
B103-98-03
SHEET 03 OF
REV-2

CONSULTANT DRAWING NO.
61440-18-03

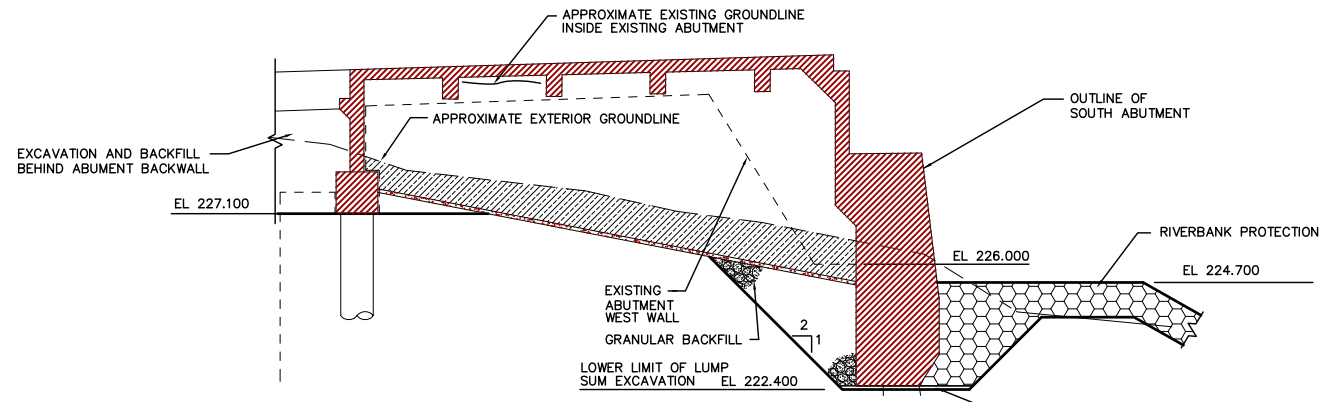


PLAN
SCALE 1:500

NOTE:
BOTTOM OF EXCAVATION FOR PIERS AS SHOWN AT EL 217.000 IS APPROXIMATE AND IS ASSUMED TOP OF BEDROCK. CONTRACTOR TO VERIFY ELEVATION AT EACH PIER LOCATION.

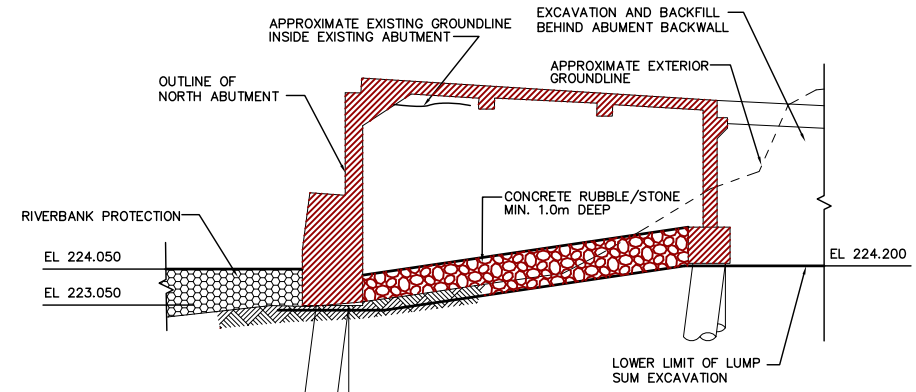
REFERENCE DRAWINGS:
TYPICAL ROCK ANCHOR DETAIL - 61440-18-08 & 09
EXCAVATION AND BACKFILL (BEHIND ABUTMENT BACKWALL) - 61440-18-06

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES



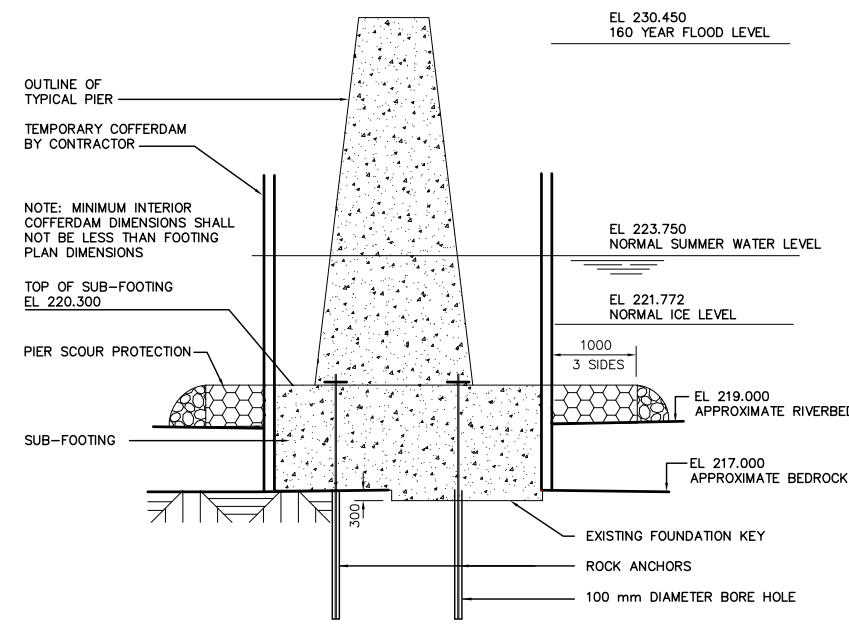
EXCAVATION LIMITS AT SOUTH ABUTMENT

SCALE 1:100



EXCAVATION LIMITS AT NORTH ABUTMENT

SCALE 1:100



EXCAVATION LIMITS AT TYPICAL PIER

SCALE 1:100

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

WORKING POINT TABLE (WP)			
ALL ANGLES ARE NORTH AZIMUTH BASED ON CONTROL MONUMENTS AS SHOWN ON DRAWING 61440-18-R3			
W P No.	NORTHING	EASTING	CHAINAGE
1	10098.329	9880.407	8+11.547
2	10119.088	9857.159	8+42.714
3	10143.573	9830.604	8+78.836
4	10169.305	9805.023	9+15.123
5	10194.859	9781.841	9+49.628
6	10218.517	9762.129	9+80.425

LOCATION APPROVED UNDERGROUND STRUCTURES		B.M. ELEV.
SURV. U/G STRUCTURES	DATE	
COMMITTEE		
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

NO.	ISSUED FOR CONSTRUCTION	DATE	BY
2	AS-CONSTRUCTED	10/14/99	KAA
1	ISSUED FOR CONSTRUCTION	12/03/96	C.T.
0	ISSUED FOR REVIEW	11/21/96	C.T.

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: [] CHECKED BY: []
DRAWN BY: C.T. APPROVED BY: []
HOR. SCALE: [] VERTICAL: AS NOTED
AUTHORIZED BY: [] DATE: []
S. SPANSPANER / SENIOR BRIDGE ENGINEER
ACCEPTED FOR GREAT CONSTRUCTION BY: DATE: []
P. PLAZA / PROJECT MANAGER

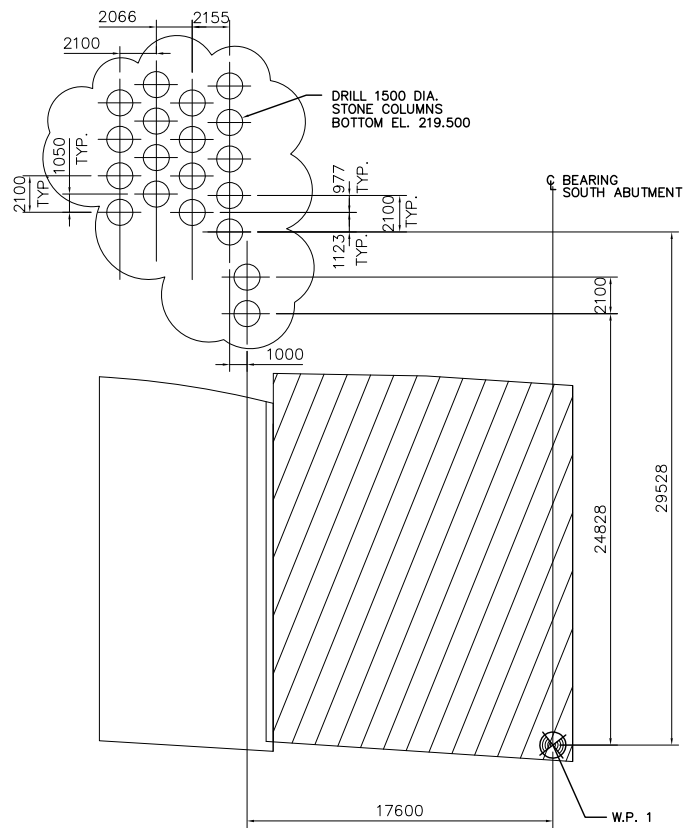
ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
G.A. WEBSTER
03/12/96
REGISTERED PROFESSIONAL ENGINEER

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

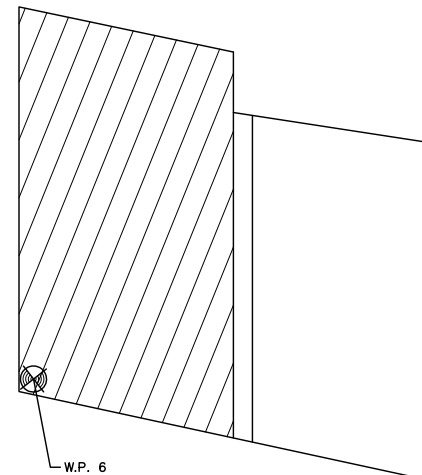
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

FOUNDATION LAYOUT
LIMITS OF EXCAVATION
AND WORKING POINTS

CITY DRAWING NUMBER
B103-98-05
SHEET 05 OF []
REV-2

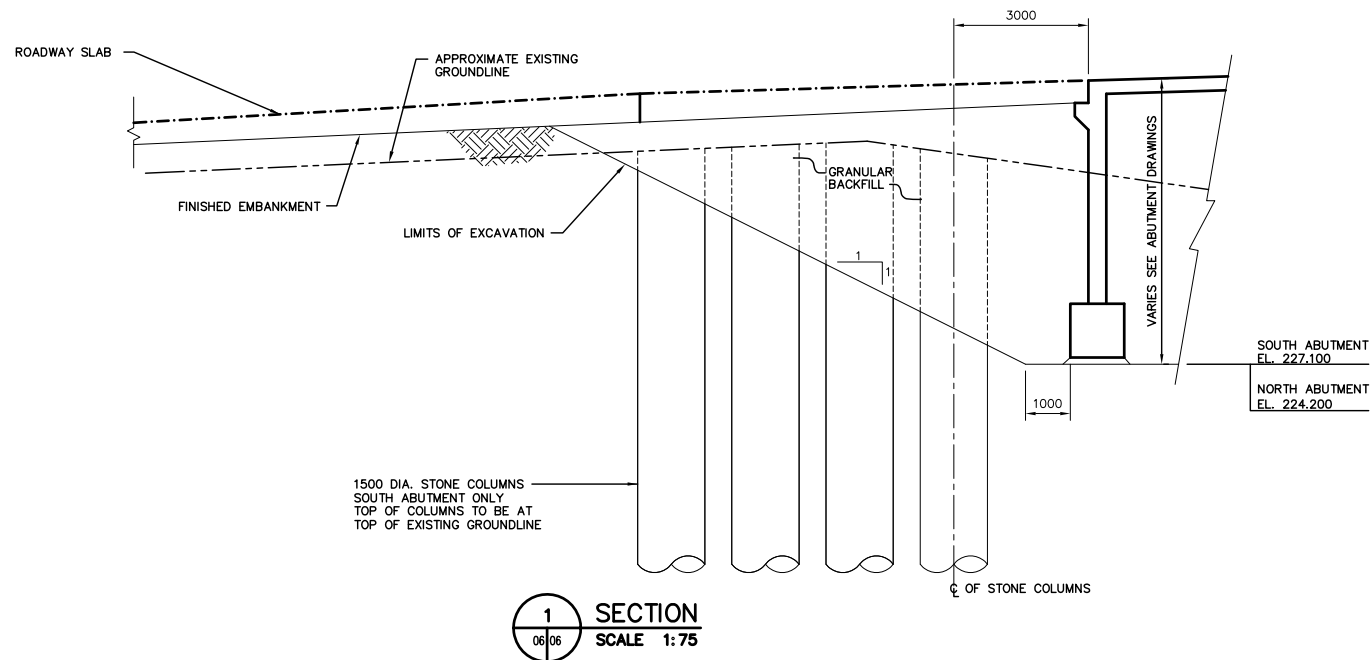


SOUTH ABUTMENT



NORTH ABUTMENT

LOCATION PLAN
SCALE: 1:200



SECTION 1
SCALE 1:75

NOTE:
REINFORCED EARTH DELETED

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

LOCATION APPROVED UNDERGROUND STRUCTURES				B.M. ELEV.
SURV. 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.				
3	AS-CONSTRUCTED	14/10/99	KA	
2	REV'D STONE COLUMN LOCATIONS	02/12/97	C.T.	
1	ISSUED FOR CONSTRUCTION	12/03/96	C.T.	
0	ISSUED FOR REVIEW	11/12/96	C.T.	
NO.	REVISIONS	DATE	BY	DATE

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY	CHECKED BY
DRAWN BY	APPROVED BY
AUTHORIZED BY DATE	
HOR. SCALE: AS NOTED	
VERTICAL: AS NOTED	
B. SPANSPANER / SENIOR BRIDGE ENGINEER ACCEPTED FOR GRAY CONSTRUCTION BY: DATE:	
P. PLAZA / PROJECT MANAGER	

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
WEBSTER
03/12/96
REGISTERED PROFESSIONAL ENGINEER

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

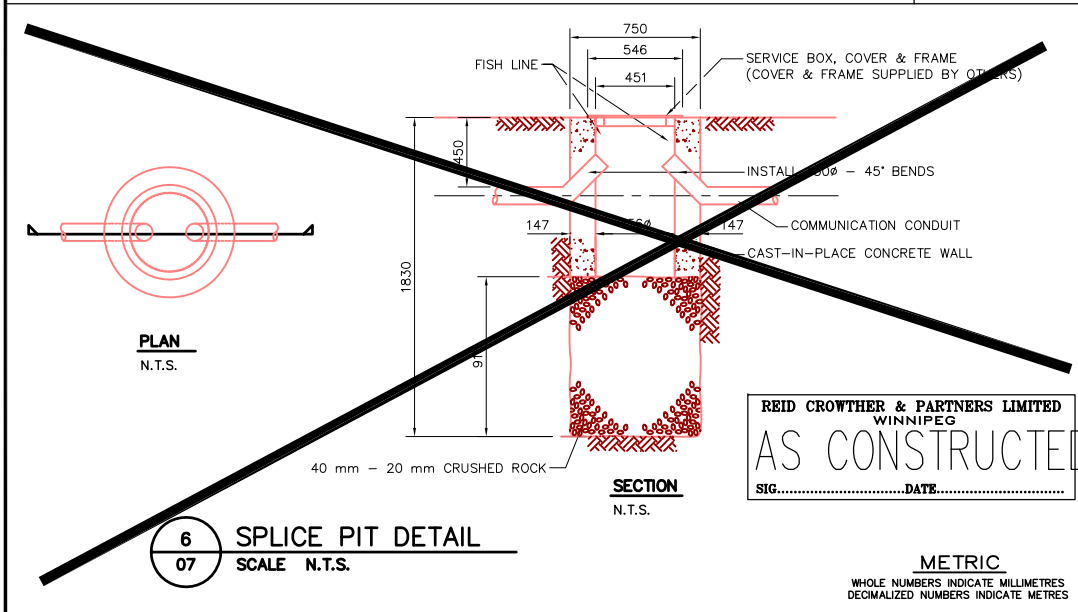
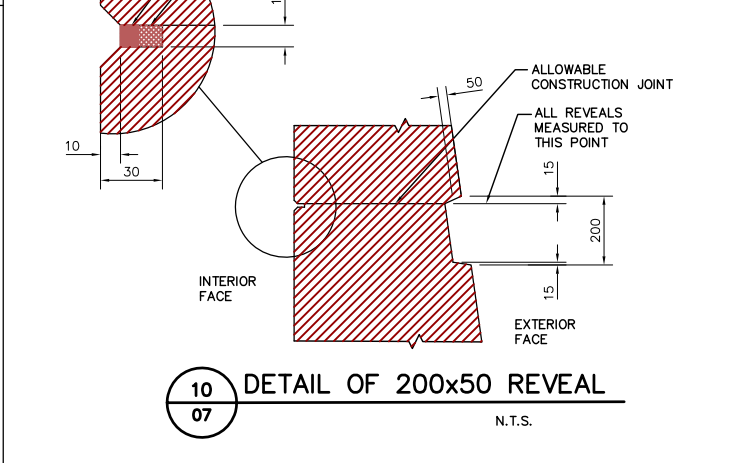
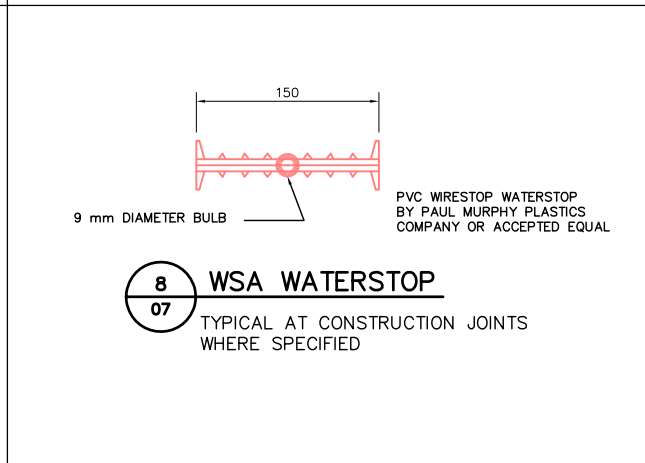
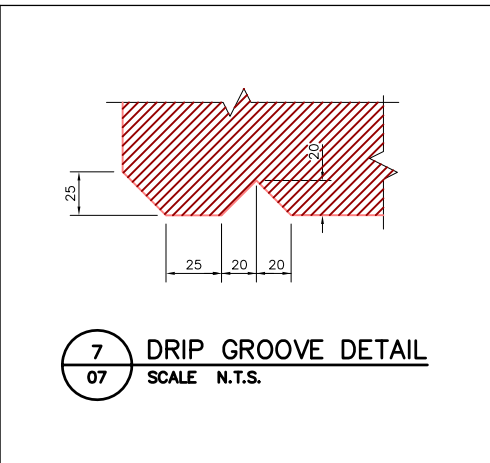
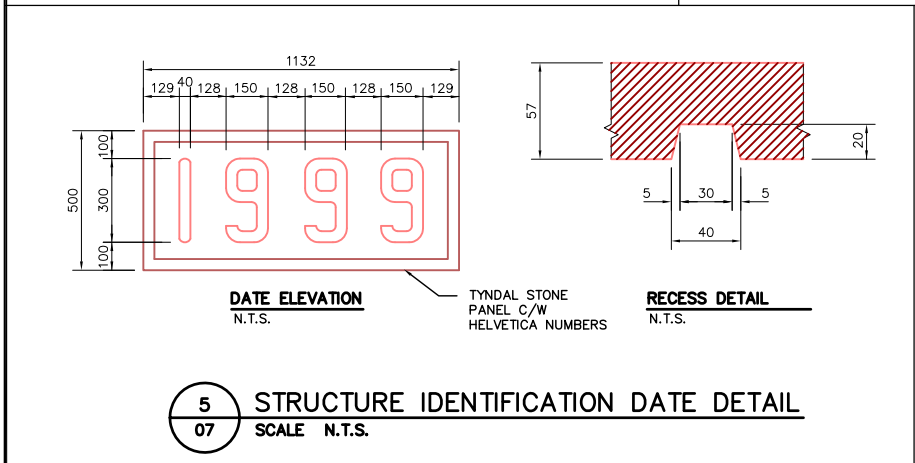
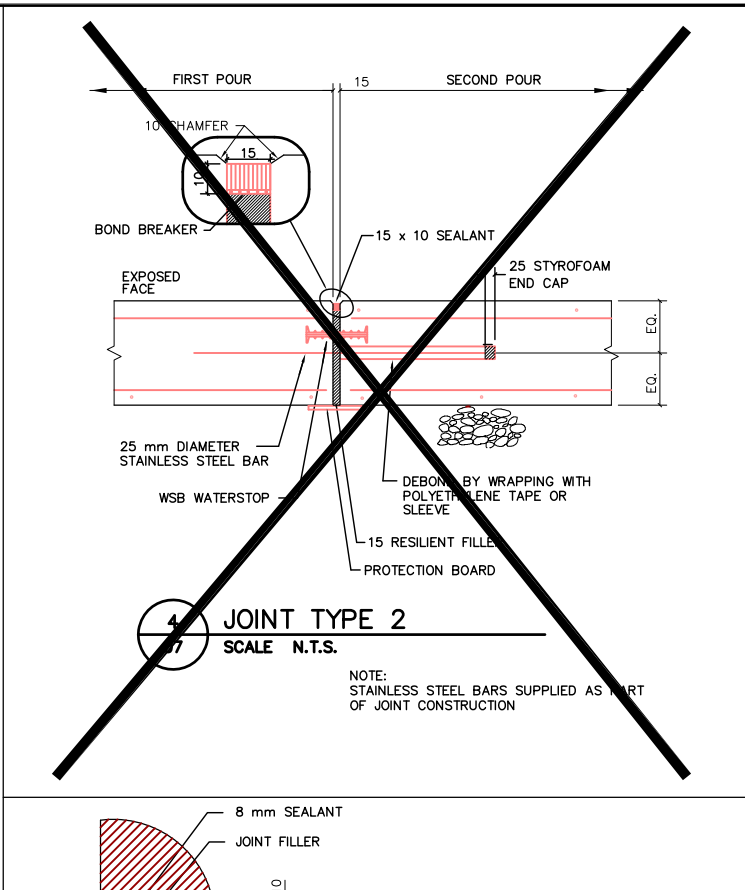
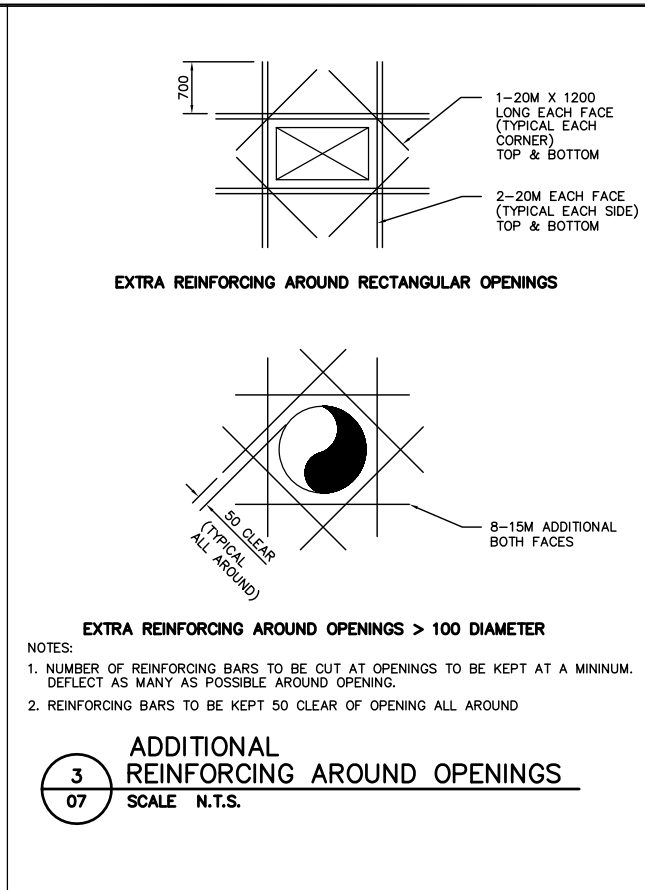
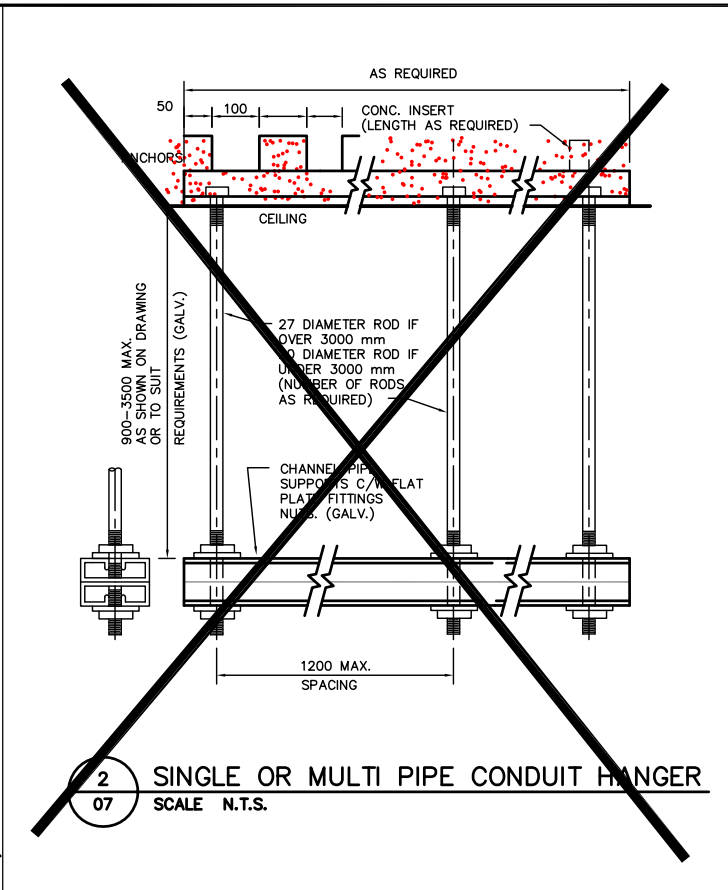
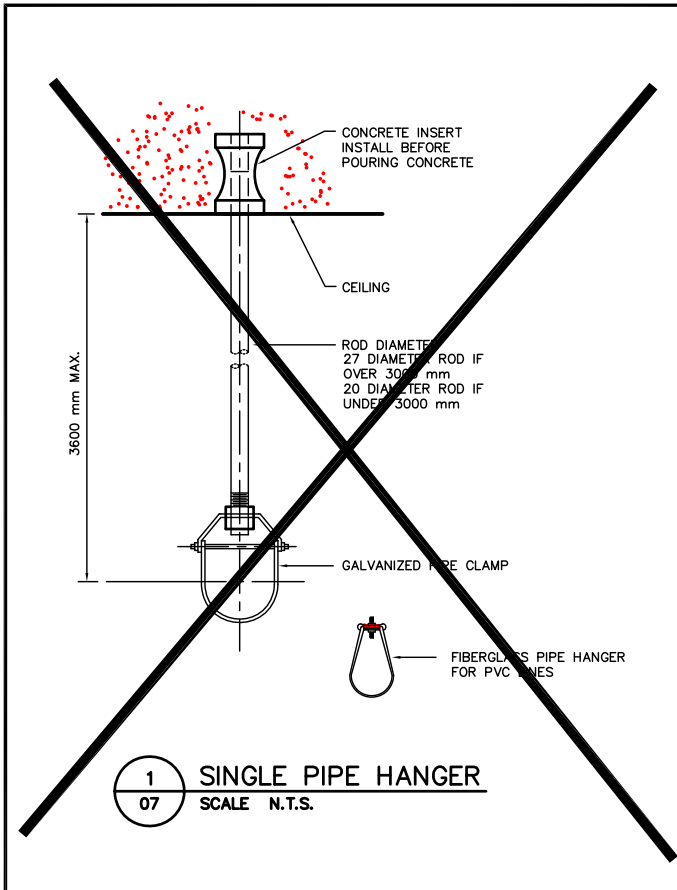
NORTH AND SOUTH ABUTMENT
EXCAVATION AND BACKFILL

CITY DRAWING NUMBER
B103-98-06
SHEET 06 OF

REV-3

CONSULTANT DRAWING NO.
61440-18-06

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES



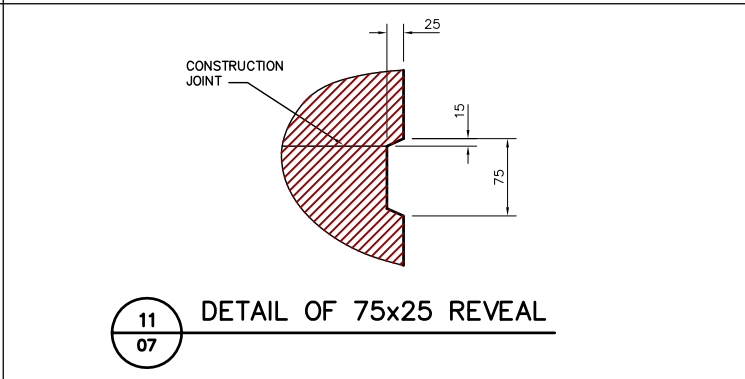
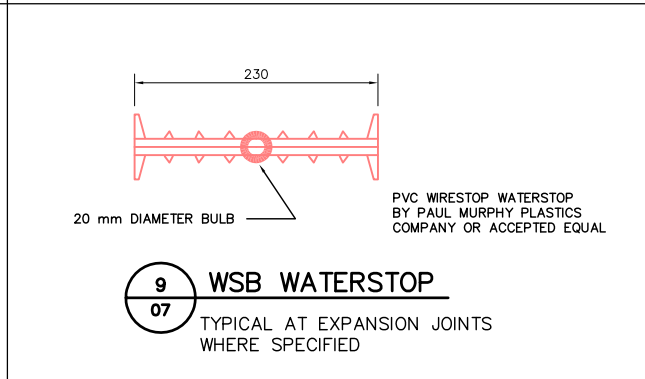
STANDARD ABBREVIATIONS

CJ CONSTRUCTION JOINT
EL ELEVATION
R RADIUS
@ AT
TYP. TYPICAL

LEGEND

WP WORKING POINT

MISCELLANEOUS METAL
ITEM NUMBER



REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED
UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES DATE COMMITTEE

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
2	AS-CONSTRUCTED	14/10/99	KAA
1	ISSUED FOR CONSTRUCTION	12/03/96	C.T.
0	ISSUED FOR REVIEW	11/06/96	C.T.

B.M. ELEV.

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY	CHECKED BY
DRAWN BY	APPROVED BY
HOR. SCALE:	AUTHORIZED BY
VERTICAL: AS NOTED	DATE
DATE	DATE

11/06/96

P. PLAZA / PROJECT MANAGER

ENGINEER'S SEAL

PROVINCE OF MANITOBA
ORIGINAL
SIGNED BY
G.A.
WEBSTER
05/12/96
REGISTERED PROFESSIONAL ENGINEER

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

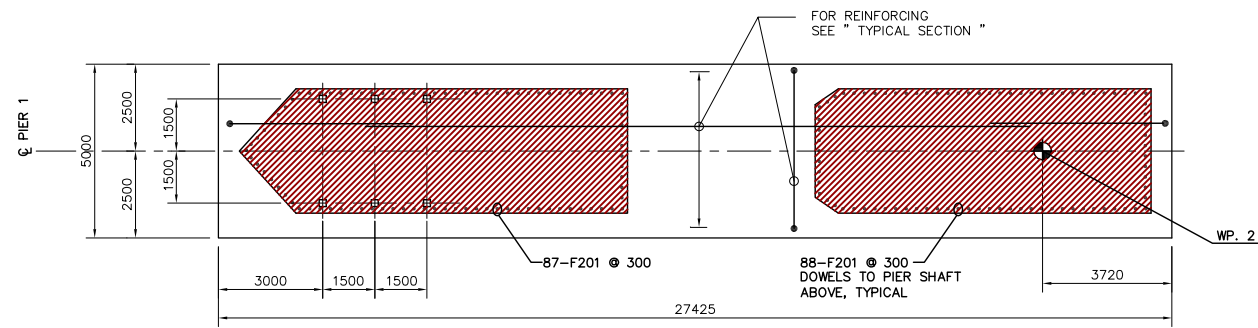
CITY DRAWING NUMBER
B103-98-07
SHEET 07 OF

CONSULTANT DRAWING NO.
61440-18-07

MISCELLANEOUS CONCRETE DETAILS

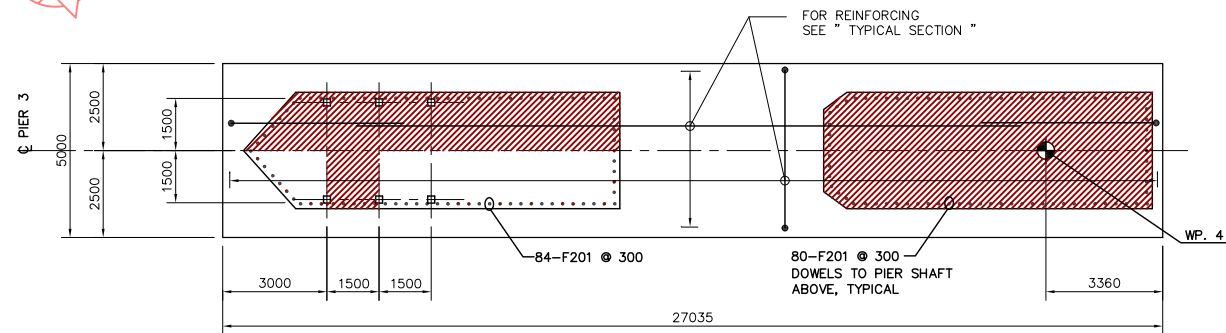
REV-2

FLOW



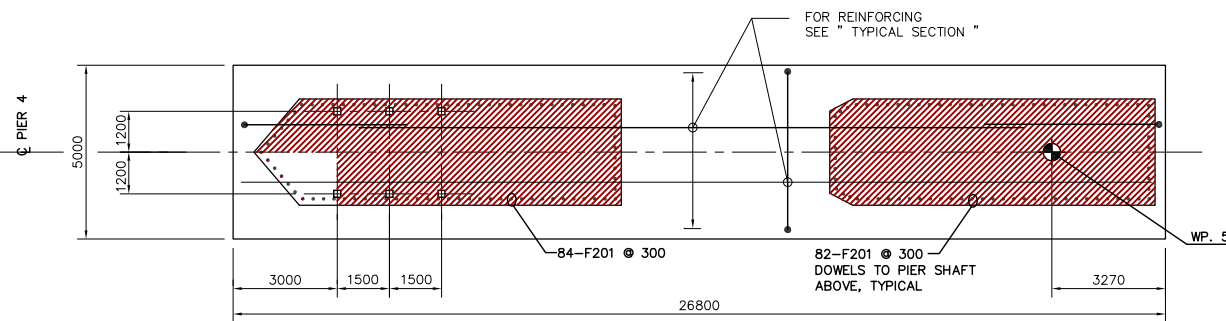
PLAN OF SUB-FOOTING PIER 1

SCALE 1:100



PLAN OF SUB-FOOTING PIER 3

SCALE 1:100



PLAN OF SUB-FOOTING PIER 4

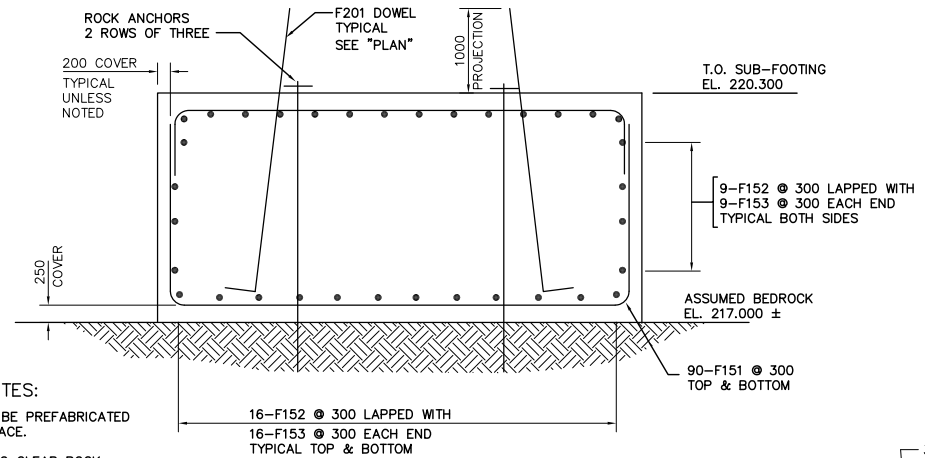
SCALE 1:100

REINFORCING SCHEDULE

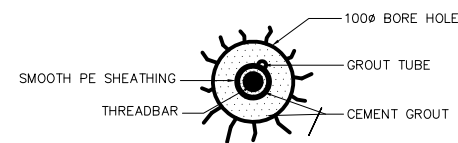
Mark	No. Bars	Size	Length	Type	A	B	C	D	E	F	G	H	J	K	L	M	S	O	Weight
F151	540	15	9000	17		2200	4600	2200											7630
F152	150	15	18000	STR															4239
F153	300	15	8000	17			5400	2600											3768
F201	505	20	4400	17		400	4000												5233
TOTAL																			20870 kg

NOTE: TOTAL QUANTITY OF BARS AS INDICATED IN THE SCHEDULE ARE TOTAL NO. OF BARS REQUIRED FOR SUB-FOOTINGS FOR PIER 1, 3 & 4 AS DETAILED ON THIS DRAWING

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES



TYPICAL SECTION



SECTION 1
SCALE N.T.S.

ROCK ANCHOR NOTES:

TREMIE SUB-FOOTING IS SUITABLE FOR WATER ELEVATION AT EL. 223.750 (NSW.) AND ROCK ELEVATION AT EL. 217.000. HIGHER WATER OR ROCK LEVELS WILL REQUIRE ADDITIONAL SINGLE PROTECTION TEMPORARY ROCK TIE DOWNS AS DIRECTED BY THE CONTRACT ADMINISTRATOR.

REINFORCING NOTES:
REINFORCING CAGE TO BE PREFABRICATED AND LOWERED INTO PLACE.
ADJUST REINFORCING TO CLEAR ROCK ANCHORS BY 100mm ALL AROUND.
LONG LEG OF BAR F153 TO LAP WITH BAR F152, TYPICAL.

SUGGESTED CONSTRUCTION SEQUENCE

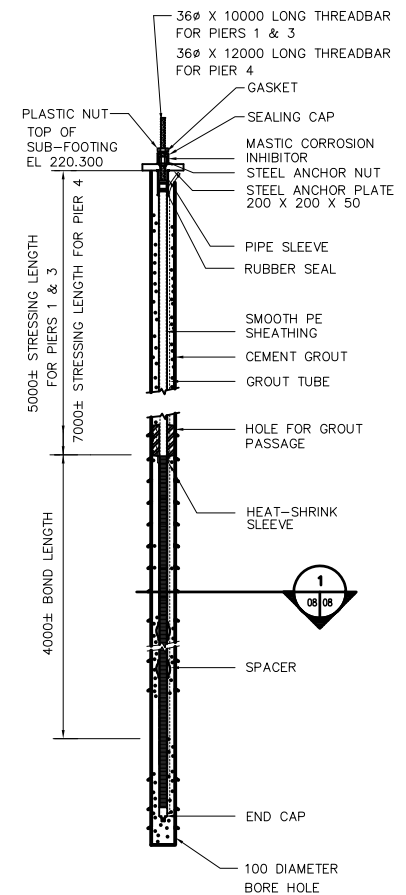
1. SHEET PILING
2. EXCAVATION (UNDERWATER)
3. CLEAN ROCK (UNDERWATER)
4. INSPECT ROCK (UNDERWATER)
5. POUR SUB-FOOTING (UNDERWATER)
6. DEWATER
7. DRILL AND INSTALL ANCHORS
8. STRESS ROCK ANCHORS TO 629 kN

NOTE: SUBSTRUCTURE IS SET OUT BY WORKING POINTS AND BEARING ANGLES AS INDICATED ON DRAWING 61440-18-05

LIST OF ABBREVIATIONS

IF	IN FACE
EF	EACH FACE
BW	BOTH WAYS
EQ SP	EQUALLY SPACED
ALT	ALTERNATING
NF	NEAR FACE
FF	FAR FACE
@	AT
C/C	CENTER TO CENTER
BTWN	BETWEEN

NOTE: CONTRACTOR MAY SUBMIT ALTERNATIVE CONSTRUCTION SEQUENCE FOR REVIEW AND ACCEPTANCE BY THE CONTRACT ADMINISTRATOR



TYPICAL ROCK ANCHOR DETAIL

SCALE N.T.S.
18 - 36mm THREADBARS REQUIRED FOR PIERS 1, 3 & 4
TOTAL LENGTH = 192 m

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

LOCATION APPROVED UNDERGROUND STRUCTURES

SURV. U/G STRUCTURES DATE COMMITTEE

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	AS-CONSTRUCTED	14/10/99	KAA
	1	ISSUED FOR CONSTRUCTION	11/01/96	JFK
	0	ISSUED FOR REVIEW		

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: KAA
DRAWN BY: KAA
HOR. SCALE: AS NOTED
VERTICAL: AS NOTED

CHECKED BY: []
APPROVED BY: []
AUTHORIZED BY: [] DATE: []

B. BRUNSINGER / SENIOR BRIDGE ENGINEER
ACCEPTED FOR GRANT CONSTRUCTION BY: DATE: []

P. PLAZA / PROJECT MANAGER

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
D.C.
MacFARLANE
05/11/96
REGISTERED PROFESSIONAL ENGINEER

CONSULTANT DRAWING NO. 61440-18-08

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

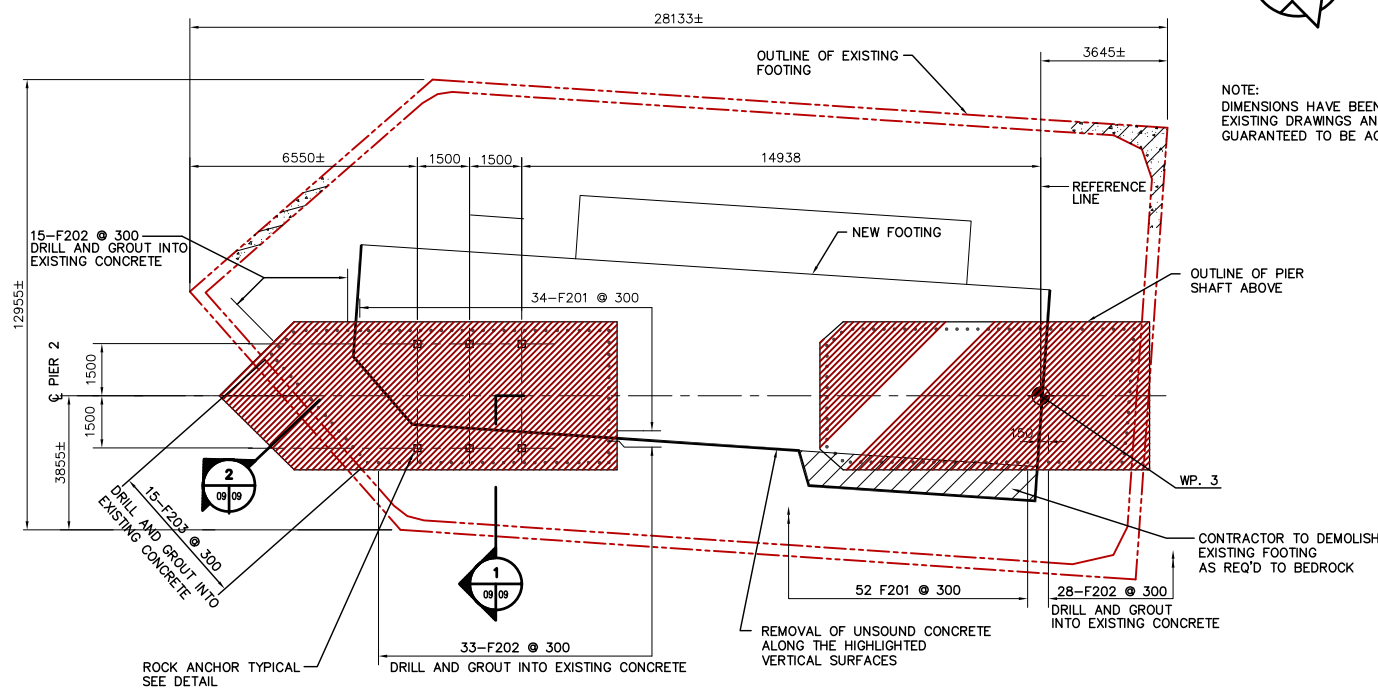
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

SUB-FOOTING
PIERS 1, 3 AND 4
CONCRETE & REINFORCING

CITY DRAWING NUMBER B103-98-08
SHEET 08 OF []

REV-2

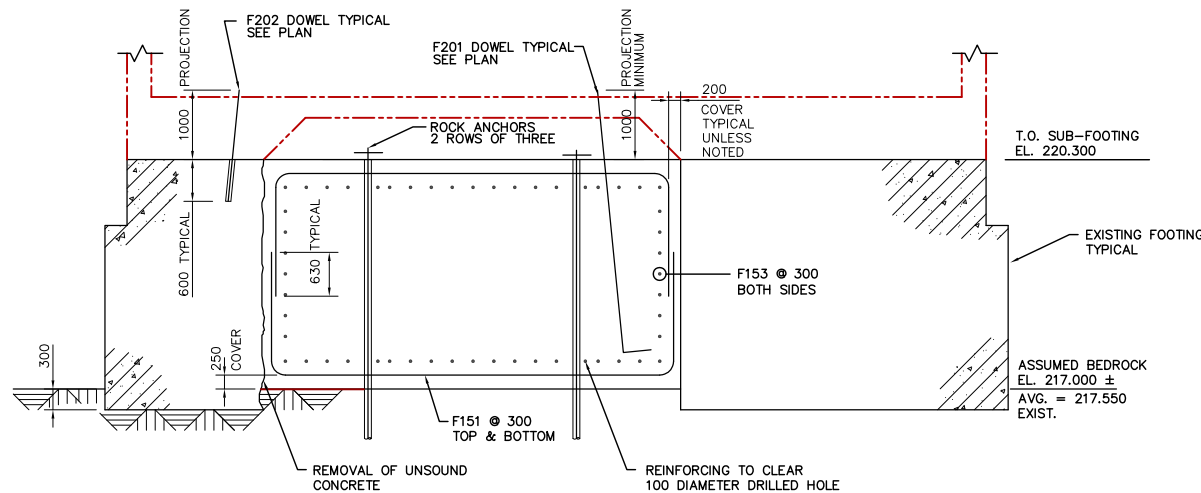
FLOW



PLAN OF SUB-FOOTING

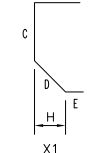
SCALE 1:100

NOTE: DIMENSIONS HAVE BEEN DERIVED FROM EXISTING DRAWINGS AND ARE NOT GUARANTEED TO BE ACCURATE



SECTION 1 SCALE 1:50

Marks	No. Bars	Size	Length	Type	A	B	C	D	E	F	G	H	J	K	L	M	S	O	Mass (kg)
F151	130	15	8180	17		1740	4700	1740											1670
F152	20	15	4260	17		1740	2520												134
F153	50	15	18000	STR															1413
F154	28	15	2100	STR															92
F155	10	15	8070	X1	2075	2950	2415	630				1710							127
F201	86	20	4500	17	400	4100													911
F202	76	20	1600	STR															286
F203	15	20	2000	16		600	1400					1000							71
TOTAL																			4704

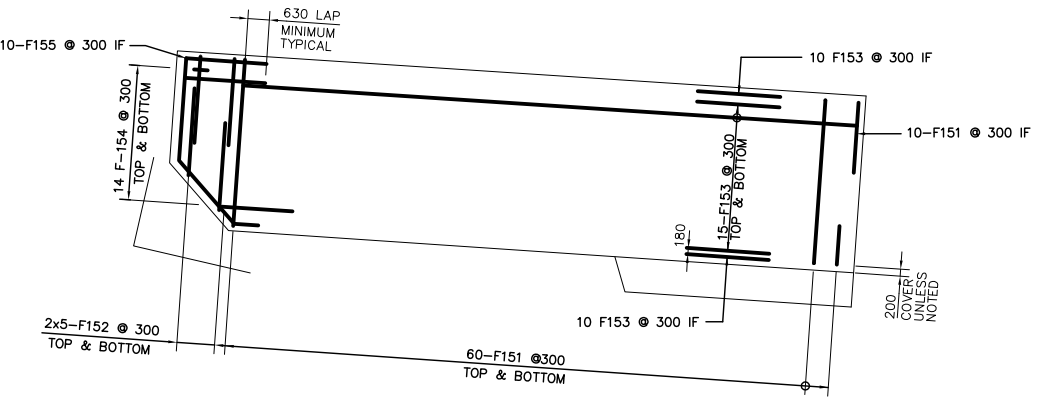


SUGGESTED CONSTRUCTION SEQUENCE

1. SHEET PILING
2. EXCAVATION (UNDERWATER)
3. CLEAN ROCK (UNDERWATER)
4. INSPECT ROCK (UNDERWATER)
5. POUR SUB-FOOTING (UNDERWATER)
6. DEWATER
7. DRILL AND INSTALL ANCHORS
8. STRESS ROCK ANCHORS TO 629 kN

LIST OF ABBREVIATIONS

IF	IN FACE
EF	EACH FACE
BW	BOTH WAYS
EQ SP	EQUALLY SPACED
ALT	ALTERNATING
NF	NEAR FACE
FF	FAR FACE
@	AT
C/C	CENTER TO CENTER
BTWN	BETWEEN



PLAN OF SUB-FOOTING REINFORCEMENT

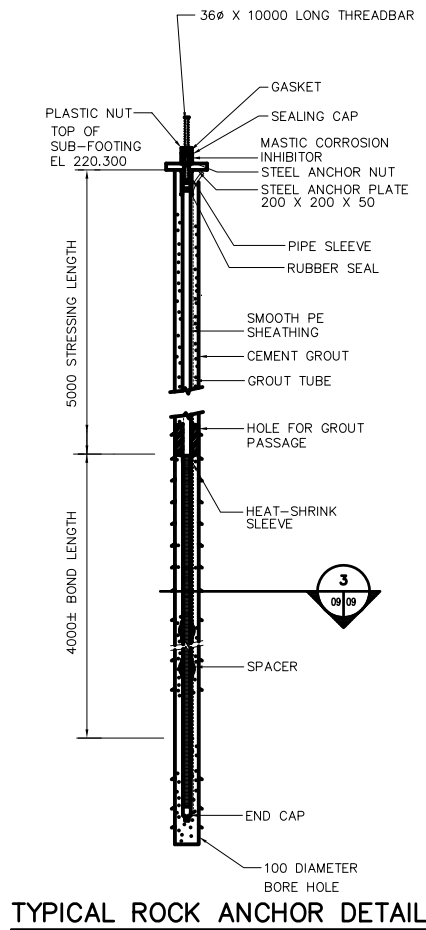
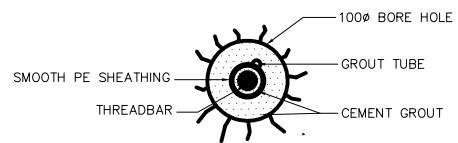
SCALE 1:100

ROCK ANCHOR NOTES

NOTE: CONTRACTOR MAY SUBMIT ALTERNATIVE CONSTRUCTION SEQUENCE FOR REVIEW AND ACCEPTANCE BY THE CONTRACT ADMINISTRATOR

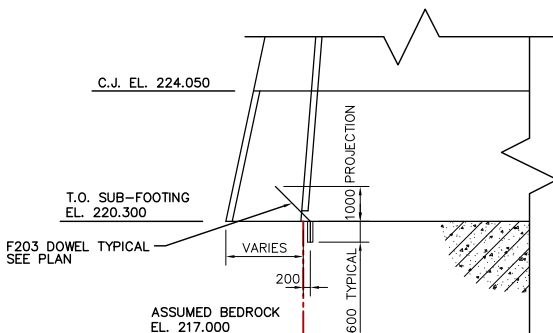
TREMIE SUB-FOOTING IS SUITABLE FOR WATER ELEVATION AT EL. 223.750 (NSWL) AND ROCK ELEVATION AT EL. 217.000. HIGHER WATER OR ROCK LEVELS WILL REQUIRE ADDITIONAL SINGLE PROTECTION TEMPORARY ROCK TIE DOWNS AS DIRECTED BY THE CONTRACT ADMINISTRATOR.

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....



TYPICAL ROCK ANCHOR DETAIL

SCALE N.T.S.
6 - 36Ø REQUIRED



SECTION 2 SCALE 1:100

NOTE: SUBSTRUCTURE IS SET OUT BY WORKING POINTS AND BEARING ANGLES AS INDICATED ON DRAWING 61440-18-05

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES

SURV. U/G STRUCTURES	DATE	COMMITTEE
2 AS-CONSTRUCTED	14/10/99	KA
1 ISSUED FOR CONSTRUCTION	12/03/96	C.T.
0 ISSUED FOR REVIEW	11/26/96	C.T.
NO. REVISIONS	DATE	BY

B.M. ELEV.

B.M.	ELEV.

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: [] CHECKED BY: []
DRAWN BY: C.T. APPROVED BY: []
HOR. SCALE: [] VERTICAL: AS NOTED
AUTHORIZED BY: [] DATE: []
B. BRONSPANER / SENIOR BRIDGE ENGINEER
ACCEPTED FOR GRANT CONSTRUCTION BY: DATE: []
P. PLAZA / PROJECT MANAGER

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
D.C.
MacFARLANE
REGISTERED PROFESSIONAL ENGINEER
03/12/96

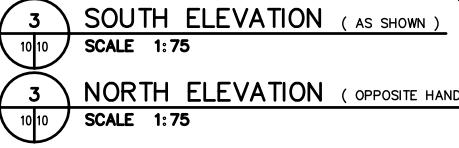
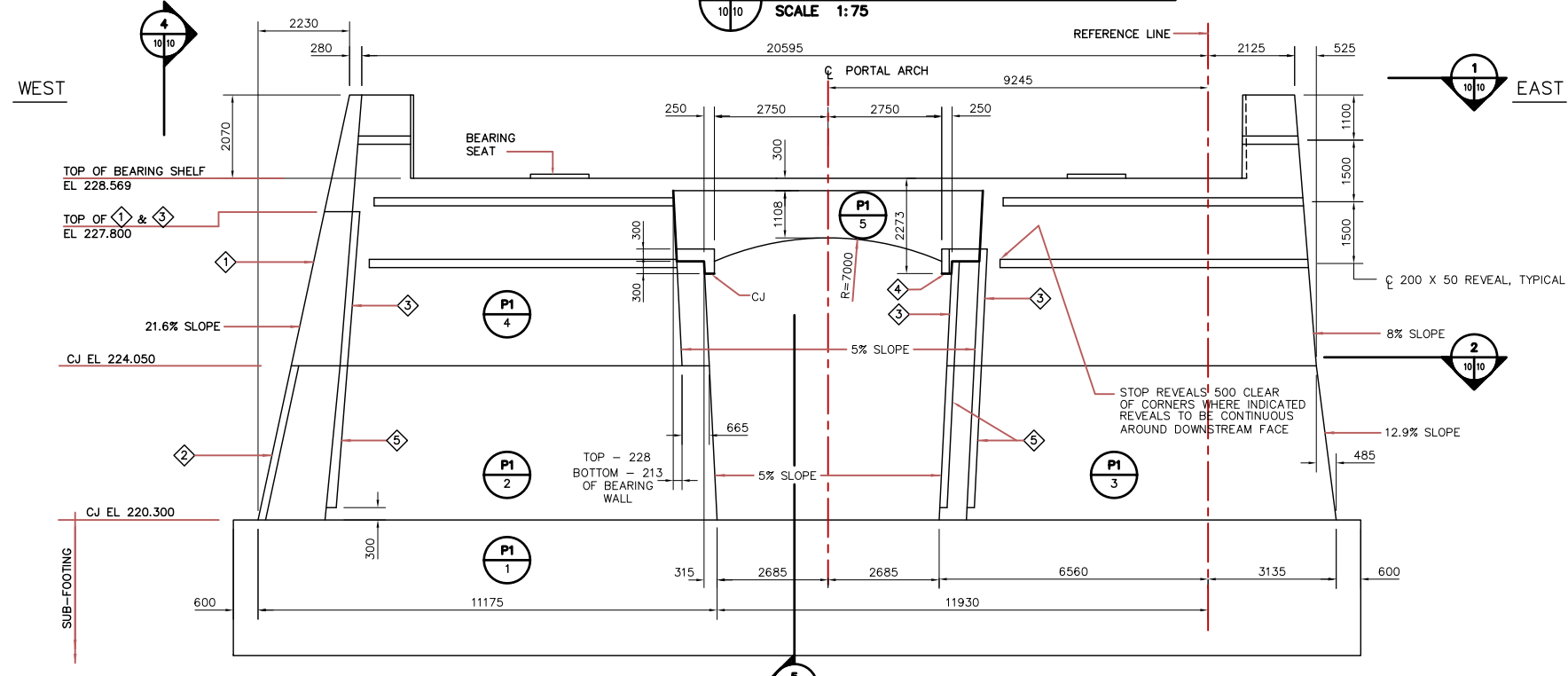
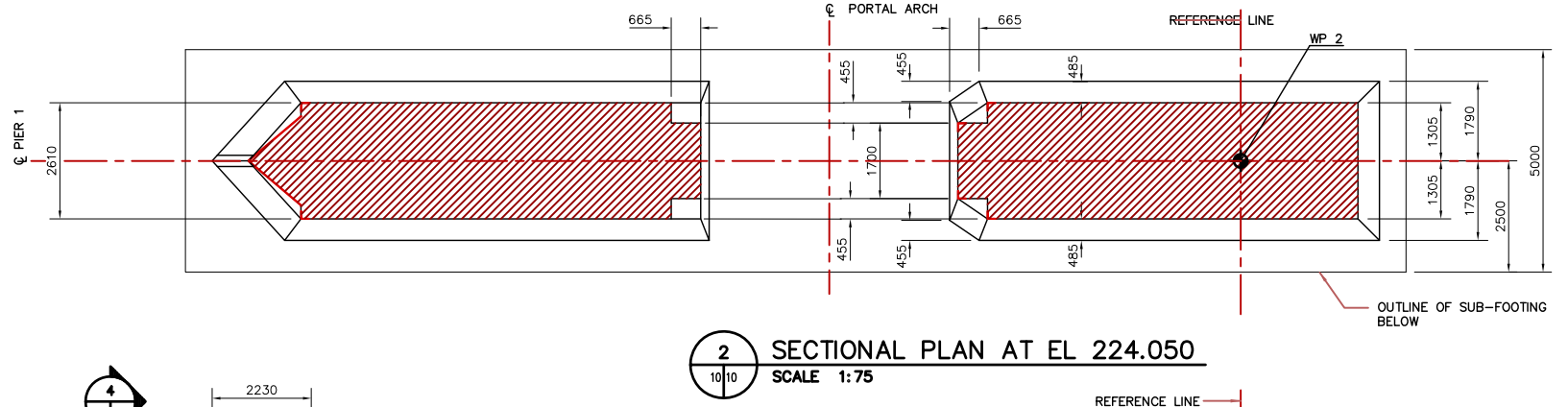
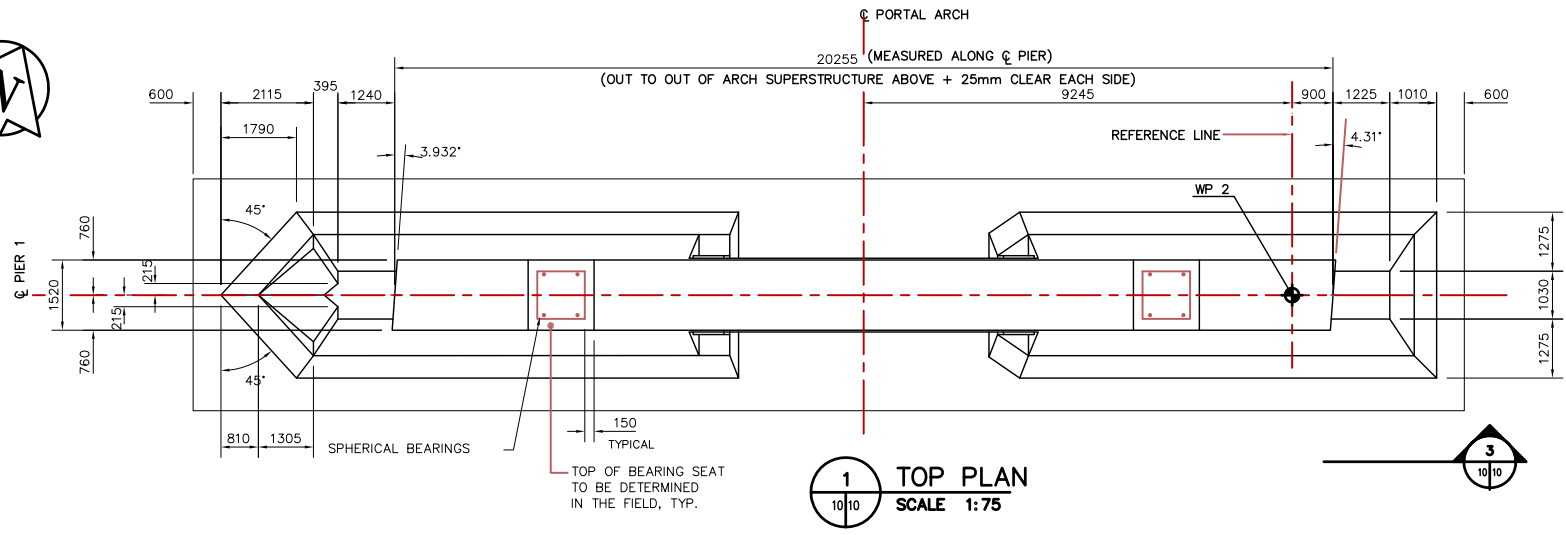
THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

CITY DRAWING NUMBER
B103-98-09
SHEET 09 OF []

SUB-FOOTING
PIER 2

REV-2



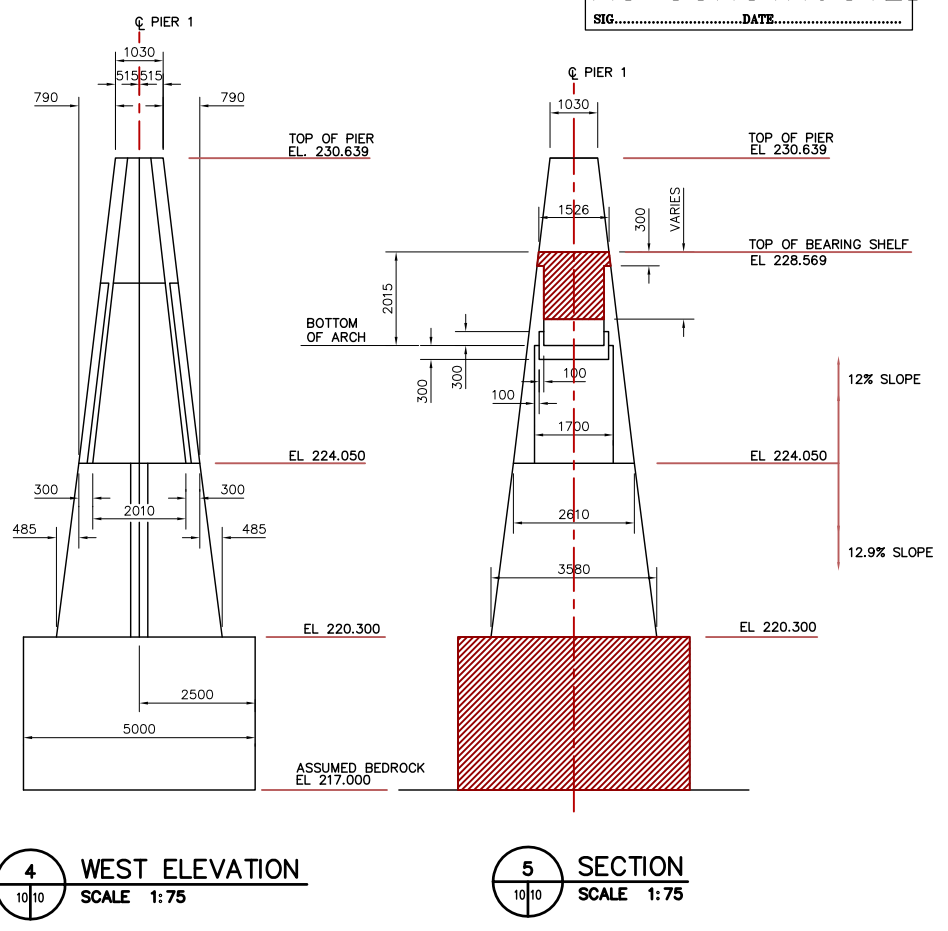
LIST OF MISCELLANEOUS METAL & EMBEDDED PARTS					
ITEM NO.	MARK NO.	QUANTITY THIS SHEET	DESCRIPTION	DRAWING REFERENCE	SPECIFICATION REFERENCE
1	MK. S22-A	1	PIER NOSE ARMOUR PLATE	61440-18-22	-
2	MK. S22-B	1	PIER NOSING	61440-18-22	-
3	MK. S22-E	6	CORNER PROTECTION PLATE	61440-18-22	-
4	MK. S22-F	2	CORNER PROTECTION PLATE	61440-18-22	-
5	MK. S22-C	6	CORNER PROTECTION PLATE	61440-18-22	-

TOTAL CONCRETE VOLUME FOR PIER 1 (INCLUDING SUB-FOOTING): 8354 cu m
 POUR P1-1 = 430.0 cu m
 POUR P1-2 = 115.6 cu m
 POUR P1-3 = 108.1 cu m
 POUR P1-4 = 166.2 cu m
 POUR P1-5 = 15.5 cu m

REFERENCE DRAWINGS
 WORKING POINTS.....61440-18-05
 SUB-FOOTING.....61440-18-08
 SPHERICAL BEARINGS.....61440-18-24
 REVEALS.....61440-18-07

LEGEND
 ◆ WORKING POINT
 ◇ MISCELLANEOUS METAL & EMBEDDED PARTS ITEM NO.
 P1 POUR NUMBER

REID CROWTHER & PARTNERS LIMITED
 WINNIPEG
 AS CONSTRUCTED
 SIG.....DATE.....



LOCATION APPROVED UNDERGROUND STRUCTURES		B.M. ELEV.
SURV. U/G STRUCTURES	DATE	
COMMITTEE		
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.		
2 AS-CONSTRUCTED	14/10/99	KAA
1 ISSUED FOR CONSTRUCTION	11/01/96	JFK
0 ISSUED FOR REVIEW		
NO. REVISIONS	DATE	BY
	09/22/96	

Reid Crowther
 Reid Crowther & Partners Ltd.
 Engineers Planners Scientists

DESIGNED BY: KAA
 CHECKED BY: KAA
 DRAWN BY: KAA
 APPROVED BY: KAA
 AUTHORIZED BY: DATE: _____
 HOR. SCALE: AS NOTED
 VERTICAL: AS NOTED
 P. PLAZA / PROJECT-MANAGER

ENGINEER'S SEAL
 PROVINCE OF MANITOBA
 ORIGINAL SIGNED BY
 D.C. MacFARLANE
 05/11/96
 REGISTERED PROFESSIONAL ENGINEER

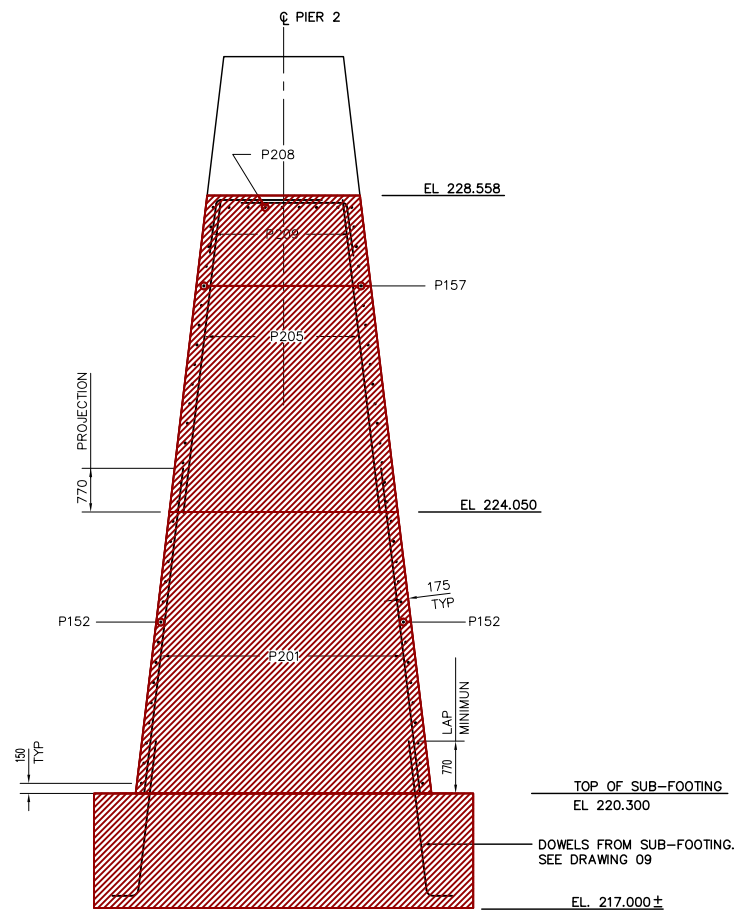
THE CITY OF WINNIPEG
 STREETS AND TRANSPORTATION DEPARTMENT
 BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
 NORWOOD BRIDGE - SOUTHBOUND
 AND RELATED ROADWORKS

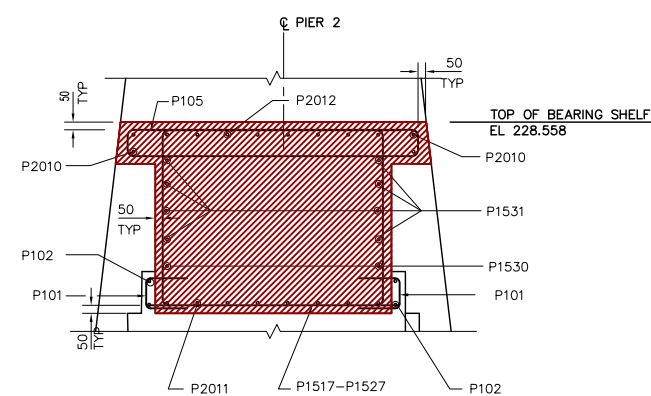
CITY DRAWING NUMBER
 B103-98-10
 SHEET 10 OF _____

PIER 1
 CONCRETE

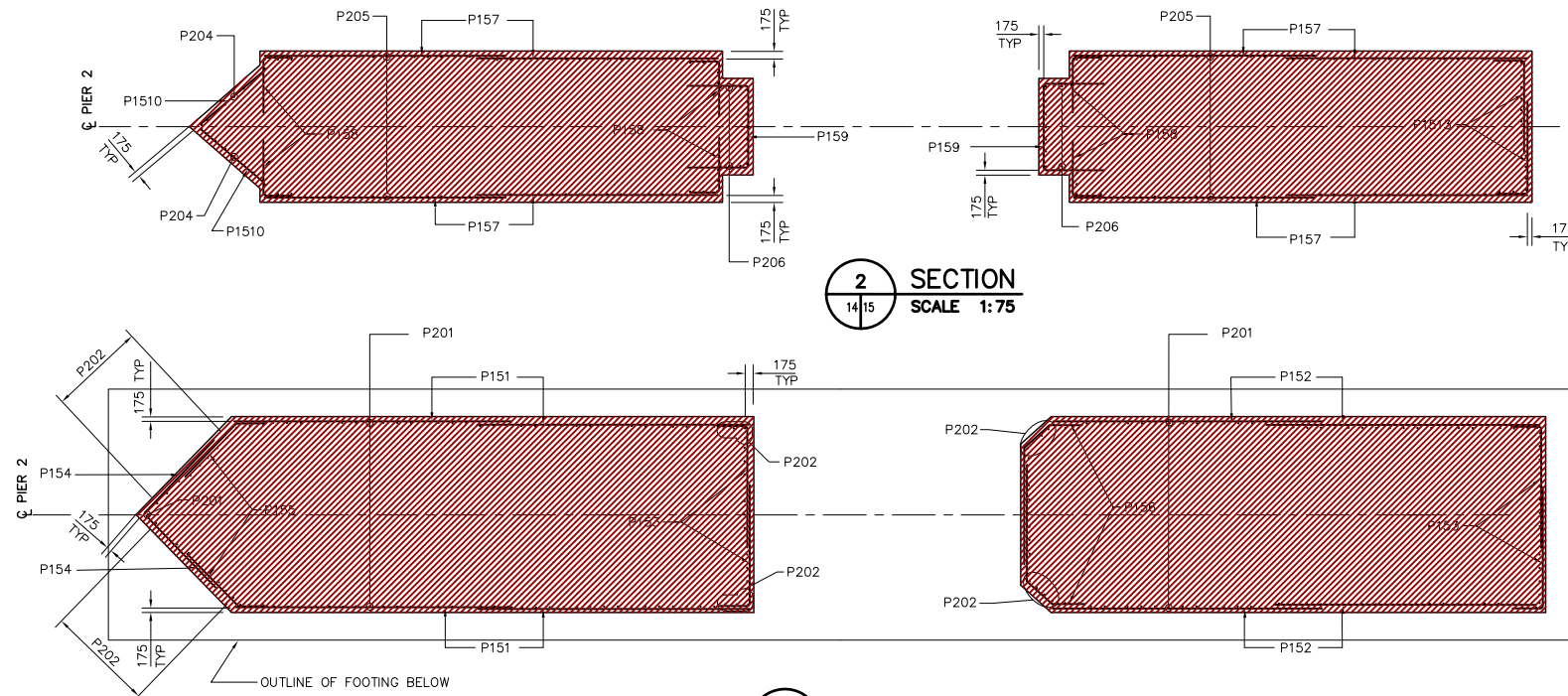
REV-2



1 SECTION
SCALE 1:50



A DETAIL
SCALE 1:25



2 SECTION
SCALE 1:75

3 SECTION
SCALE 1:75

REINFORCING SCHEDULE																		Q	Mass (kg)	
Mark	No. Bars	Size	Length	Type	A	B	C	D	E	F	G	H	J	K	L	M	S	O		
P101	16	10	900	17																11
P102	8	10	845	STR																5
P103	14	10	1150	17																13
P104	12	10	1700	STR																16
P105	27	10	4800	T2	100	2100	200	2100	200			100								102
P151	48	15	5000	STR																577
P152	48	15	5200	STR																392
P153	48	15	3240	17		630	2610													244
P154	24	15	2000	STR																75
P155	24	15	2060	16		630	1430						1011	1011					78	
P156	24	15	3315	14	630	795	1890						562							125
P157	120	15	4500	STR																848
P158	90	15	1800	17		630	1170													254
P159	16	15	4500	17				1350	1800	1350										113
P1510	14	15	2130	STR																47
P1511	16	15	1725	STR																43
P1512	14	15	1350	STR																30
P1513	26	15	2430	17		630	1800													99
P1514	8	15	5500	T2	140	970	1640	970	1640						140					69
P1515	8	15	5780	T2	140	1110	1640	1110	1640						140					73
P1516	4	20	9000	STR																57
P1517	1	15	5880	T2	140	1600	1200	1600	1200				140							9
P1518	2	15	5890	T2	140	1600	1205	1600	1205				140							18
P1519	2	15	5930	T2	140	1600	1225	1600	1225				140							19
P1520	2	15	6000	T2	140	1600	1260	1600	1260				140							19
P1521	2	15	6090	T2	140	1600	1305	1600	1305				140							19
P1522	2	15	6200	T2	140	1600	1360	1600	1360				140							19
P1523	2	15	6350	T2	140	1600	1435	1600	1435				140							20
P1524	2	15	6520	T2	140	1600	1520	1600	1520				140							20
P1525	2	15	6720	T2	140	1600	1620	1600	1620				140							21
P1526	2	15	6960	T2	140	1600	1740	1600	1740				140							22
P1527	8	15	7220	T2	140	1600	1870	1600	1870				140							91
P1528	8	20	3000	STR																94
P1529	8	25	9000	STR																353
P1530	4	15	2500	STR																24
P1531	8	15	9000	STR																170
P1532	22	15	2480	17		230	2020	230												86
P1533	28	15	1980	17		230	1520	230												87
P201	177	20	4550	STR																1897
P202	36	20	3675	STR																312
P203	36	20	2210	1	210	2000							160							187
P204	15	20	6425	STR																227
P205	119	20	4500	STR																1261
P206	12	20	3135	17		660	2475													89
P207	48	20	2715	STR																307
P208	14	20	7125	STR																235
P209	80	20	2230	16			1600	630					626	75						420
P2010	4	20	9000	STR																85
P2011	8	20	10000	9																8562
P2012	8	20	10000	STR																188
																			TOTAL	9501

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

FOR SUB-FOOTING REINFORCING
SEE DRAWING 61440-18-09

- LIST OF ABBREVIATIONS
- IF IN FACE
 - EF EACH FACE
 - BW BOTH WAYS
 - EQ_SP EQUALLY SPACED
 - ALT ALTERNATING
 - NF NEAR FACE
 - FF FAR FACE
 - @ AT
 - C/C CENTER TO CENTER
 - BTWN BETWEEN
 - HORIZ HORIZONTAL

NO.	REVISIONS	DATE	BY
2	AS-CONSTRUCTED	14/10/99	KA
1	ISSUED FOR CONSTRUCTION	11/01/96	JFK
0	ISSUED FOR REVIEW	10/18/96	C.T.

Reid Crowther
Reid Crowther & Partners Ltd
Engineers Planners Scientists

DESIGNED BY: KAA, C.T.
CHECKED BY: KAA, C.T.
DRAWN BY: KAA, C.T.
APPROVED BY: KAA, C.T.
HOR. SCALE: AS NOTED
VERTICAL: AS NOTED
DATE: 10/18/96

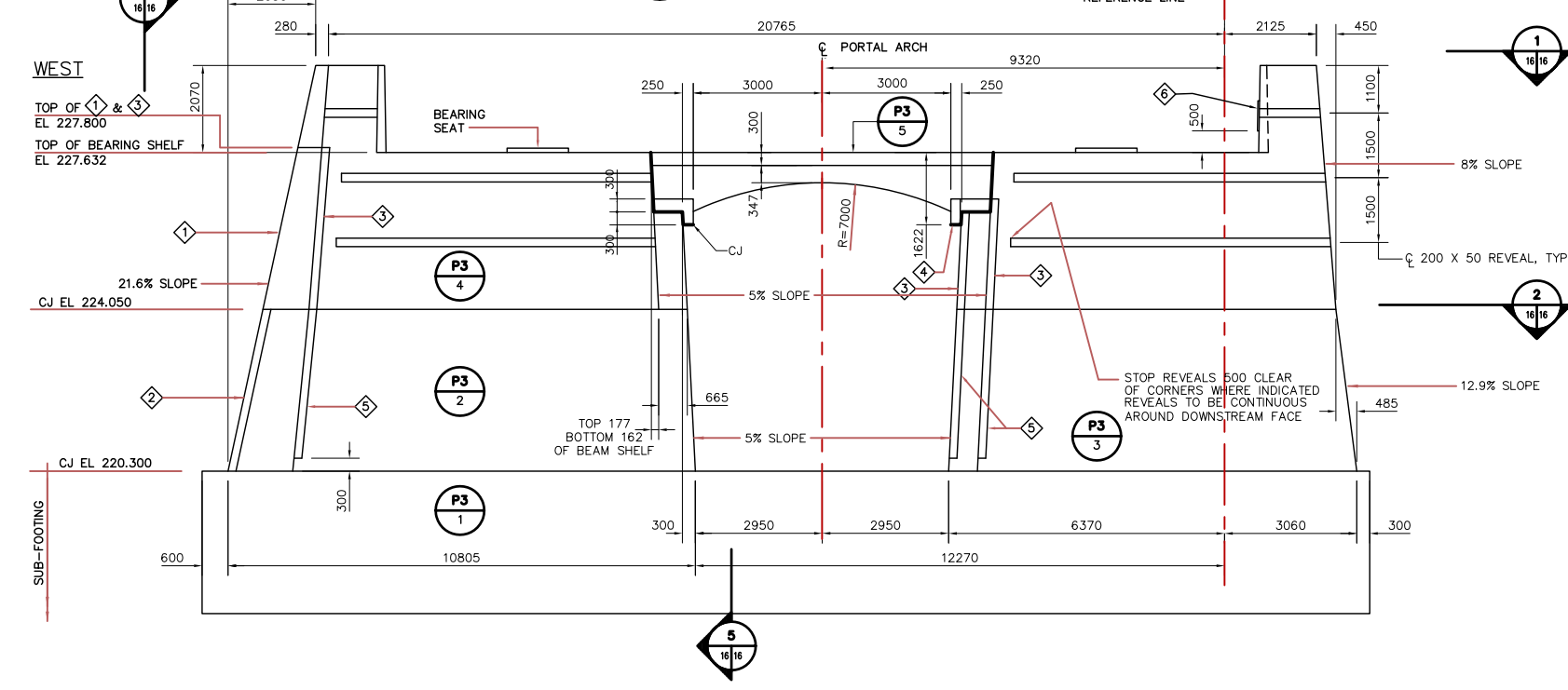
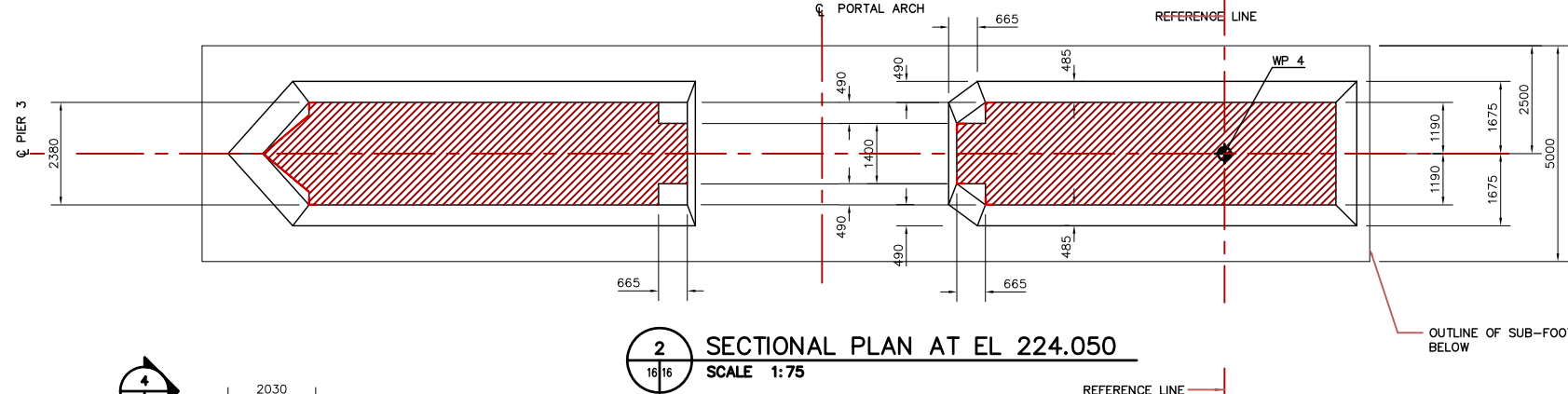
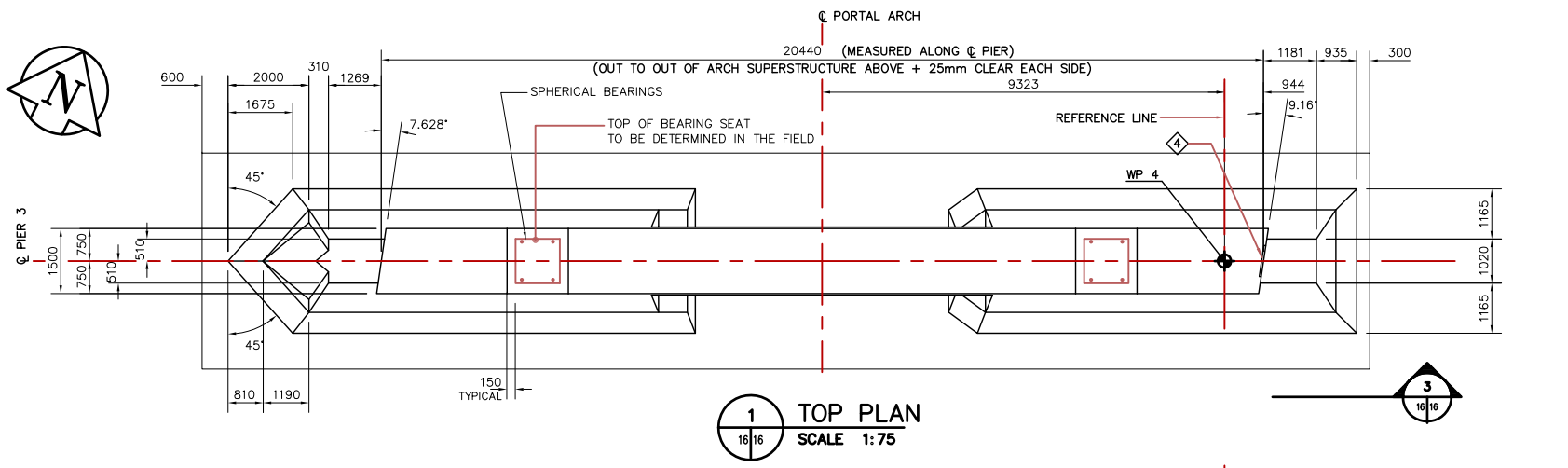
ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
D.C.
MacFARLANE
05/11/96
REGISTERED PROFESSIONAL ENGINEER

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

PIER 2
REINFORCING
SHEET 2 OF 2

CITY DRAWING NUMBER
B103-98-15
SHEET 15 OF
REV-2



3 SOUTH ELEVATION (AS SHOWN)
SCALE 1:75

3 NORTH ELEVATION (OPPOSITE HAND)
SCALE 1:75

ITEM NO.	MARK NO.	QUANTITY THIS SHEET	DESCRIPTION	DRAWING REFERENCE	SPECIFICATION REFERENCE
1	MK. S22-A	1	PIER NOSE ARMOUR PLATE	61440-18-22	-
2	MK. S22-B	1	PIER NOSING	61440-18-22	-
3	MK. S22-E	6	CORNER PROTECTION PLATE	61440-18-22	-
4	MK. S22-F	2	CORNER PROTECTION PLATE	61440-18-22	-
5	MK. S22-C	6	CORNER PROTECTION PLATE	61440-18-22	-
6	MK. S23-A	1	SLIP PLATE	61440-18-23	-

TOTAL CONCRETE VOLUME FOR PIER 3 (INCLUDING SUB-FOOTING): 766.3 cu m

POUR P3-1 = 433.7 cu m
 POUR P3-2 = 103.7 cu m
 POUR P3-3 = 97.1 cu m
 POUR P3-4 = 122.5 cu m
 POUR P3-5 = 9.3 cu m

REFERENCE DRAWINGS
 WORKING POINTS.....61440-18-05
 SUB-FOOTING.....61440-18-08
 SPHERICAL BEARINGS.....61440-18-24
 REVEALS.....61440-18-07

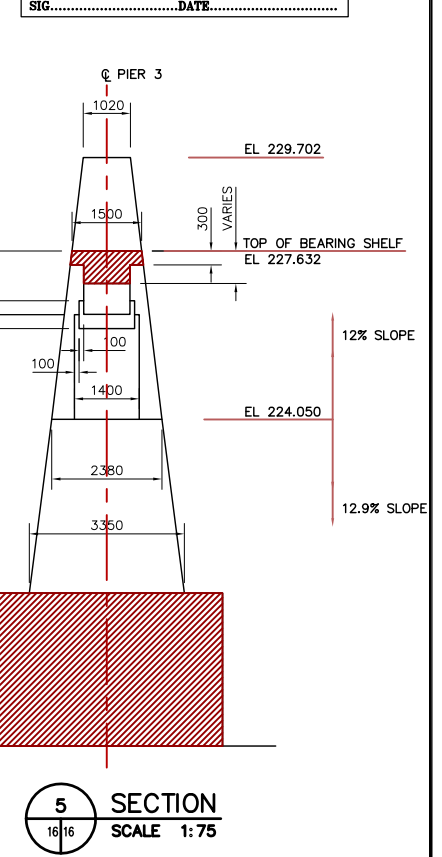
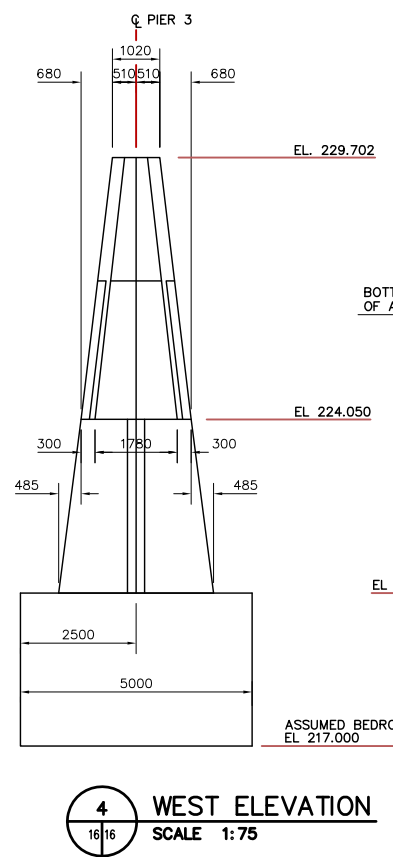
LEGEND

◆ WORKING POINT

◇ MISCELLANEOUS METAL & EMBEDDED PARTS ITEM NO.

○ P3 3 POUR NUMBER

REID CROWTHER & PARTNERS LIMITED
 WINNIPEG
AS CONSTRUCTED
 SIG.....DATE.....



LOCATION APPROVED UNDERGROUND STRUCTURES		B.M. ELEV.
SURV. U/G STRUCTURES	DATE	
COMMITTEE		
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.		
2 AS-CONSTRUCTED	14/10/99	KAA
1 ISSUED FOR CONSTRUCTION	11/01/96	JFK
0 ISSUED FOR REVIEW		
NO. REVISIONS	DATE	BY
	09/22/96	

Reid Crowther
 Reid Crowther & Partners Ltd.
 Engineers Planners Scientists

DESIGNED BY: []
 CHECKED BY: []

DRAWN BY: KAA
 APPROVED BY: []

HOR. SCALE: AS NOTED
 VERTICAL: AS NOTED

AUTHORIZED BY: []
 DATE: []

B. SPANSPANER / SENIOR BRIDGE ENGINEER
 ACCEPTED FOR BRIDGE CONSTRUCTION BY: DATE: []

P. PLAZA / PROJECT MANAGER

ENGINEER'S SEAL

PROVINCE OF MANITOBA
 ORIGINAL SIGNED BY
D.C. MacFARLANE
 05/11/96
 REGISTERED PROFESSIONAL ENGINEER

THE CITY OF WINNIPEG
 STREETS AND TRANSPORTATION DEPARTMENT
 BRIDGE ENGINEERING DIVISION

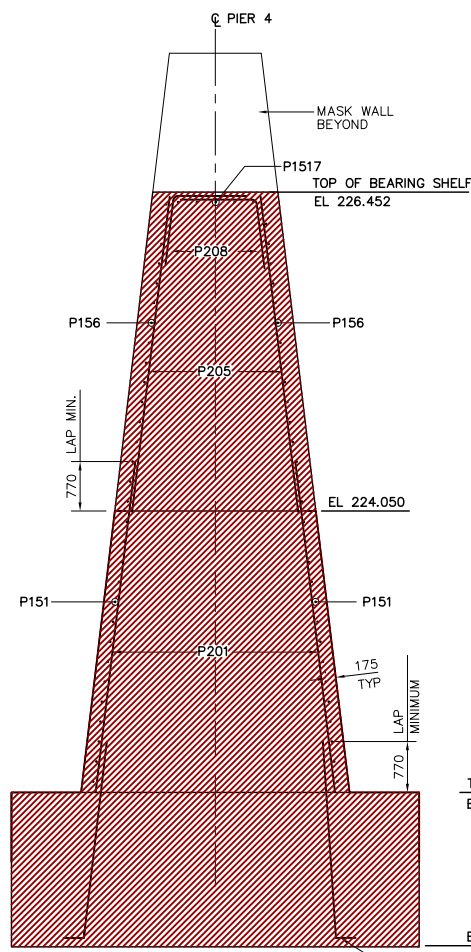
MAIN STREET AND NORWOOD BRIDGES PROJECT
 NORWOOD BRIDGE - SOUTHBOUND
 AND RELATED ROADWORKS

CITY DRAWING NUMBER
 B103-98-16
 SHEET 16 OF []

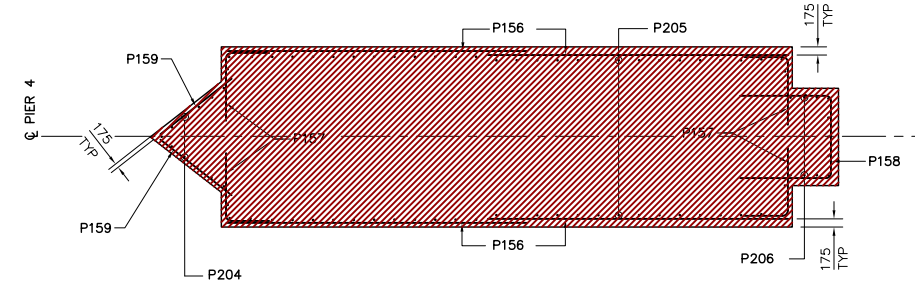
CONSULTANT DRAWING NO.
 61440-18-16

PIER 3
 CONCRETE

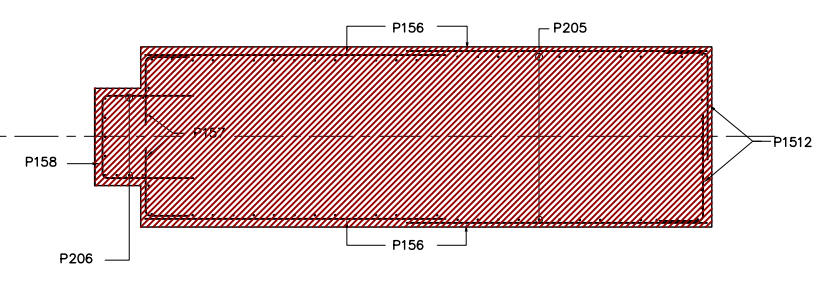
REV-2



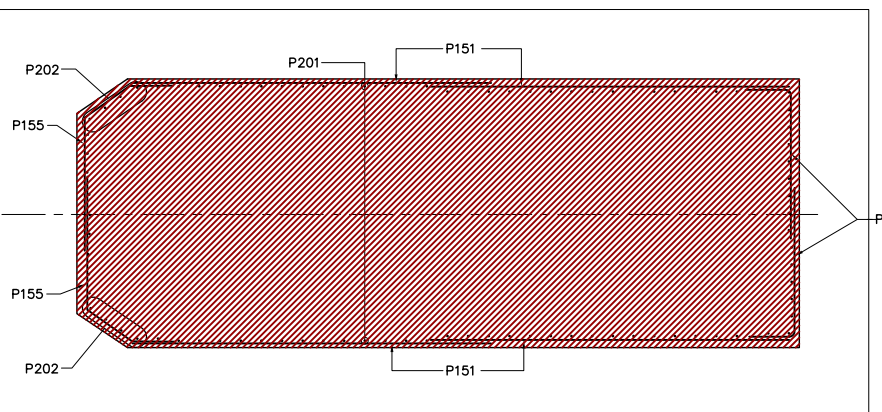
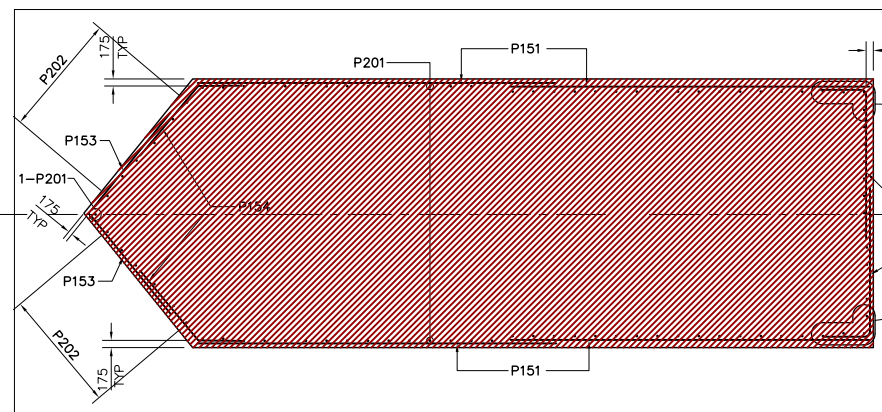
1 SECTION
SCALE 1:50



2 SECTION
SCALE 1:50



3 SECTION
SCALE 1:50



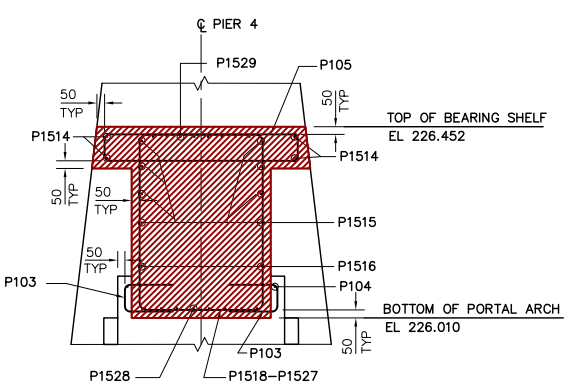
TOP OF SUB-FOOTING
EL 220.300

EL 217.000 ±

DOWEL FROM SUB-FOOTING

REINFORCING SCHEDULE										A	B	C	D	E	F	G	H	J	K	L	M	S	O	Weight			
P101	10	10	1150	17		500	150	500																			9
P102	12	10	1100	STR																							10
P103	16	10	900	17		350	200	350																			11
P104	8	10	800	STR																							5
P105	28	10	3420	T2	100	1410	200	1410	200				100														75
P151	96	15	4780	STR																							717
P152	48	15	2300	17		630	1670																				173
P153	24	15	1500	STR																							57
P154	24	15	2000	16		630	1370																				75
P155	24	15	2770	14	630	730	1410						605														104
P156	64	15	4165	STR																							418
P157	48	15	1830	17		630	1200																				138
P158	8	15	3580	17		1265	1050	1265																			45
P159	14	15	1165	STR																							26
P1510	8	15	900	STR																							11
P1511	8	15	750	STR																							9
P1512	16	15	1815	17		630	1185																				46
P1513	14	15	3770	T2	140	925	820	925	820				140														83
P1514	4	15	9230	STR																							58
P1515	8	15	10000	STR																							126
P1516	4	15	2930	STR																							18

REINFORCING SCHEDULE CONTINUED										A	B	C	D	E	F	G	H	J	K	L	M	O	R	Weight			
P1517	10	15	6720	STR																							106
P1518	3	15	3080	T2	140	600	800	600	800																		15
P1519	2	15	3130	T2	140	625	800	625	800																		10
P1520	2	15	3200	T2	140	660	800	660	800																		10
P1521	2	15	3280	T2	140	700	800	700	800																		10
P1522	2	15	3400	T2	140	760	800	760	800																		11
P1523	2	15	3550	T2	140	835	800	835	800																		11
P1524	2	15	3720	T2	140	920	800	920	800																		12
P1525	2	15	3920	T2	140	1020	800	1020	800																		12
P1526	2	15	4150	T2	140	1135	800	1135	800																		13
P1527	8	15	4420	T2	140	1270	800	1270	800																		56
P1528	8	15	10000	9		10000												1730								126	
P1529	8	15	10000	STR																							126
P1530	18	15	1980	17		230	1520	230																			56
P1531	22	15	1780	17		230	1320	230																			61
P201	138	20	4550	STR																							1479
P202	28	20	3635	16																							240
P203	26	20	2210	1		2000													210		160					135	
P204	11	20	4340	STR																							112
P205	124	20	2350	STR																							686
P206	12	20	1500	17		600	900																				42
P207	28	20	2700	STR																							178
P208	84	20	2000	16													930	1070				920			110	396	
TOTAL																										6117	



A DETAIL
SCALE 1:25

FOR SUB-FOOTING REINFORCING
SEE DRAWING 61440-18-08

LIST OF ABBREVIATIONS

IF	IN FACE
EF	EACH FACE
BW	BOTH WAYS
EQ SP	EQUALLY SPACED
ALT	ALTERNATING
NF	NEAR FACE
FF	FAR FACE
@	AT
C/C	CENTER TO CENTER
BTWN	BETWEEN
HORIZ	HORIZONTAL

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES

SURV. U/G STRUCTURES	DATE	B.M. ELEV.

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

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: KAA, C.T.
DRAWN BY: KAA, C.T.
CHECKED BY: KAA, C.T.
APPROVED BY: KAA, C.T.
HORIZ. SCALE: AS NOTED
VERTICAL: AS NOTED
DATE: 10/18/96

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
D.C. MacFARLANE
REGISTERED PROFESSIONAL ENGINEER
05/11/96
CONSULTANT DRAWING NO. 61440-18-21

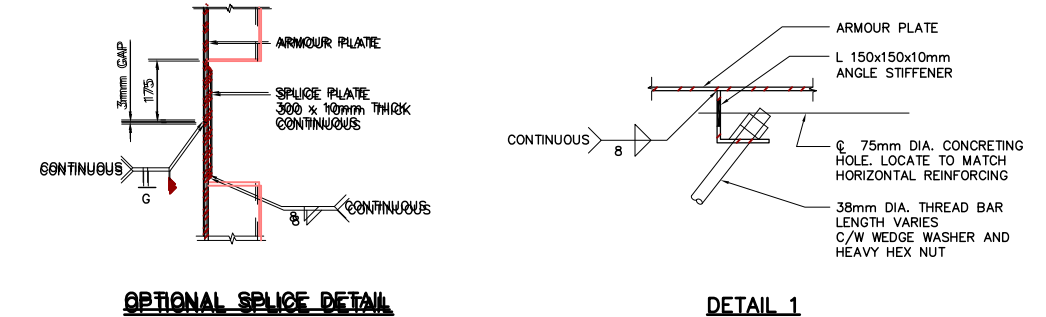
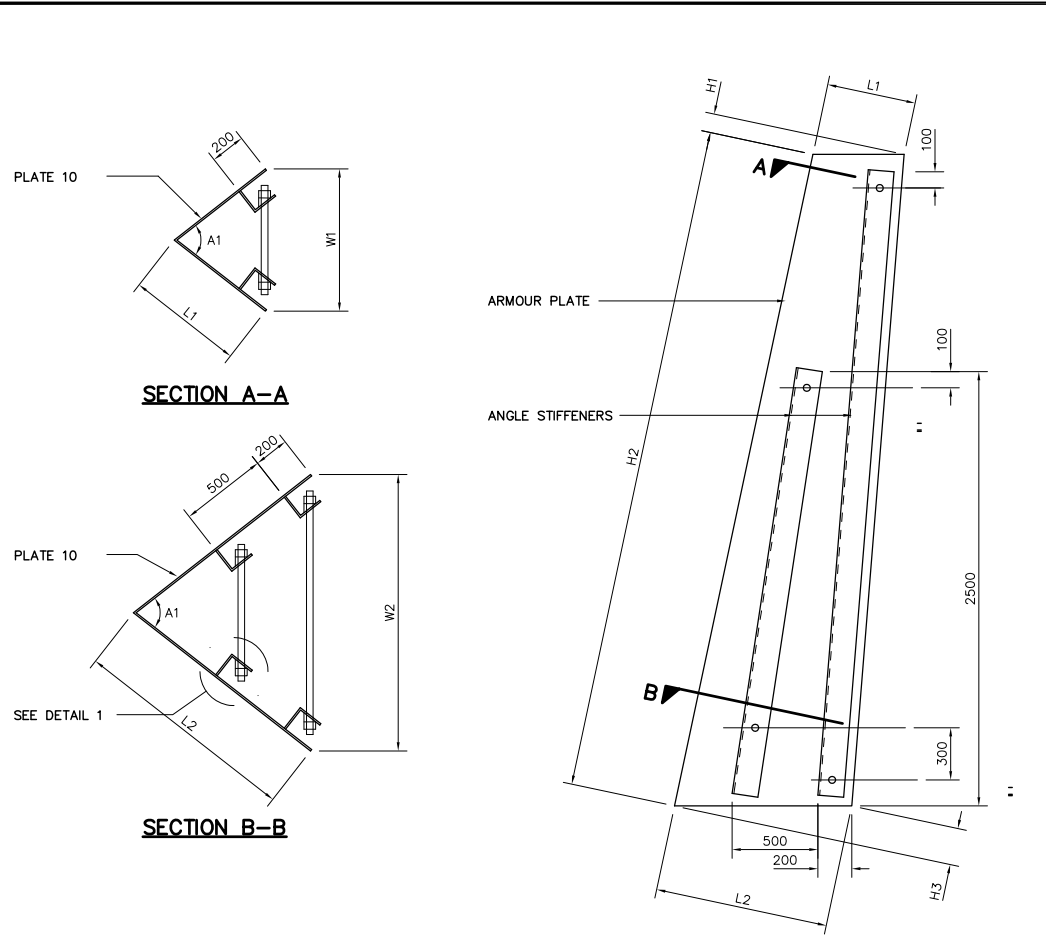
THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

PIER 4
REINFORCING
SHEET 2 OF 2

CITY DRAWING NUMBER B103-98-21
SHEET 21 OF
REV-2

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....



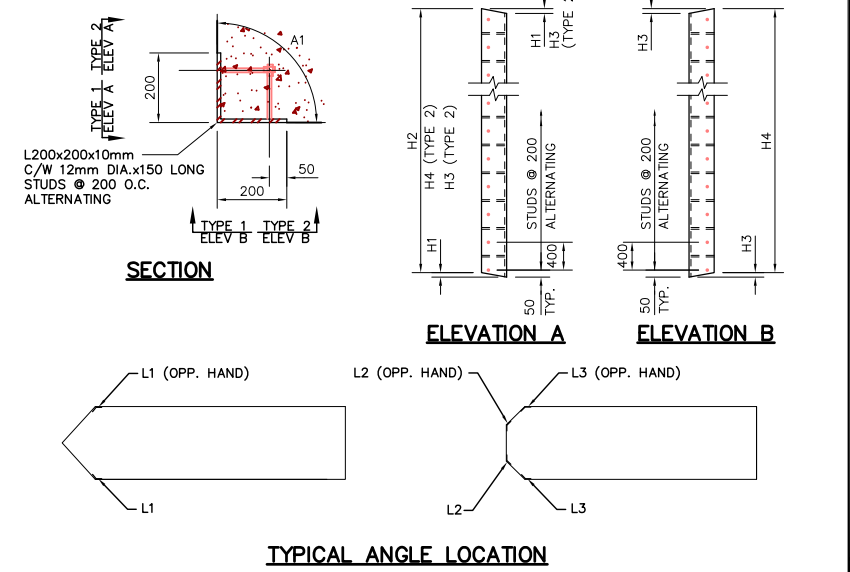
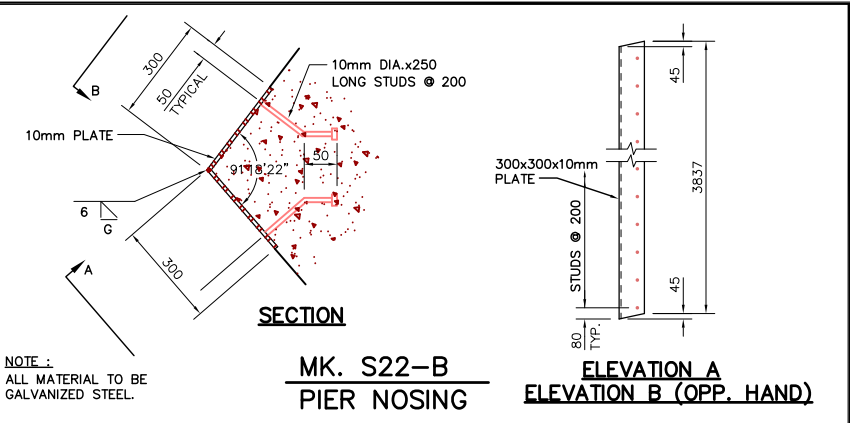
LOCATION	A1	H1	H2	H3	L1	L2	W1	W2
PIER 1	76°27'43"	152	3835	275	898	1624	1110	2010
PIER 2	79°49'30"	231	3835	347	1396	2096	1792	2690
PIER 3	75°10'8"	125	3835	250	725	1465	878	1780
PIER 4	72°14'28"	87	3835	221	500	1264	588	1490

MK. S22-A
PIER NOSE ARMOUR PLATE

NOTE:
 ALL MATERIAL TO BE GALVANIZED UNLESS NOTED OTHERWISE

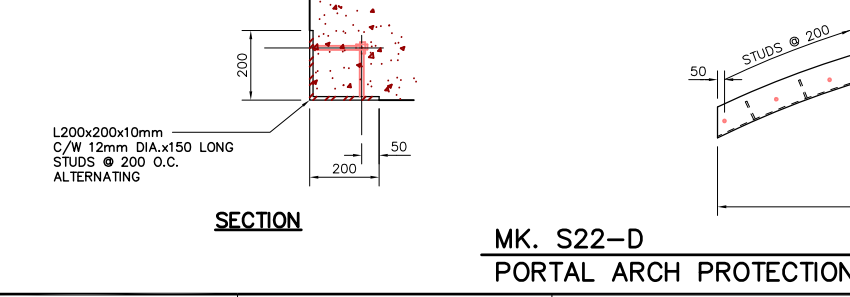
REID CROWTHER & PARTNERS LIMITED
 WINNIPEG
AS CONSTRUCTED
 SIG.....DATE.....

METRIC
 WHOLE NUMBERS INDICATE MILLIMETRES
 DECIMALIZED NUMBERS INDICATE METRES



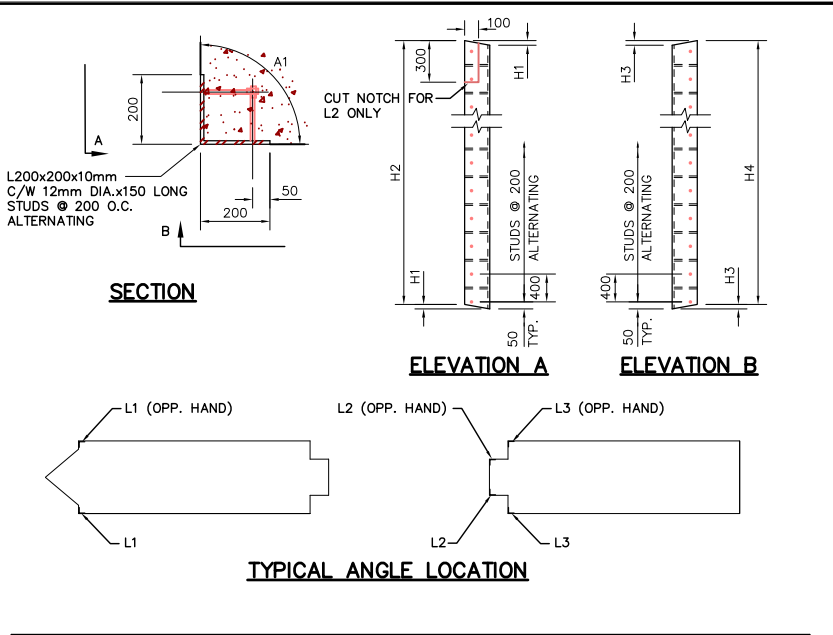
TYPE	PIER 1			PIER 2			PIER 3			PIER 4		
	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
A1	135°26'46"	124°41'20"	145°49'41"	135°26'46"	131°50'13"	138°31'52"	135°26'46"	126°9'00"	144°12'58"	135°26'46"	117°34'55"	152°47'10"
H1	6	26	6	6	26	10	6	25	5	6	26	3
H2	3492	3486	3486	3492	3486	3486	3492	3485	3485	3492	3483	3483
H3	17	6	10	17	10	10	17	5	10	17	3	10
H4	3492	3486	3486	3492	3486	3486	3492	3485	3485	3492	3483	3483
No.	2	2	2	2	2	2	2	2	2	2	2	2
REQ'D	(1 OPP. HAND)	(1 OPP. HAND)	(1 OPP. HAND)	(1 OPP. HAND)	(1 OPP. HAND)	(1 OPP. HAND)	(1 OPP. HAND)	(1 OPP. HAND)	(1 OPP. HAND)	(1 OPP. HAND)	(1 OPP. HAND)	(1 OPP. HAND)

NOTE:
 ALL MATERIAL TO BE GALVANIZED STEEL.
MK. S22-C
CORNER PROTECTION PLATE



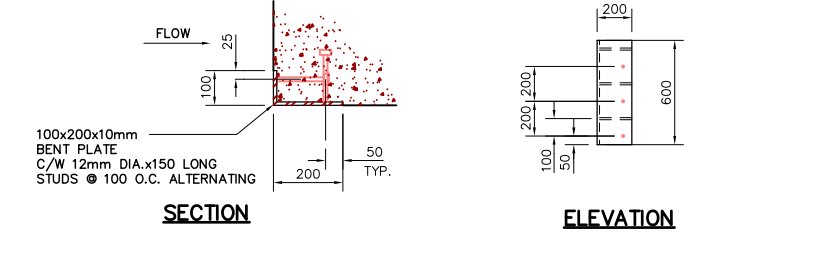
NOTE:
 ALL MATERIAL TO BE GALVANIZED STEEL.
MK. S22-D
PORTAL ARCH PROTECTION PLATE

NO.	REVISIONS	DATE	BY
2	AS-CONSTRUCTED	14/10/99	KAA
1	ISSUED FOR CONSTRUCTION	11/01/96	JFK
0	ISSUED FOR REVIEW	10/22/96	

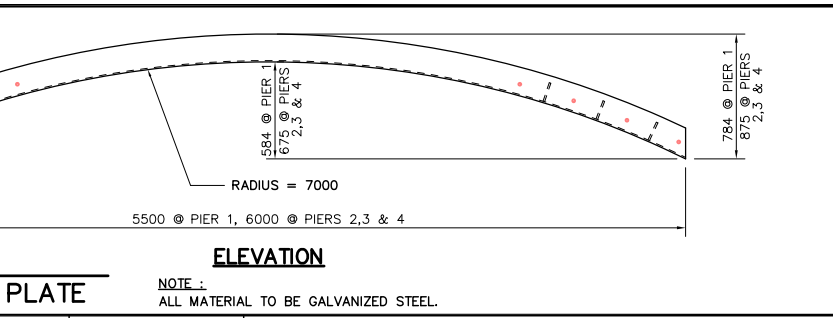


TYPE	PIER 1			PIER 2			PIER 3			PIER 4		
	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
A1	90°24'29"	90°00'00"	90°00'00"	90°28'19"	90°00'00"	90°20'20"	90°22'30"	90°25'52"	90°20'42"	90°19'23"	90°00'00"	90°20'35"
H1	24	0	24	24	0	24	25	0	25	24	0	24
H2	3784	2549	2870	3786	2536	2856	3785	2265	2580	3781	1028	1338
H3	12	10	10	14	10	10	10	10	10	9	10	10
H4	3784	2549	2870	3786	2536	2856	3785	2265	2580	3781	1028	1338
No.	2	2	2	2	2	2	2	2	2	2	2	2
REQ'D	(1 OPP. HAND)	(1 OPP. HAND)	(1 OPP. HAND)	(1 OPP. HAND)	(1 OPP. HAND)	(1 OPP. HAND)	(1 OPP. HAND)	(1 OPP. HAND)	(1 OPP. HAND)	(1 OPP. HAND)	(1 OPP. HAND)	(1 OPP. HAND)

NOTE:
 ALL MATERIAL TO BE GALVANIZED STEEL.
MK. S22-E
CORNER PROTECTION PLATE

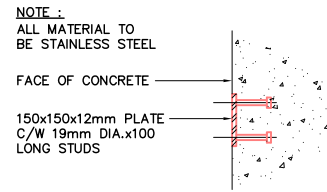
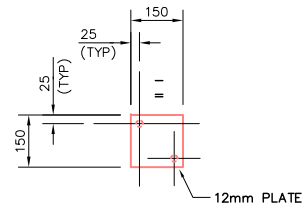


NOTE:
 ALL MATERIAL TO BE GALVANIZED STEEL.
MK. S22-F
CORNER PROTECTION PLATE

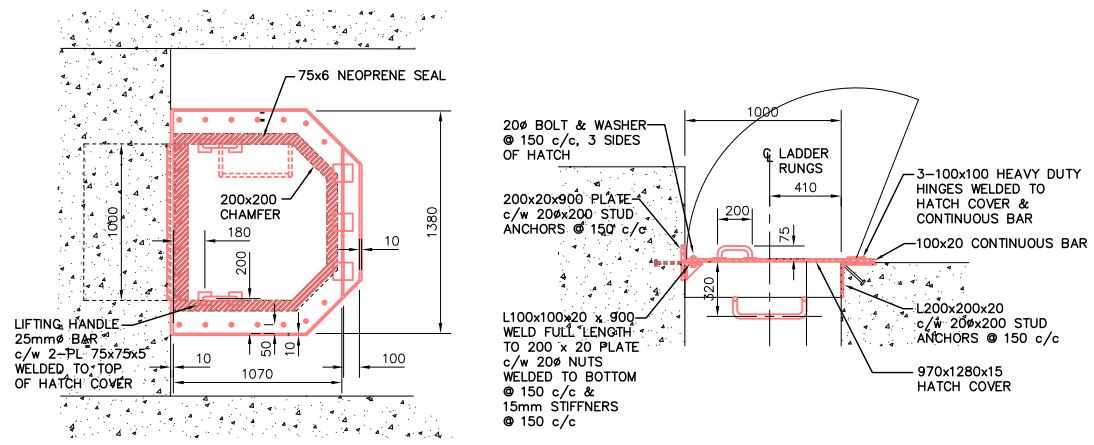


NOTE:
 ALL MATERIAL TO BE GALVANIZED STEEL.

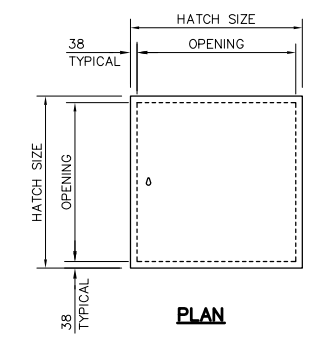
 Reid Crowther & Partners Ltd. Engineers Planners Scientists DESIGNED BY: [] CHECKED BY: [] DRAWN BY: KAA APPROVED BY: [] HOR. SCALE: [] VERTICAL: AS NOTED AUTHORIZED BY: [] DATE: [] P. PLAZA / PROJECT MANAGER	 G.A. WEBSTER 05/11/96 REGISTERED PROFESSIONAL ENGINEER	THE CITY OF WINNIPEG STREETS AND TRANSPORTATION DEPARTMENT BRIDGE ENGINEERING DIVISION MAIN STREET AND NORWOOD BRIDGES PROJECT NORWOOD BRIDGE - SOUTHBOUND AND RELATED ROADWORKS CONSULTANT DRAWING NO. 61440-18-S22	CITY DRAWING NUMBER B103-98-22 SHEET 22 OF [] MISCELLANEOUS METAL SHEET 1 REV-2
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MK. S23-A
EMBED PLATE

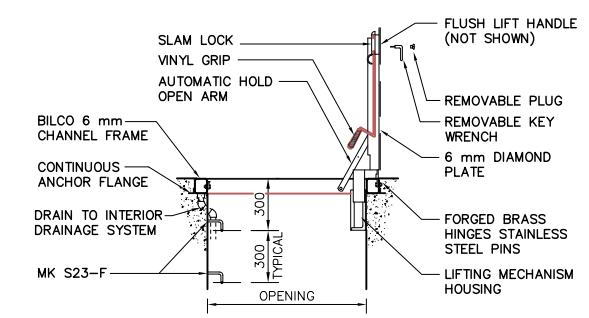


MK. S23-E
BEARING ACCESS HATCH



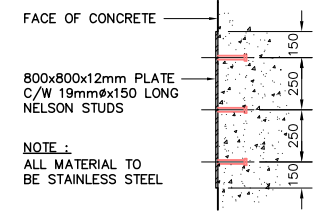
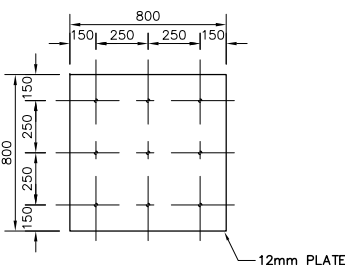
MK. S23-G 915 x 915
DECK ACCESS HATCH

MK. S23-H 610 x 610
FLOOD LIGHTING & NAVIGATION LIGHT ACCESS HATCH

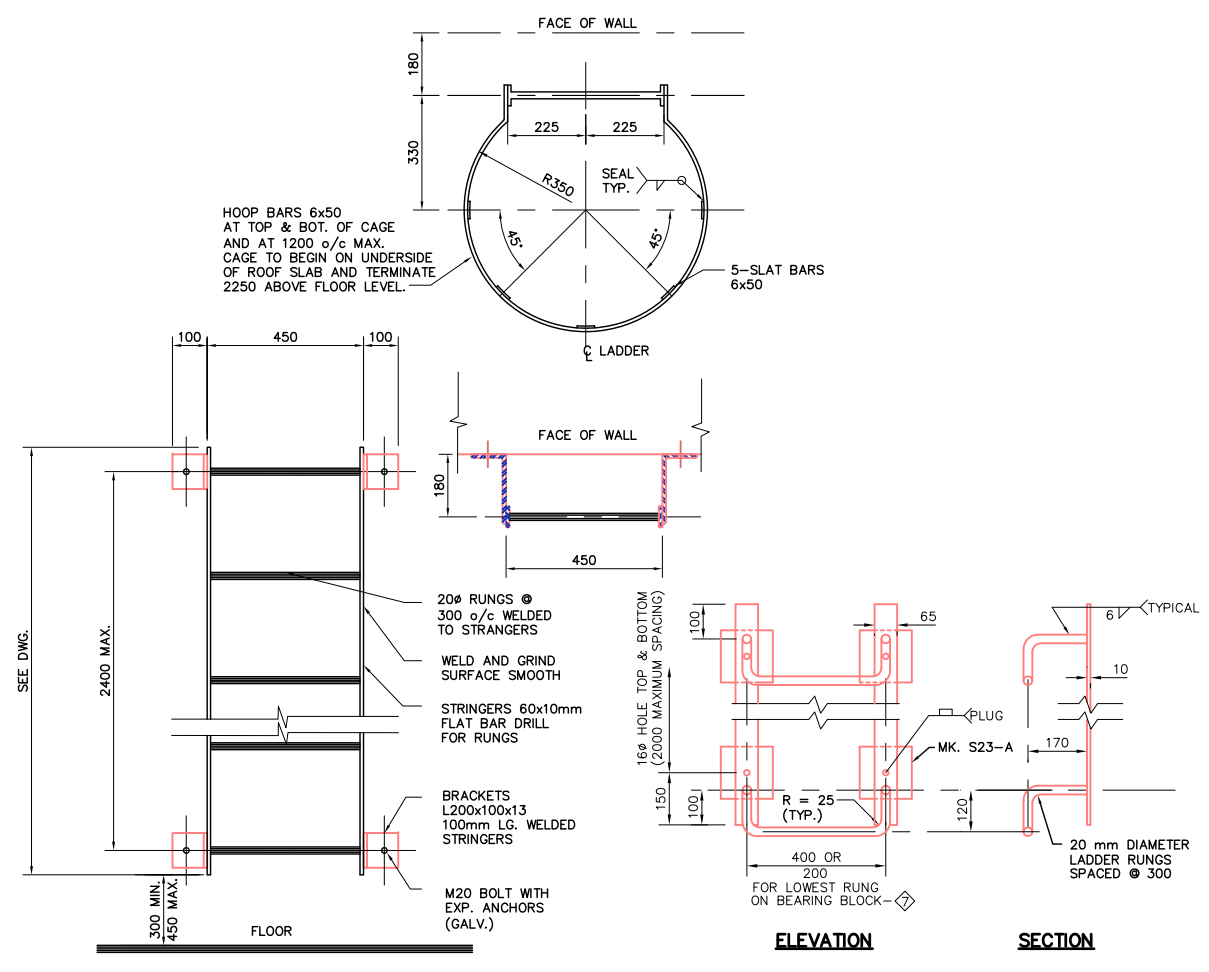


SECTION

NOTE: ALL MATERIAL TO BE ALUMINUM APPLY MINIMUM TWO COATS PAINT TO ALL SURFACES IN CONTACT WITH CONCRETE
NOTE: HATCH TO BE TYPE J-44L AB MANUFACTURED BY RICHARD-WILCOX OF CANADA LIMITED OR ACCEPTED EQUAL

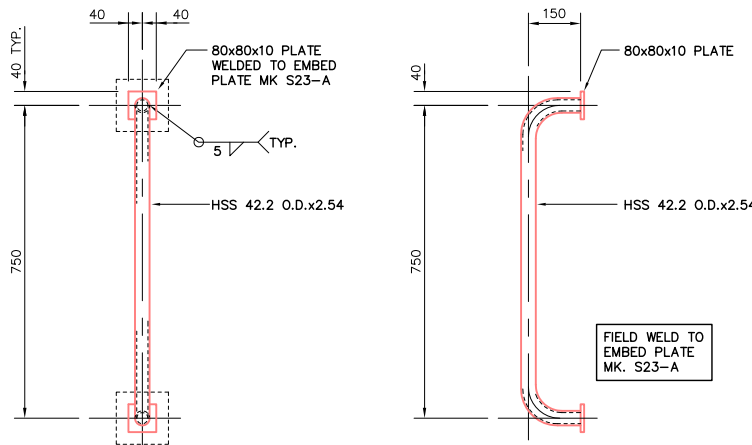


MK. S23-B
SLIP PLATE



STEEL LADDER DETAIL
SCALE N.T.S.
ALL MATERIAL TO BE HOT DIPPED GALVANIZED
MK. S23-F
LADDER RUNG

NOTE: ALL MATERIALS TO BE STAINLESS STEEL EXCEPT SOUTH ABUTMENT LADDERS BOTH GALVANIZED REMAINDER ALL STAINLESS

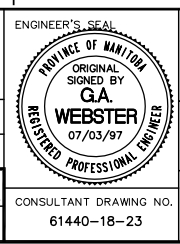


MK. S23-C
GRAB BAR

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG. DATE

LOCATION APPROVED UNDERGROUND STRUCTURES			
SURV. U/G STRUCTURES	DATE	COMMITTEE	
4 AS-CONSTRUCTED	14/10/99	KAA	
3 REVISED BEARING ACCESS HATCH	03/07/97	KAA	
2 REMOVE S23-D & ADD S23-J	03/04/97	KAA	
1 ISSUED FOR CONSTRUCTION	12/03/96	C.T.	
0 ISSUED FOR REVIEW	11/21/96	KAA	
NO. REVISIONS	DATE	BY	

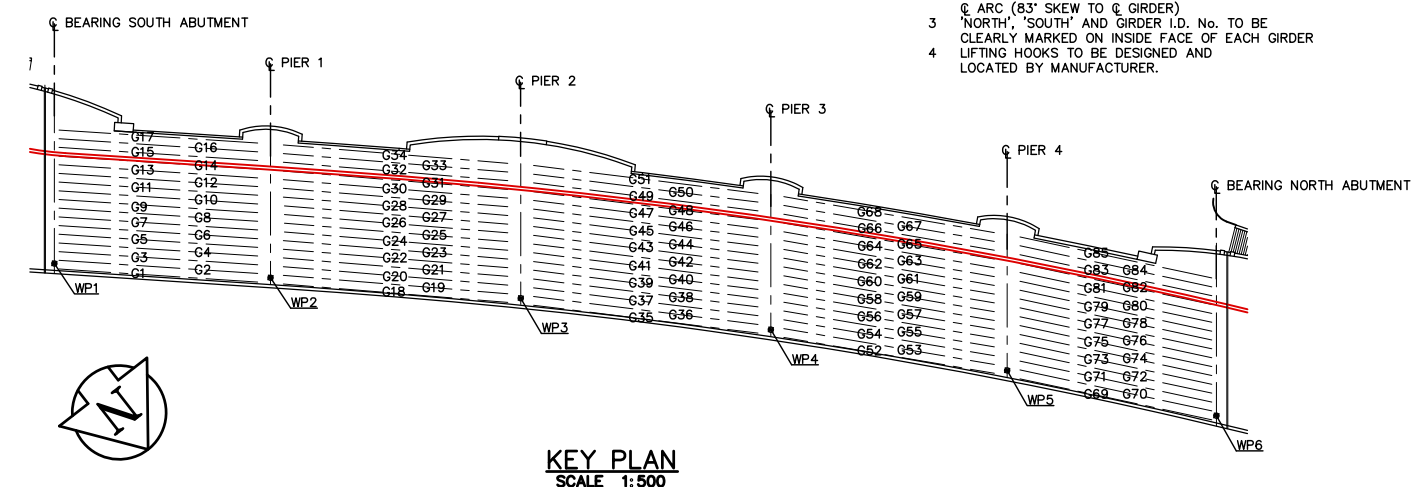
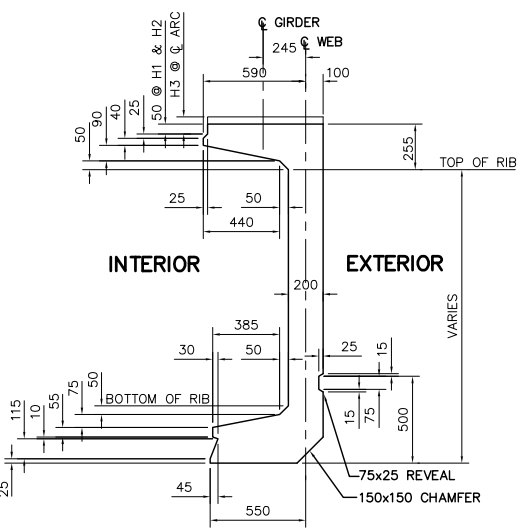
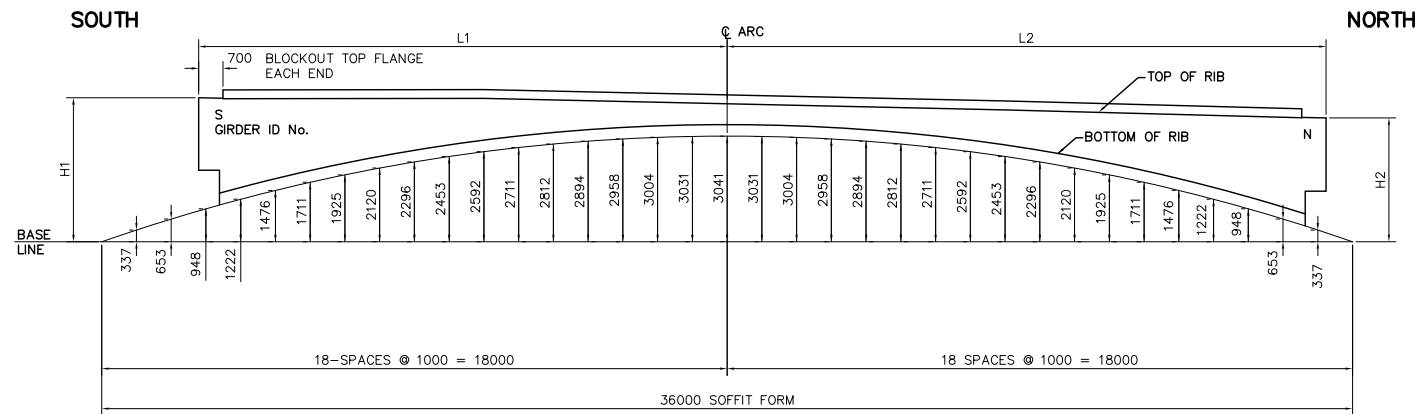
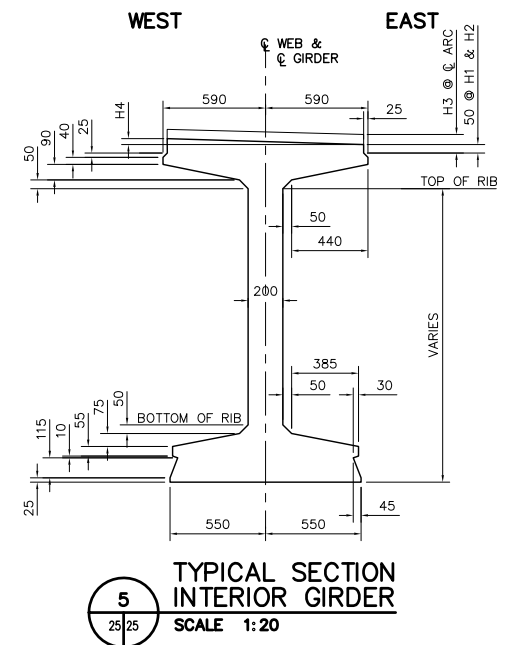
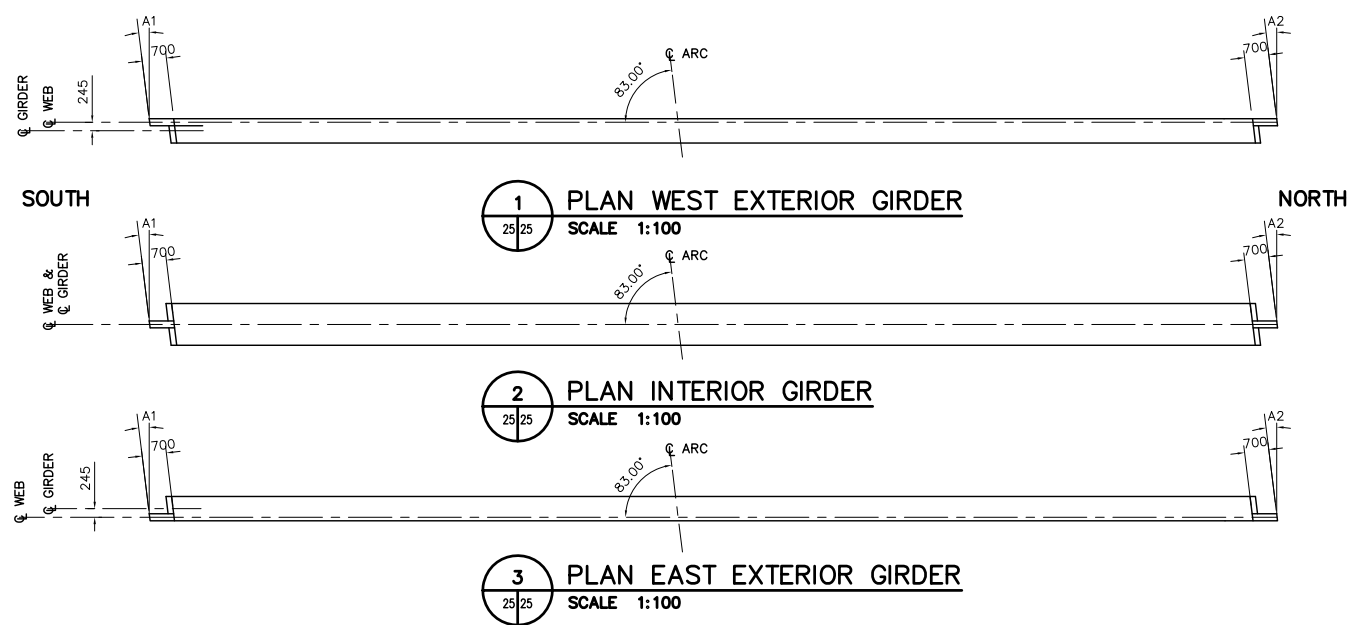
DESIGNED BY		CHECKED BY	
DRAWN BY		APPROVED BY	
HOR. SCALE:		AUTHORIZED BY	
VERTICAL: AS NOTED		DATE	
DATE		DATE	



THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

CITY DRAWING NUMBER B103-98-23
SHEET 23 OF
REV-4

MISCELLANEOUS METAL SHEET 2



NOTES:
 1 ALL DIMENSIONS SHOWN IN ELEVATION ARE MEASURED AT C. GIRDER.
 2 BASE LINE DIMENSIONS OF ARC (GIRDER SOFFIT) SHOWN AT 1000 SPACING ARE PARALLEL TO C. ARC (83' SKEW TO C. GIRDER).
 3 'NORTH', 'SOUTH' AND GIRDER I.D. No. TO BE CLEARLY MARKED ON INSIDE FACE OF EACH GIRDER.
 4 LIFTING HOOKS TO BE DESIGNED AND LOCATED BY MANUFACTURER.

SPAN 1

MK No.	A1	A2	L1	L2	H1	H2	H3	H4
* G1	3.76'	3.76'	13807	14704	3766	4033	95	0
G2	3.76'	3.76'	13807	14704	3766	4043	95	10
G3	3.76'	3.76'	13807	14704	3766	4052	95	10
G4	3.76'	3.76'	13807	14704	3766	4062	95	10
G5	3.76'	3.76'	13807	14704	3766	4072	95	10
G6	3.76'	3.76'	13807	14704	3766	4081	95	10
G7	3.76'	3.76'	13807	14704	3766	4091	95	10
G8	3.76'	3.76'	13807	14704	3766	4101	95	10
G9	3.76'	3.76'	13807	14704	3766	4111	95	10
G10	3.76'	3.76'	13807	14704	3766	4120	95	10
G11	3.76'	3.76'	13807	14704	3766	4130	95	10
G12	3.76'	3.76'	13807	14704	3766	4140	95	10
G13	3.76'	3.76'	13807	14704	3766	4149	95	10
G14	3.76'	3.76'	13807	14704	3766	4159	95	10
G15	3.76'	3.76'	13807	14704	3766	4183	95	10
G16	3.76'	3.76'	13807	14704	3802	4207	95	10
* G17	3.76'	3.76'	13807	14704	3820	4231	95	0

SPAN 2

MK No.	A1	A2	L1	L2	H1	H2	H3	H4
* G18	4.64'	4.64'	15892	16414	3669	3507	100	0
G19	4.64'	4.64'	15892	16414	3679	3527	100	15
G20	4.64'	4.64'	15892	16414	3691	3547	100	15
G21	4.64'	4.64'	15892	16414	3702	3566	100	15
G22	4.64'	4.64'	15892	16414	3712	3586	100	15
G23	4.64'	4.64'	15892	16414	3723	3606	100	15
G24	4.64'	4.64'	15892	16414	3734	3626	100	15
G25	4.64'	4.64'	15892	16414	3744	3645	100	15
G26	4.64'	4.64'	15892	16414	3756	3665	100	15
G27	4.64'	4.64'	15892	16414	3766	3685	100	15
G28	4.64'	4.64'	15892	16414	3777	3705	100	15
G29	4.64'	4.64'	15892	16414	3788	3724	100	15
G30	4.64'	4.64'	15892	16414	3799	3744	100	15
G31	4.64'	4.64'	15892	16414	3810	3764	100	15
G32	4.64'	4.64'	15892	16414	3821	3784	100	15
G33	4.64'	4.64'	15892	16414	3832	3804	100	15
* G34	4.64'	4.64'	15892	16414	3843	3824	100	0

SPAN 3

MK No.	A1	A2	L1	L2	H1	H2	H3	H4
* G35	7.09'	7.09'	15177	17271	3907	3251	100	0
G36	7.09'	7.09'	15177	17271	3928	3279	100	24
G37	7.09'	7.09'	15177	17271	3949	3307	100	24
G38	7.09'	7.09'	15177	17271	3969	3335	100	24
G39	7.09'	7.09'	15177	17271	3990	3363	100	24
G40	7.09'	7.09'	15177	17271	4011	3391	100	24
G41	7.09'	7.09'	15177	17271	4032	3419	100	24
G42	7.09'	7.09'	15177	17271	4052	3448	100	24
G43	7.09'	7.09'	15177	17271	4073	3476	100	24
G44	7.09'	7.09'	15177	17271	4094	3504	100	24
G45	7.09'	7.09'	15177	17271	4115	3532	100	24
G46	7.09'	7.09'	15177	17271	4135	3560	100	24
G47	7.09'	7.09'	15177	17271	4156	3588	100	24
G48	7.09'	7.09'	15177	17271	4177	3616	100	24
G49	7.09'	7.09'	15177	17271	4197	3644	100	24
G50	7.09'	7.09'	15177	17271	4217	3672	100	24
* G51	7.09'	7.09'	15177	17271	4237	3700	100	0

SPAN 4

MK No.	A1	A2	L1	L2	H1	H2	H3	H4
* G52	9.67'	9.67'	13474	17161	4419	3349	95	0
G53	9.67'	9.67'	13474	17161	4448	3383	95	32
G54	9.67'	9.67'	13474	17161	4477	3417	95	32
G55	9.67'	9.67'	13474	17161	4506	3452	95	32
G56	9.67'	9.67'	13474	17161	4535	3486	95	32
G57	9.67'	9.67'	13474	17161	4564	3520	95	32
G58	9.67'	9.67'	13474	17161	4593	3554	95	32
G59	9.67'	9.67'	13474	17161	4622	3588	95	32
G60	9.67'	9.67'	13474	17161	4652	3623	95	32
G61	9.67'	9.67'	13474	17161	4681	3657	95	32
G62	9.67'	9.67'	13474	17161	4710	3691	95	32
G63	9.67'	9.67'	13474	17161	4739	3726	95	32
G64	9.67'	9.67'	13474	17161	4768	3760	95	32
G65	9.67'	9.67'	13474	17161	4797	3794	95	32
G66	9.67'	9.67'	13474	17161	4826	3828	95	32
G67	9.67'	9.67'	13474	17161	4855	3862	95	32
* G68	9.67'	9.67'	13474	17161	4884	3896	95	0

SPAN 5

MK No.	A1	A2	L1	L2	H1	H2	H3	H4
* G69	12.06'	12.06'	13205	14917	4498	3390	50	0
G70	12.06'	12.06'	13205	14917	4533	3425	50	35
G71	12.06'	12.06'	13205	14917	4567	3461	50	35
G72	12.06'	12.06'	13205	14917	4602	3496	50	35
G73	12.06'	12.06'	13205	14917	4637	3532	50	35
G74	12.06'	12.06'	13205	14917	4671	3567	50	35
G75	12.06'	12.06'	13205	14917	4706	3603	50	35
G76	12.06'	12.06'	13205	14917	4741	3638	50	35
G77	12.06'	12.06'	13205	14917	4776	3674	50	35
G78	12.06'	12.06'	13205	14917	4810	3709	50	35
G79	12.06'	12.06'	13205	14917	4845	3745	50	35
G80	12.06'	12.06'	13205	14917	4880	3780	50	35
G81	12.06'	12.06'	13205	14917	4914	3816	50	35
G82	12.06'	12.06'	13205	14917	4949	3851	50	35
G83	12.06'	12.06'	13205	14917	4984	3886	50	35
G84	12.06'	12.06'	13205	14917	5019	3921	50	35
* G85	12.06'	12.06'	13205	14917	5054	3956	50	0

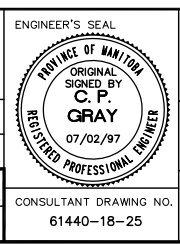
* - INDICATES EXTERIOR GIRDER

REID CROWTHER & PARTNERS LIMITED
 WINNIPEG
 AS CONSTRUCTED
 SIG.....DATE.....

LOCATION APPROVED UNDERGROUND STRUCTURES				B.M. ELEV.	
SURV. U/G STRUCTURES	DATE	COMMITTEE			
5 AS-CONSTRUCTED	14/10/99	KAA	DESIGNED BY	REID CROWTHER & PARTNERS LTD	ENGINEERS PLANNERS SCIENTISTS
4 H1 & H2 DIMENSIONS REVISED	02/07/97	KAA	CHECKED BY		
3 'L' & 'H' DIMENSIONS REVISED	01/14/97	KAA	DRAWN BY	KAA	APPROVED BY
2 'L' DIMENSIONS REVISED	01/06/97	KAA	HOR. SCALE:		AUTHORIZED BY
1 ISSUED FOR CONSTRUCTION	12/06/96	KAA	VERTICAL:	AS NOTED	DATE
0 ISSUED FOR REVIEW	18/10/96	KAA			
NO. REVISIONS	DATE	BY	DATE	06/12/96	

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.

METRIC
 WHOLE NUMBERS INDICATE MILLIMETRES
 DECIMALIZED NUMBERS INDICATE METRES



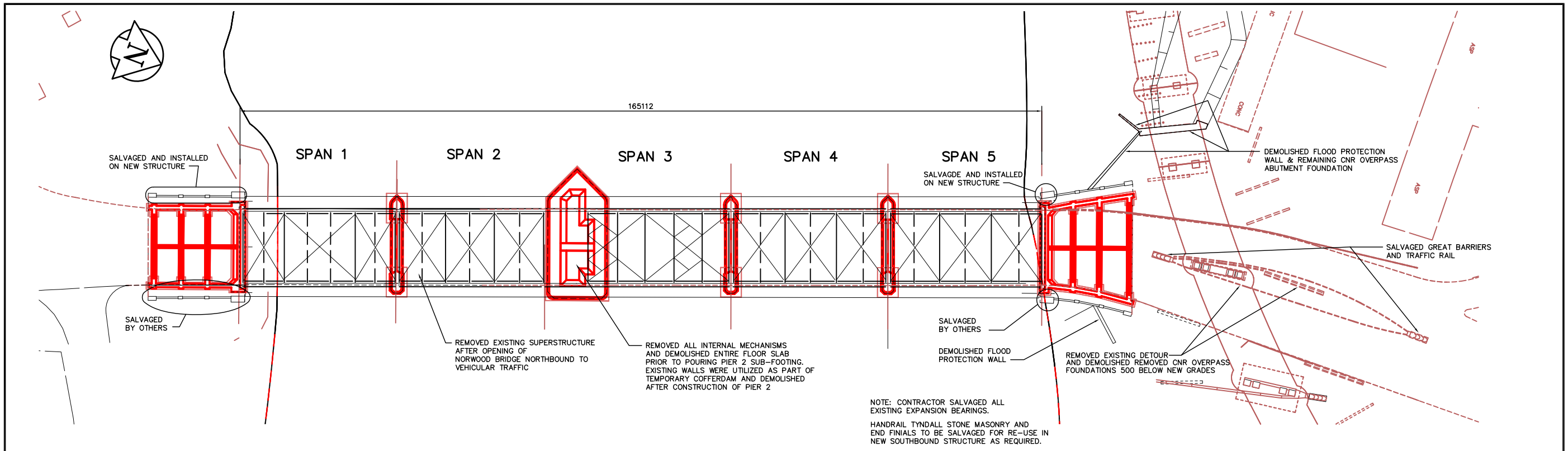
THE CITY OF WINNIPEG
 STREETS AND TRANSPORTATION DEPARTMENT
 BRIDGE ENGINEERING DIVISION
 MAIN STREET AND NORWOOD BRIDGES PROJECT
 NORWOOD BRIDGE - SOUTHBOUND
 AND RELATED ROADWORKS

CITY DRAWING NUMBER
 B103-98-25
 SHEET 25 OF

CONTRACTANT DRAWING NO.
 61440-18-25

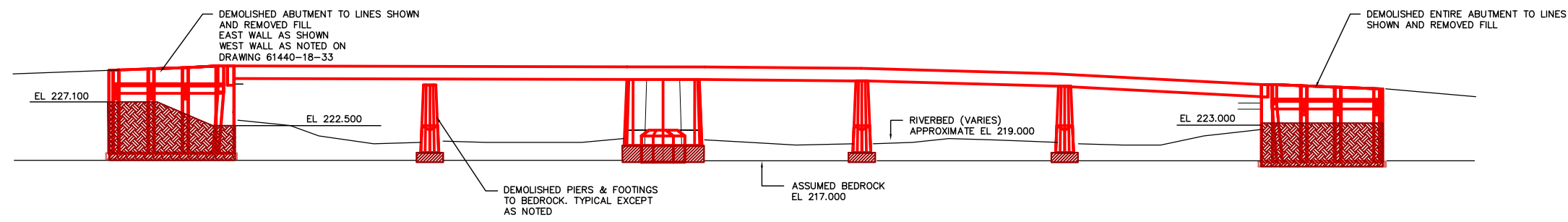
GIRDER GEOMETRY

REV-5



PLAN OF EXISTING NORWOOD BRIDGE

SCALE 1:400



ELEVATION OF EXISTING NORWOOD BRIDGE

SCALE 1:400

NOTE:
ORIGINAL CONSTRUCTION DRAWINGS WERE AVAILABLE FOR VIEWING AT THE CONTRACT ADMINISTRATOR'S OFFICE.

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES		B.M. ELEV.
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.		
2	AS-CONSTRUCTED	14/10/99 KAA
1	ISSUED FOR CONSTRUCTION	02/03/97 C.T.
0	ISSUED FOR REVIEW	12/16/96 VSW
NO.	REVISIONS	DATE BY DATE 10/22/96

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY	CHECKED BY
DRAWN BY	APPROVED BY
C.T.	
AUTHORIZED BY	DATE
B. BRUNSPANZER / SENIOR BRIDGE ENGINEER	ACCEPTED FOR GREAT CONSTRUCTION BY: DATE:
P. PLAZA / PROJECT MANAGER	

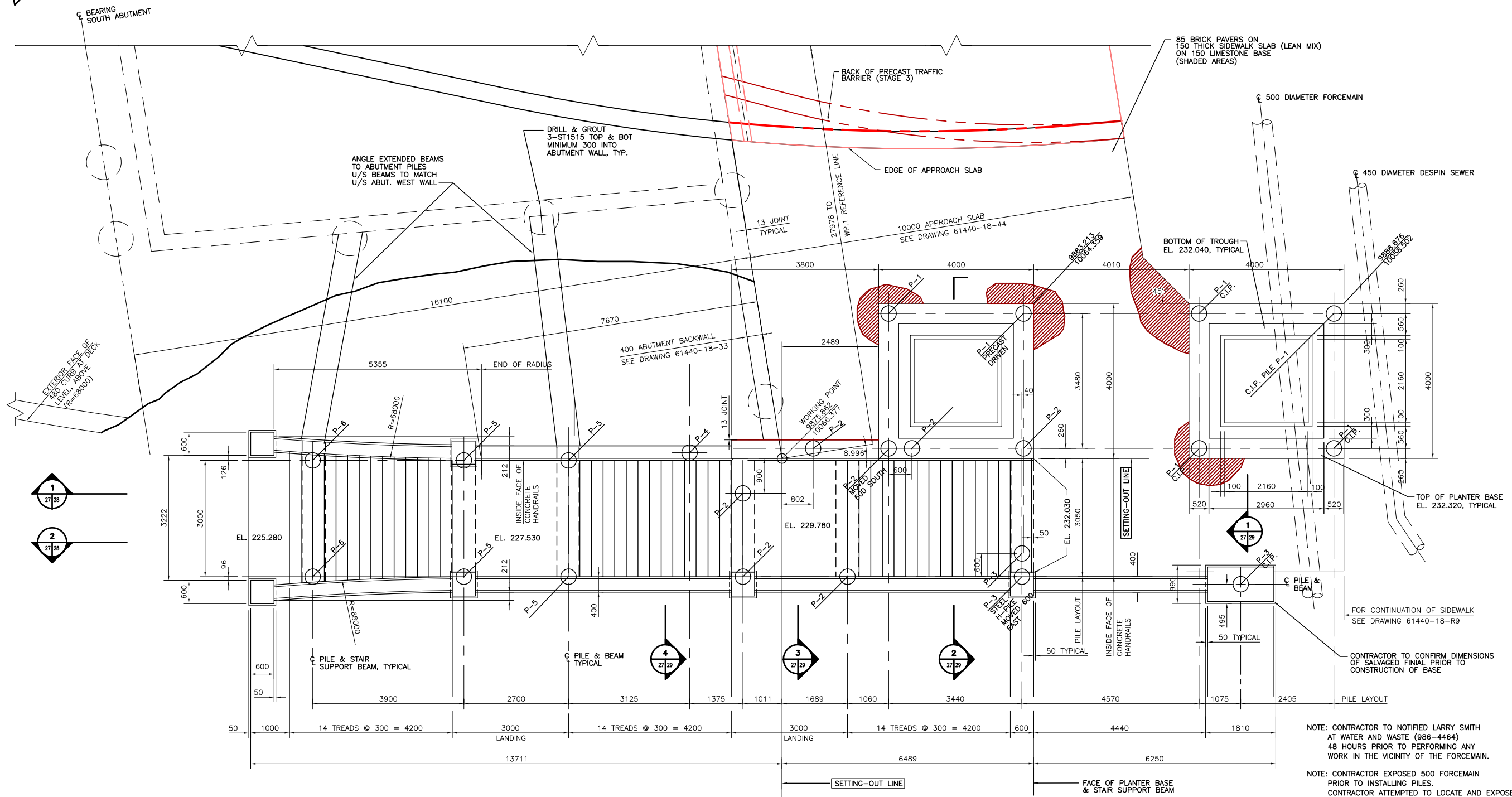
ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
G.A. WEBSTER
04/02/97
REGISTERED PROFESSIONAL ENGINEER

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

CITY DRAWING NUMBER
B103-98-26
SHEET 26 OF

EXISTING NORWOOD BRIDGE
REV-2



NOTE: CONTRACTOR TO NOTIFIED LARRY SMITH AT WATER AND WASTE (986-4464) 48 HOURS PRIOR TO PERFORMING ANY WORK IN THE VICINITY OF THE FORCEMAIN.

NOTE: CONTRACTOR EXPOSED 500 FORCEMAIN PRIOR TO INSTALLING PILES. CONTRACTOR ATTEMPTED TO LOCATE AND EXPOSE 450 DESPIN SEWER BUT WAS NOT FOUND PRIOR TO INSTALLING PILES.

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

PILE SCHEDULE		
MARK NUMBER	SIZE	CUT-OFF ELEVATION
P-1	400 mm DIAMETER	231.620
P-2	400 mm DIAMETER	228.930
P-3	400 mm DIAMETER	231.180
P-4	400 mm DIAMETER	227.890
P-5	400 mm DIAMETER	226.680
P-6	400 mm DIAMETER	224.530

NOTE: ALL PILES TO BE 400 DIAMETER PRECAST PILES DRIVEN TO BEDROCK. UNLESS NOTED OTHERWISE ON DRAWINGS EXTEND STRANDS MINIMUM 1000 INTO CONCRETE ABOVE AND TIE TO REINFORCING BARS.

FOUNDATION & FRAMING PLAN
SCALE 1:50

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES				B.M. ELEV.
SURV. U/G STRUCTURES	DATE	COMMITTEE		
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.				
3	AS-CONSTRUCTED	14/10/99	KAA	
2	EXTEND BEAMS TO ABUTMENT	05/20/97	KAA	
1	ISSUED FOR CONSTRUCTION	19/02/97	C.T.	
0	ISSUED FOR REVIEW	05/02/97	RMT	
NO.	REVISIONS	DATE	BY	DATE
				11/06/96

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: _____
DRAWN BY: JFK
CHECKED BY: _____
APPROVED BY: _____
AUTHORIZED BY: _____
DATE: _____

HOR. SCALE: AS NOTED
VERTICAL: AS NOTED

P. PLAZA / PROJECT MANAGER

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
GA WEBSTER
21/05/97
REGISTERED PROFESSIONAL ENGINEER

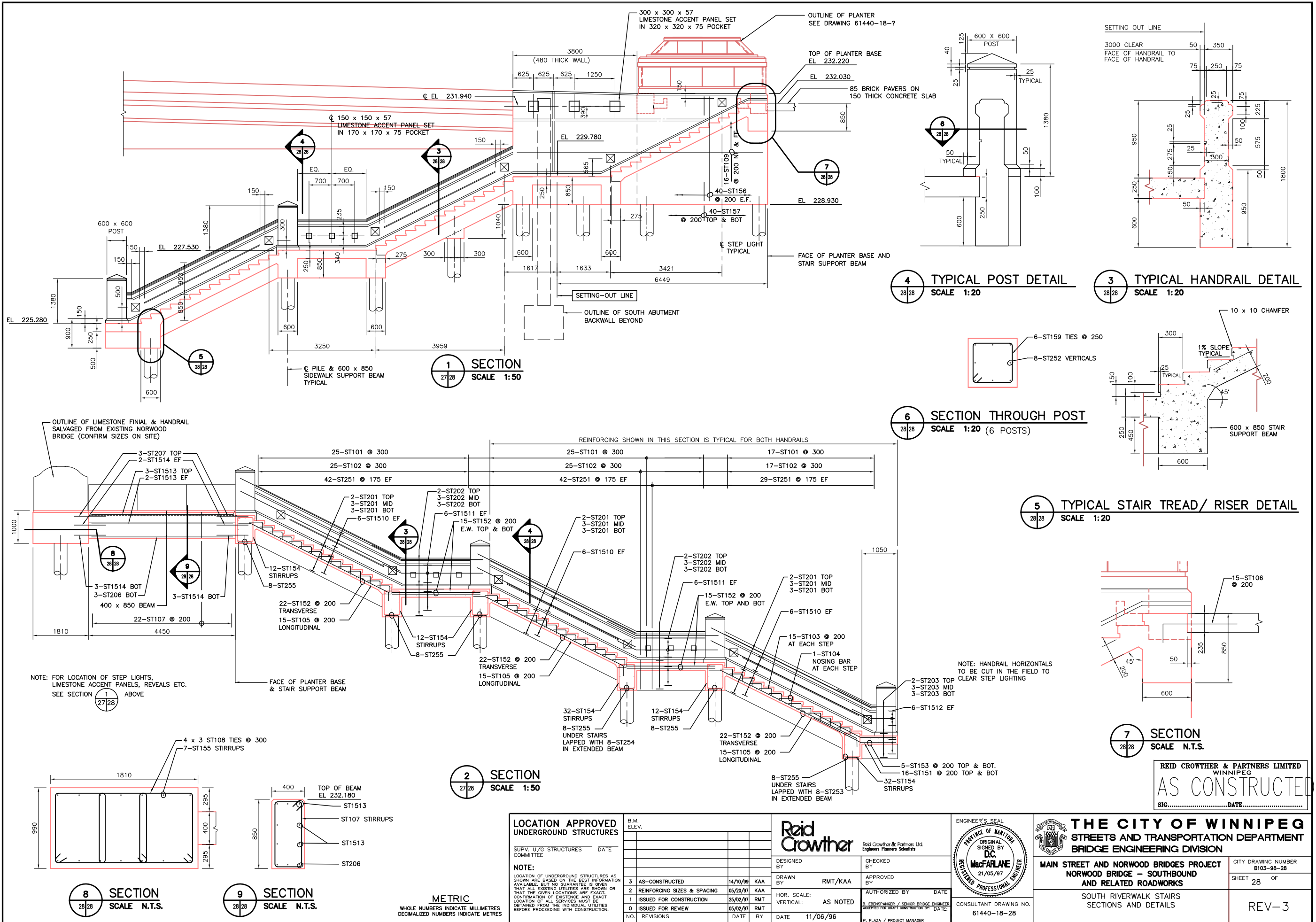
THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

SOUTH RIVERWALK STAIRS
PLAN

CITY DRAWING NUMBER
B103-98-27
SHEET 27 OF _____

REV-3



LOCATION APPROVED UNDERGROUND STRUCTURES		B.M. ELEV.
SURV. U/G STRUCTURES	DATE	
COMMITTEE		
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
3	AS-CONSTRUCTED	14/10/99 KAA
2	REINFORCING SIZES & SPACING	05/20/97 KAA
1	ISSUED FOR CONSTRUCTION	25/02/97 RMT
0	ISSUED FOR REVIEW	05/02/97 RMT

Reid Crowther Reid Crowther & Partners Ltd. Engineers Planners Scientists		ENGINEER'S SEAL PROVING OF HANITON ORIGINAL SIGNED BY DC MacFARLANE REGISTERED PROFESSIONAL ENGINEER	
DESIGNED BY	CHECKED BY	APPROVED BY	
DRAWN BY	RMT/KAA	DATE	
HOR. SCALE:	AS NOTED	DATE	
VERTICAL:	AS NOTED	DATE	
NO. REVISIONS		DATE	
		11/06/96	
		P. PLAZA / PROJECT MANAGER	

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

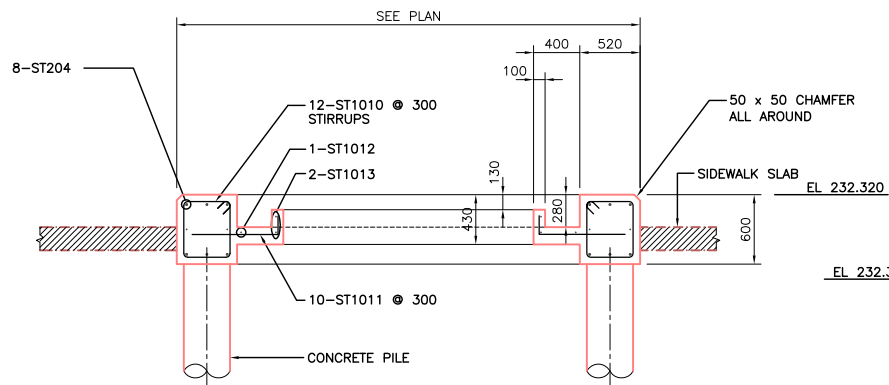
SOUTH RIVERWALK STAIRS
SECTIONS AND DETAILS

CITY DRAWING NUMBER
B103-98-28

SHEET 28 OF

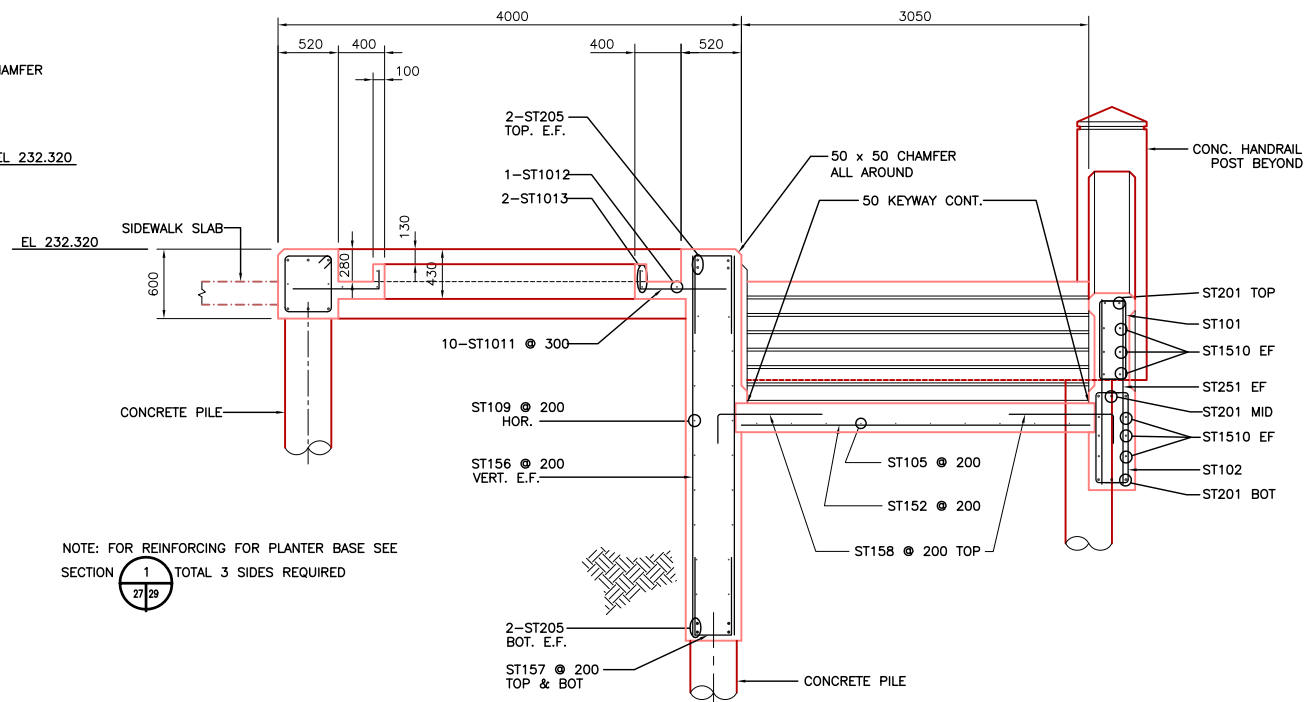
REV-3

CONSULTANT DRAWING NO.
61440-18-28



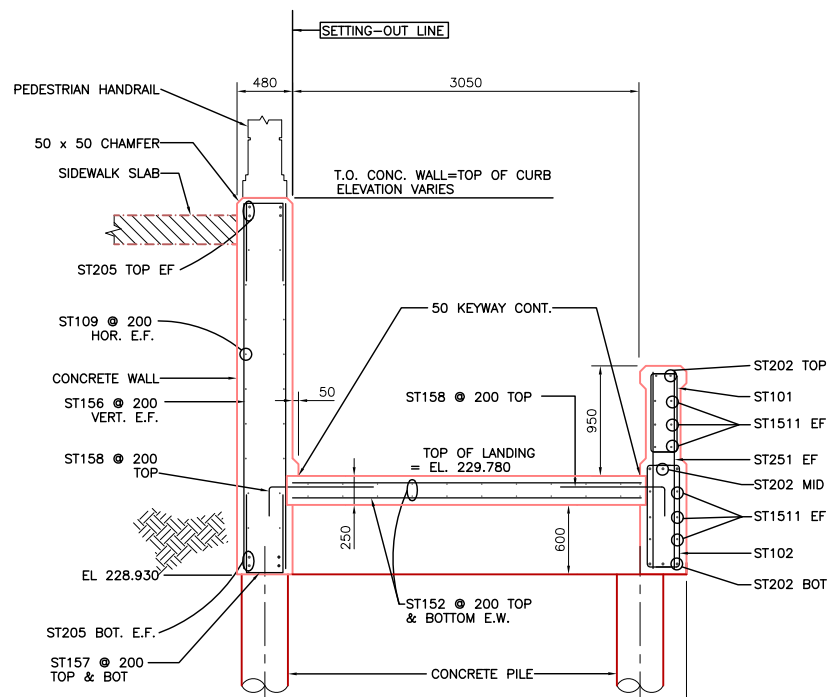
NOTE: REINFORCING SHOWN FOR ONE SIDE ONLY
TOTAL 4 SIDES REQUIRED

1 SECTION
SCALE 1:30

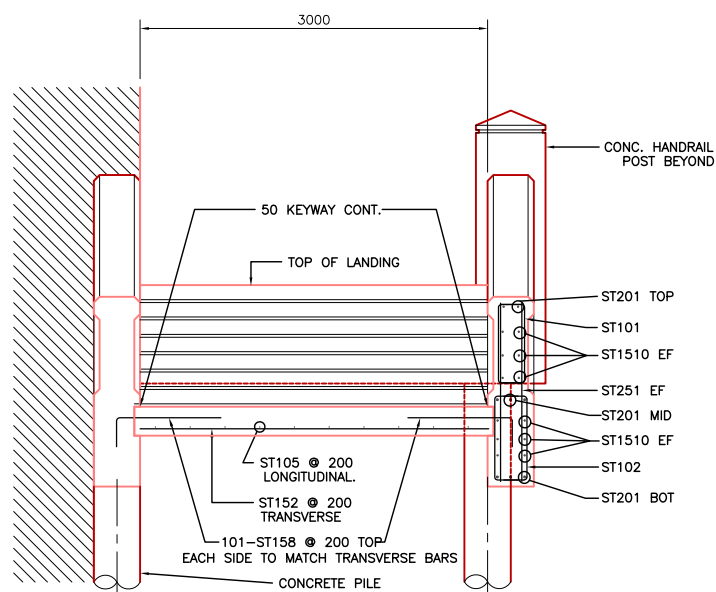


NOTE: FOR REINFORCING FOR PLANTER BASE SEE SECTION 1
TOTAL 3 SIDES REQUIRED

2 SECTION
SCALE 1:30



3 SECTION
SCALE 1:30



4 SECTION
SCALE 1:30

REINFORCING SCHEDULE																				
Marks	No.	Bars	Size	Length	Type	A	B	C	D	E	F	G	H1	H2	K	L	M	O	R	Weight
ST101	109	10	2000	T2	100	200	700	200	700											171
ST102	109	10	2200	T2	100	300	700	300	700											188
ST103	615	10	645	T2		215	430													311
ST104	41	10	3200	STR																103
ST105	45	10	5380	T2			700	3980	700				265	160						190
ST106	15	10	1040	T2		140	900													12
ST107	22	10	2300	T2	100	300	750	300	750			100								40
ST108	12	10	3180	T2	100	600	890	600	890			100								30
ST109	16	10	7860	STR																99
ST110	84	10	2120	T2	100	400	480	400	480			100								140
ST111	80	10	1080	T2	180	900														68
ST112	8	10	3260	STR																20
ST113	16	10	2710	STR																34
ST151	32	15	2650	T2		1650	1000						750	1470						133
ST152	186	15	3000	STR																876
ST153	10	15	3300	STR																52
ST154	112	15	2680	T2	140	500	700	500	700			140								471
ST155	7	15	3820	T2	140	870	900	870	900			140								42
ST156	80	15	3190	STR																401
ST157	80	15	1680	T2		630	420	630												211
ST158	202	15	1150	T2	250	900														40
ST159	36	15	2280	T2	140	500	500	500	500			140								129
ST1510	60	15	5260	STR																495
ST1511	36	15	3150	T2		2500	650					287		582						178
ST1512	24	15	1350	T2		700	650					287		582						51
ST1513	7	15	4350	STR																48
ST1514	14	15	600	STR																13
ST1515	12	15	700	STR																13
ST201	40	20	5260	STR																495
ST202	24	20	3500	T2		2500	1000					442		897						198
ST203	16	20	1700	T2		700	1000					442		897						64
ST204	56	20	4500	T2	300	3900						300								593
ST205	8	20	7700	STR																145
ST206	3	20	4350	STR																31
ST207	6	20	1200	STR																17
ST251	368	25	1700	STR																2456
ST252	48	25	2100	STR																396
ST253	8	25	6445	T2		5445	1000					179		989						202
ST254	8	25	6900	T2		5900	1000					117		993						217
ST255	48	25	3600	STR																678
ST256	24	25	1500	T2		300	1200													141
TOTAL																			10192	

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

NO.	REVISIONS	DATE	BY
3	AS-CONSTRUCTED	14/10/99	KAA
2	REINFORCING SIZES & SPACING	05/20/97	KAA
1	ISSUED FOR CONSTRUCTION	25/02/97	RMT
0	ISSUED FOR REVIEW	06/02/97	RMT

DESIGNED BY	CHECKED BY	APPROVED BY	AUTHORIZED BY
RMT/KAA			

DATE	BY
11/06/96	

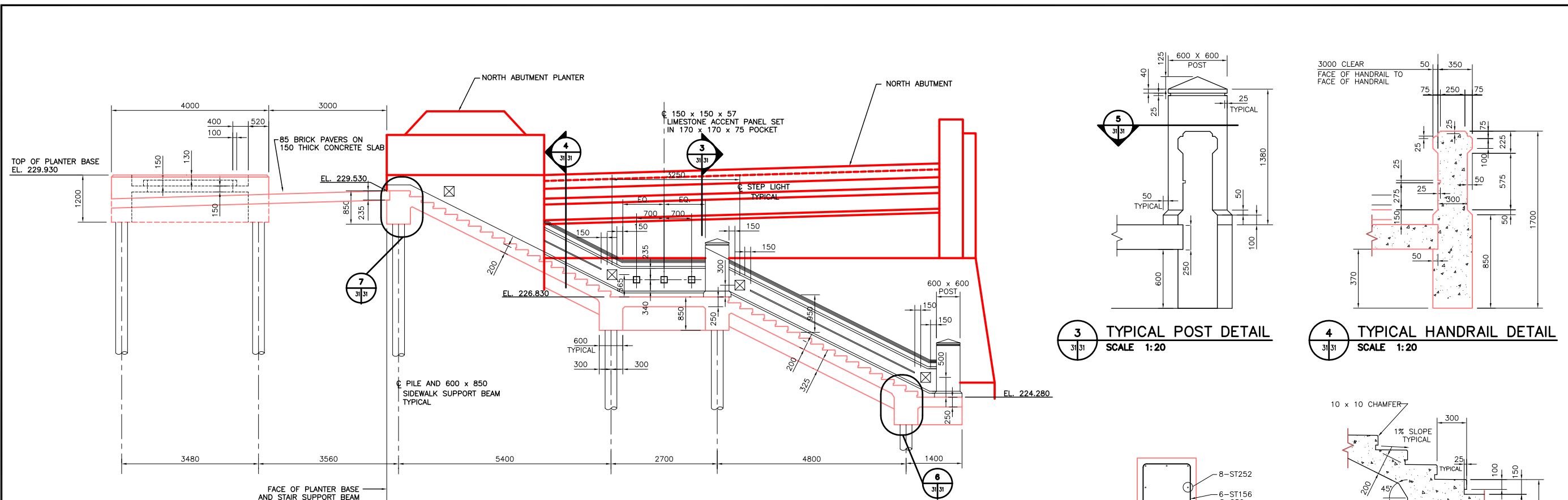
ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
D.C. MacFARLANE
21/05/97
REGISTERED PROFESSIONAL ENGINEER

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS
SOUTH RIVERWALK STAIRS
SECTIONS & DETAILS

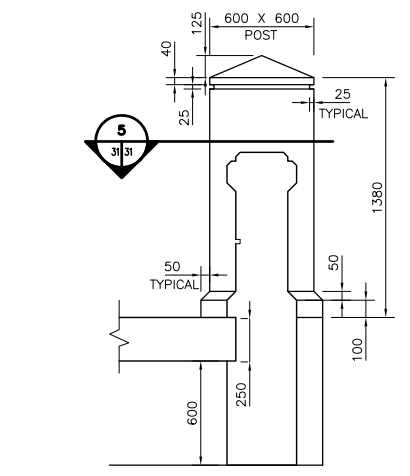
CITY DRAWING NUMBER
B103-98-29

SHEET 29 OF

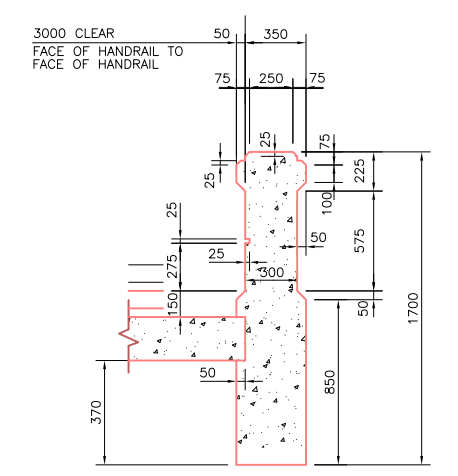
REV-3



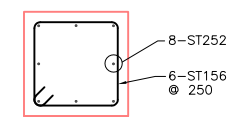
1 SECTION
SCALE 1:50



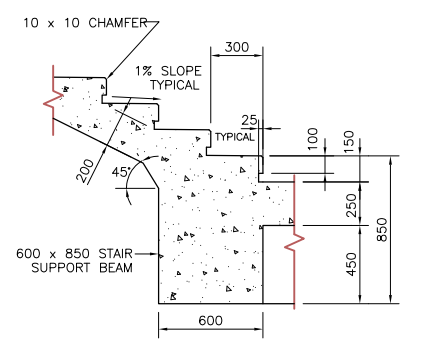
3 TYPICAL POST DETAIL
SCALE 1:20



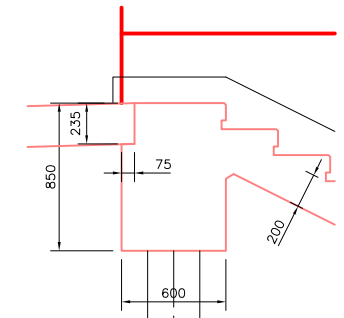
4 TYPICAL HANDRAIL DETAIL
SCALE 1:20



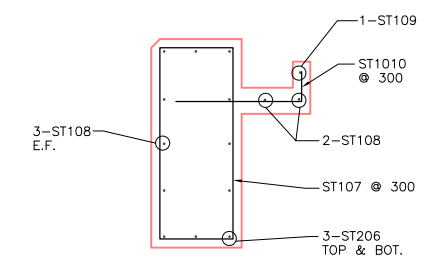
5 SECTION THROUGH POST
SCALE 1:20



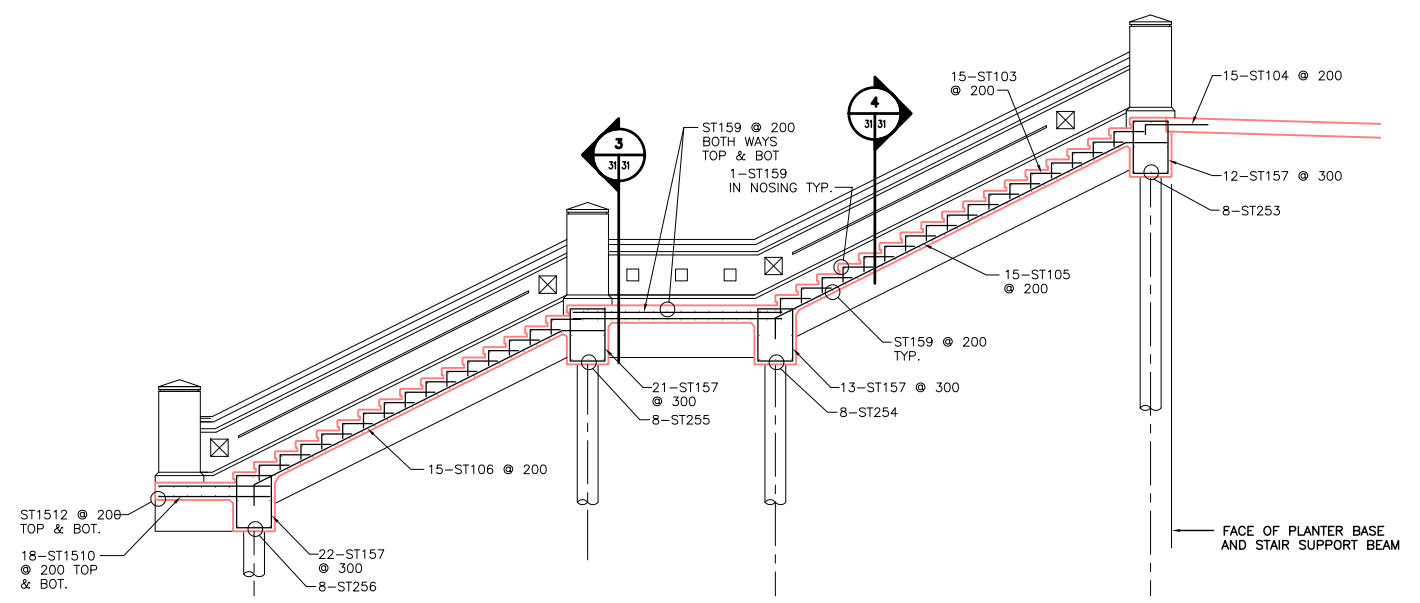
6 STAIR TREAD/RISER DETAIL
SCALE 1:20



7 DETAIL
SCALE N.T.S.



8 SECTION
SCALE N.T.S.



2 SECTION
SCALE 1:50

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

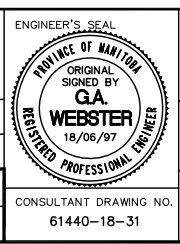
LOCATION APPROVED UNDERGROUND STRUCTURES				B.M. ELEV.
SURV. U/G STRUCTURES	DATE	COMMITTEE		
NOTE: LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE. BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.				
2	AS-CONSTRUCTED	14/10/99	KAA	
1	ISSUED FOR CONSTRUCTION	06/10/97	KAA	
0	ISSUED FOR REVIEW	05/20/97	KAA	
NO.	REVISIONS	DATE	BY	DATE
				11/06/96

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: AGT/KAA
DRAWN BY: AGT/KAA
HOR. SCALE: AS NOTED
VERTICAL: AS NOTED

CHECKED BY: []
APPROVED BY: []
AUTHORIZED BY: [] DATE: []

CONSULTANT DRAWING NO. 61440-18-31



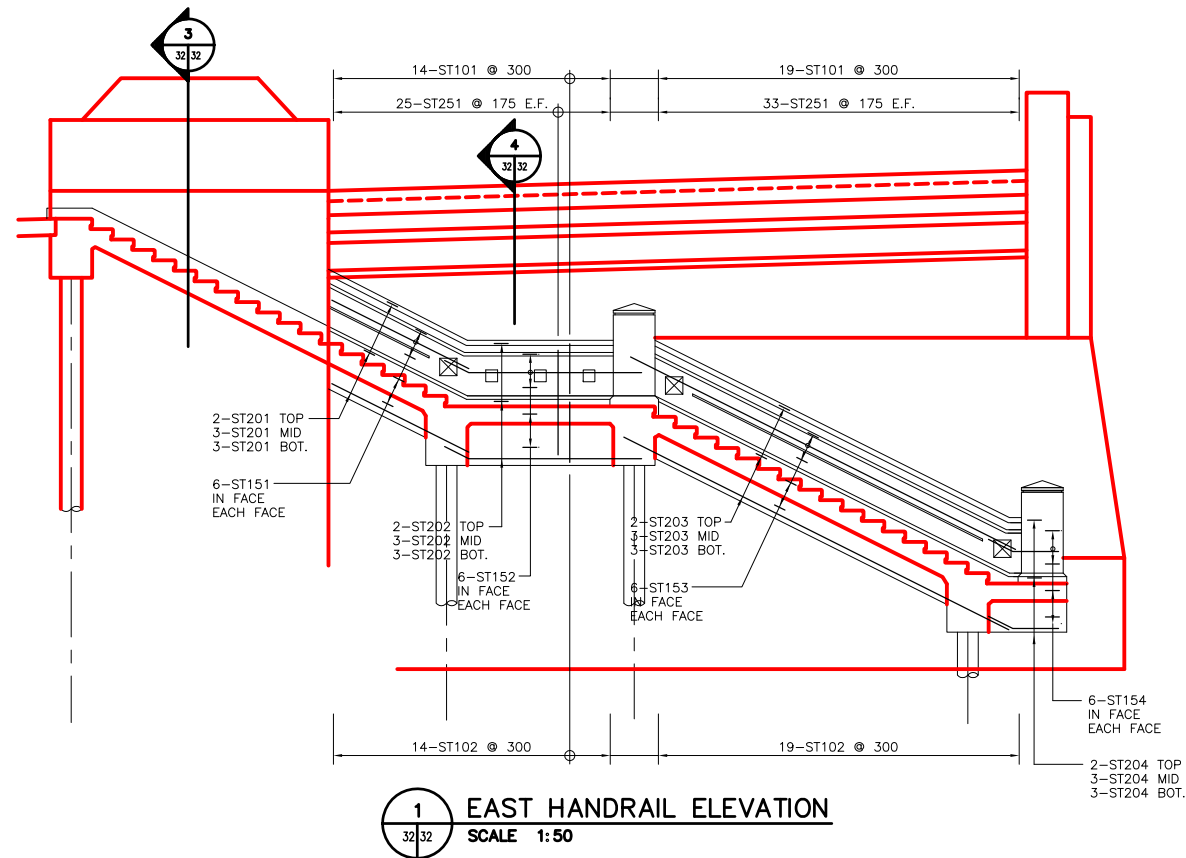
THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

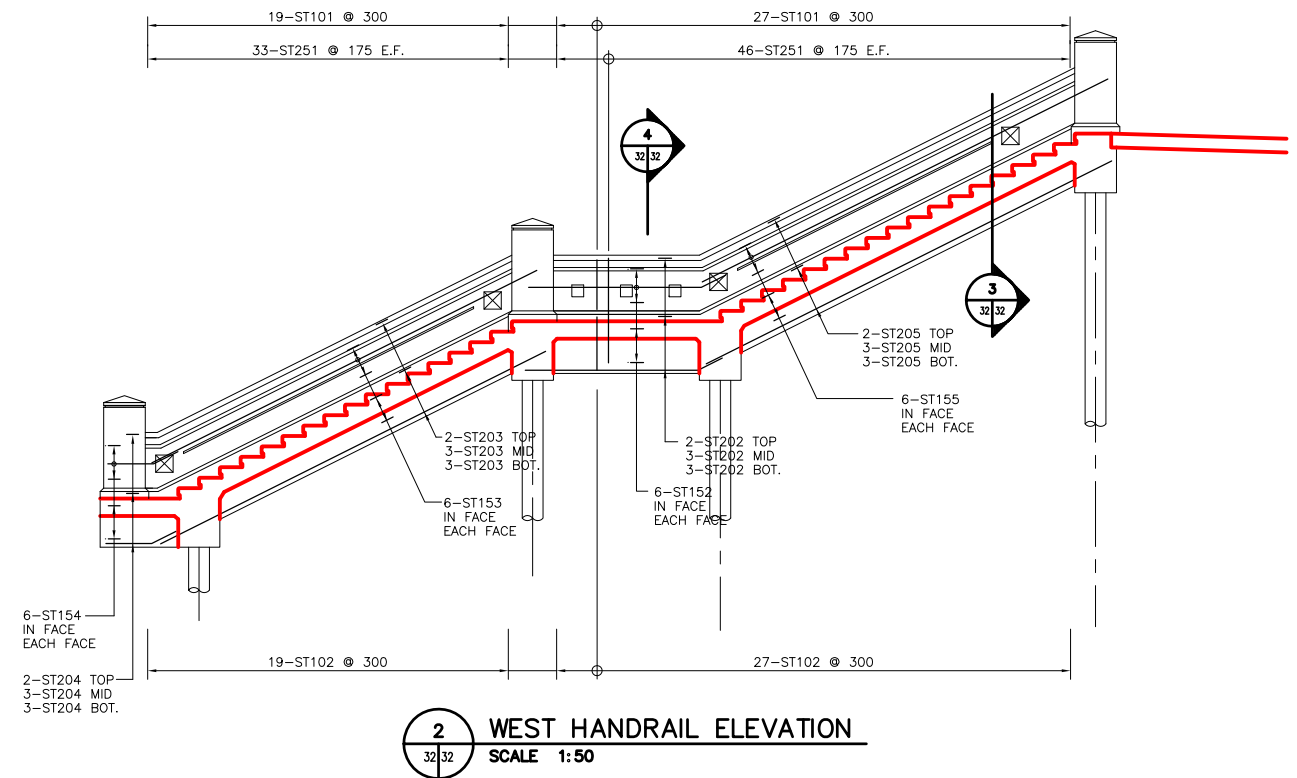
CITY DRAWING NUMBER B103-98-31
SHEET 31 OF []

NORTH RIVERWALK STAIRS
SECTIONS & DETAILS

REV-2

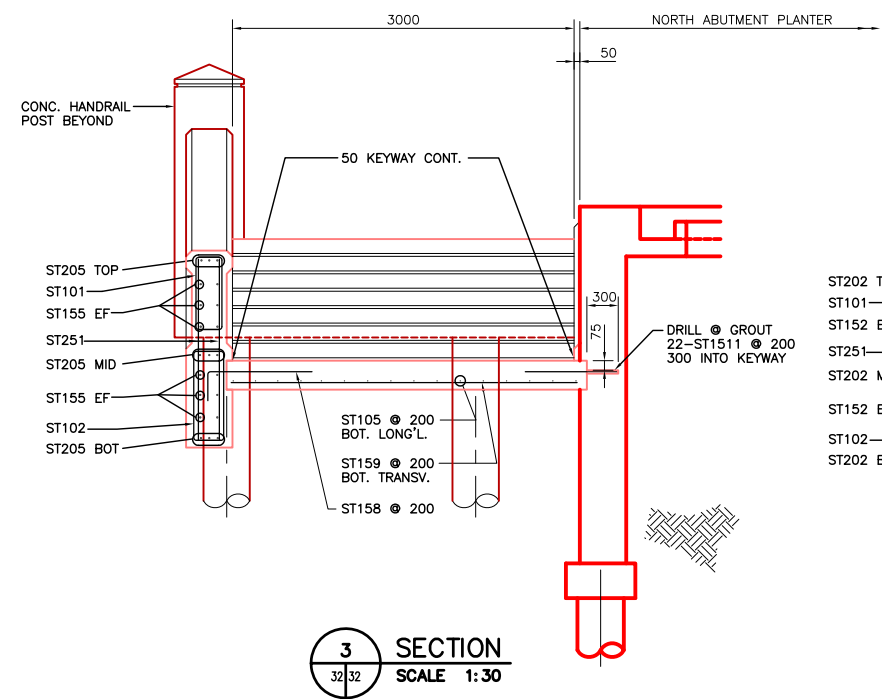


1 EAST HANDRAIL ELEVATION
SCALE 1:50

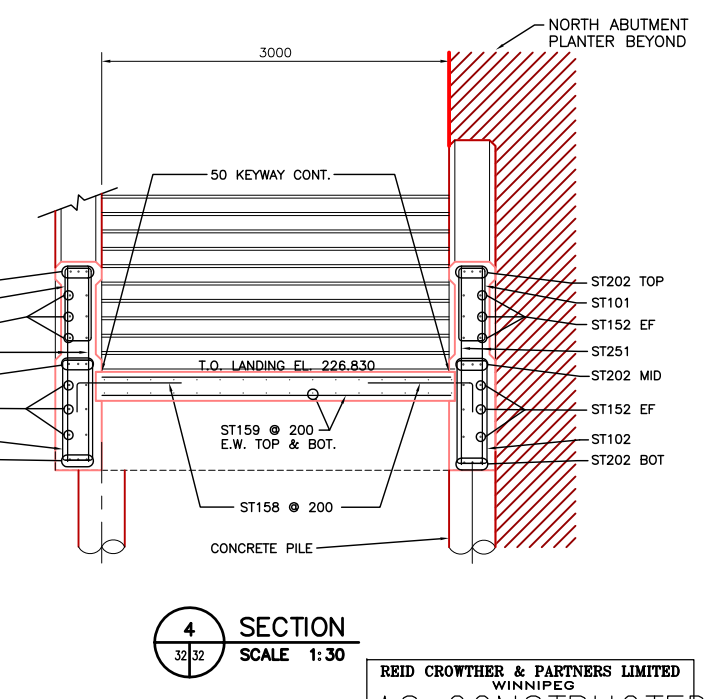


2 WEST HANDRAIL ELEVATION
SCALE 1:50

Mark	No. Bars	Size	Length	Type	A	B	C	D	E	F	G	H	J	K	L	M	O	R	Weight
ST101	79	10	2100	T2	100	750	200	750	200			100							130
ST102	79	10	2300	T2	100	750	300	750	300			100							143
ST103	513	10	645	T2		215	430												260
ST104	15	10	1040	T2		140	900												12
ST105	15	10	6540	T2	300	5640	600					2522							77
ST106	15	10	5855	T2	300	4955	600					2216							69
ST107	50	10	3240	T2	100	1100	420	1100	420		100								127
ST108	24	10	3850	STR															73
ST109	4	10	2260	STR															7
ST110	50	10	900	T2		725	175												35
ST151	12	15	2245	STR															42
ST152	24	15	2730	STR		2100	630				282		563					103	
ST153	24	15	5700	STR															215
ST154	24	15	1330	STR		700	630				282		563					50	
ST155	12	15	8035	STR															114
ST156	30	15	2280	T2	140	500	500	500	500		140							107	
ST157	68	15	2780	T2	140	750	500	750	500		140							297	
ST158	154	15	1040	T2		140	900											251	
ST159	143	15	3000	STR														674	
ST1510	36	15	1600	STR														90	
ST1511	22	15	800	STR														28	
ST1512	12	15	3700	STR														70	
ST201	8	20	2245	STR														42	
ST202	16	20	2870	STR		2100	770				344		689					108	
ST203	16	20	5700	STR														215	
ST204	16	20	1470	STR		700	770				344		689					55	
ST205	8	20	6035	STR														114	
ST206	24	20	3850	STR														218	
ST251	274	25	1600	STR														1721	
ST252	40	25	1980	STR														311	
ST253	8	25	3400	STR														107	
ST254	8	25	3880	STR														122	
ST255	8	25	6060	STR														190	
ST256	8	25	6595	STR														207	
TOTAL																			6384



3 SECTION
SCALE 1:30



4 SECTION
SCALE 1:30

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

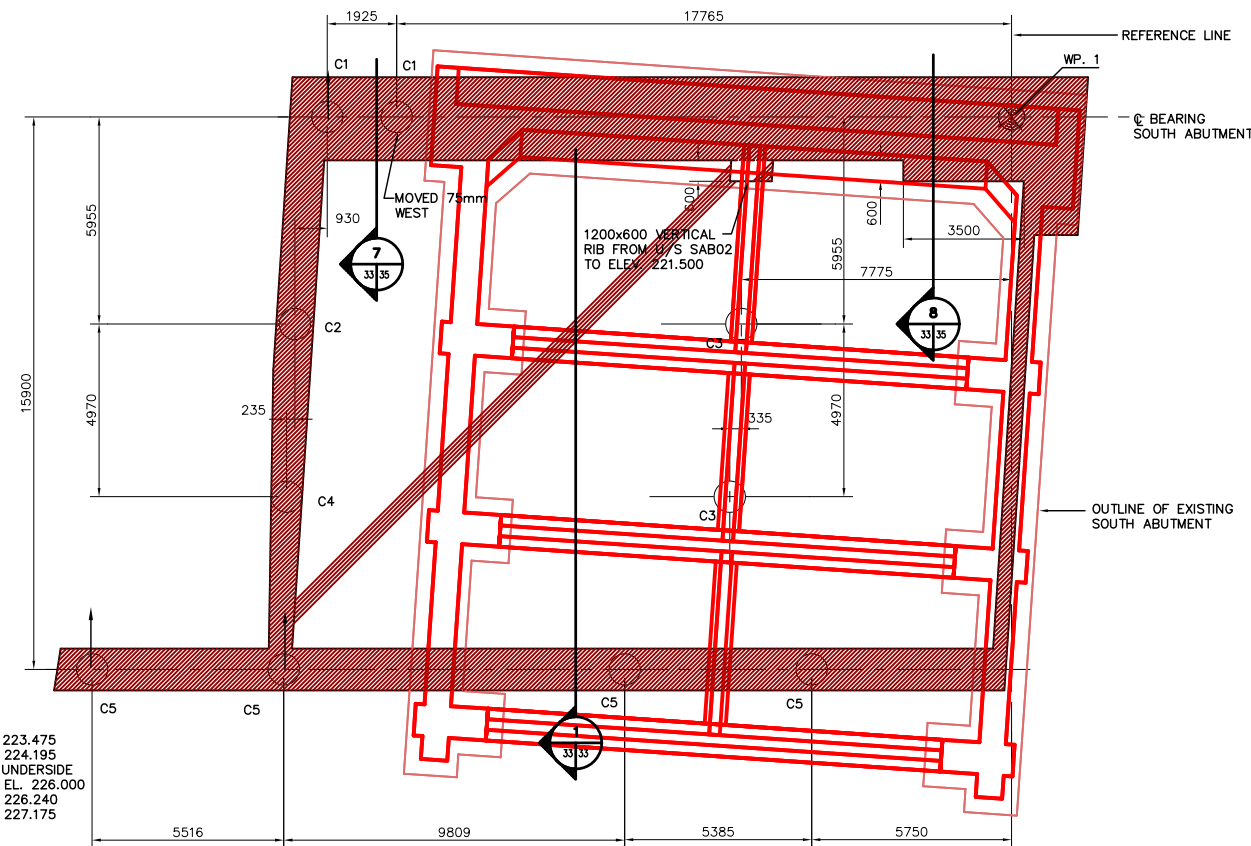
NO.	REVISIONS	DATE	BY
2	AS-CONSTRUCTED	14/10/99	KAA
1	ISSUED FOR CONSTRUCTION	06/10/97	KAA
0	ISSUED FOR REVIEW	05/20/97	KAA

DESIGNED BY	JFK/KAA	CHECKED BY	
DRAWN BY	JFK/KAA	APPROVED BY	
HOR. SCALE:	AS NOTED	AUTHORIZED BY	
VERTICAL:	AS NOTED	DATE	11/06/96

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
G.A. WEBSTER
18/06/97
REGISTERED PROFESSIONAL ENGINEER

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS
NORTH RIVERWALK STAIRS
SECTIONS & DETAILS

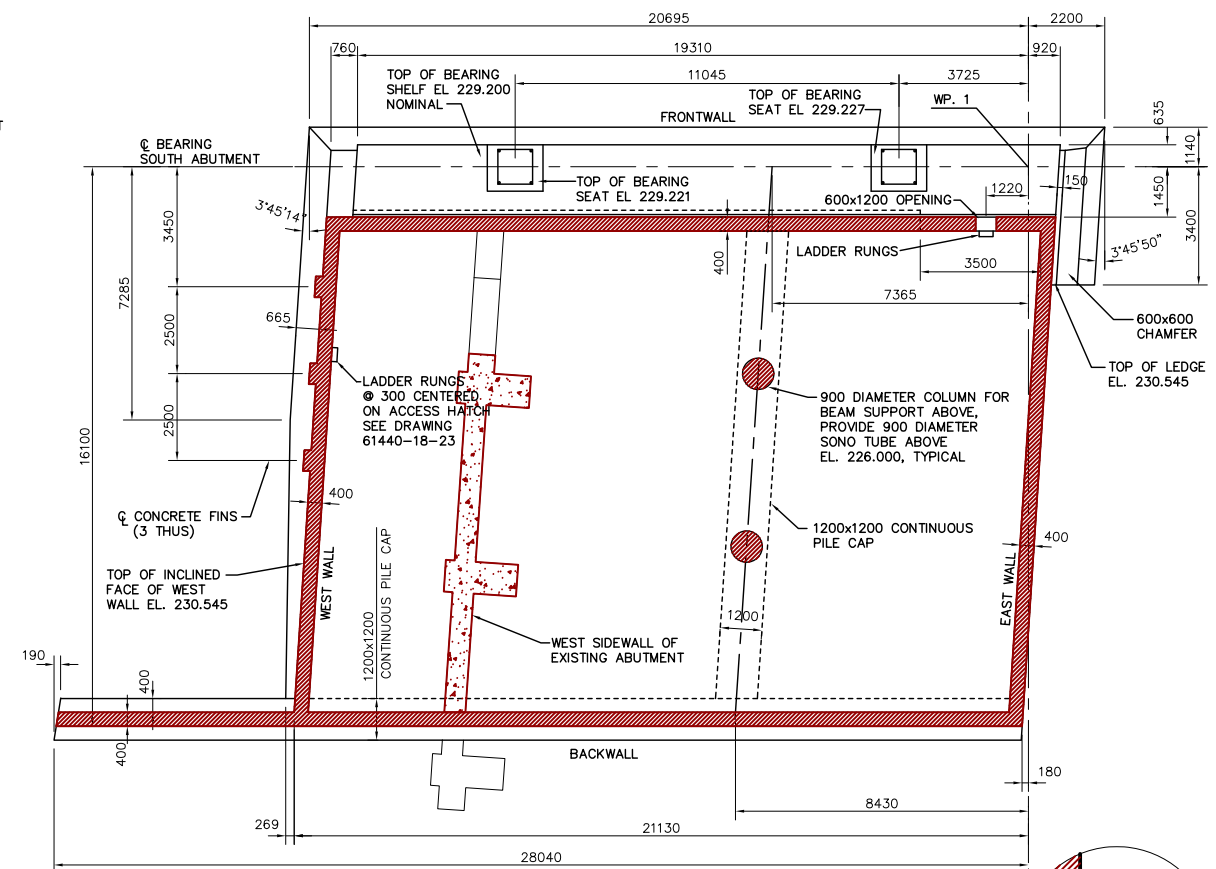
CITY DRAWING NUMBER
B103-98-32
SHEET 32 OF
REV-2



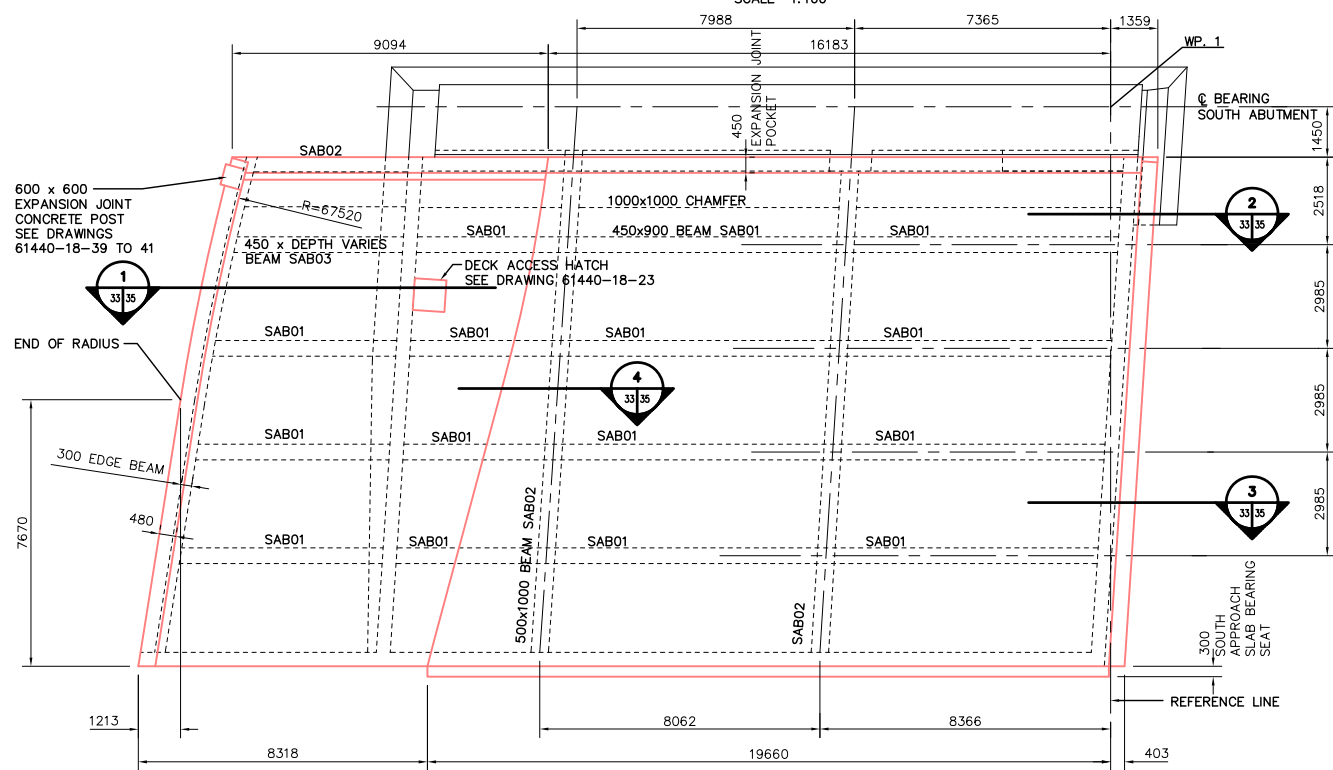
FOUNDATION LAYOUT
SCALE 1:100

NOTE: ALL CAISSONS MARKED WITH AN ARROW (→) ARE TO BE BATTERED 1:6 IN THE DIRECTION OF THE ARROW

- C1 900mm DIAMETER CAISSON, TOP EL. 223.475
- C2 900mm DIAMETER CAISSON, TOP EL. 224.195
- C3 900mm DIAMETER CAISSON, TOP AT UNDERSIDE OF ROOF BEAMS, SONO TUBE ABOVE EL. 226.000
- C4 900mm DIAMETER CAISSON, TOP EL. 226.240
- C5 900mm DIAMETER CAISSON, TOP EL. 227.175



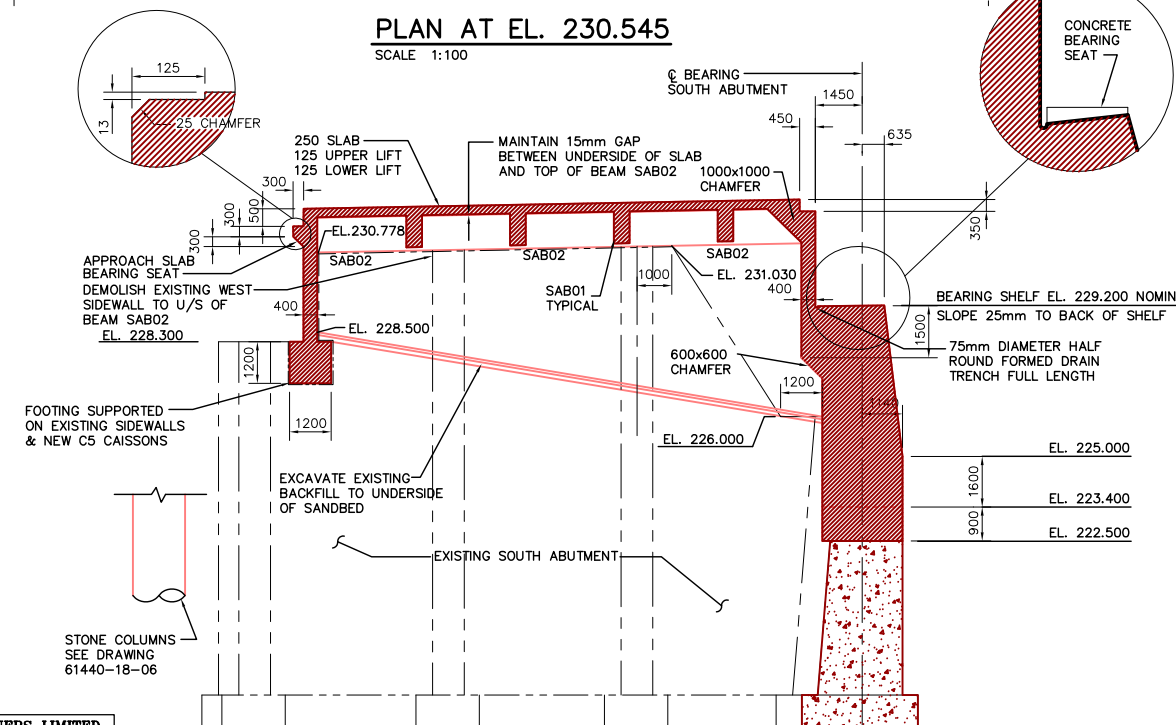
PLAN AT EL. 230.545
SCALE 1:100



PLAN AT ROADWAY
SCALE 1:100

CONTRACTOR TO PROVIDE SUPPORT FOR THE LOWER LIFT OF THE ABUTMENT SLAB UNTIL THE UPPER LIFT HAS REACHED A MINIMUM 25 MPa COMPRESSIVE STRENGTH. METHOD OF TEMPORARY SUPPORT SHALL BE SUBMITTED TO THE CONTRACT ADMINISTRATOR FOR ACCEPTANCE.

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES



SECTION 1
SCALE 1:100

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

LOCATION APPROVED UNDERGROUND STRUCTURES

SUPPLY U/G STRUCTURES	DATE	COMMITTEE
2 AS-CONSTRUCTED	14/10/99	KAA
1 ISSUED FOR CONSTRUCTION	12/03/96	KAA
0 ISSUED FOR REVIEW	11/12/96	KAA
NO. REVISIONS	DATE	BY

B.M.	ELEV.

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: []
DRAWN BY: KAA
CHECKED BY: []
APPROVED BY: []
AUTHORIZED BY: [] DATE: []
HOR. SCALE: []
VERTICAL: AS NOTED
DATE: 12/03/96

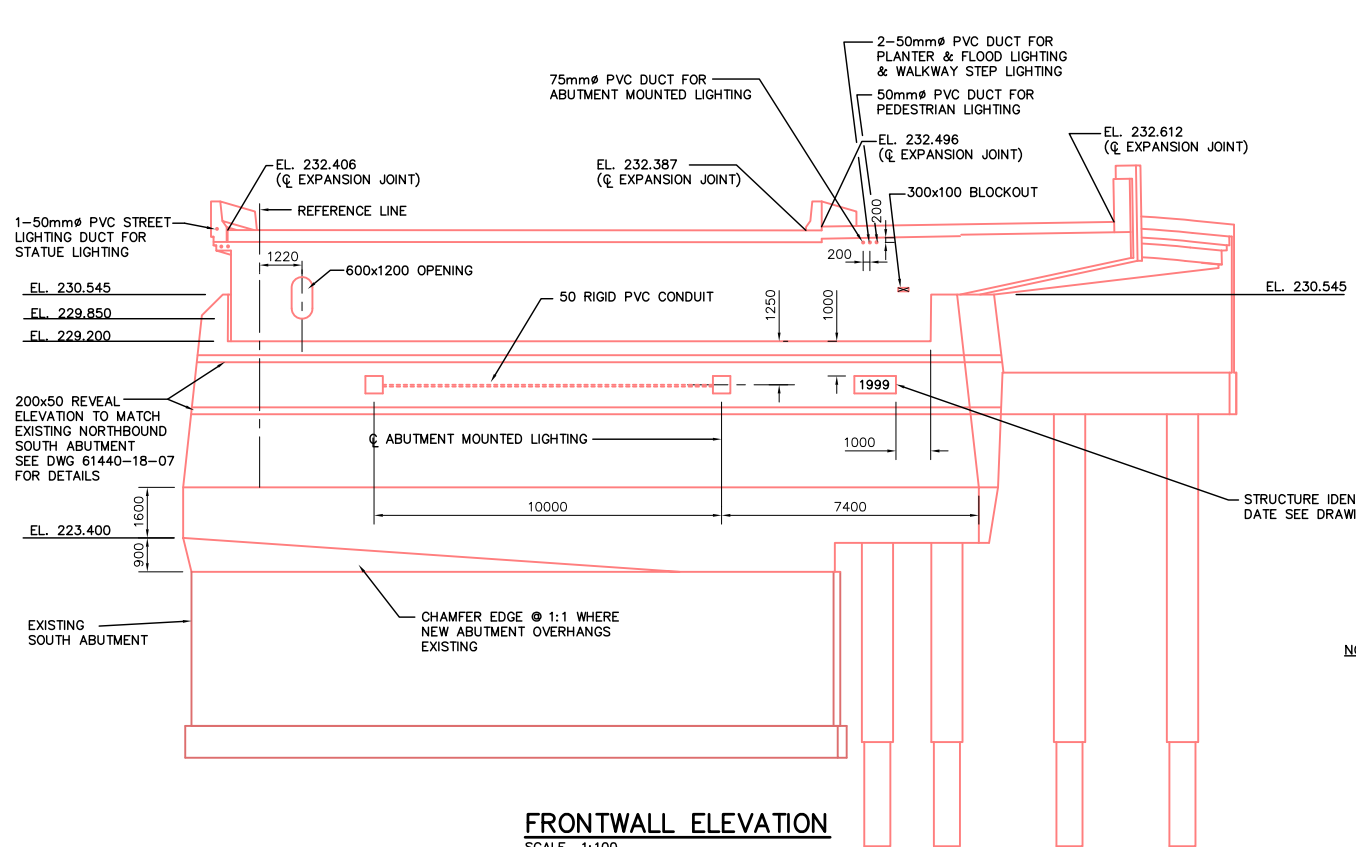
ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
D.C. MacFARLANE
REGISTERED PROFESSIONAL ENGINEER
CONSULTANT DRAWING NO. 61440-18-33

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

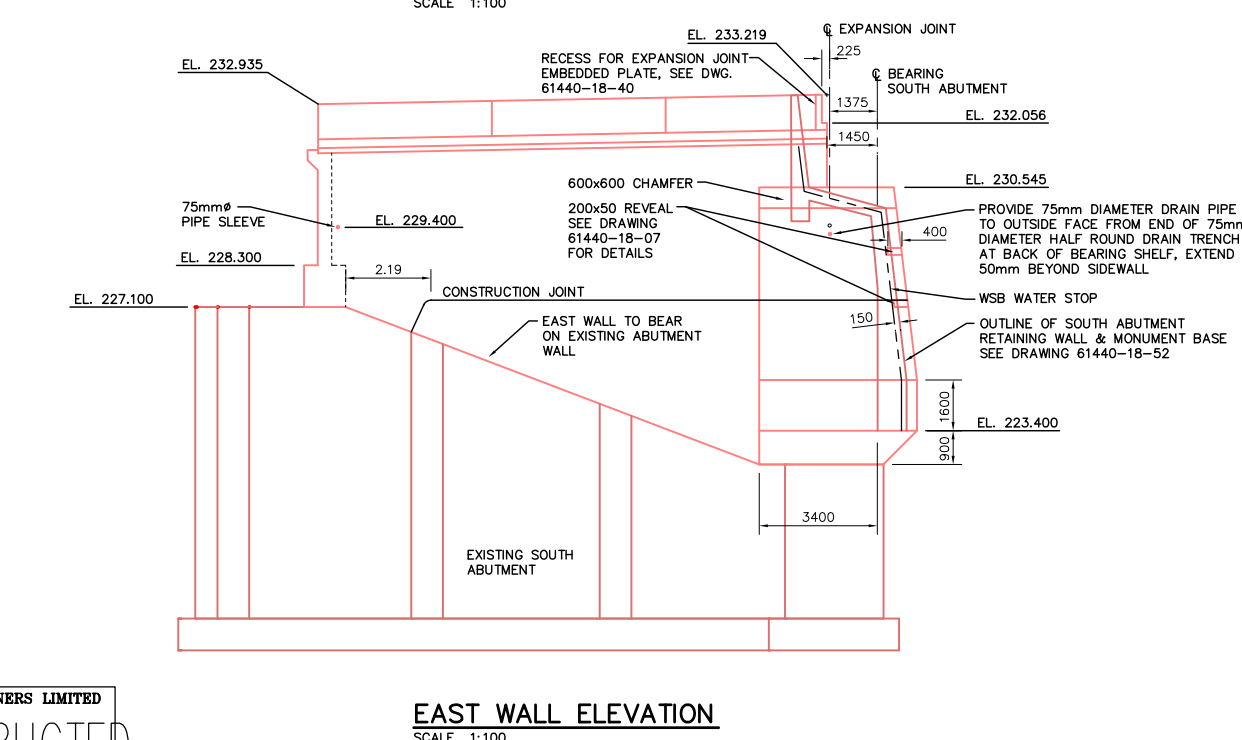
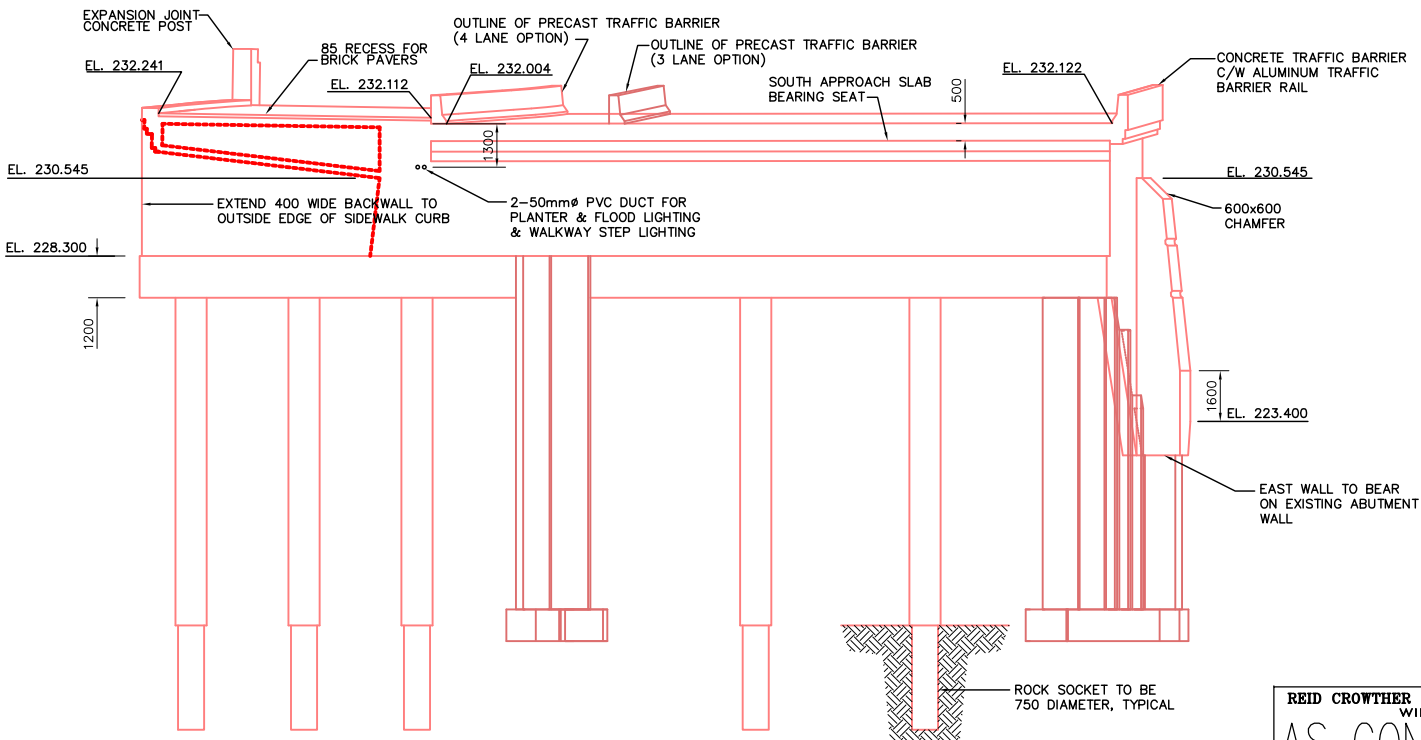
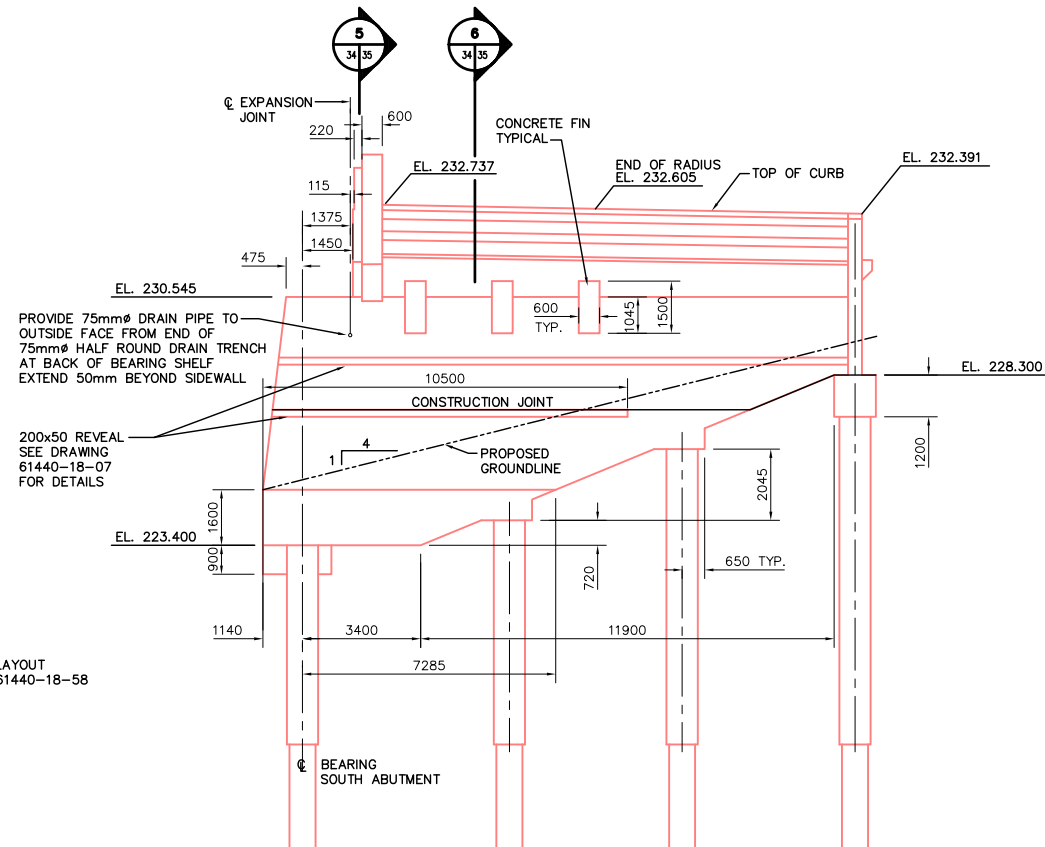
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

SOUTH ABUTMENT
CONCRETE
SHEET 1 OF 3

CITY DRAWING NUMBER 8103-98-33
SHEET 33 OF []
REV-2



NOTE:
FOR CONDUIT LAYOUT
SEE DRAWING 61440-18-58



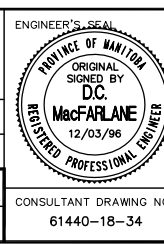
REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

NOTE:
DECK GEOMETRY IS SET OUT FROM CONTROL LINES.
ROADSIDE FACES OF CONCRETE TRAFFIC BARRIER
ARE DETERMINED AS OFFSETS FROM THE CONTROLLING
CONTROL LINE AT INDIVIDUAL LOCATIONS.

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES		B.M. ELEV.
SURV. U/G STRUCTURES	DATE	
COMMITTEE		
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.		
2	AS-CONSTRUCTED	14/10/99 KAA
1	ISSUED FOR CONSTRUCTION	12/03/96 KAA
0	ISSUED FOR REVIEW	11/14/96 KAA
NO.	REVISIONS	DATE BY

DESIGNED BY		CHECKED BY	
DRAWN BY KAA		APPROVED BY	
HOR. SCALE: AS NOTED		AUTHORIZED BY DATE	
VERTICAL: AS NOTED		B. SPANZNER / SENIOR BRIDGE ENGINEER	
DATE 12/03/96		ACCEPTED FOR GREAT CONSTRUCTION BY: DATE:	
P. PLAZA / PROJECT MANAGER		CONSULTANT DRAWING NO. 61440-18-34	



THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

SOUTH ABUTMENT
CONCRETE
SHEET 2 OF 3

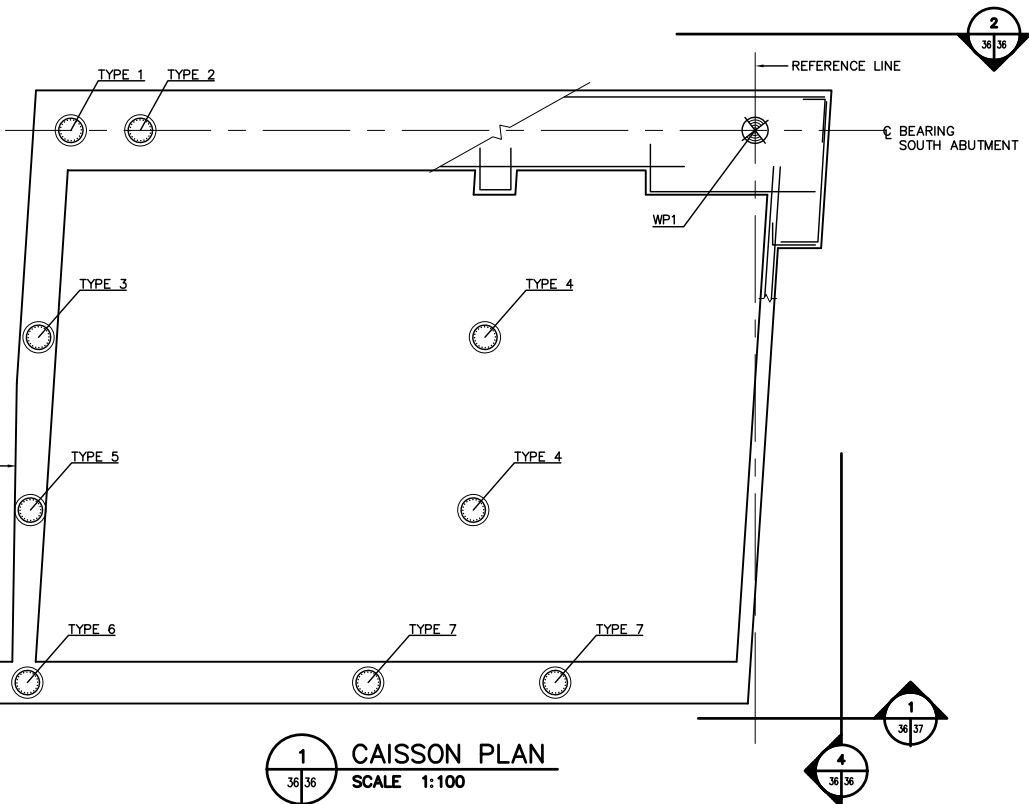
CITY DRAWING NUMBER B103-98-34
SHEET 34 OF
REV-2

CAISSON SCHEDULE		
TYPE	VERTICAL BARS	TIES
1	20-SA301	25-SA151, 10-SA152
2	20-SA302	25-SA151, 10-SA152
3	20-SA303	24-SA151, 10-SA152
4	20-SA304	47-SA151, 10-SA152
5	20-SA305	31-SA151, 10-SA152
6	20-SA306	34-SA151, 10-SA152
7	20-SA307	34-SA151, 10-SA152

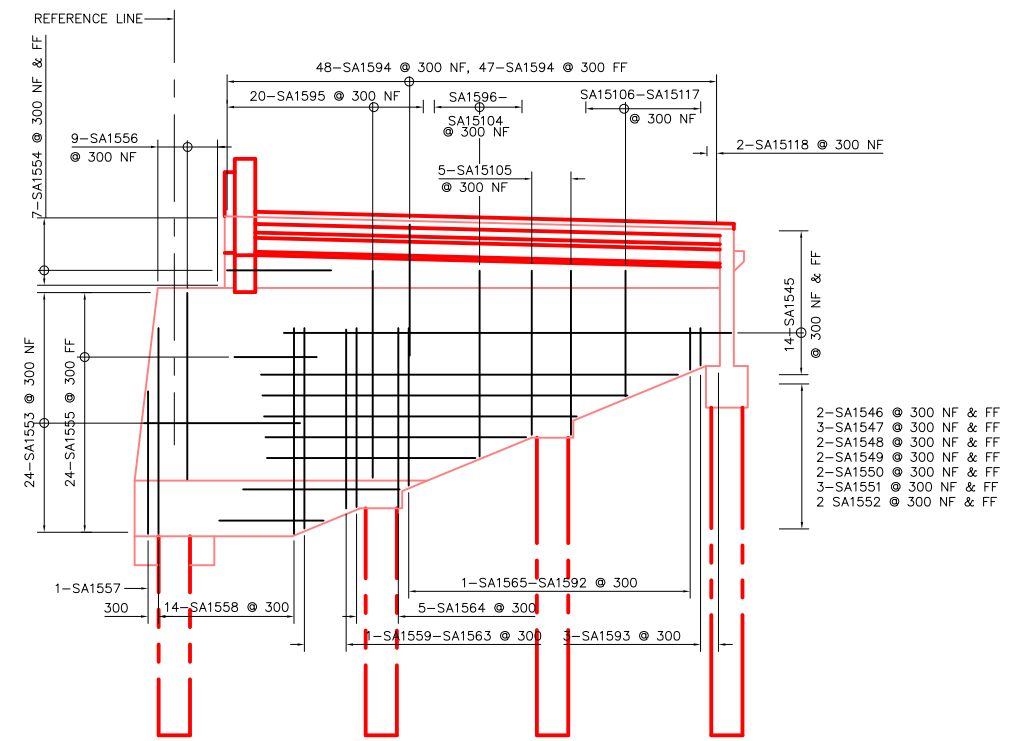
NOTE: BARS SHOWN ARE FOR ONE CAISSON.



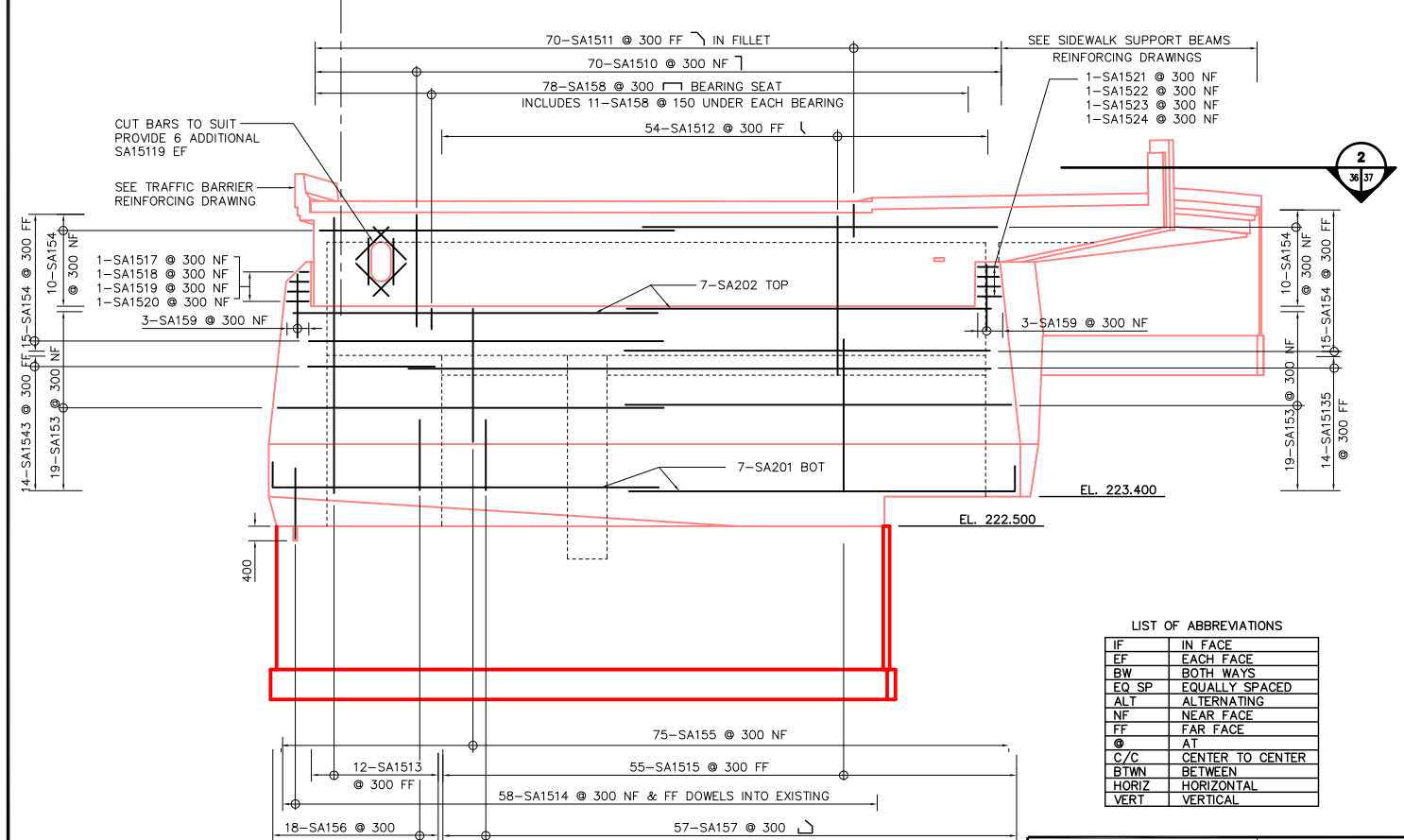
OUTLINE OF ABUTMENT WALLS ABOVE



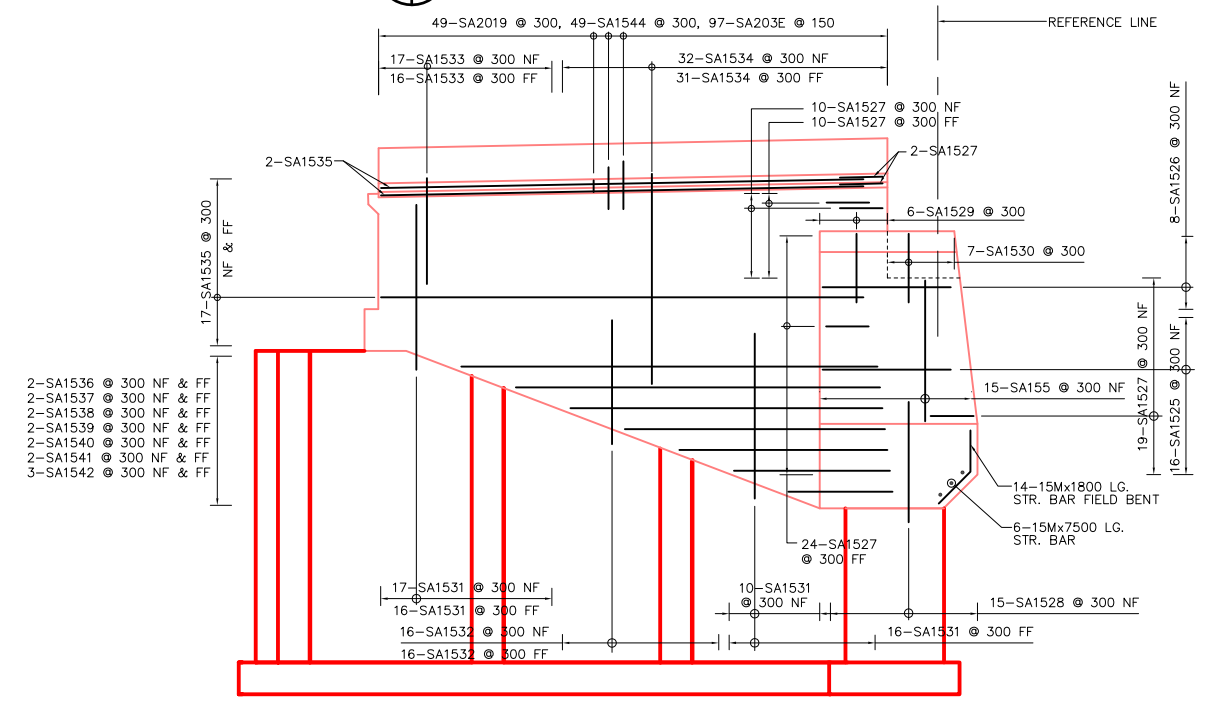
1 CAISSON PLAN
SCALE 1:100



3 ELEVATION OF WEST WALL
SCALE 1:100



2 ELEVATION OF ABUTMENT FRONTWALL
SCALE 1:100



4 ELEVATION OF EAST WALL
SCALE 1:100

LIST OF ABBREVIATIONS

IF	IN FACE
EF	EACH FACE
BW	BOTH WAYS
EQ SP	EQUALLY SPACED
ALT	ALTERNATING
NF	NEAR FACE
FF	FAR FACE
@	AT
C/C	CENTER TO CENTER
BTWN	BETWEEN
HORIZ	HORIZONTAL
VERT	VERTICAL

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

LOCATION APPROVED UNDERGROUND STRUCTURES		B.M. ELEV.
SURV. U/G STRUCTURES	DATE	
COMMITTEE		
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.		
2	AS-CONSTRUCTED	14/10/99 KAA
1	ISSUED FOR CONSTRUCTION	01/07/97 C.T.
0	ISSUED FOR REVIEW	01/06/97 C.T.
NO.	REVISIONS	DATE BY

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: []
DRAWN BY: KAA
CHECKED BY: []
APPROVED BY: []
AUTHORIZED BY: [] DATE: []

HOR. SCALE: []
VERTICAL: AS NOTED

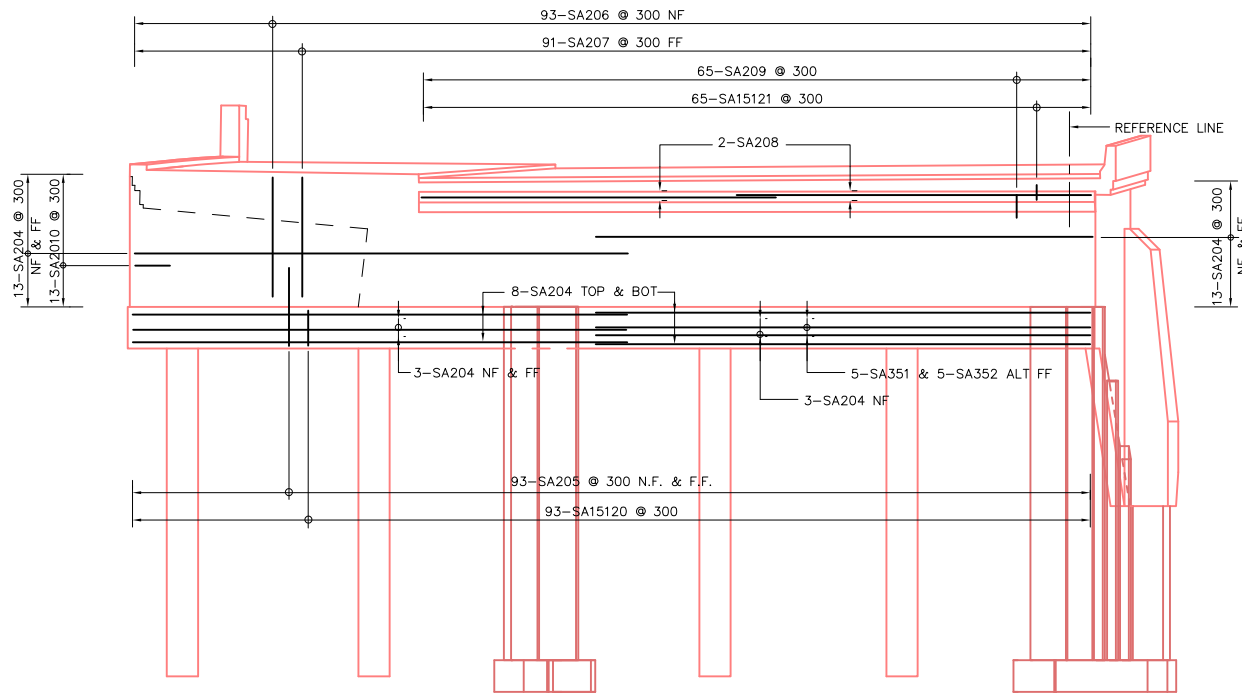
CONSULTANT DRAWING NO. 61440-18-36

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

SOUTH ABUTMENT
REINFORCING
SHEET 1 OF 3

CITY DRAWING NUMBER B103-98-36
SHEET OF 36
REV-2

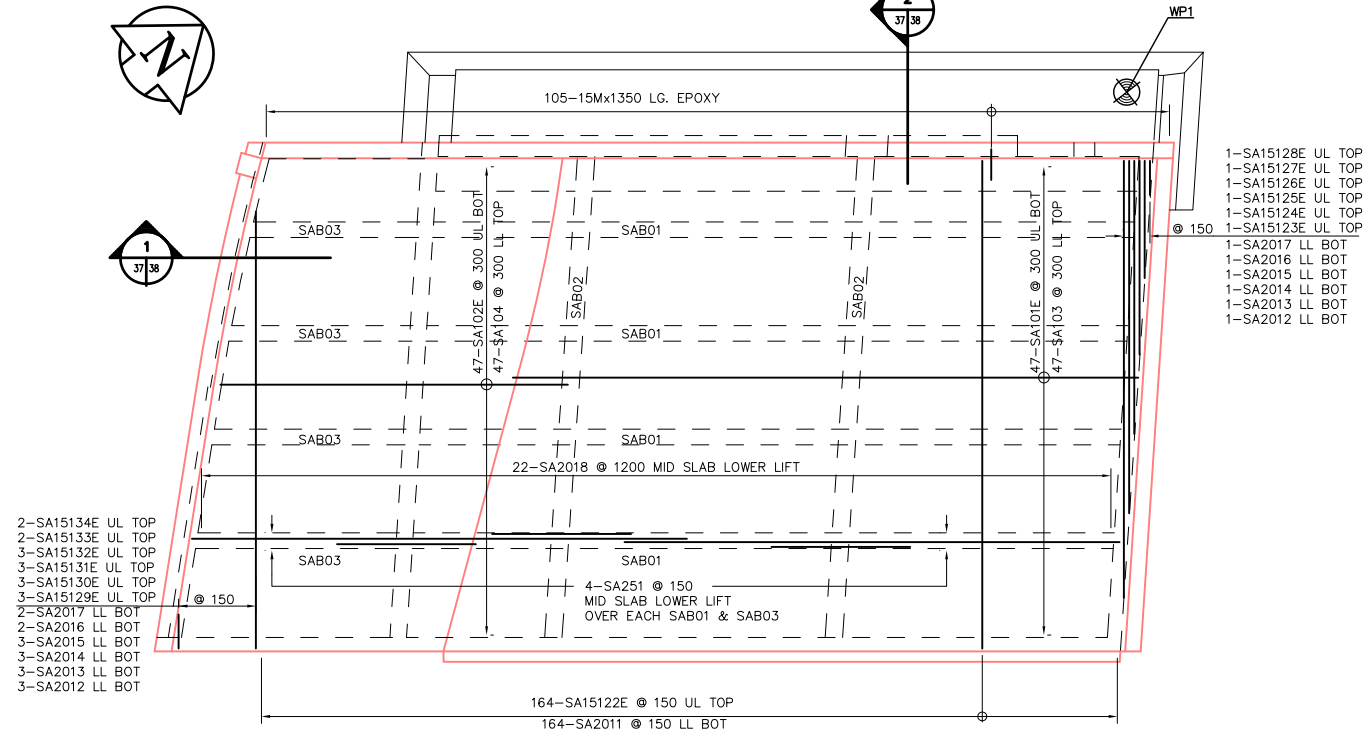


1 ELEVATION OF ABUTMENT BACKWALL
SCALE 1:100

MARKS	NO.	SIZE	LENGTH	TYPE	A	B	C	D	E	F	G	H	J	K	L	M	O	R	Mass (kg)
SA101E	47	10	18000	STR															664
SA102E	47	10	10740	2	140	10600													396
SA103	47	10	18000	STR															664
SA104	47	10	10600	STR															391
SA151	335	15	2956	13						600						750		1555	
SA152	100	15	2485	13						600						600		390	
SA153	38	15	11760	STR														702	
SA154	50	15	10800	STR														848	
SA155	90	15	4230	STR														598	
SA156	18	15	5640	16	630	2860	1450	700				83		685				159	
SA157	57	15	4890	16	630	2110	1450	700				83		685				438	
SA158	78	15	3610	17	630	2350	630											442	
SA159	6	15	1975	STR														19	
SA1510	70	15	4400	17	1000	3400												484	
SA1511	70	15	3230	14	630	1930	630					445						355	
SA1512	54	15	5885	12		4185	1700					1200		1200				499	
SA1513	12	15	8500	STR														160	
SA1514	116	15	2500	STR														455	
SA1515	55	15	4880	STR														421	
SA1516	20	15	3590	17	1245	1100	1245											90	
SA1517	1	15	4695	17	3725	270	700											7	
SA1518	1	15	5000	17	3725	575	700											8	
SA1519	1	15	5060	17	3725	635	700											8	
SA1520	1	15	5095	17	3725	670	700											8	
SA1521	1	15	1875	17	630	615	630					8919		12000				3	
SA1522	1	15	1945	17	630	685	630											3	
SA1523	1	15	1980	17	630	720	630											3	
SA1524	1	15	2015	17	630	755	630											3	
SA1525	16	15	5095	17	3800	1295												128	
SA1526	8	15	4590	17	3800	790												58	
SA1527	65	15	1860	17	1230	630												190	
SA1528	15	15	3460	16		2830	630			445		445						81	
SA1529	6	15	4675	X1	2020	420	810	1425		1415		150						44	
SA1530	7	15	4255	X1	2020		810	1425		1415		150						47	
SA1531	59	15	5300	STR														491	
SA1532	32	15	4070	STR														204	
SA1533	33	15	3000	17		500	2500											155	
SA1534	63	15	6000	17		500	5500											593	
SA1535	36	15	15150	17		500	14650											856	
SA1536	4	15	12000	STR														75	
SA1537	4	15	10500	STR														66	
SA1538	4	15	9000	STR														57	
SA1539	4	15	7500	STR														47	
SA1540	4	15	6000	STR														38	
SA1541	4	15	4500	STR														28	
SA1542	6	15	3000	STR														28	
SA1543	14	15	5300	17	1200	4100												116	
SA1544	49	15	1310	16		550	760				623		436					101	
SA1545	28	15	13500	17	630	12870												593	
SA1546	4	15	12000	STR														75	
SA1547	6	15	10500	STR														99	
SA1548	4	15	9000	STR														57	
SA1549	4	15	7500	STR														47	
SA1550	4	15	6000	STR														38	
SA1551	6	15	4500	STR														42	
SA1552	4	15	3000	STR														19	

REINFORCING SCHEDULE CONTINUED ON DRAWING 61440-18-38

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

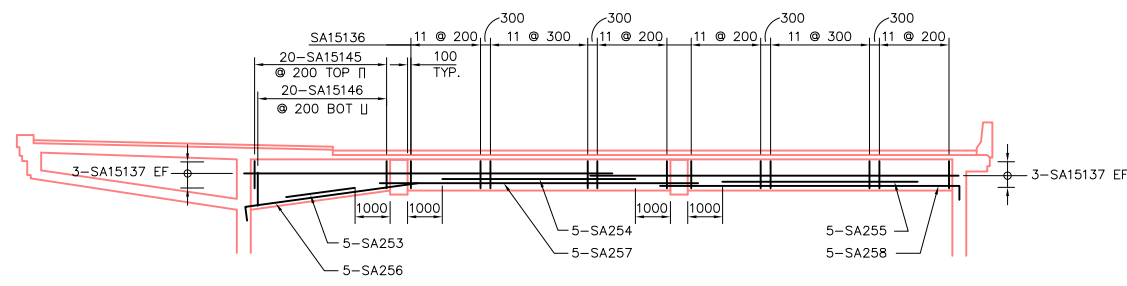


2 ROOF PLAN
SCALE 1:100

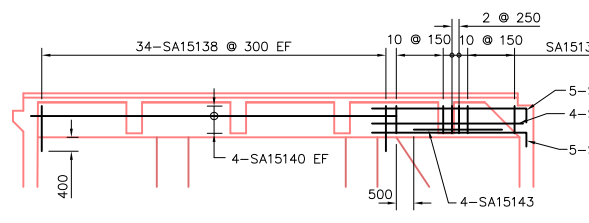
REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

- 2-SA15134E UL TOP
- 2-SA15133E UL TOP
- 3-SA15132E UL TOP
- 3-SA15131E UL TOP
- 3-SA15130E UL TOP
- 3-SA15129E UL TOP
- 2-SA2017 LL BOT
- 2-SA2016 LL BOT
- 3-SA2015 LL BOT
- 3-SA2014 LL BOT
- 3-SA2013 LL BOT
- 3-SA2012 LL BOT

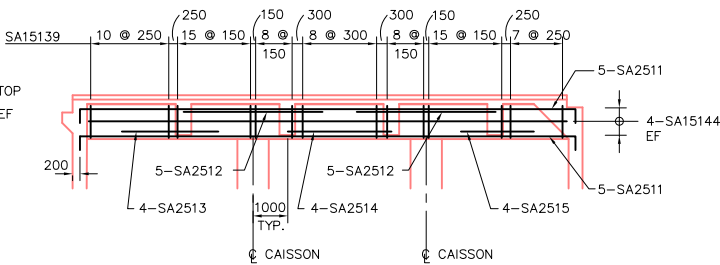
- 1-SA15128E UL TOP
- 1-SA15127E UL TOP
- 1-SA15126E UL TOP
- 1-SA15125E UL TOP
- 1-SA15124E UL TOP
- 1-SA15123E UL TOP
- 1-SA2017 LL BOT
- 1-SA2016 LL BOT
- 1-SA2015 LL BOT
- 1-SA2014 LL BOT
- 1-SA2013 LL BOT
- 1-SA2012 LL BOT



ELEVATION OF BEAM SAB01 LOOKING NORTH
SCALE 1:100 (4 REQUIRED)



ELEVATION OF BEAM SAB02 LOOKING WEST OVER EXISTING ABUTMENT WEST WALL
SCALE 1:100 (1 REQUIRED)



ELEVATION OF BEAM SAB02 LOOKING WEST OVER CAISSONS (C3)
SCALE 1:100 (1 REQUIRED)

LIST OF ABBREVIATIONS

IF	IN FACE
EF	EACH FACE
BW	BOTH WAYS
EQ SP	EQUALLY SPACED
ALT	ALTERNATING
NF	NEAR FACE
FF	FAR FACE
@	AT
C/C	CENTER TO CENTER
BTWN	BETWEEN
HORIZ	HORIZONTAL
VERT	VERTICAL
UL	UPPER LIFT
LL	LOWER LIFT

LOCATION APPROVED UNDERGROUND STRUCTURES

SURV. U/G STRUCTURES	DATE	COMMITTEE

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.			

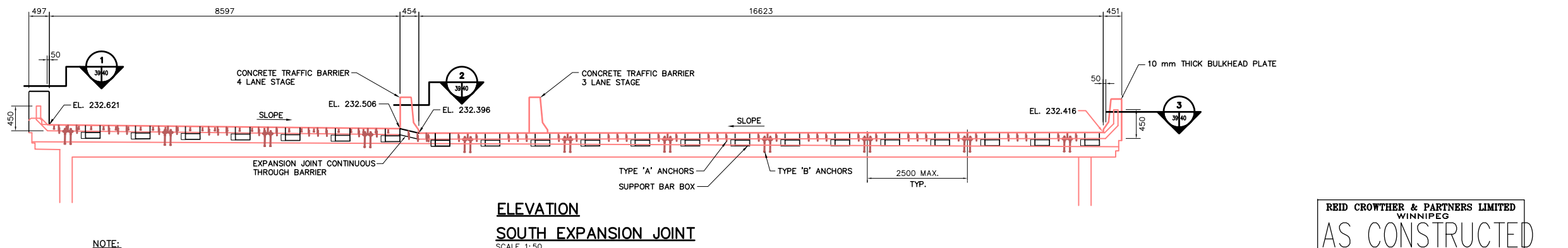
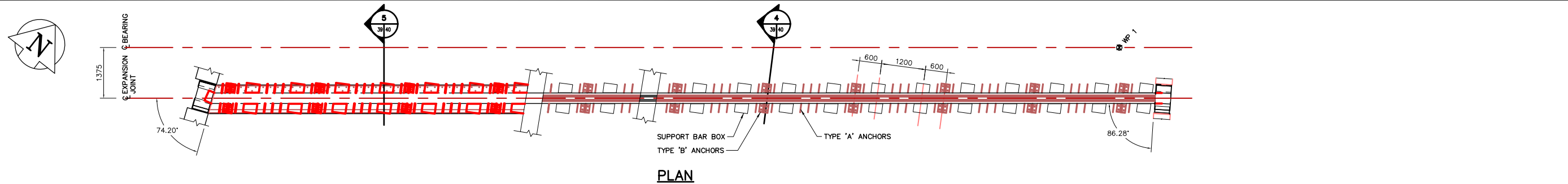
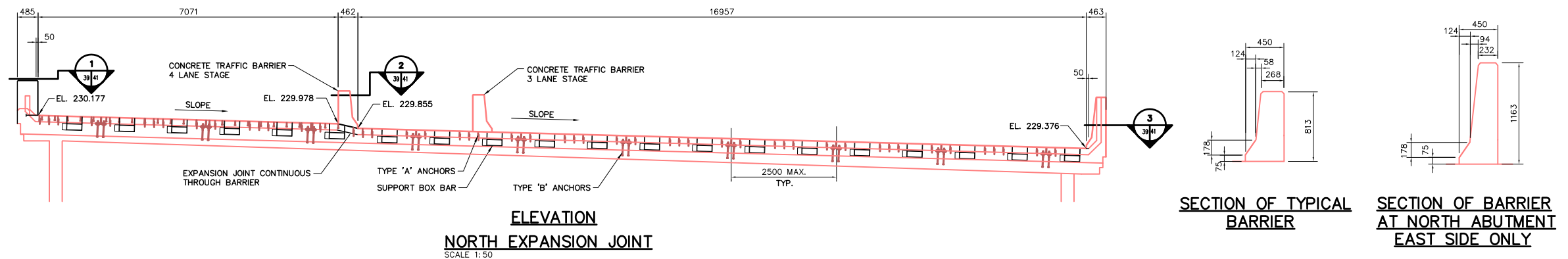
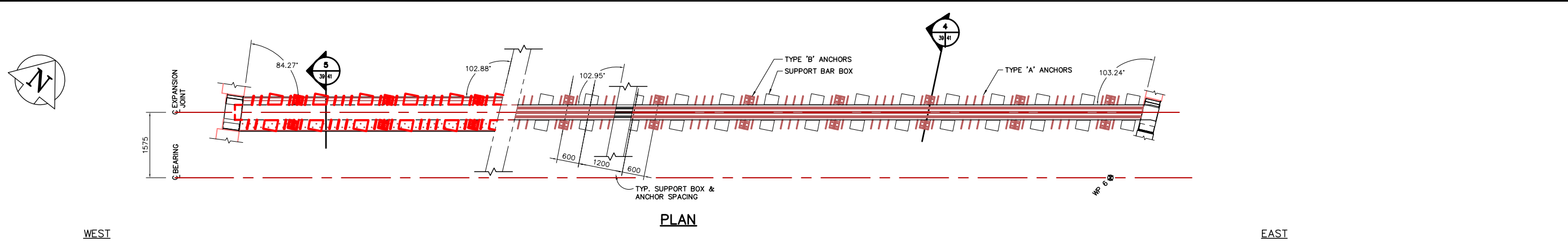
Reid Crowther
Reid Crowther & Partners Ltd
Engineers Planners Scientists

DESIGNED BY: KAA
CHECKED BY: KAA
DRAWN BY: KAA
APPROVED BY: KAA
HOR. SCALE: AS NOTED
VERTICAL: AS NOTED
AUTHORIZED BY: DATE: 01/02/97
P. PLAZA / PROJECT MANAGER

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY D.C.
MacFARLANE
REGISTERED PROFESSIONAL ENGINEER
09/05/97

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS
SOUTH ABUTMENT REINFORCING
SHEET 2 OF 3

CITY DRAWING NUMBER B103-98-37
SHEET 37 OF
REV-3



NOTE:
ALL DIMENSIONS AND ELEVATIONS ARE ALONG C OF EXPANSION JOINT

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

LOCATION APPROVED UNDERGROUND STRUCTURES		B.M.	ELEV.
SURV. U/G STRUCTURES	DATE		
COMMITTEE			
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
3	AS-CONSTRUCTED	14/10/99	KAA
2	REV'D EXPANSION JT. DIMS. & EL.	05/21/97	C.T.
1	ISSUED FOR CONSTRUCTION	02/03/97	C.T.
0	ISSUED FOR REVIEW	01/06/97	C.T.

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: []
CHECKED BY: []
DRAWN BY: C.T.
APPROVED BY: []
AUTHORIZED BY: [] DATE: []

HOR. SCALE: AS NOTED
VERTICAL: AS NOTED

DATE: 11/25/96
P. PLAZA / PROJECT MANAGER

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
D.C. MacFARLANE
21/05/97
REGISTERED PROFESSIONAL ENGINEER

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

CITY DRAWING NUMBER: B103-98-39
SHEET 39 OF []

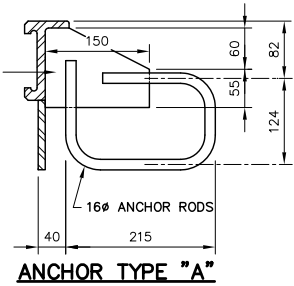
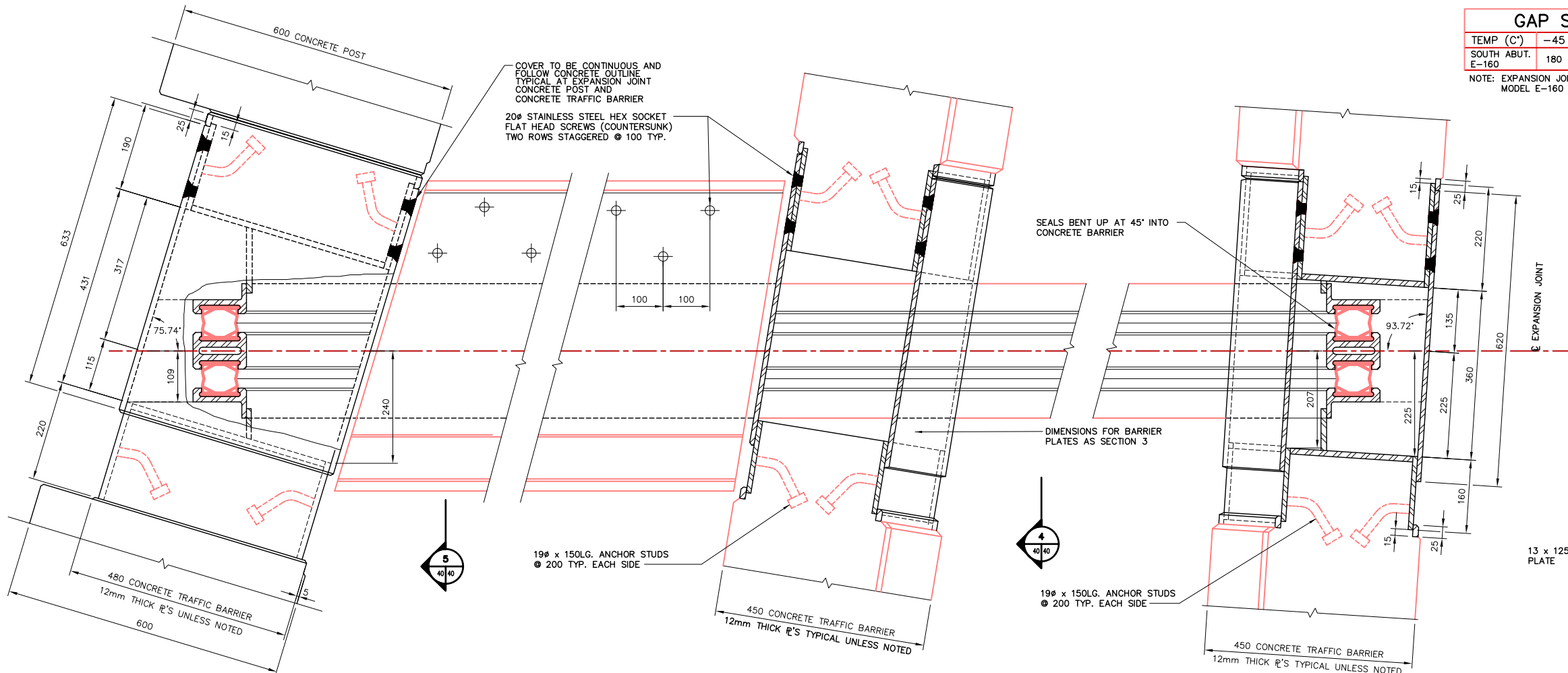
EXPANSION JOINTS
SHEET 1 OF 3

REV-3

GAP SETTING TABLE (DIM'N. "J")

TEMP (C°)	-45	-35	-25	-15	-5	+5	+15	+25	+35
SOUTH ABUT. E-160	180	170	161	153	145	137	129	122	114

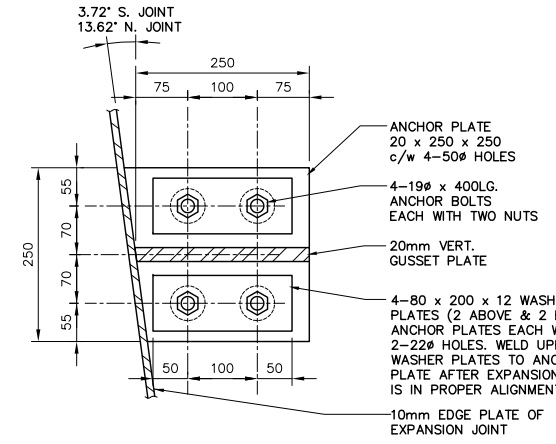
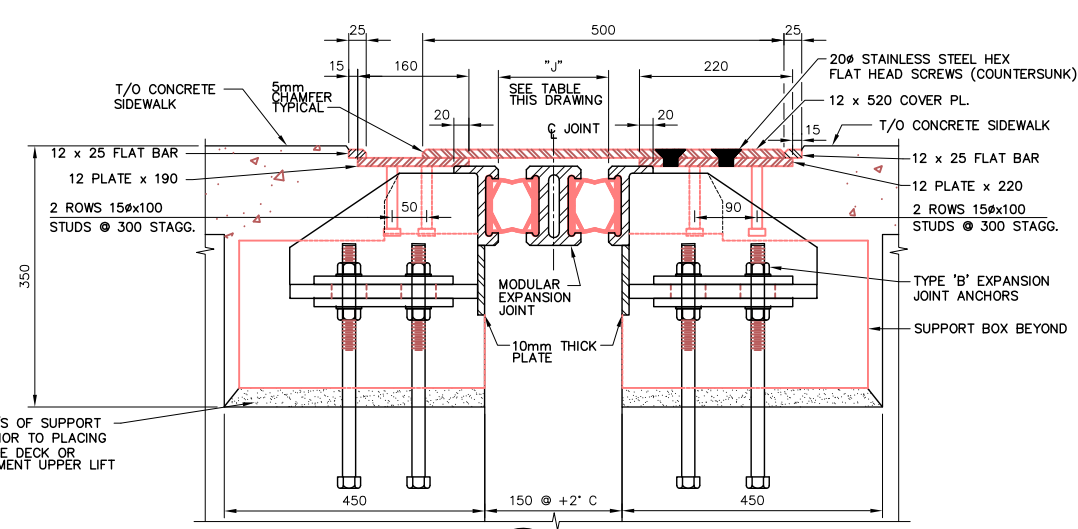
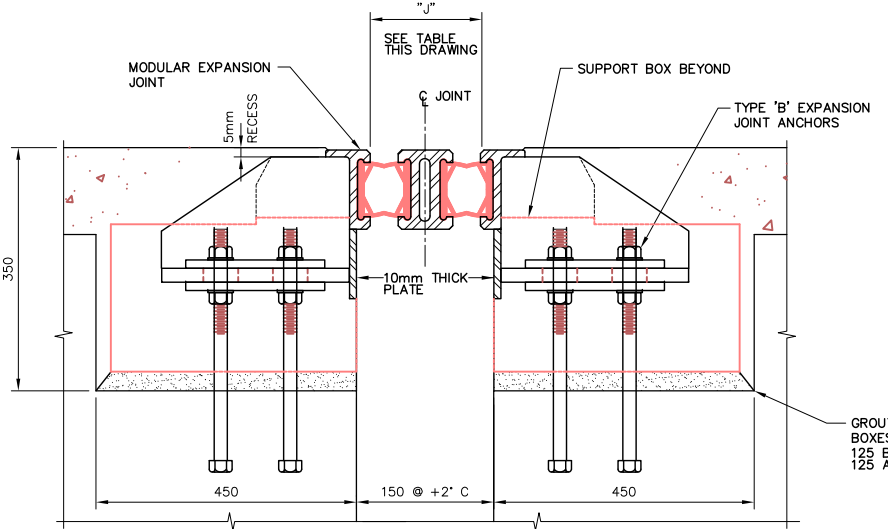
NOTE: EXPANSION JOINT SHOWN IS A WABO BOX SEAL MODULAR JOINT SYSTEM MODEL E-160 BY WATSON BOWMAN ACME INC.



1 PLAN/SECTION
SCALE 1:5

2 PLAN/SECTION
SCALE 1:5

3 PLAN/SECTION
SCALE 1:5



4 SECTION
SCALE 1:5

5 SECTION
SCALE 1:5

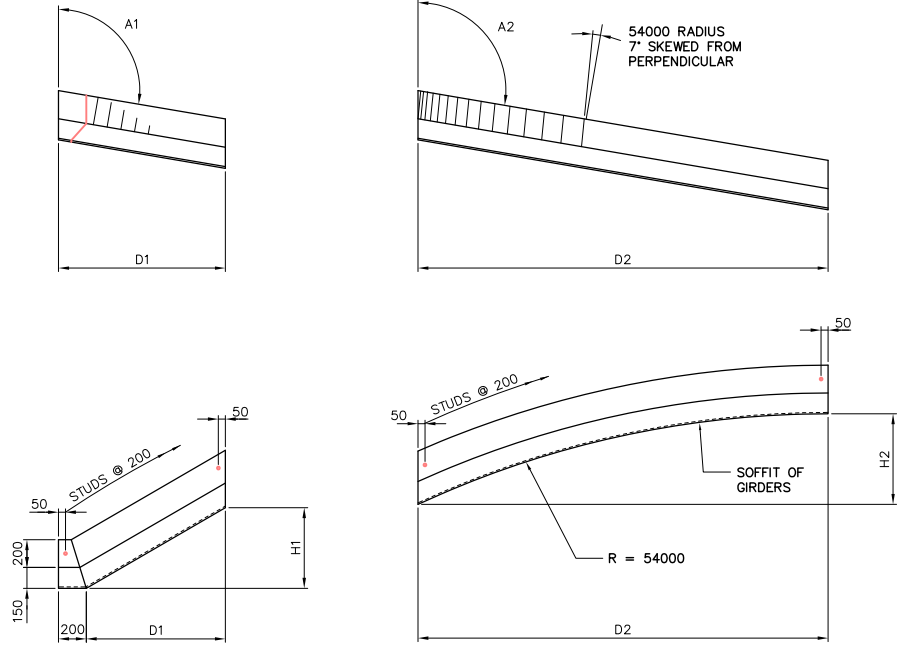
ANCHOR TYPE "B"
REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

LOCATION APPROVED UNDERGROUND STRUCTURES		B.M. ELEV.
SURV. U/G STRUCTURES	DATE	
COMMITTEE		
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.		
2	AS-CONSTRUCTED	14/10/99 KAA
1	ISSUED FOR CONSTRUCTION	02/03/97 C.T.
0	ISSUED FOR REVIEW	01/06/97 C.T.
NO.	REVISIONS	DATE BY

Reid Crowther Reid Crowther & Partners Ltd Engineers Planners Scientists		ENGINEER'S SEAL PROVINCE OF MANITOBA ORIGINAL SIGNED BY D.C. MacFARLANE 03/02/97 REGISTERED PROFESSIONAL ENGINEER	
DESIGNED BY	CHECKED BY	APPROVED BY	AUTHORIZED BY
DRAWN BY	C.T.		
HOR. SCALE:	AS NOTED		
VERTICAL:			
DATE	12/02/96		
CONSULTANT DRAWING NO. 61440-18-40		CITY DRAWING NUMBER B103-98-40	

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS
EXPANSION JOINTS
SHEET 2 OF 3

CITY DRAWING NUMBER
B103-98-40
SHEET 40 OF
REV-2



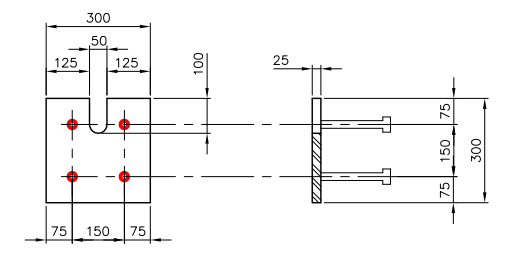
S42-A	PIER 4 SOUTH	PIER 4 NORTH	NORTH ABUTMENT
A1	99.67	99.67	102.06
D1	1888	1786	550
H1	640	447	153

MK. S42-A
HIGH ICE PROTECTION PLATE

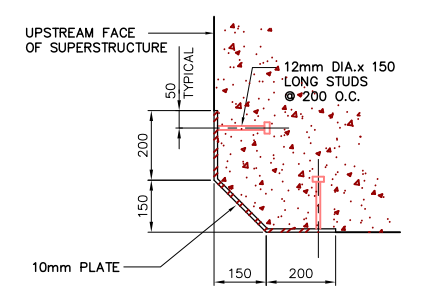
S42-B	PIER 4 SOUTH	PIER 4 NORTH	NORTH ABUTMENT
A2	99.67	102.06	102.06
D2	2062	2164	3400
H2	610	454	804

MK. S42-B
HIGH ICE PROTECTION PLATE

* OPPOSITE HAND



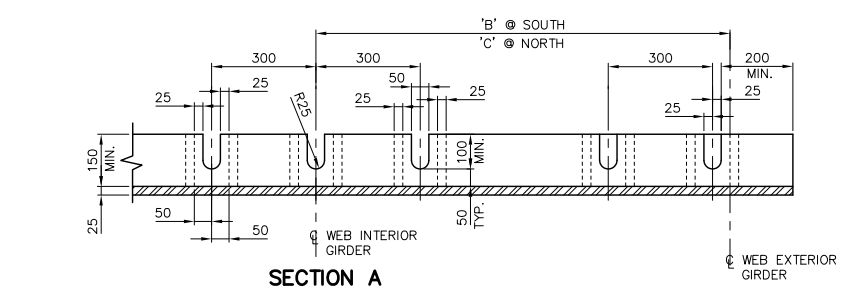
MK. S42-C
DYWIDAG SUPPORT PLATE



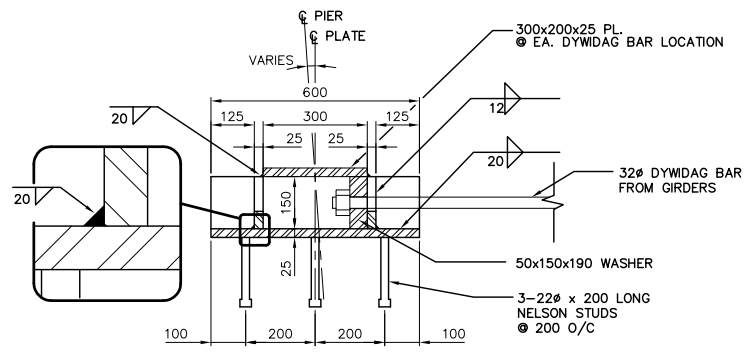
TYPICAL SECTION S42-A & S42-B

	PIER 1	PIER 2	PIER 3	PIER 4
A1	3.76	4.64	7.09	9.67
A2	4.64	7.09	9.67	12.06
A3	3.98	4.86	7.37	9.67
A4	4.33	6.16	9.39	12.06
B	1250	1251	1257	1265
C	1251	1257	1265	1275
D1	-6	38	23	24
D2	-7	32	14	13
D3	-9	27	6	3
D4	-10	21	-2	-7
D5	-12	16	-11	-17
D6	-13	11	-19	-27
D7	-15	5	-27	-37
D8	-16	0	-36	-47
D9	-17	-6	-44	-58
D10	-19	-11	-53	-68
D11	-20	-17	-61	-78
D12	-22	-22	-69	-88
D13	-23	-27	-78	-98
D14	-25	-33	-86	-108
D15	-26	-38	-94	-118
D16	-28	-44	-103	-129
D17	-29	-49	-111	-139
L1	20370	20449	20579	20739
L2	20370	20456	20590	20752
L3	20370	20452	20584	20746
W	935	959	971	981

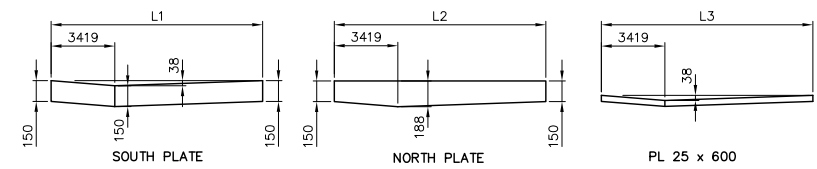
NOTE:
WHEN 'D' IS INDICATED IN THE NEGATIVE, THE NORTH G GIRDER IS EAST OF THE SOUTH G GIRDER
DYWIDAG SUPPORT PLATE TO BE SHIPPED IN TWO PIECES. FABRICATOR TO SUPPLY BACKER PLATE & PREPARE ENDS OF PLATES AS REQUIRED FOR FULL PENETRATION FIELD WELD.



SECTION A

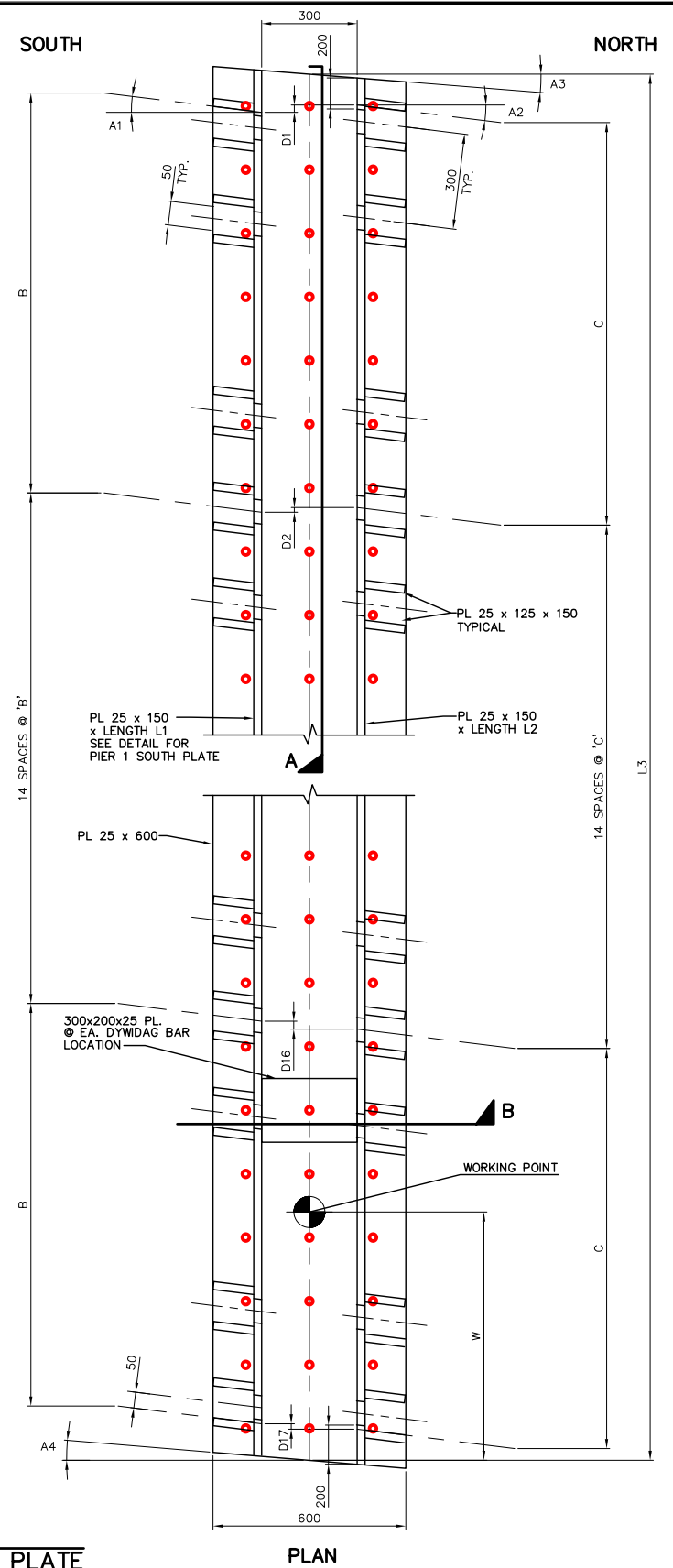


SECTION B



DETAIL FOR PIER 1 ONLY

MK. S42-D
DYWIDAG SUPPORT PLATE



PLAN

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

NOTE:
ALL MATERIAL TO BE GALVANIZED UNLESS NOTED OTHERWISE

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

NO.	REVISIONS	DATE	BY
3	AS-CONSTRUCTED	14/10/99	KAA
2	REVISED L1, L2, L3 & W	05/23/97	KAA
1	ISSUED FOR CONSTRUCTION	04/08/97	C.T.
0	ISSUED FOR REVIEW	03/04/97	KAA

DESIGNED BY	CHECKED BY
DRAWN BY	APPROVED BY
HOR. SCALE:	AUTHORIZED BY
VERTICAL:	DATE
AS NOTED	DATE
01/03/97	DATE

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
C. P. GRAY
26/05/99
REGISTERED PROFESSIONAL ENGINEER

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

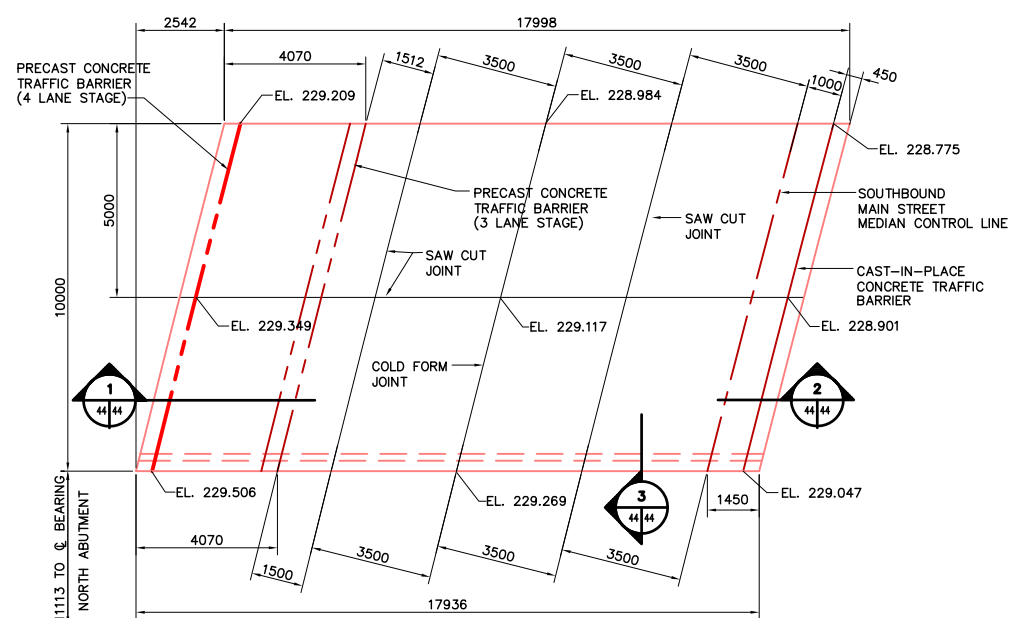
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

MISCELLANEOUS METAL
SHEET 3

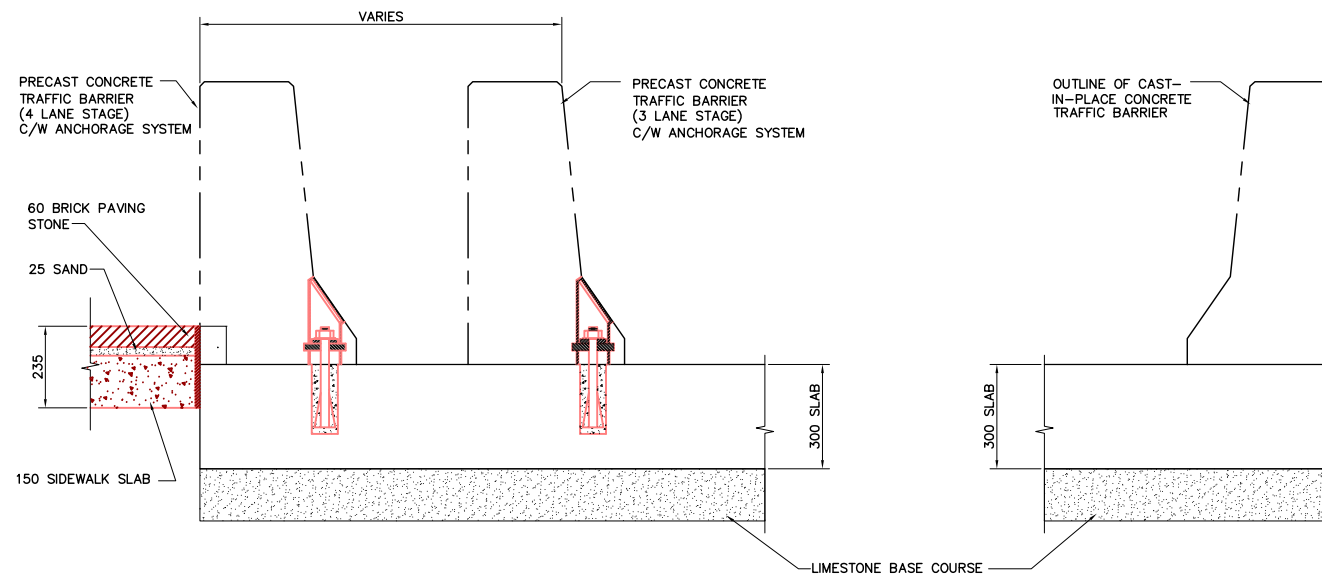
CITY DRAWING NUMBER
B103-98-42
SHEET 42 OF

CONSULTANT DRAWING NO.
61440-18-42

REV-3

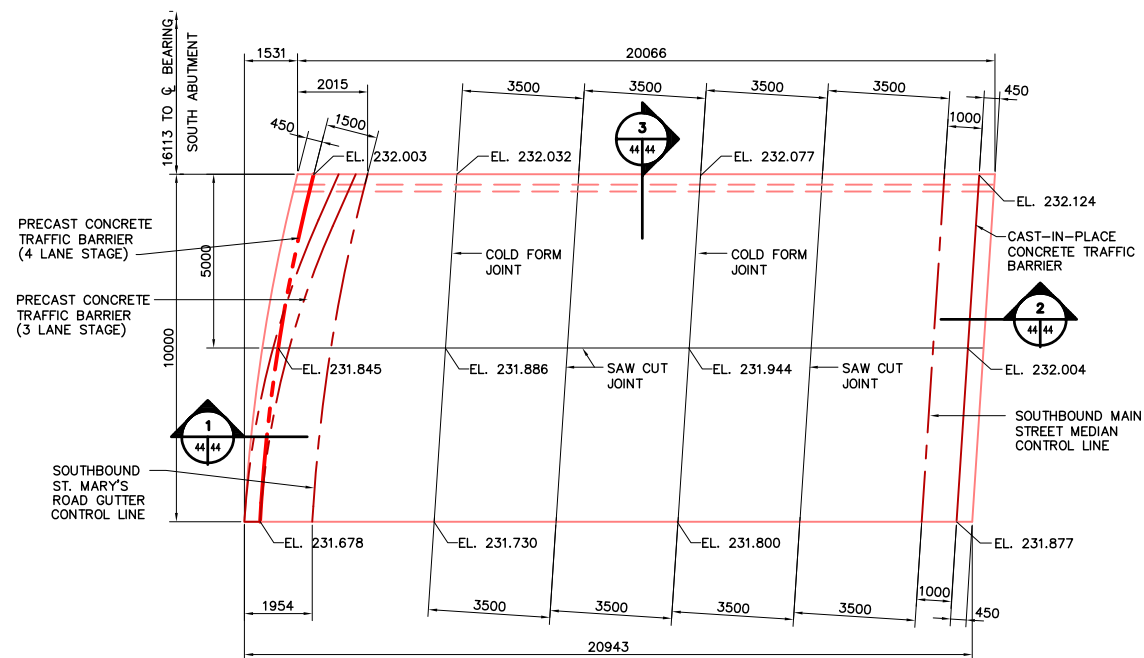
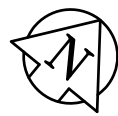


PLAN - NORTH APPROACH SLAB
SCALE 1:100

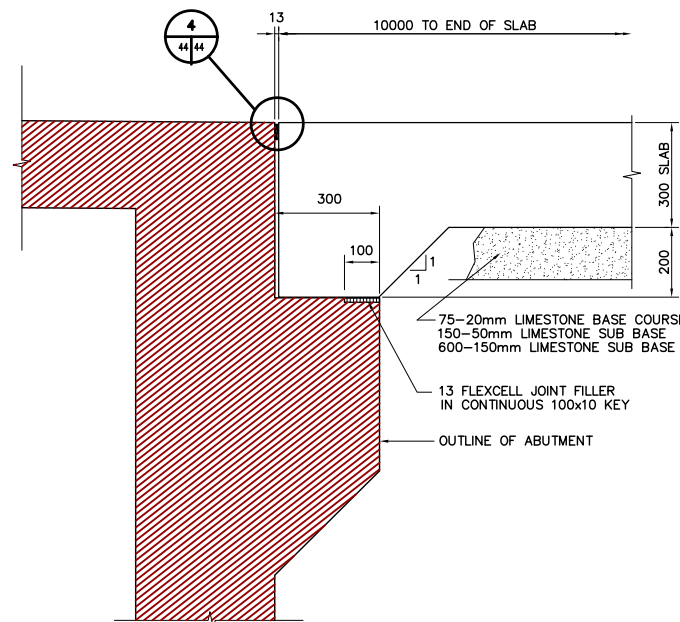


1 SECTION
SCALE 1:10

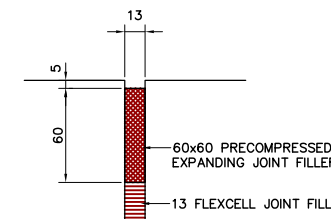
2 SECTION
SCALE 1:10



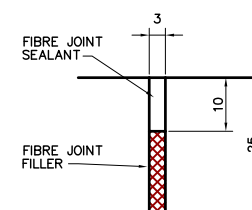
PLAN - SOUTH APPROACH SLAB
SCALE 1:100



3 SECTION
SCALE 1:10



4 DETAIL
SCALE 1:2.5



SAWCUT DETAIL
SCALE N.T.S.



REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

LOCATION APPROVED UNDERGROUND STRUCTURES

SURV. U/G STRUCTURES DATE COMMITTEE

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
3	AS-CONSTRUCTED	14/10/99	KAA
2	REVISED APPROACH DIMENSIONS	07/08/97	KAA
1	ISSUED FOR CONSTRUCTION	02/03/97	C.T.
0	ISSUED FOR REVIEW	01/06/97	C.T.

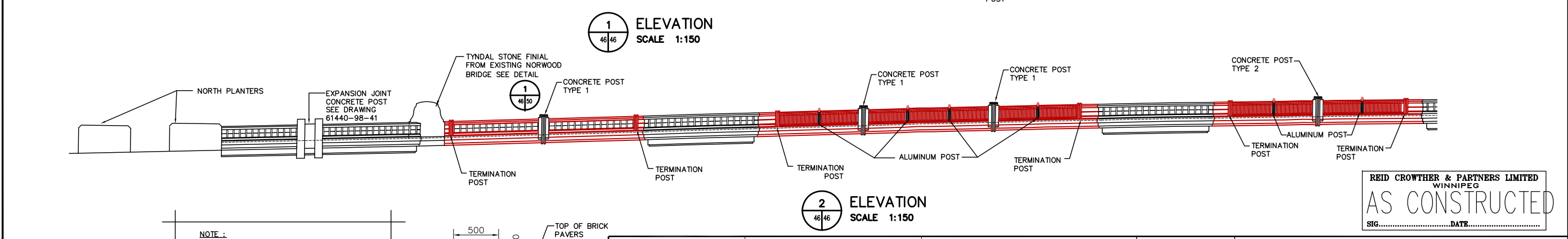
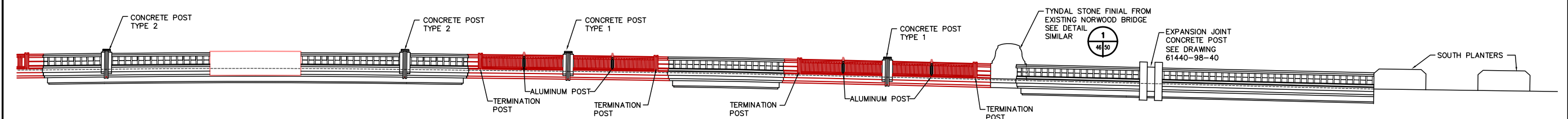
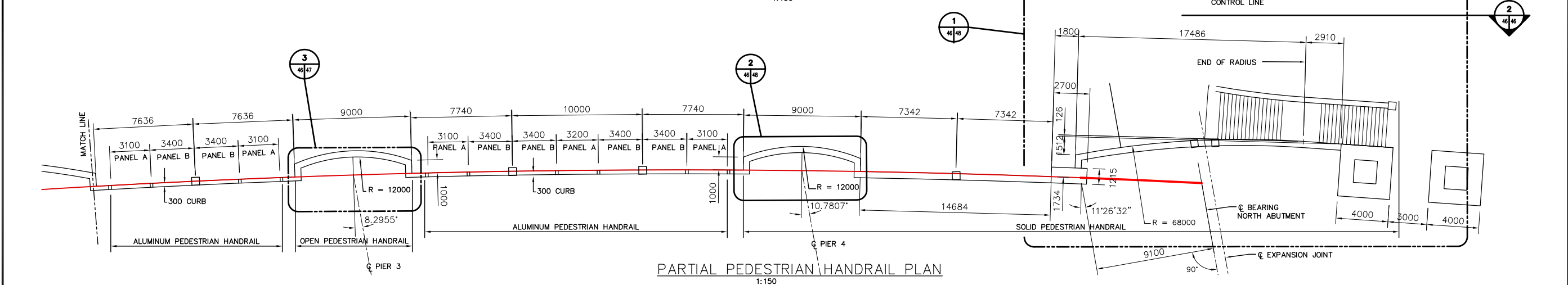
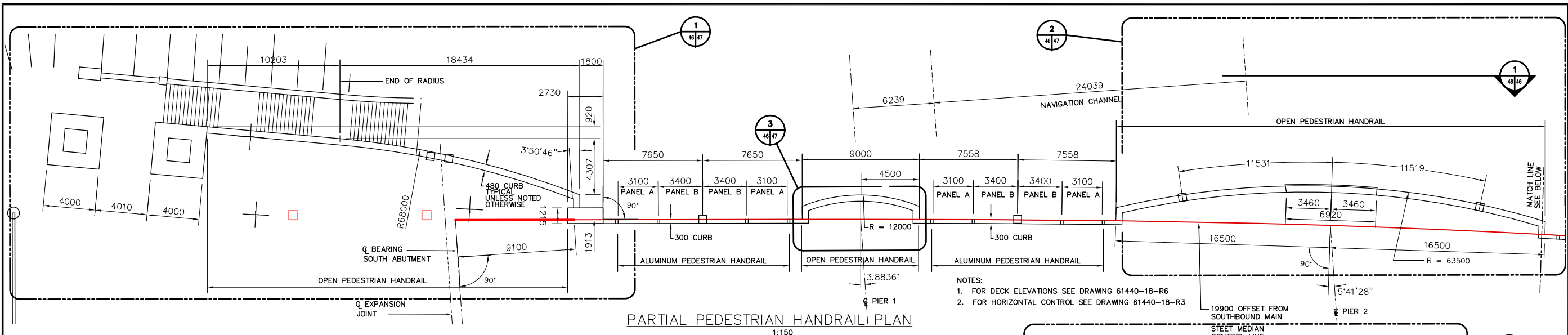
Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: T.P.
CHECKED BY:
DRAWN BY: T.P.
APPROVED BY:
AUTHORIZED BY: DATE:
HOR. SCALE: AS NOTED
VERTICAL: AS NOTED
P. PLAZA / PROJECT-MANAGER

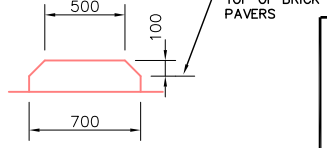
ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
D.C.
MacFARLANE
REGISTERED PROFESSIONAL ENGINEER
08/07/97
CONSULTANT DRAWING NO.
61440-18-44

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS
CITY DRAWING NUMBER
B103-98-44
SHEET 44 OF
APPROACH SLABS
CONCRETE DETAILS
REV-3

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES



NOTE:
ALL POSTS, PICKETS, BALLUSTRADES, PANELS,
ETC. TO BE CONSTRUCTED/ERECTED VERTICAL



METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES

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	AS-CONSTRUCTED	14/10/99	KA
1	ISSUED FOR CONSTRUCTION	02/03/97	C.T.
0	ISSUED FOR REVIEW	12/06/96	VSW

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY	CHECKED BY
DRAWN BY VSW	APPROVED BY
HOR. SCALE:	AUTHORIZED BY
VERTICAL: AS NOTED	DATE
DATE 11/28/96	P. PLATA / PROJECT MANAGER

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
G.A. WEBSTER
04/02/97
REGISTERED PROFESSIONAL ENGINEER

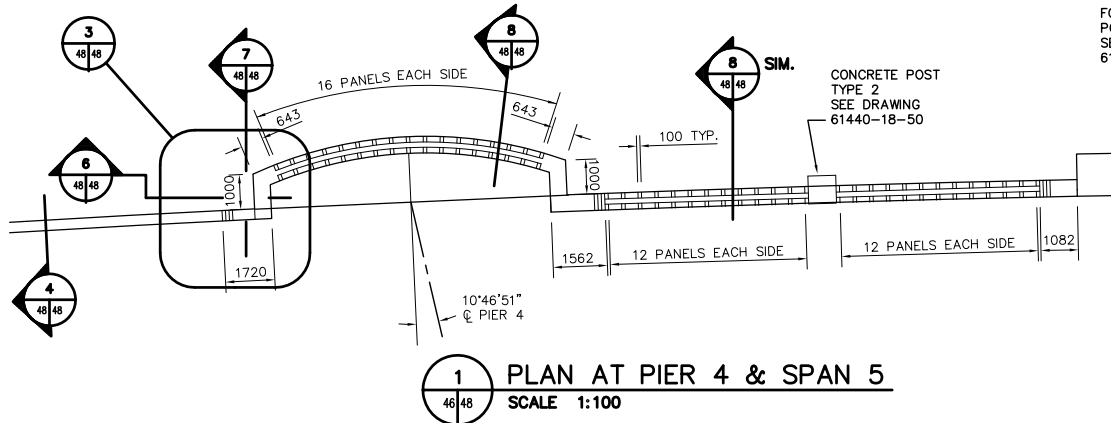
THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

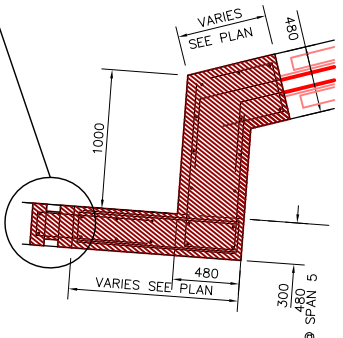
PEDESTRIAN HANDRAIL LAYOUT

CITY DRAWING NUMBER
B103-98-46
SHEET 46 OF
REV-2

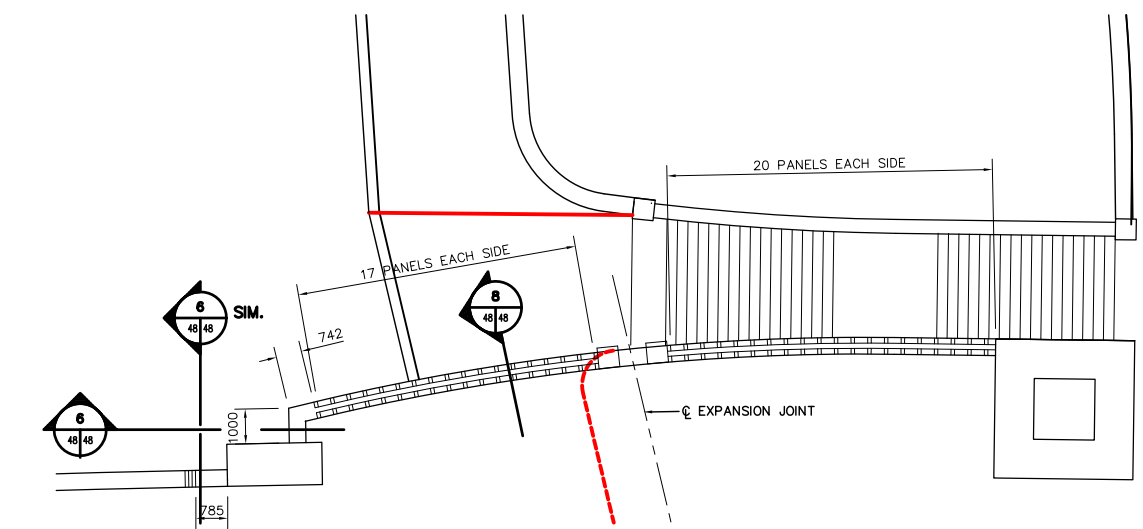
REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....



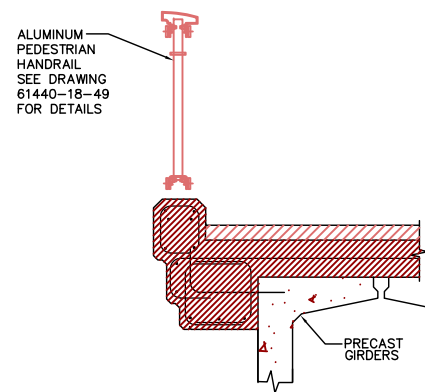
1 PLAN AT PIER 4 & SPAN 5
SCALE 1:100



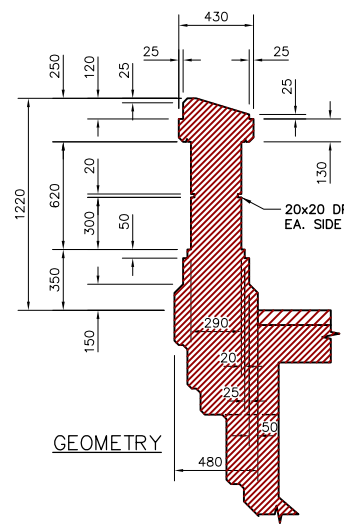
3 PLAN - DETAIL
SCALE 1:25



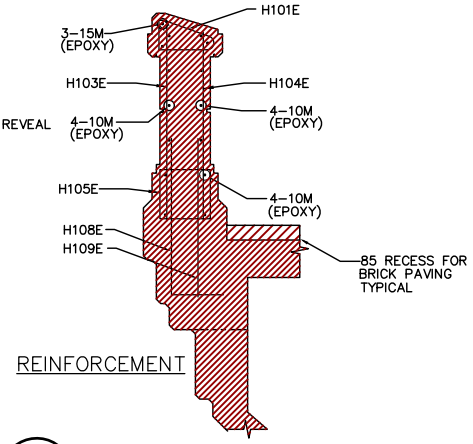
2 PLAN AT NORTH ABUTMENT
SCALE 1:100



4 SECTION
SCALE 1:20

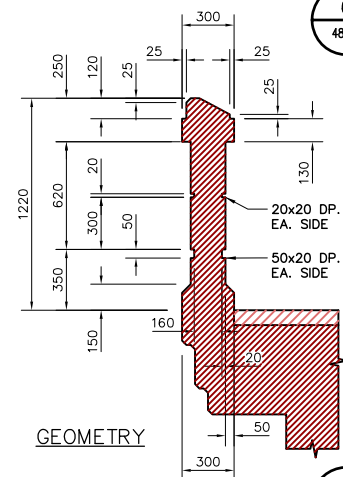


GEOMETRY

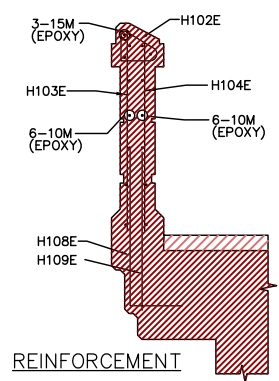


REINFORCEMENT

6 SECTION
SCALE 1:20

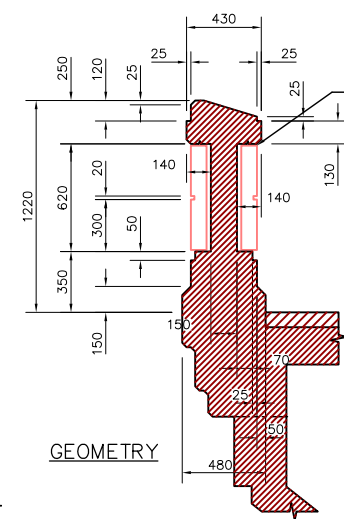


GEOMETRY

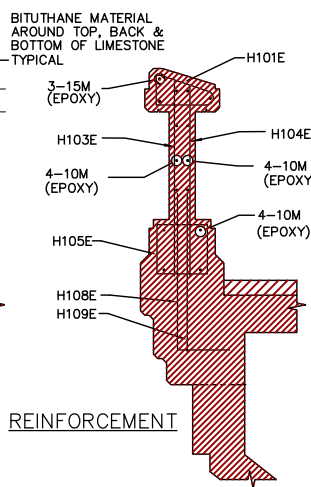


REINFORCEMENT

7 SECTION
SCALE 1:20



GEOMETRY

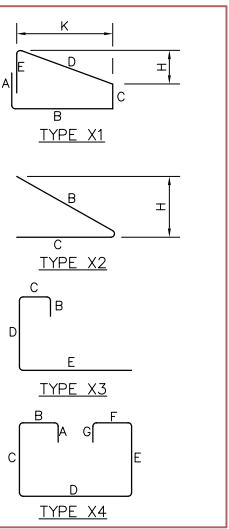


REINFORCEMENT

8 SECTION
SCALE 1:20

Marks	No. Bars	Size	Length	Type	A	B	C	D	E	F	G	H	J	K	L	M	S	O	Mass (kg)
H101E	632	10	1095	X1	175	325	80	340	175					99				325	543
H102E	57	10	856	X1	180	195	80	221	180					104				195	38
H103E	326	10	990	STR															253
H104E	326	10	870	STR															223
H105E	632	10	1400	T2	180	300	220	300	220		180								695
H106E	363	10	1000	T2															285
H107E	1535	10	750	T2															904
H108E	326	10	950	T2															243
H109E	326	10	750	STR															192
H1010E	150	10	1110	T2	400	200	150	400				155							131
H1011E	70	10	1200	T2															66
H1012E	140	10	2200	T2															242
H1013E	70	10	2580	T2															142
H1014E	140	10	1500	T2															165
H1015E	70	10	1280	T2															70
H1016E	27	10	1185	T2	180	375	100	375	100					180					25
H1017E	35	10	900	T2	100	250	100	250	100					100					25
H1018E	35	10	630	X2														95	17
H1019E	20	10	1429	T2	180	200	330	200	330					180					22
H1020E	32	10	2020	STR															51
H1021E	48	10	1545	STR															58
H1022E	64	10	1645	STR															83
H1023E	24	10	1300	T2		800	500												25
H1024E	176	10	650	STR															90
H1025E	72	10	2280	X4	180	250	350	700	350	250	180								128
H1026E	72	10	2280	T2	180	450	500	450	500		180								128
H1027E	24	10	2200	STR															41
H1028E	48	10	800	T2	100	200	100	200	100					100					30
H1029E	12	10	1160	T2	100	200	280	200	280					100					11
H1030E	40	10	1770	T2															56
10M EPOXY	-	10	936000	STR															735
H151E	35	15	2245	T2		500	1745												123
H152E	23	15	910	STR															33
H153E	23	15	1595	T2															58
H154E	32	15	1155	X3										80	165	375	600		58
H155E	32	15	1220	T2															61
H156E	9	15	2200	STR															31
15M EPOXY	-	15	306000	STR															480
H201E	572	20	1310	T2		310	1000												1765
Total																			8326

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES



REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

5 DETAIL
SCALE 1:20

NOTE: REINFORCING AT 200 O.C. TYPICAL

LOCATION APPROVED UNDERGROUND STRUCTURES

SURV. U/G STRUCTURES	DATE	B.M. ELEV.

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

DESIGNED BY Reid Crowther	CHECKED BY R. B. SENAPANER / SENIOR BRIDGE ENGINEER
DRAWN BY KAA	APPROVED BY P. BLAZA / PROJECT MANAGER
HOR. SCALE: VERTICAL: AS NOTED	AUTHORIZED BY DATE
14/10/99 KAA	04/02/97
2 AS-CONSTRUCTED	12/2/96
1 ISSUED FOR CONSTRUCTION	02/03/97 C.T.
0 ISSUED FOR REVIEW	12/13/96 VSW

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
G.A. WEBSTER
REGISTERED PROFESSIONAL ENGINEER

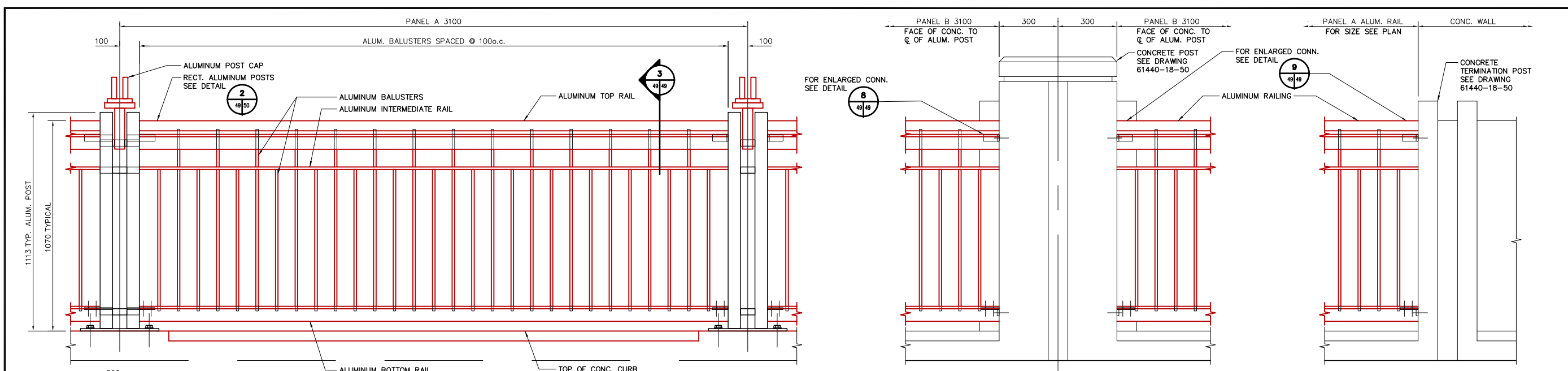
THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

CITY DRAWING NUMBER
B103-98-48
SHEET 48 OF

CONSULTANT DRAWING NO.
61440-18-48

SOLID PEDESTRIAN HANDRAIL
LAYOUT & DETAILS

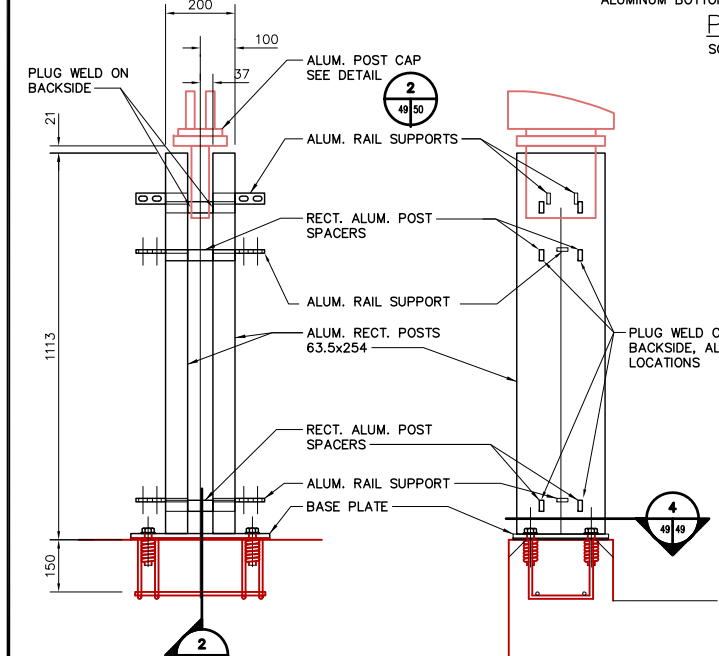
REV-2



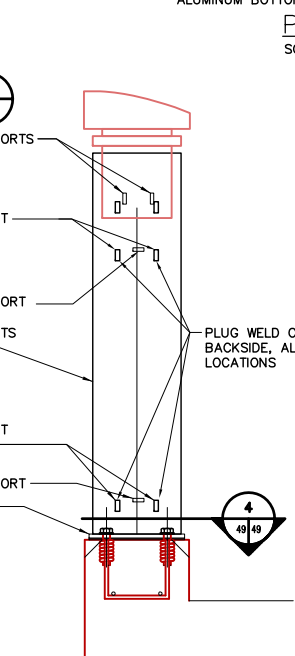
PANEL ELEVATION
SCALE: 1:10

PANEL ELEVATION AT CONCRETE POST
SCALE: 1:10

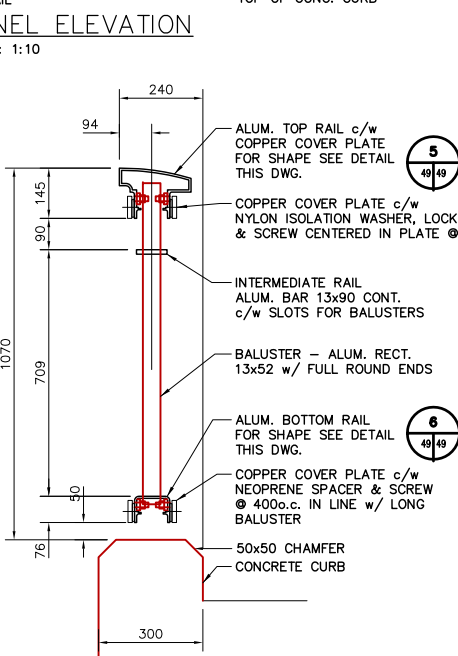
PANEL ELEVATION AT CONCRETE WALL
SCALE: 1:10



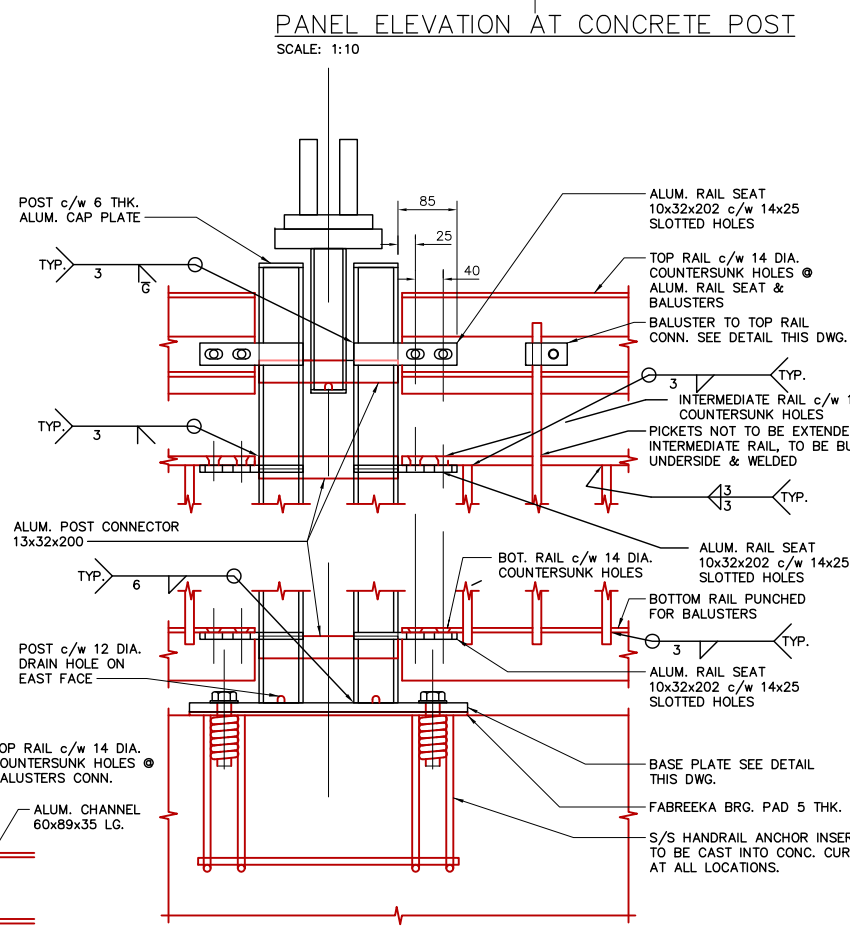
1 DETAIL
SCALE 1:10



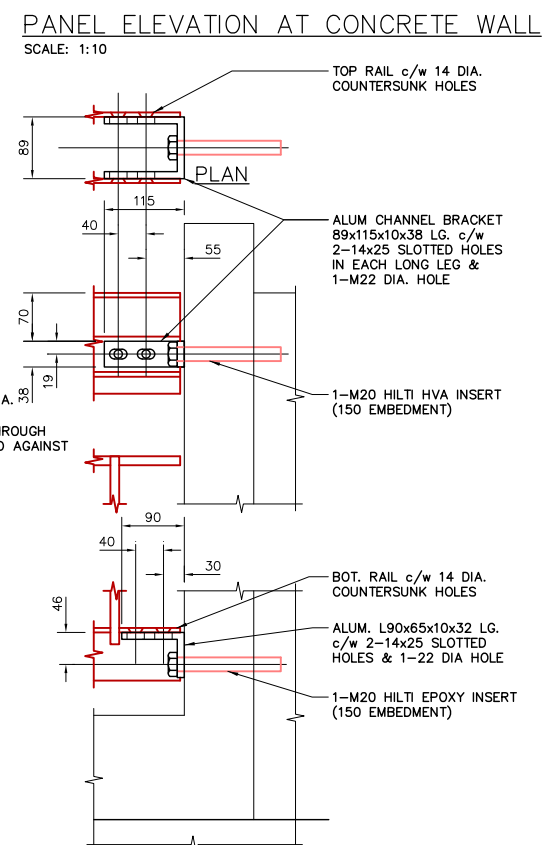
2 SECTION
SCALE 1:10



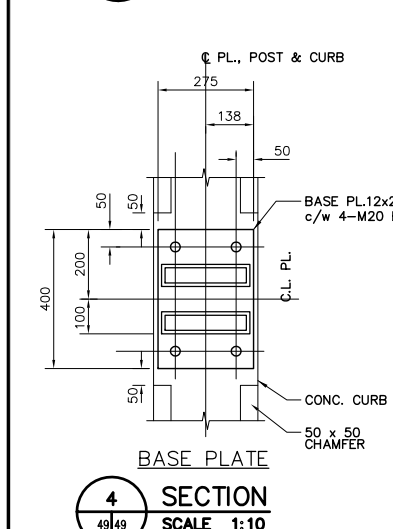
3 SECTION
SCALE 1:10



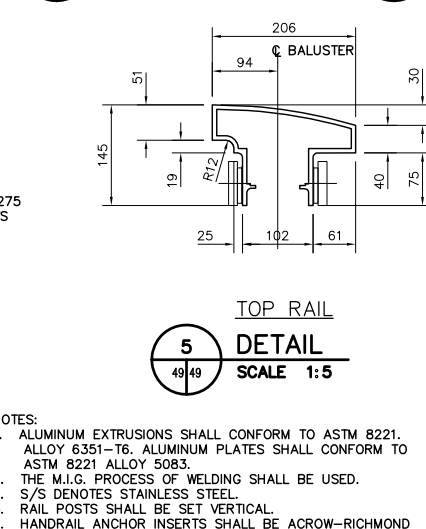
ENLARGED DETAIL OF RAILING TO ALUMINUM POST CONNECTIONS



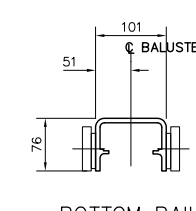
ENLARGED DETAIL OF RAILING TO CONCRETE TERMINATION WALL CONNECTIONS



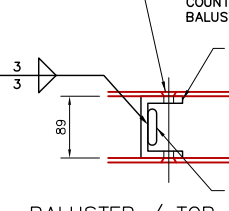
4 SECTION
SCALE 1:10



5 DETAIL
SCALE 1:5



6 DETAIL
SCALE 1:5



7 DETAIL
SCALE 1:5

8 DETAIL
SCALE 1:5

9 DETAIL
SCALE 1:5

- NOTES:**
- ALUMINUM EXTRUSIONS SHALL CONFORM TO ASTM 8221. ALLOY 6351-T6. ALUMINUM PLATES SHALL CONFORM TO ASTM 8221 ALLOY 5083.
 - THE M.I.G. PROCESS OF WELDING SHALL BE USED.
 - S/S DENOTES STAINLESS STEEL.
 - RAIL POSTS SHALL BE SET VERTICAL.
 - HANDRAIL ANCHOR INSERTS SHALL BE ACROW-RICHMOND TYPE DGR-1.

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES

SURV. U/G STRUCTURES	DATE	COMMITTEE

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.

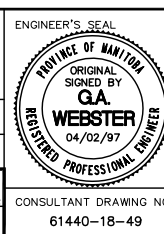
NO.	REVISIONS	DATE	BY
2	AS-CONSTRUCTED	14/10/99	KAA
1	ISSUED FOR CONSTRUCTION	02/03/97	C.T.
0	ISSUED FOR REVIEW	12/11/96	C.T.

Reid Crowther
Reid Crowther & Partners Ltd
Engineers Planners Scientists

DESIGNED BY: []
DRAWN BY: DMR
CHECKED BY: []
APPROVED BY: []
AUTHORIZED BY: [] DATE: []

HOR. SCALE: AS NOTED
VERTICAL: AS NOTED

DATE: 12/03/96



THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

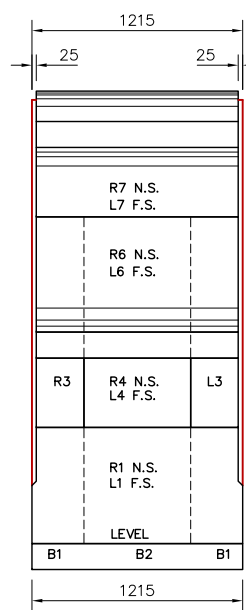
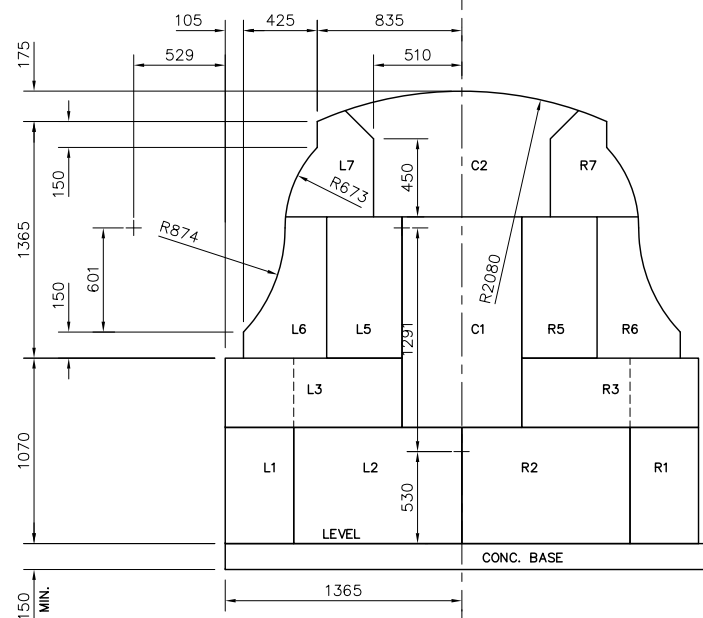
ALUMINUM PEDESTRIAN HANDRAIL
DETAILS

CITY DRAWING NUMBER: B103-98-49
SHEET 49 OF []

CONSULTANT DRAWING NO. 61440-18-49

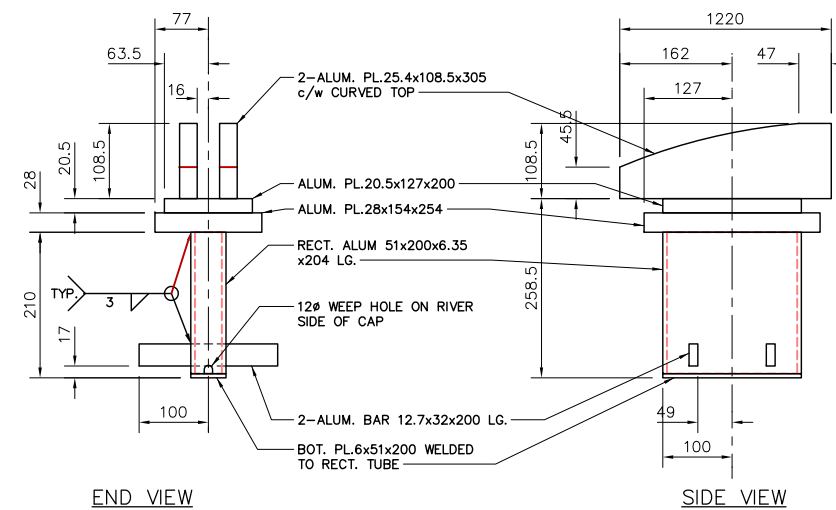
REV-2

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG. _____ DATE: _____

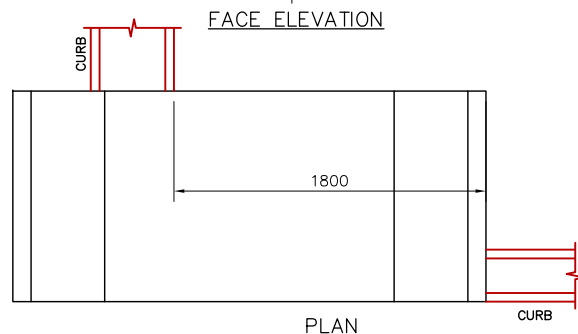


ORNAMENTAL LIMESTONE BLOCK SCHEDULE			
MARK	NO.	SIZE	REMARKS
R1	1	395Wx570Hx1215 LG.	
L1	1		
R2	2	970Wx570Hx300 LG.	
L2	2		
R3	2	1020Wx400Hx300 DP.	
L3	2		
R4	1	615Wx400Hx395 LG.	
L4	1		
R5	2	435Wx815Hx300 LG.	
L5	2		
R6	1	480Wx815Hx1215 LG.	1215 FACE CURVED
L6	1		
R7	1	510Wx±615Hx1215 LG.	1215 FACE & TOP CURVED
L7	1		
C1	2	690Wx±1215Hx300 DP.	TOP CURVED
C2	1	±1020Wx±725Hx1215 LG.	

NOTES:
1. ABOVE SCHEDULE DENOTES THE NUMBER OF LIMESTONE BLOCKS FOR 1 ASSEMBLY. THERE ARE 2 ASSEMBLIES REQUIRED.

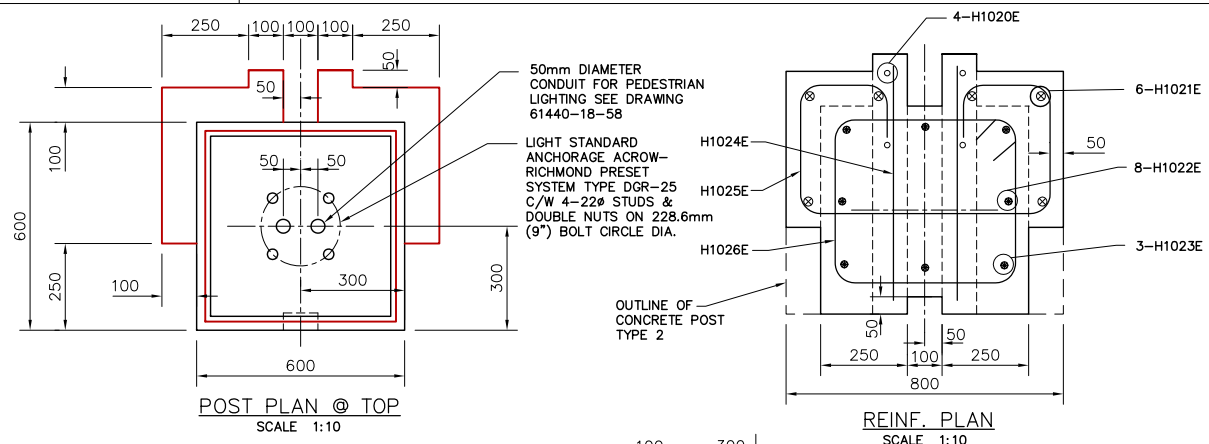


2 DETAIL OF ALUMINUM HANDRAIL POST TOP CAP
SCALE 1:5



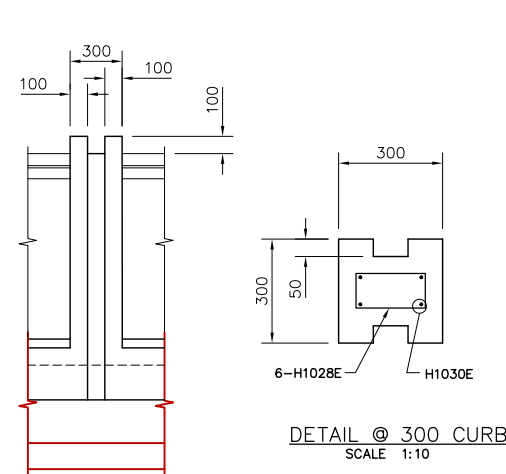
1 TYNDALL STONE FINIAL FROM EXISTING NORWOOD BRIDGE
SCALE 1:20

NOTE:
ORNAMENTAL BLOCK SHOWN, AT SOUTH ABUTMENT. BLOCK AT NORTH ABUTMENT OPPOSITE HAND.

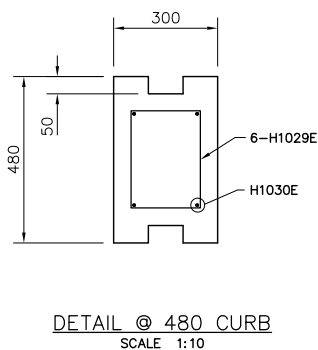


POST PLAN @ TOP
SCALE 1:10

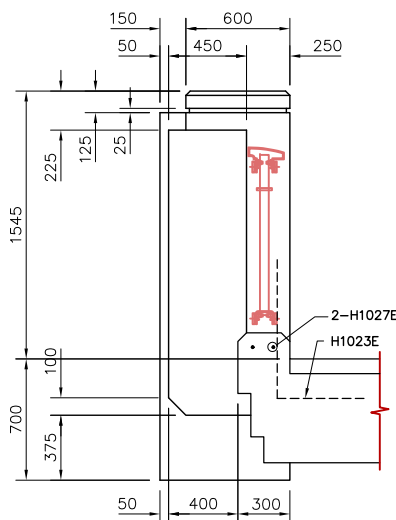
REINF. PLAN
SCALE 1:10



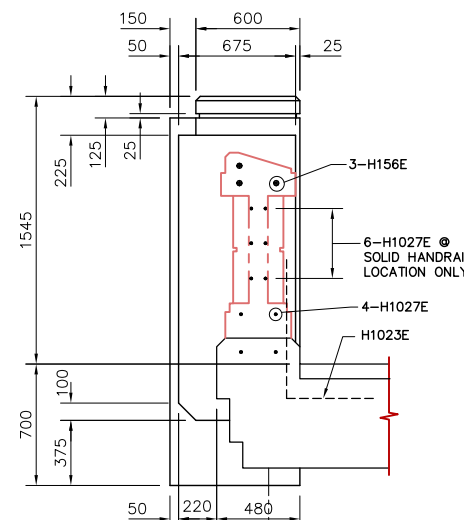
DETAIL @ 300 CURB
SCALE 1:10



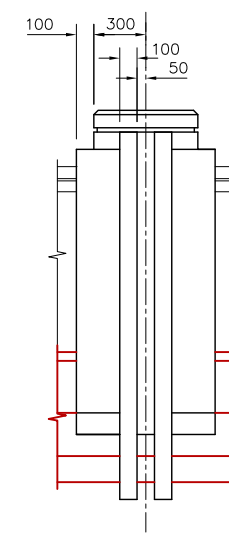
DETAIL @ 480 CURB
SCALE 1:10



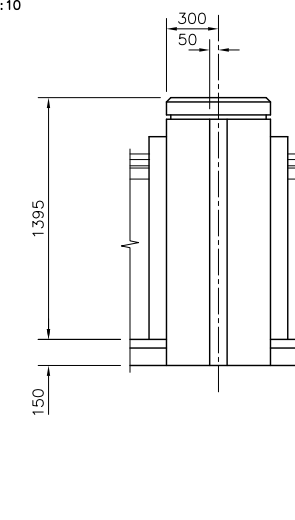
4 DETAIL OF CONCRETE POST TYPE 1
SCALE 1:20



5 DETAIL OF CONCRETE POST TYPE 2
SCALE 1:20



RIVER ELEVATION



PEDESTRIAN ELEVATION

3 TERMINATION POST
SCALE 1:20

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES COMMITTEE	DATE
2 AS-CONSTRUCTED	14/10/99 KAA
1 ISSUED FOR CONSTRUCTION	05/27/97 KAA
0 ISSUED FOR REVIEW	12/13/96 C.T.
NO. REVISIONS	DATE BY

B.M. ELEV.

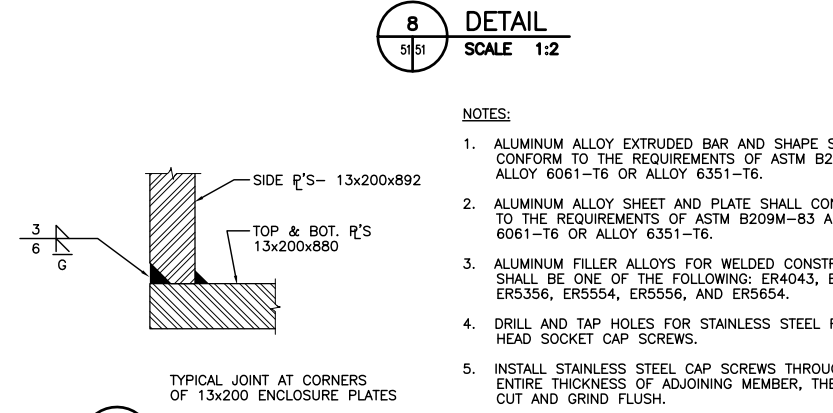
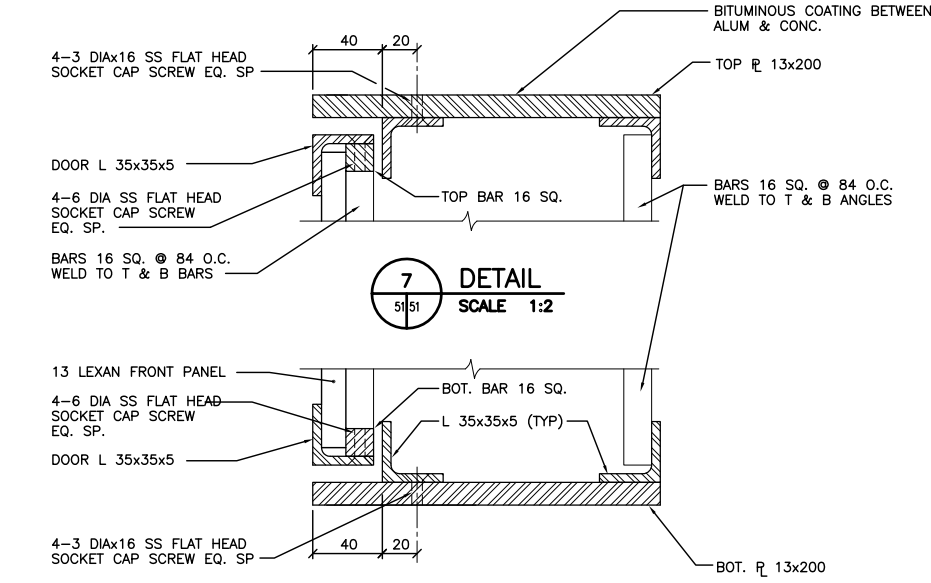
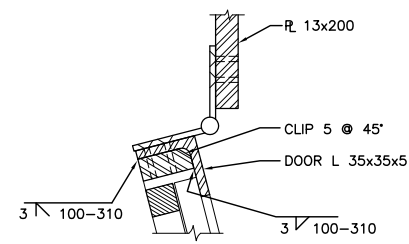
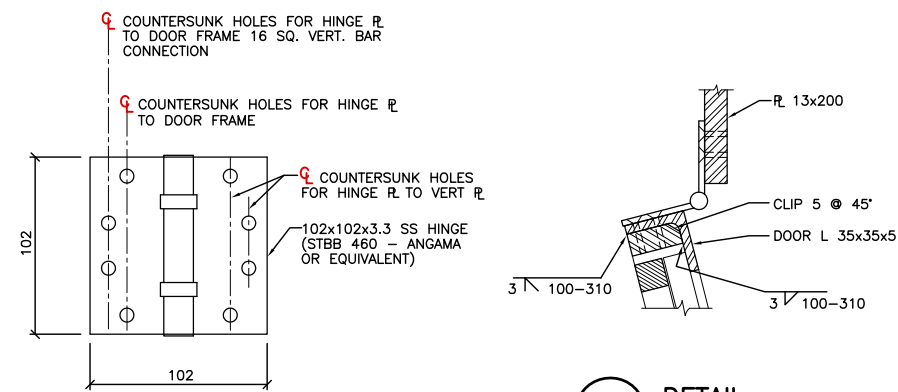
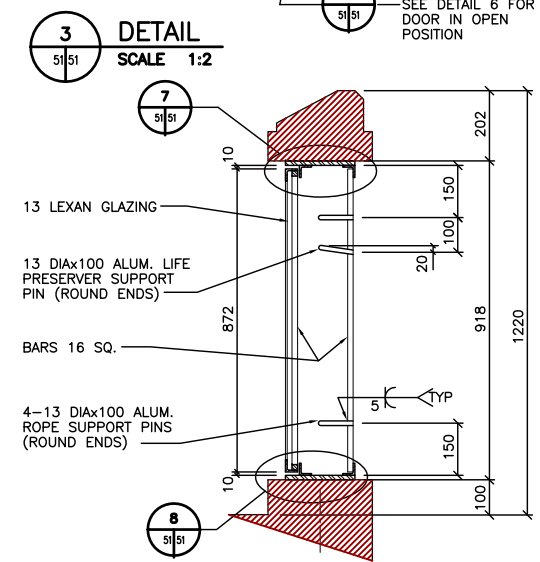
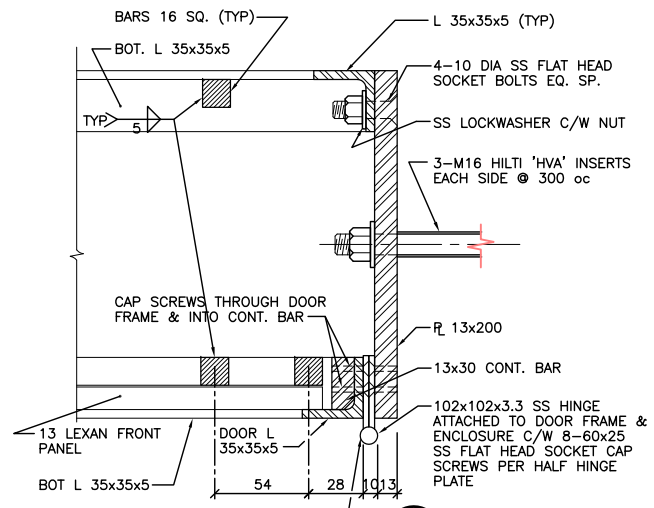
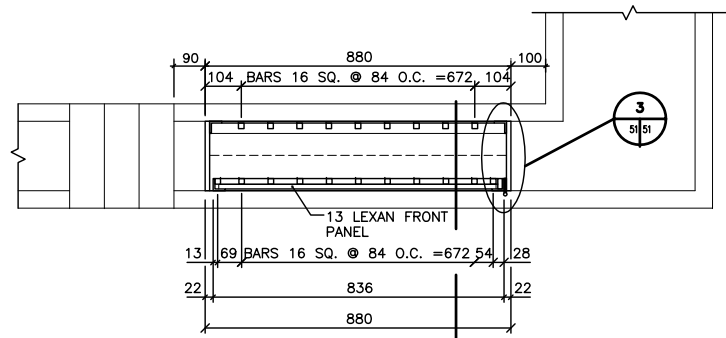
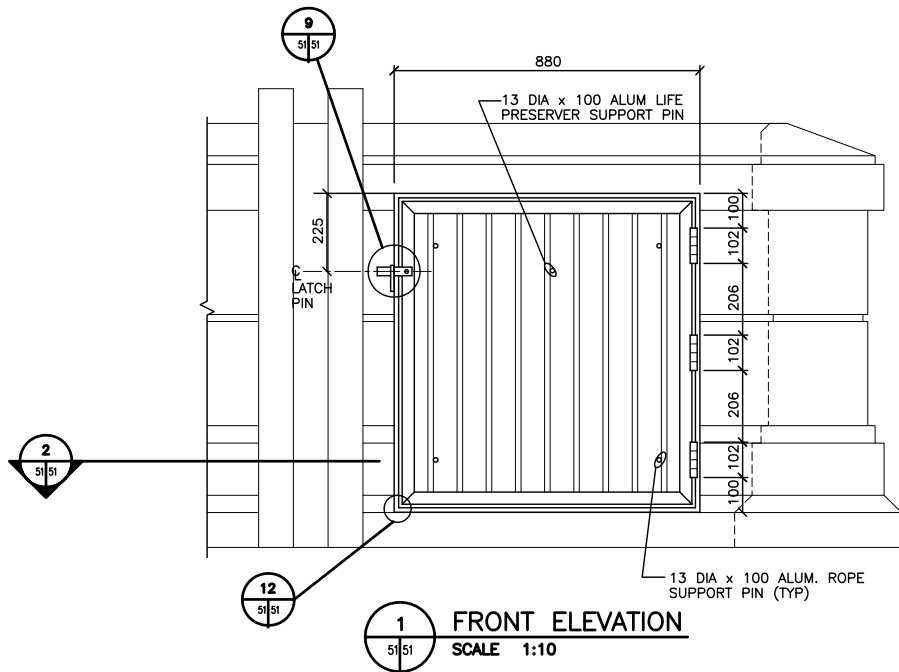
NO.	DATE	BY
2	14/10/99	KAA
1	05/27/97	KAA
0	12/13/96	C.T.

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

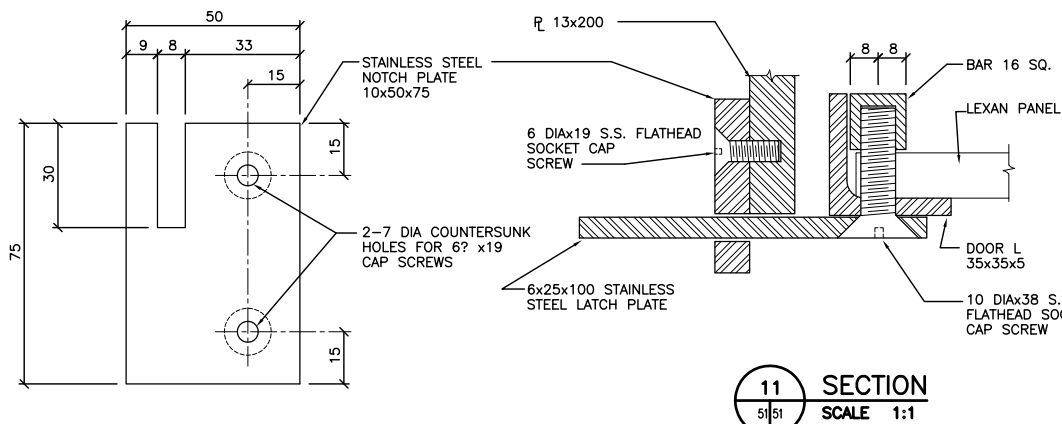
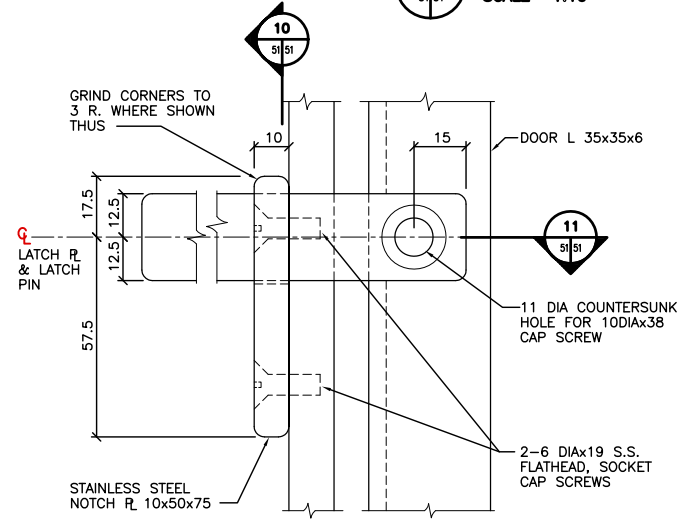
DESIGNED BY	CHECKED BY
BY KAA	APPROVED BY
HOR. SCALE: AS NOTED	AUTHORIZED BY DATE
VERTICAL: AS NOTED	B. EBENSPANGER / SENIOR BRIDGE ENGINEER ACCEPTED FOR RAFT CONSTRUCTION BY DATE:
DATE 12/02/96	P. PLAZA / PROJECT MANAGER

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
G.A. WEBSTER
REGISTERED PROFESSIONAL ENGINEER
27/05/97

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS
PEDESTRIAN HANDRAIL
MISCELLANEOUS DETAILS
CITY DRAWING NUMBER
B103-98-50
SHEET 50 OF
REV-2



- NOTES:
1. ALUMINUM ALLOY EXTRUDED BAR AND SHAPE SHALL CONFORM TO THE REQUIREMENTS OF ASTM B221M-83 ALLOY 6061-T6 OR ALLOY 6351-T6.
 2. ALUMINUM ALLOY SHEET AND PLATE SHALL CONFORM TO THE REQUIREMENTS OF ASTM B209M-83 ALLOY 6061-T6 OR ALLOY 6351-T6.
 3. ALUMINUM FILLER ALLOYS FOR WELDED CONSTRUCTION SHALL BE ONE OF THE FOLLOWING: ER4043, ER5183, ER5356, ER5554, ER5556, AND ER5654.
 4. DRILL AND TAP HOLES FOR STAINLESS STEEL FLAT HEAD SOCKET CAP SCREWS.
 5. INSTALL STAINLESS STEEL CAP SCREWS THROUGH ENTIRE THICKNESS OF ADJOINING MEMBER, THEN CUT AND GRIND FLUSH.



REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

9 DETAIL SCALE 1:1

10 SECTION SCALE 1:1

11 SECTION SCALE 1:1

12 DETAIL SCALE 1:1

8 DETAIL SCALE 1:2

7 DETAIL SCALE 1:2

5 DETAIL SCALE 1:2

6 DETAIL SCALE 1:2

3 DETAIL SCALE 1:2

4 SECTION SCALE 1:10

2 PLAN/SECTION SCALE 1:10

1 FRONT ELEVATION SCALE 1:10

LOCATION APPROVED UNDERGROUND STRUCTURES		B.M. ELEV.
SURV. U/G STRUCTURES	DATE	
COMMITTEE		
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.		
2	AS-CONSTRUCTED	14/10/99 KAA
1	ISSUED FOR CONSTRUCTION	02/03/97 C.T.
0	ISSUED FOR REVIEW	12/13/96 C.T.
NO.	REVISIONS	DATE BY

Reid Crowther
Reid Crowther & Partners Ltd
Engineers Planners Scientists

DESIGNED BY: []
CHECKED BY: []
DRAWN BY: KAA
APPROVED BY: []
HOR. SCALE: []
VERTICAL: AS NOTED
DATE: 12/03/96
P. PLAZA / PROJECT MANAGER

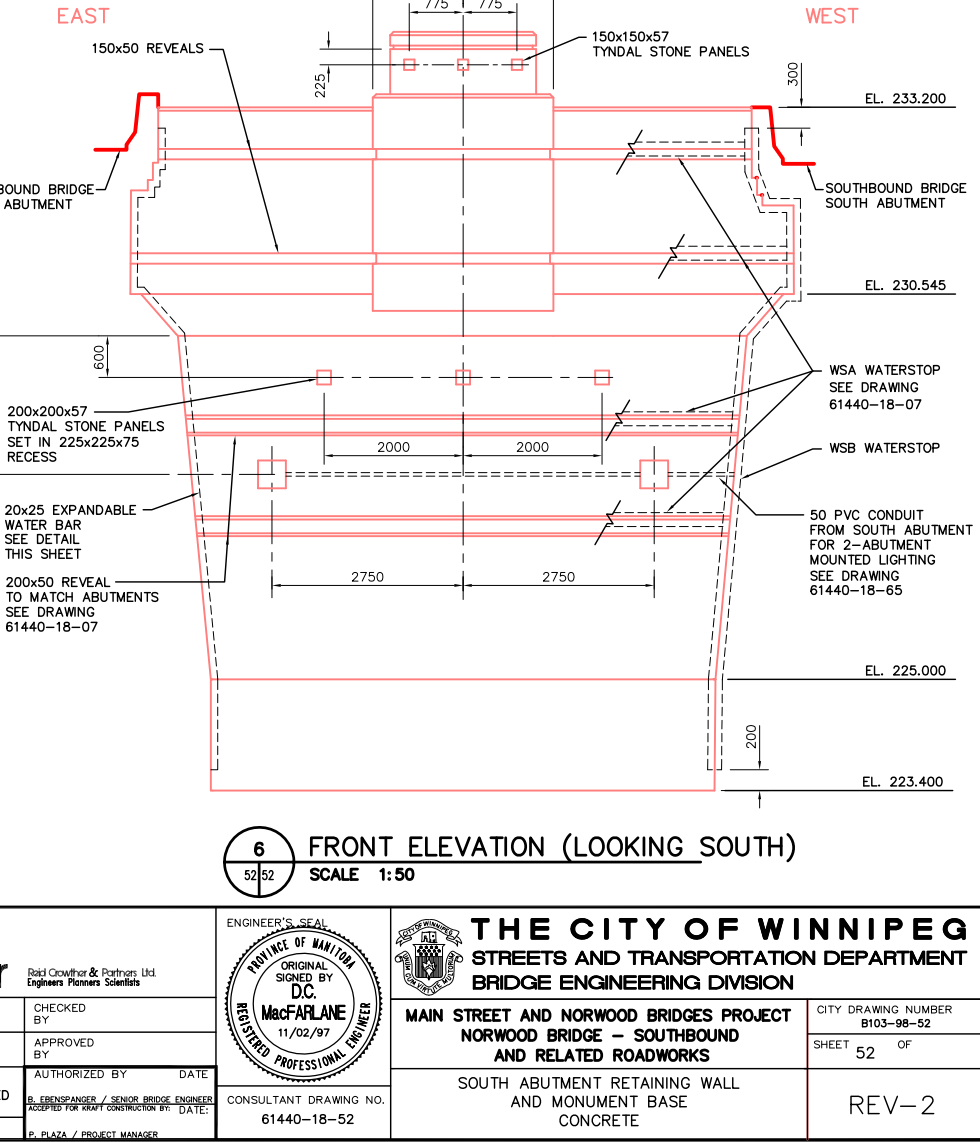
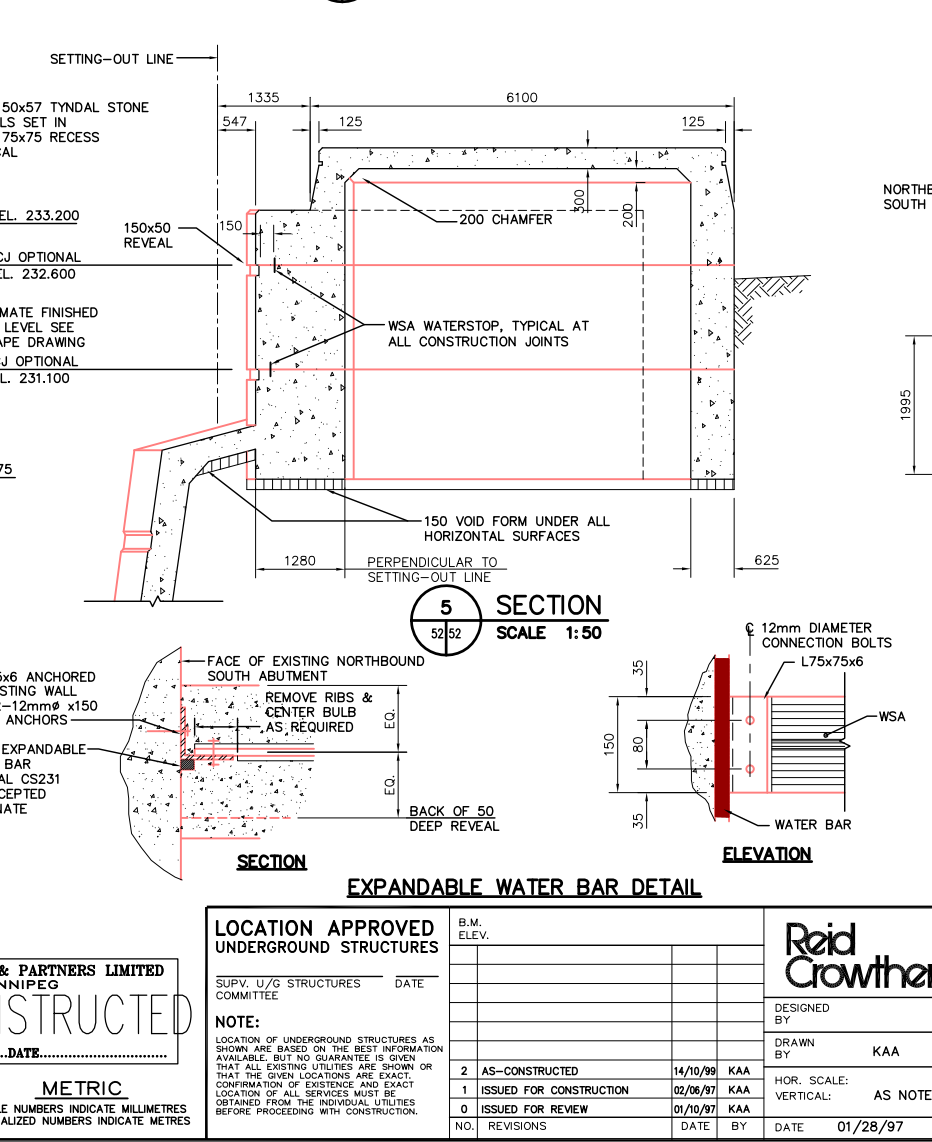
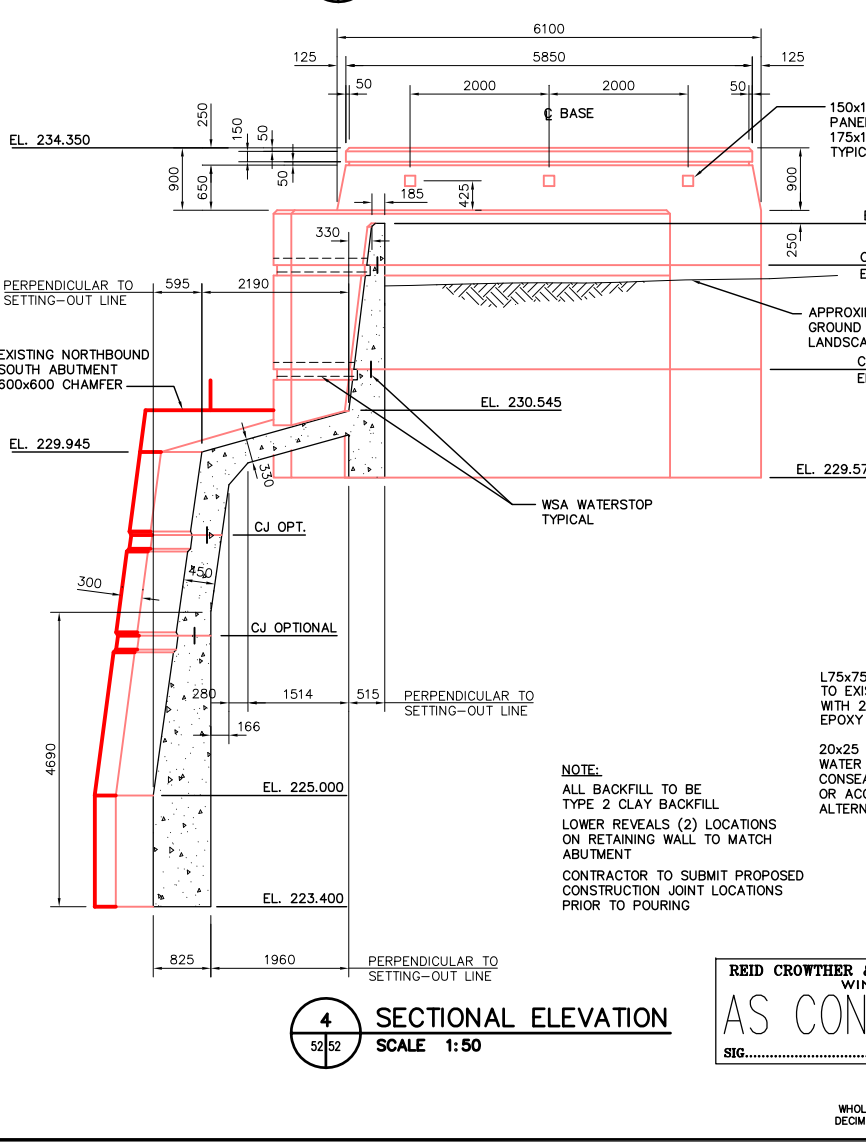
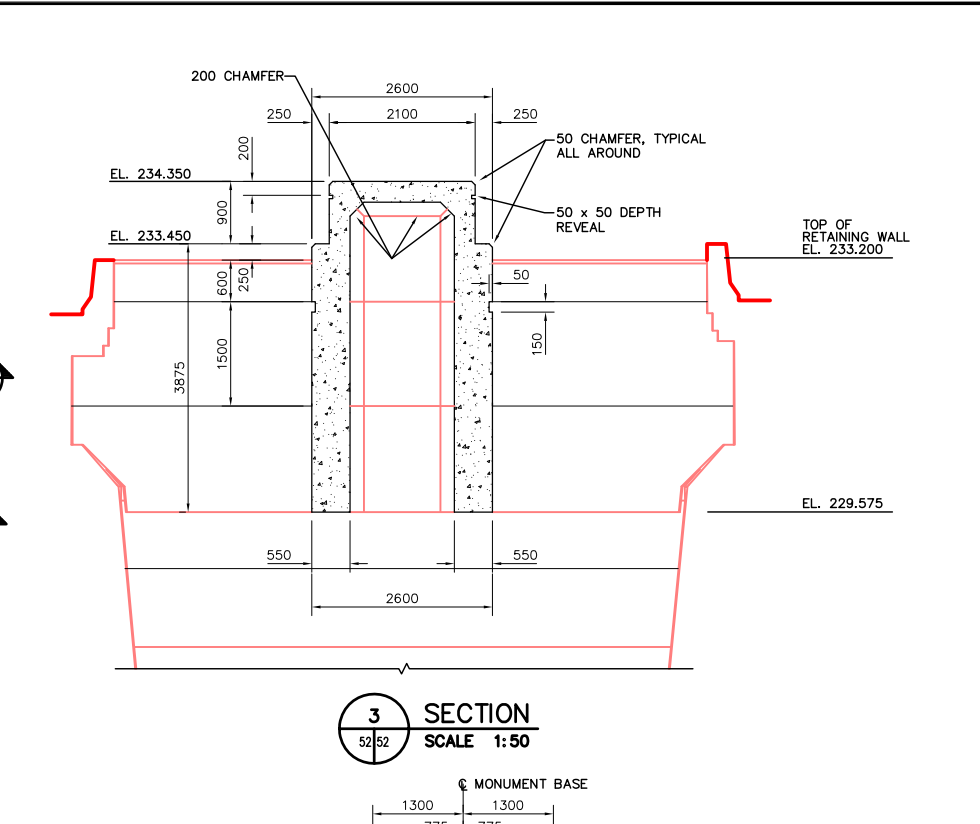
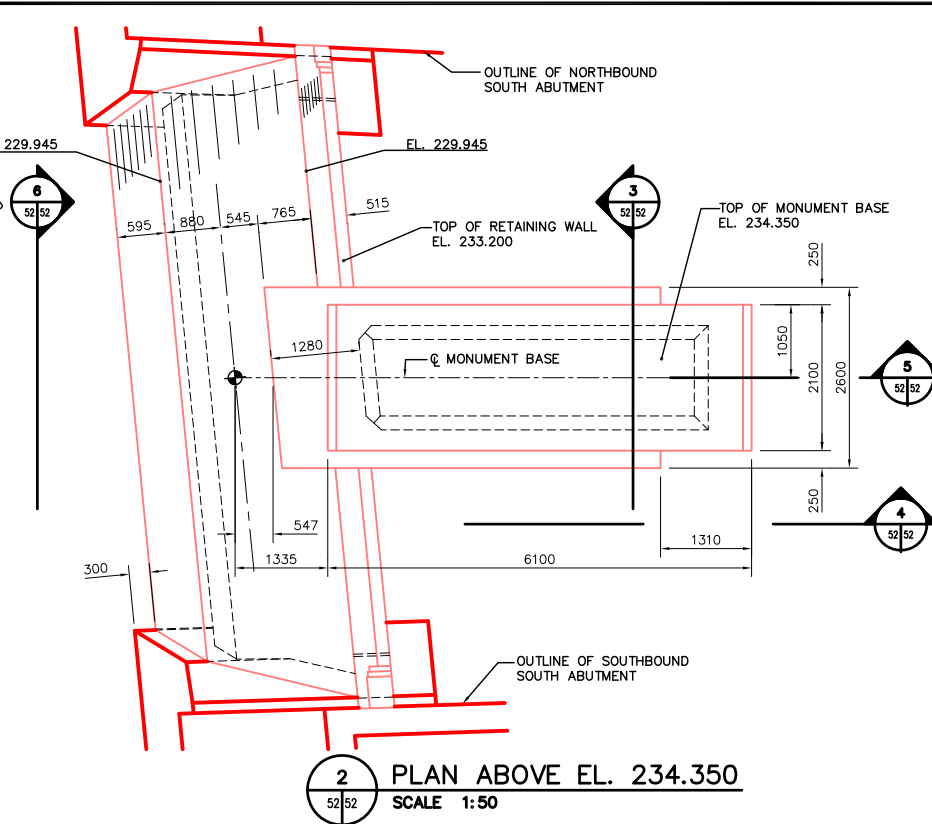
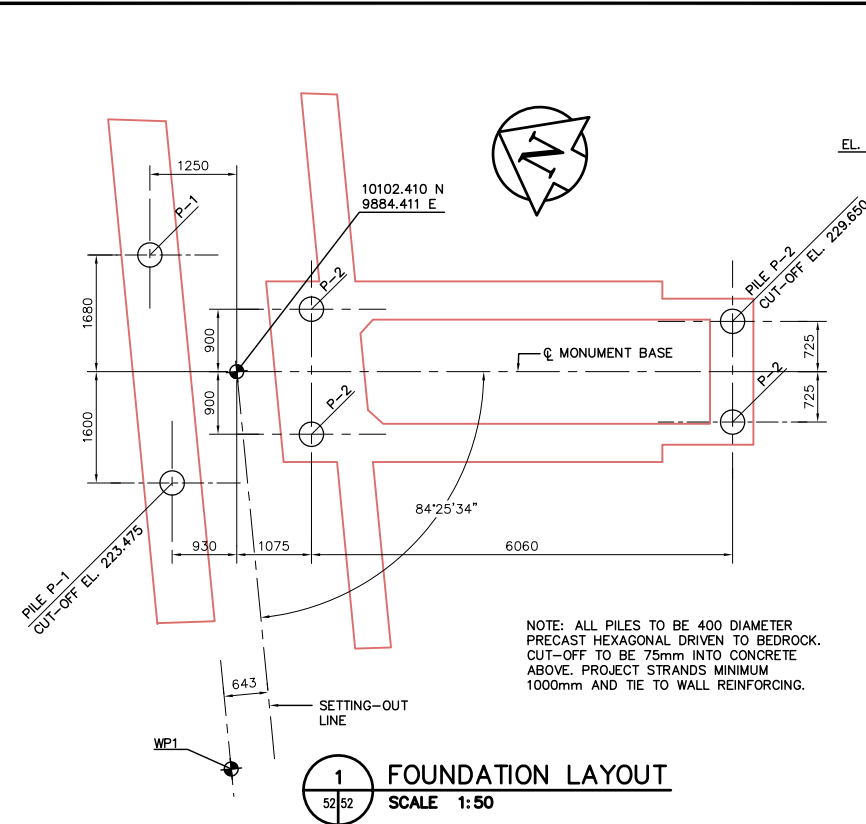
ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
G.A. WEBSTER
04/02/97
REGISTERED PROFESSIONAL ENGINEER

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

PEDESTRIAN HANDRAIL
LIFE PRESERVER ENCLOSURE

CITY DRAWING NUMBER
B103-98-51
SHEET 51 OF []
REV-2



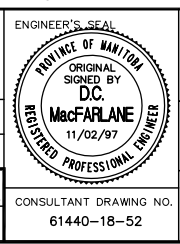
LOCATION APPROVED UNDERGROUND STRUCTURES		B.M. ELEV.
SURV. U/G STRUCTURES	DATE	
COMMITTEE		
NOTE: LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE. BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.		
2	AS-CONSTRUCTED	14/10/99 KAA
1	ISSUED FOR CONSTRUCTION	02/06/97 KAA
0	ISSUED FOR REVIEW	01/10/97 KAA
NO.	REVISIONS	DATE BY
		DATE 01/28/97

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: []
DRAWN BY: KAA
CHECKED BY: []
APPROVED BY: []
AUTHORIZED BY: [] DATE: []

HOR. SCALE: AS NOTED
VERTICAL: AS NOTED

CONSULTANT DRAWING NO. 61440-18-52

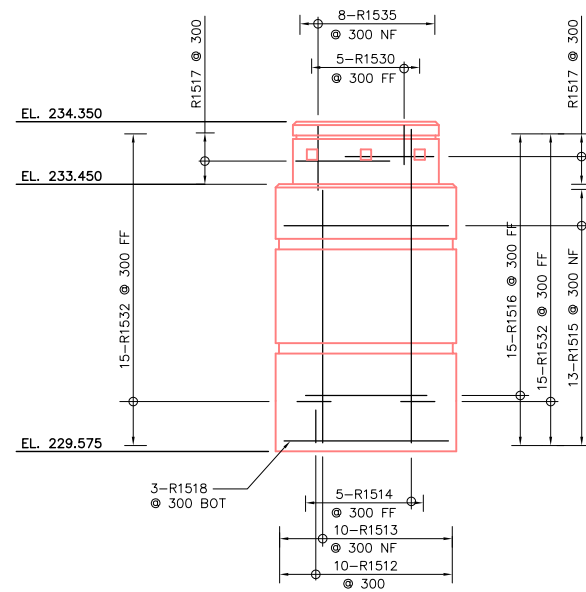


THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

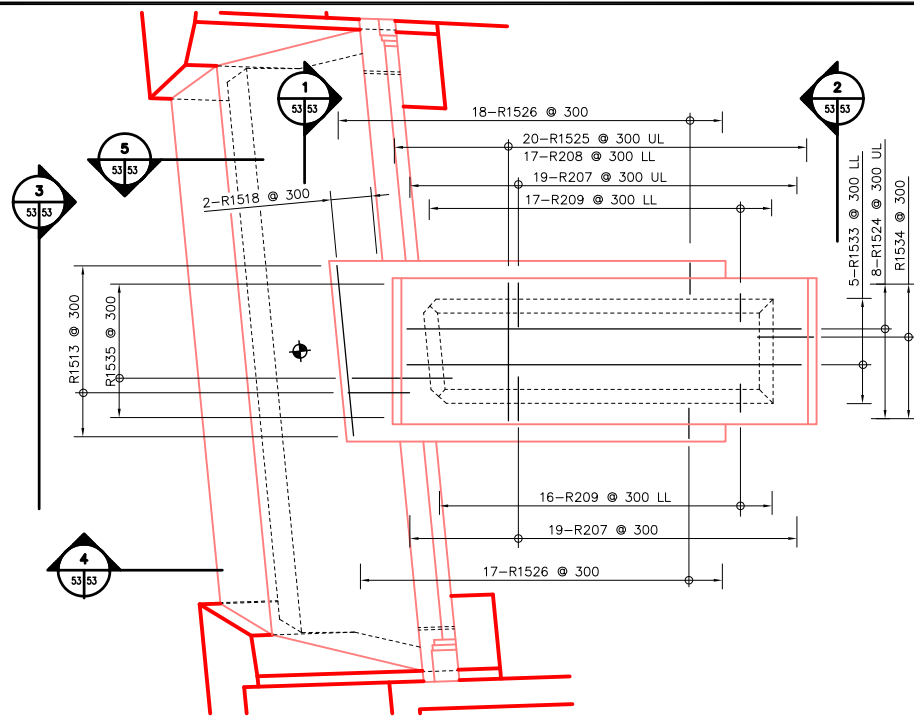
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

SOUTH ABUTMENT RETAINING WALL
AND MONUMENT BASE
CONCRETE

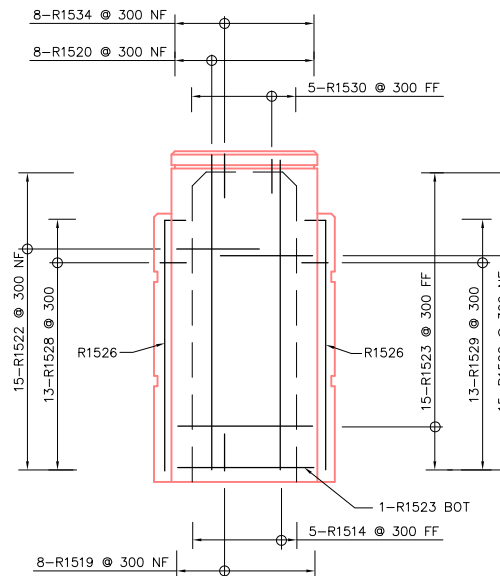
CITY DRAWING NUMBER B103-98-52
SHEET 52 OF []
REV-2



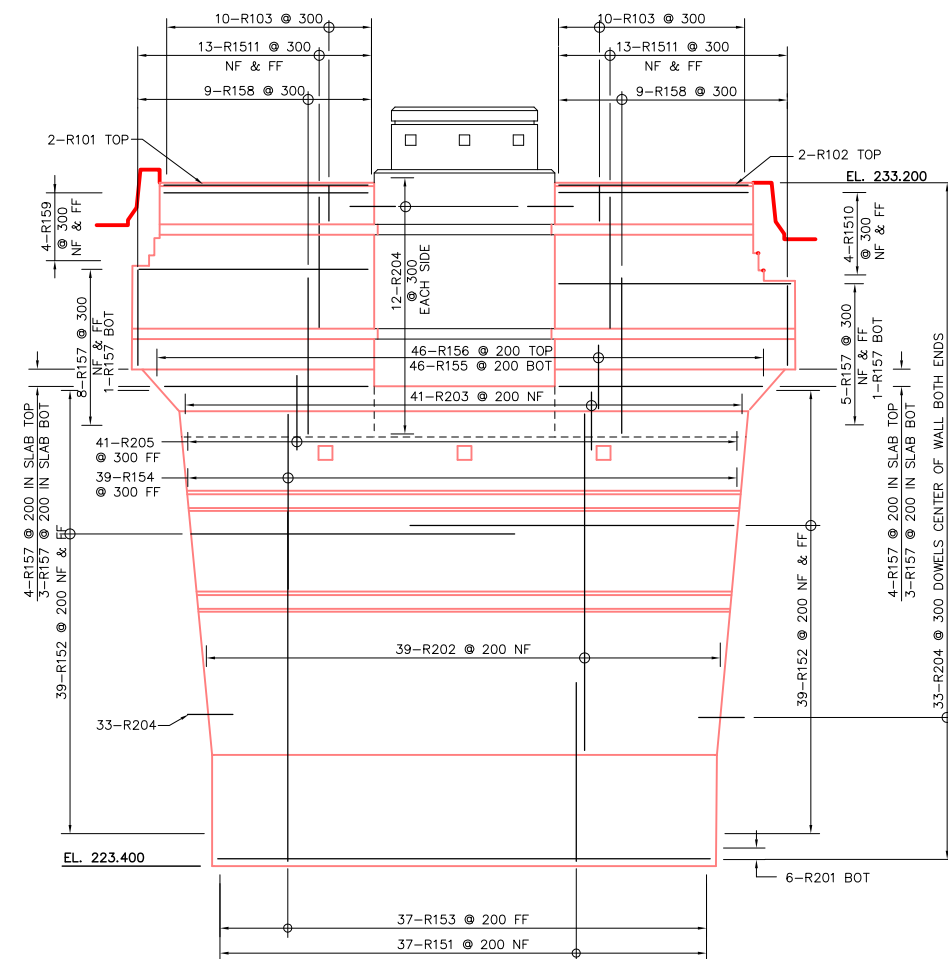
1 ELEVATION
SCALE 1:50



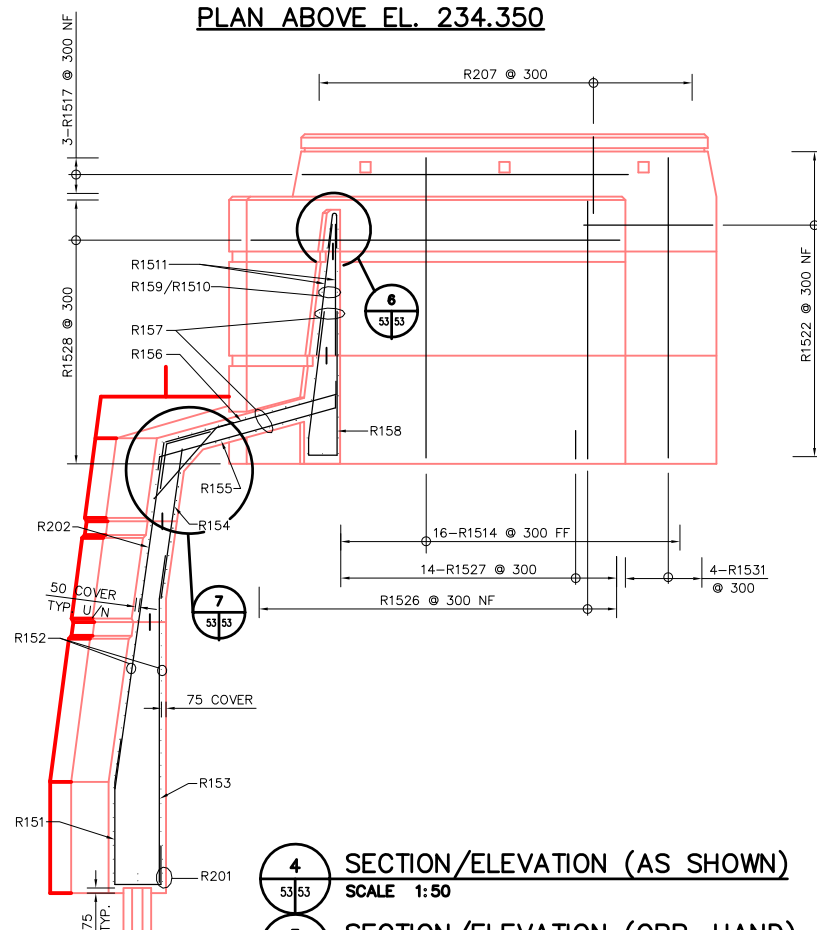
PLAN ABOVE EL. 234.350



2 ELEVATION
SCALE 1:50

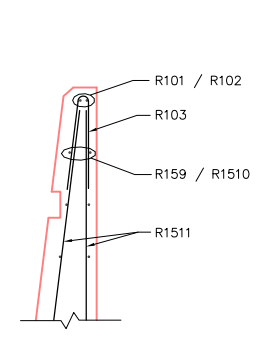


3 ELEVATION
SCALE 1:50

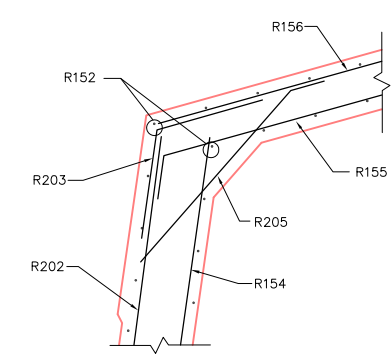


4 SECTION/ELEVATION (AS SHOWN)
SCALE 1:50

5 SECTION/ELEVATION (OPP. HAND)
SCALE 1:50



6 DETAIL
SCALE 1:50



7 DETAIL
SCALE 1:50

LIST OF ABBREVIATIONS

BW	BOTH WAYS
IF	IN FACE
EF	EACH FACE
EQ SP	EQUALLY SPACED
ALT	ALTERNATING
NF	NEAR FACE
FF	FAR FACE
@	AT
C/C	CENTER TO CENTER
BTWN	BETWEEN
HORIZ	HORIZONTAL
LL	LOWER LAYER
ML	MIDDLE LAYER
UL	UPPER LAYER

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES		B.M. ELEV.
SURV. U/G STRUCTURES	DATE	
COMMITTEE		
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.		
2	AS-CONSTRUCTED	14/10/99 KAA
1	ISSUED FOR CONSTRUCTION	02/19/97 C.T.
0	ISSUED FOR REVIEW	02/06/97 KAA
NO.	REVISIONS	DATE BY
		DATE 02/05/97

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: [] CHECKED BY: []
DRAWN BY: KAA APPROVED BY: []
HOR. SCALE: [] VERTICAL: AS NOTED
AUTHORIZED BY: [] DATE: []
S. SPANSPANER / SENIOR BRIDGE ENGINEER
ACCEPTED FOR GRANT CONSTRUCTION BY: DATE: []
P. PLAZA / PROJECT MANAGER

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY D.C.
MacFarlane
20/02/97
REGISTERED PROFESSIONAL ENGINEER

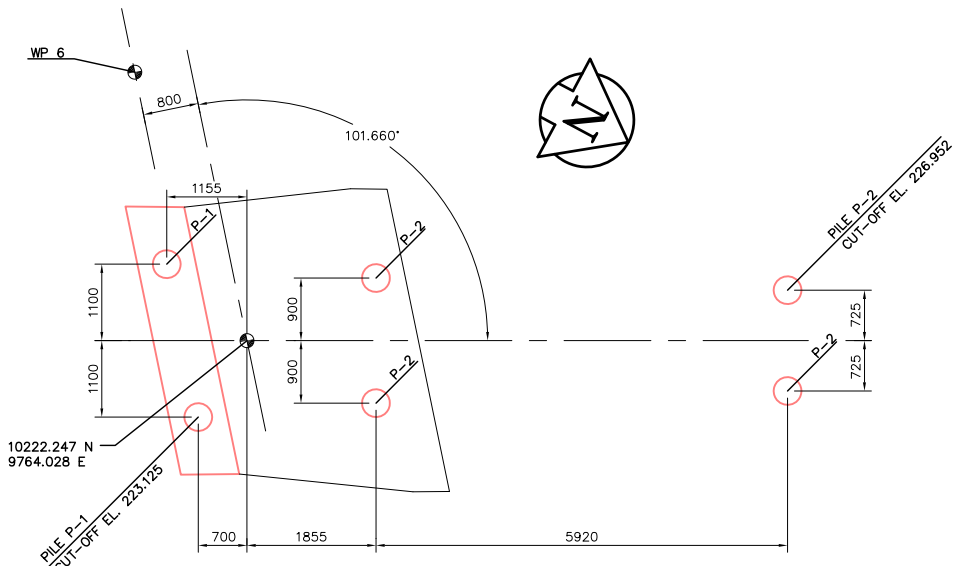
THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

SOUTH ABUTMENT RETAINING WALL
AND MONUMENT BASE
REINFORCING SHEET 1 OF 2

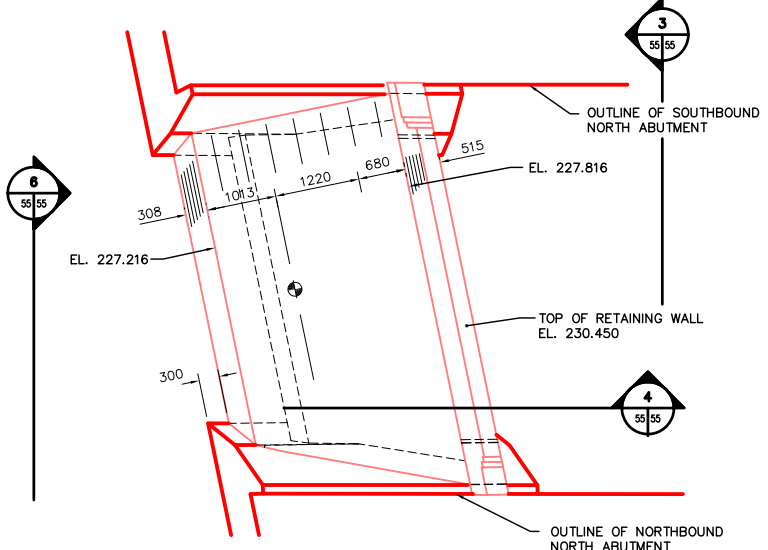
CITY DRAWING NUMBER B103-98-53
SHEET 53 OF []
REV-2

CONSULTANT DRAWING NO. 61440-18-53

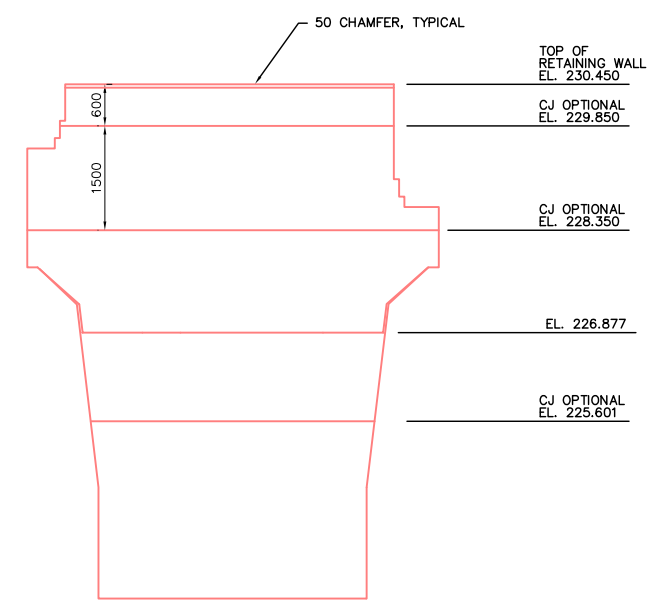


1 FOUNDATION LAYOUT
SCALE 1:50

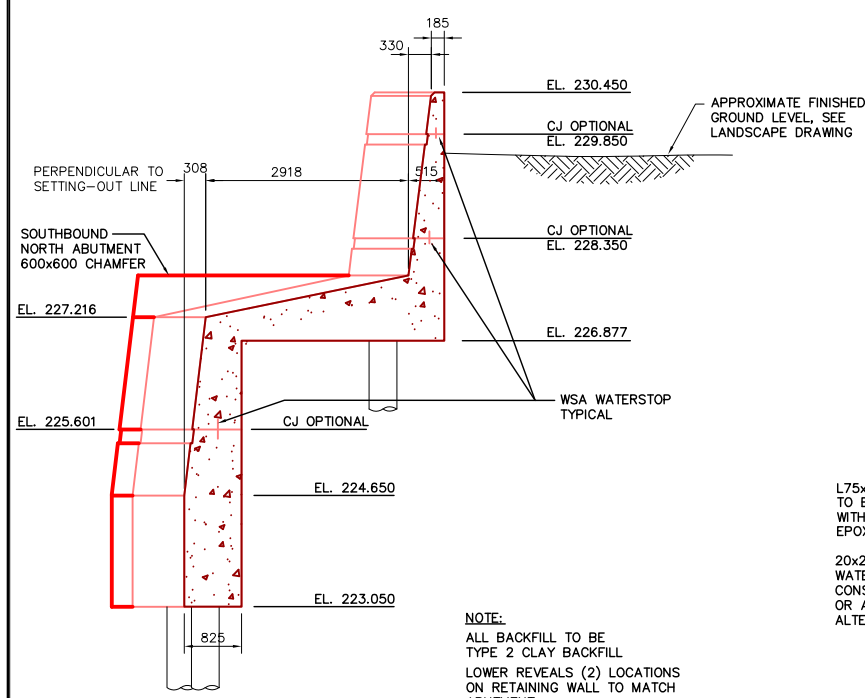
NOTE: ALL PILES TO BE 400 DIAMETER PRECAST HEXAGONAL DRIVEN TO BEDROCK. CUT-OFF TO BE 75mm INTO CONCRETE ABOVE. PROJECT STRANDS MINIMUM 1000mm AND TIE TO WALL REINFORCING.



2 PLAN ABOVE EL. 230.450
SCALE 1:50

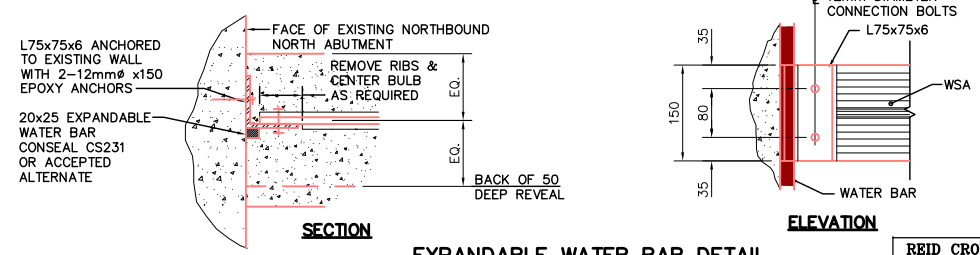


3 SECTION
SCALE 1:50

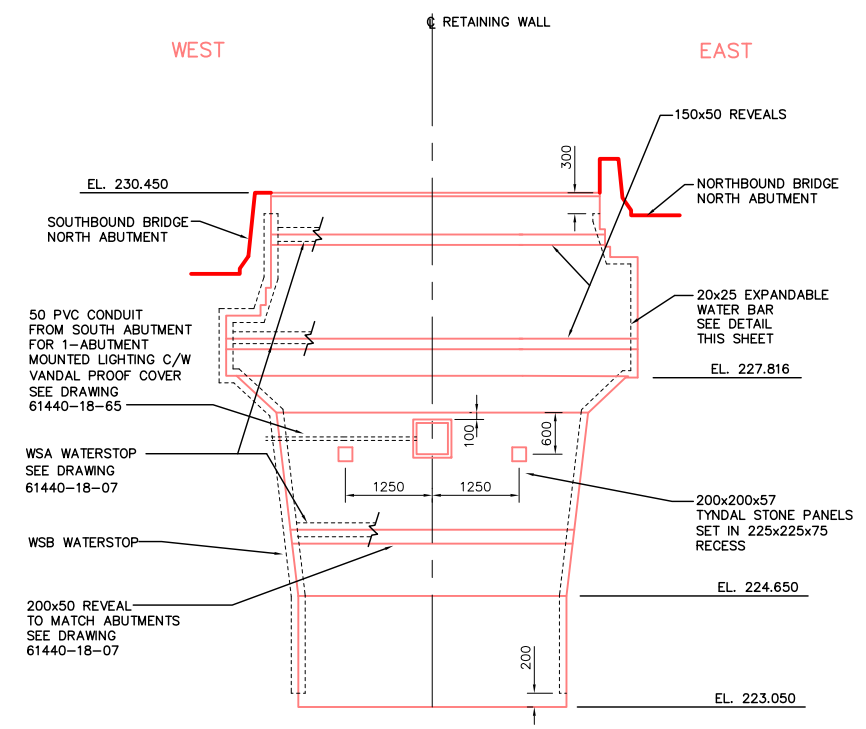


4 SECTIONAL ELEVATION
SCALE 1:50

NOTE:
ALL BACKFILL TO BE TYPE 2 CLAY BACKFILL.
LOWER REVEALS (2) LOCATIONS ON RETAINING WALL TO MATCH ABUTMENT.
CONTRACTOR TO SUBMIT PROPOSED CONSTRUCTION JOINT LOCATIONS PRIOR TO POURING.



EXPANDABLE WATER BAR DETAIL



6 FRONT ELEVATION (LOOKING NORTH)
SCALE 1:50

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

LOCATION APPROVED UNDERGROUND STRUCTURES				B.M. ELEV.
SURV. U/G STRUCTURES	DATE	COMMITTEE		
4 AS-CONSTRUCTED	14/10/99	KA		
3 REMOVED MONUMENT BASE	01/08/97	KA		
2 ABUTMENT LIGHT REPOSITIONED	06/24/97	KA		
1 ISSUED FOR CONSTRUCTION	05/22/97	C.T.		
0 ISSUED FOR REVIEW	05/08/97	KA		
NO. REVISIONS	DATE	BY	DATE	05/07/97

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: []
DRAWN BY: KAA
CHECKED BY: []
APPROVED BY: []
AUTHORIZED BY: [] DATE: []
HOR. SCALE: AS NOTED
VERTICAL: AS NOTED
S. SPONSORER / SENIOR BRIDGE ENGINEER ACCEPTED FOR GRANT CONSTRUCTION BY: DATE: []
P. PLAZA / PROJECT MANAGER

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
GA WEBSTER
08/01/97
REGISTERED PROFESSIONAL ENGINEER

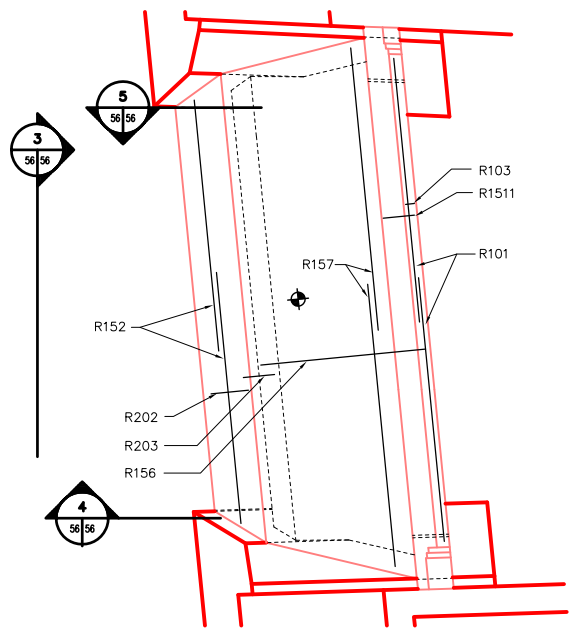
THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND AND RELATED ROADWORKS

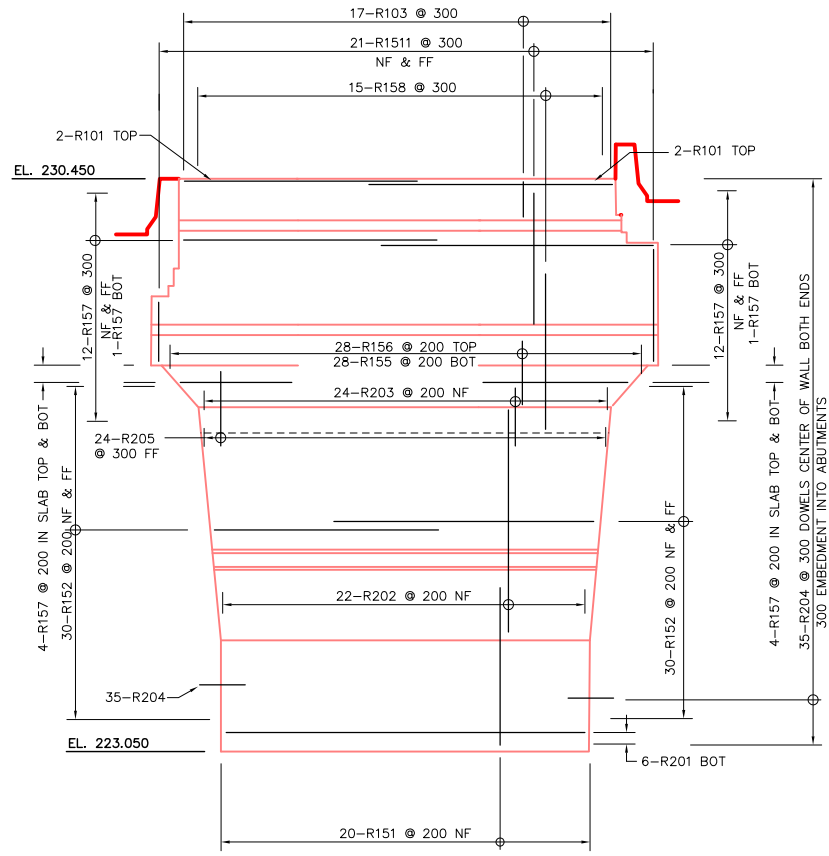
CITY DRAWING NUMBER: B103-98-55
SHEET 55 OF []

NORTH ABUTMENT RETAINING WALL AND MONUMENT BASE CONCRETE

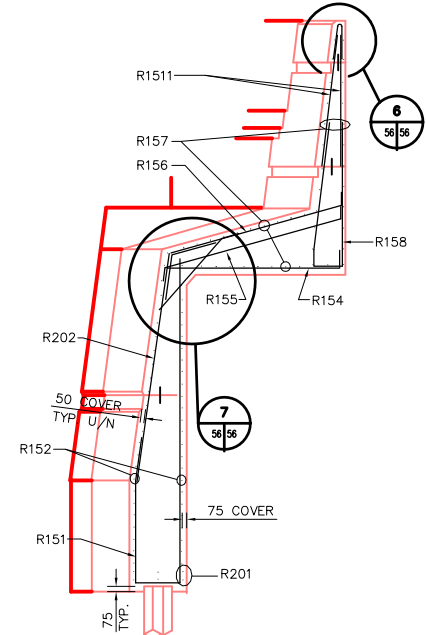
REV-4



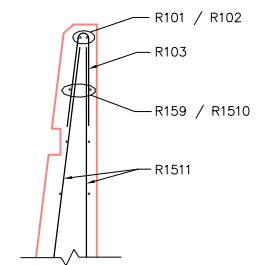
PLAN ABOVE EL. 230.450



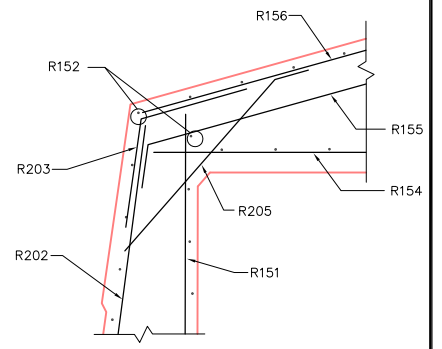
3 ELEVATION
SCALE 1:50



4 SECTION/ELEVATION (AS SHOWN)
SCALE 1:50
5 SECTION/ELEVATION (OPP. HAND)
SCALE 1:50



6 DETAIL
SCALE 1:50



7 DETAIL
SCALE 1:50

LIST OF ABBREVIATIONS

BW	BOTH WAYS
IF	IN FACE
EF	EACH FACE
EQ SP	EQUALLY SPACED
ALT	ALTERNATING
NF	NEAR FACE
FF	FAR FACE
@	AT
C/C	CENTER TO CENTER
BTWN	BETWEEN
HORIZ	HORIZONTAL
LL	LOWER LAYER
ML	MIDDLE LAYER
UL	UPPER LAYER

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG:.....DATE:.....

NO.	REVISIONS	DATE	BY
3	AS-CONSTRUCTED	14/10/99	KAA
2	REMOVED MONUMENT BASE	01/05/98	KAA
1	ISSUED FOR CONSTRUCTION	05/22/97	C.T.
0	ISSUED FOR REVIEW	05/08/97	KAA

DESIGNED BY	CHECKED BY
DRAWN BY	APPROVED BY
HOR. SCALE:	AUTHORIZED BY
VERTICAL:	DATE
AS NOTED	DATE
01/08/98	

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
G.A. WEBSTER
08/01/97
REGISTERED PROFESSIONAL ENGINEER
CONSULTANT DRAWING NO.
61440-18-56

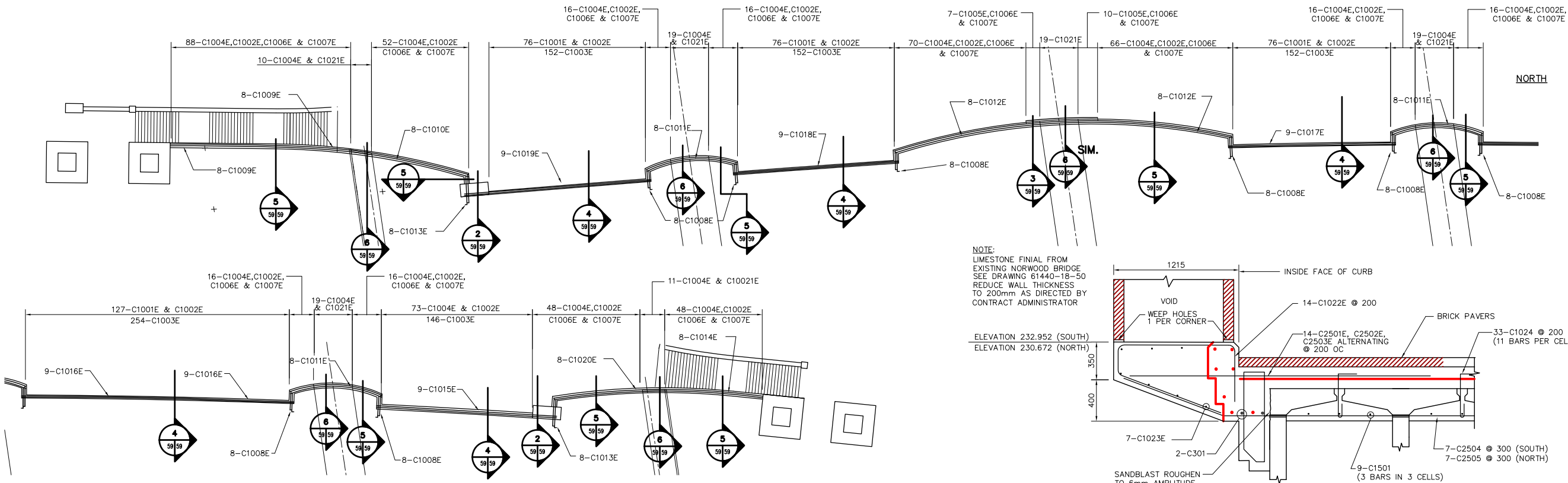
THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS
NORTH ABUTMENT RETAINING WALL
AND MONUMENT BASE
REINFORCING SHEET 1 OF 2

CITY DRAWING NUMBER
B103-98-56
SHEET 56 OF
REV-3

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

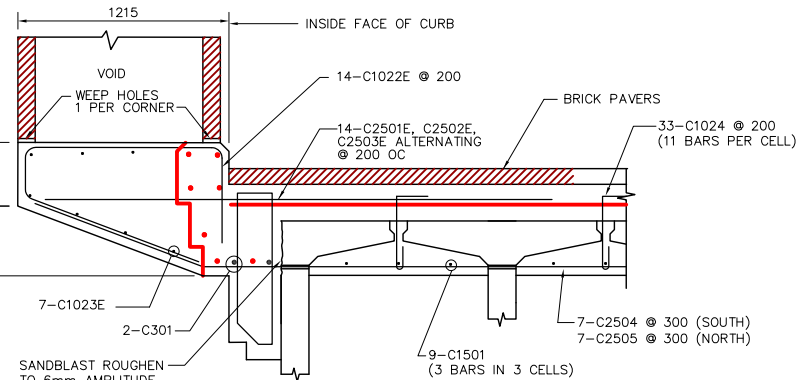
SOUTH

NORTH

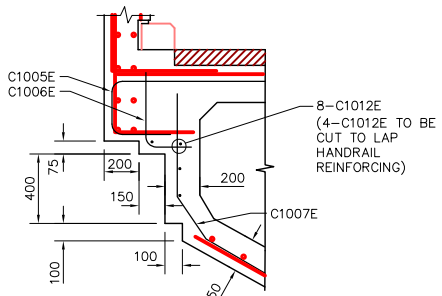


PLAN SCALE: 1:200

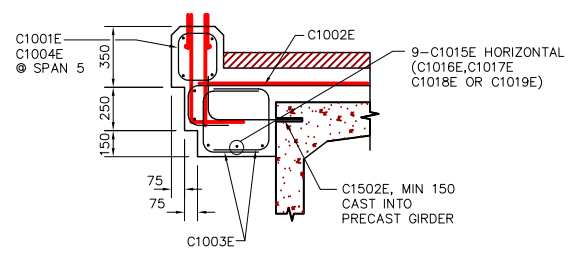
NOTE:
LIMESTONE FINIAL FROM EXISTING NORWOOD BRIDGE SEE DRAWING 61440-18-50 REDUCE WALL THICKNESS TO 200mm AS DIRECTED BY CONTRACT ADMINISTRATOR



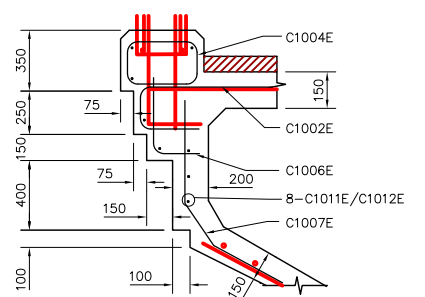
SECTION 2 SCALE 1:20



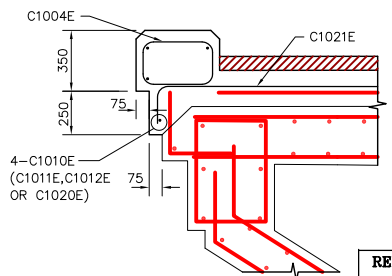
SECTION 3 SCALE 1:20



SECTION 4 SCALE 1:20



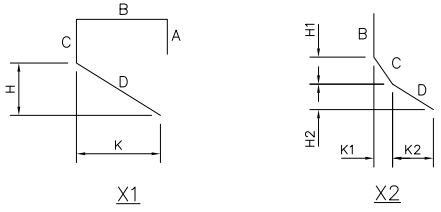
SECTION 5 SCALE 1:20



SECTION 6 SCALE 1:20

MARKS	NO. BARS	SIZE	LENGTH	TYPE	A	B	C	D	E	F	G	H1	H2	K1	K2	J	O	R	Mass (kg)
C1001E	355	10	1340	T2	180	220	270	220	270										373
C1002E	896	10	1825	T7		1200	250	375											1284
C1003E	856	10	1400	T7		500	400	500											941
C1004E	619	10	1650	T2	180	400	245	400	245	180									802
C1005E	17	10	1920	T7		1200	345	375											26
C1006E	485	10	875	T7			500	375											333
C1007E	485	10	1335	X2		590	295	450			245	215	165	396				508	
C1008E	64	10	2465	6	180	1835	450				435								124
C1009E	16	10	10025	STR															126
C1010E	8	10	11660	STR															73
C1011E	24	10	9145	9		9145					872					8919	12000	172	
C1012E	16	10	16820	STR															211
C1013E	16	10	3365	6	180	2735	450				435								42
C1014E	8	10	11735	STR															74
C1015E	9	10	17500	STR															124
C1016E	9	10	13450	STR															95
C1017E	9	10	16210	STR															115
C1018E	9	10	16090	STR															114
C1019E	9	10	18150	STR															128
C1020E	8	10	10950	STR															69
C1021E	97	10	1450	T7		1200	250												110
C1022E	28	10	2795	X1	390	1030	280	1095			385		1025						61
C1023E	14	10	2200	STR															24
C1501	9	15	1850	STR															26
C1502E	298	15	710	T7		460	250												332
C2501E	10	25	6000	STR															236
C2502E	10	25	7000	STR															275
C2503E	8	25	8000	STR															251
C2504	7	25	5386	T6		4354	1032				364			966				148	
C2505	7	25	5609	T6			4577	1032			364			966				154	
C1024	66	10	710	T5	130	400					180					80			37
C301	4	30	2400	STR															53
TOTAL																			7441

REFERENCE DRAWINGS:
PEDESTRAIN HANDRAIL 61440-18-47 & 48
SIDEWALK SLAB 61440-18-109
LOOKOUT SOFFIT SLAB 61440-18-110
TRANSFER BEAM CONC. & REINF. 61440-18-85 TO 96



METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES		B.M. ELEV.
SURV. U/G STRUCTURES	DATE	
COMMITTEE		
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.		
3	AS-CONSTRUCTED	14/10/99 KAA
2	ADDITIONAL REINFORCING	06/11/97 KAA
1	ISSUED FOR CONSTRUCTION	05/27/97 KAA
0	ISSUED FOR REVIEW	03/23/97 RMT
NO.	REVISIONS	DATE BY

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: KAA
CHECKED BY: KAA
DRAWN BY: KAA
APPROVED BY: KAA
HOR. SCALE: AS NOTED
VERTICAL: AS NOTED
DATE: 03/20/97
P. PLAZA / PROJECT-MANAGER

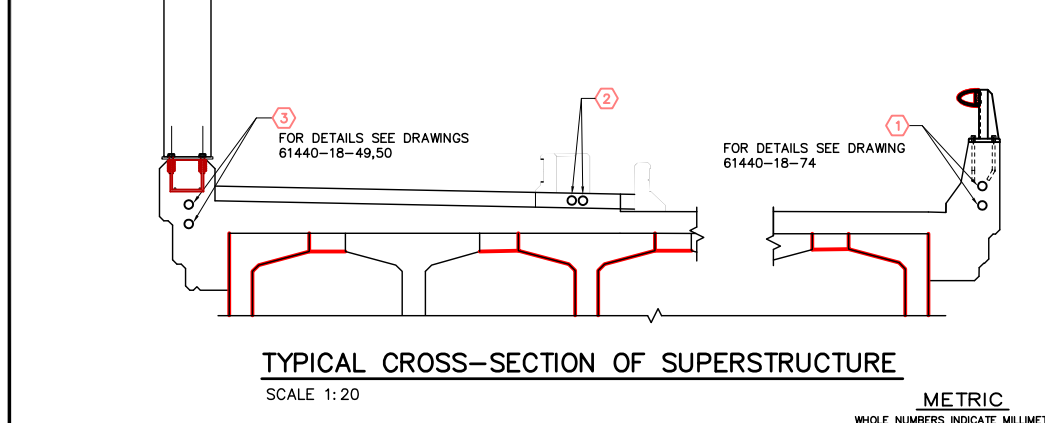
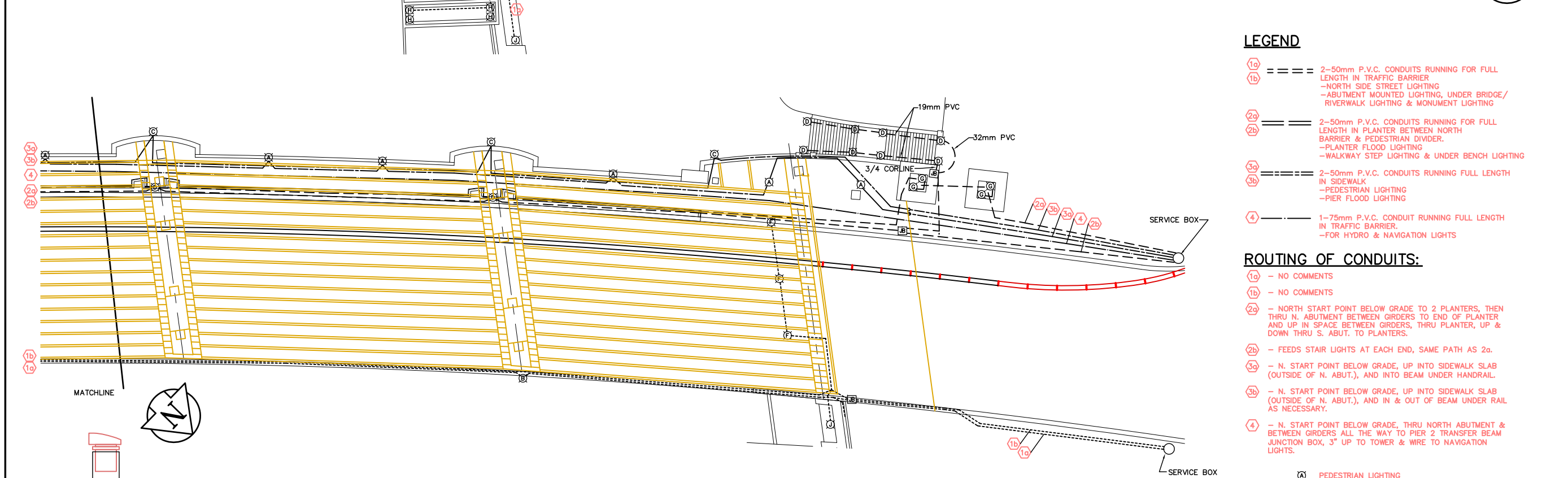
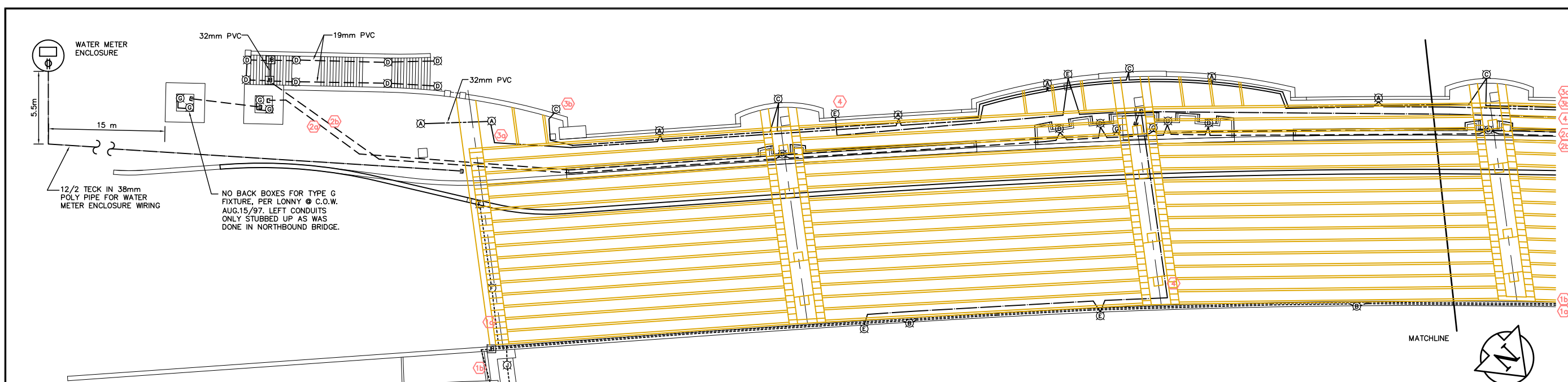
ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
C. P. GRAY
12/08/97
REGISTERED PROFESSIONAL ENGINEER

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

CITY DRAWING NUMBER: B103-98-59
SHEET 59 OF

CURB REINFORCING
REV-3



- LEGEND**
- 1a - - - - 2-50mm P.V.C. CONDUITS RUNNING FOR FULL LENGTH IN TRAFFIC BARRIER
- NORTH SIDE STREET LIGHTING
- ABUTMENT MOUNTED LIGHTING, UNDER BRIDGE / RIVERWALK LIGHTING & MONUMENT LIGHTING
 - 1b - - - - 2-50mm P.V.C. CONDUITS RUNNING FOR FULL LENGTH IN PLANTER BETWEEN NORTH BARRIER & PEDESTRIAN DIVIDER.
- PLANTER FLOOD LIGHTING
- WALKWAY STEP LIGHTING & UNDER BENCH LIGHTING
 - 2a - - - - 2-50mm P.V.C. CONDUITS RUNNING FULL LENGTH IN SIDEWALK
- PEDESTRIAN LIGHTING
- PIER FLOOD LIGHTING
 - 2b - - - - 2-50mm P.V.C. CONDUITS RUNNING FULL LENGTH IN SIDEWALK
- PEDESTRIAN LIGHTING
- PIER FLOOD LIGHTING
 - 3a - - - - 1-75mm P.V.C. CONDUIT RUNNING FULL LENGTH IN TRAFFIC BARRIER.
- FOR HYDRO & NAVIGATION LIGHTS
 - 3b - - - - 1-75mm P.V.C. CONDUIT RUNNING FULL LENGTH IN TRAFFIC BARRIER.
- FOR HYDRO & NAVIGATION LIGHTS
 - 4 - - - - 1-75mm P.V.C. CONDUIT RUNNING FULL LENGTH IN TRAFFIC BARRIER.
- FOR HYDRO & NAVIGATION LIGHTS

- ROUTING OF CONDUITS:**
- 1a - NO COMMENTS
 - 1b - NO COMMENTS
 - 2a - NORTH START POINT BELOW GRADE TO 2 PLANTERS, THEN THRU N. ABUTMENT BETWEEN GIRDERS TO END OF PLANTER AND UP IN SPACE BETWEEN GIRDERS, THRU PLANTER, UP & DOWN THRU S. ABUT. TO PLANTERS.
 - 2b - FEEDS STAIR LIGHTS AT EACH END, SAME PATH AS 2a.
 - 3a - N. START POINT BELOW GRADE, UP INTO SIDEWALK SLAB (OUTSIDE OF N. ABUT.), AND INTO BEAM UNDER HANDRAIL.
 - 3b - N. START POINT BELOW GRADE, UP INTO SIDEWALK SLAB (OUTSIDE OF N. ABUT.), AND IN & OUT OF BEAM UNDER RAIL AS NECESSARY.
 - 4 - N. START POINT BELOW GRADE, THRU NORTH ABUTMENT & BETWEEN GIRDERS ALL THE WAY TO PIER 2 TRANSFER BEAM JUNCTION BOX, 3" UP TO TOWER & WIRE TO NAVIGATION LIGHTS.
- A PEDESTRIAN LIGHTING
 - B STREET LIGHT STANDARD LIGHTING
 - C PIER FLOOD LIGHTING
 - D STEP LIGHTING / UNDER BENCH LIGHTING
 - E NAVIGATION LIGHTING
 - F ABUTMENT MOUNTED LIGHTING (SOUTH ABUTMENT) AND UNDER BRIDGE / RIVERWALK LIGHTING (NORTH ABUTMENT)
 - G PLANTER FLOOD LIGHTING
 - H MONUMENT LIGHTING
 - I ABUTMENT MOUNTED LIGHTING (RETAINING WALL)
 - J JUNCTION BOX

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

REFER TO DRAWINGS 61440-18-65 AND 61440-18-66 FOR INSTALLATION DETAILS OF PEDESTRIAN LIGHTING, PIER FLOOD LIGHTING & NAVIGATION LIGHTING

LOCATION APPROVED UNDERGROUND STRUCTURES

SURV. U/G STRUCTURES	DATE	COMMITTEE

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
3	AS-CONSTRUCTED	11/02/00	KA
2	REV'D CONDUIT #4 & LEGEND	06/05/97	C.T.
1	ISSUED FOR CONSTRUCTION	07/11/97	C.T.
0	ISSUED FOR REVIEW	02/26/97	RMT

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY	CHECKED BY
DRAWN BY RMT	APPROVED BY
HOR. SCALE: 1:200	AUTHORIZED BY
VERTICAL: AS NOTED	DATE
	DATE 02/26/97

B. BERENSPANZER / SENIOR BRIDGE ENGINEER
ACCEPTED FOR BRARY CONSTRUCTION BY: DATE: P. PLAZA / PROJECT MANAGER

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
C.P. GRAY
06/08/97
REGISTERED PROFESSIONAL ENGINEER

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

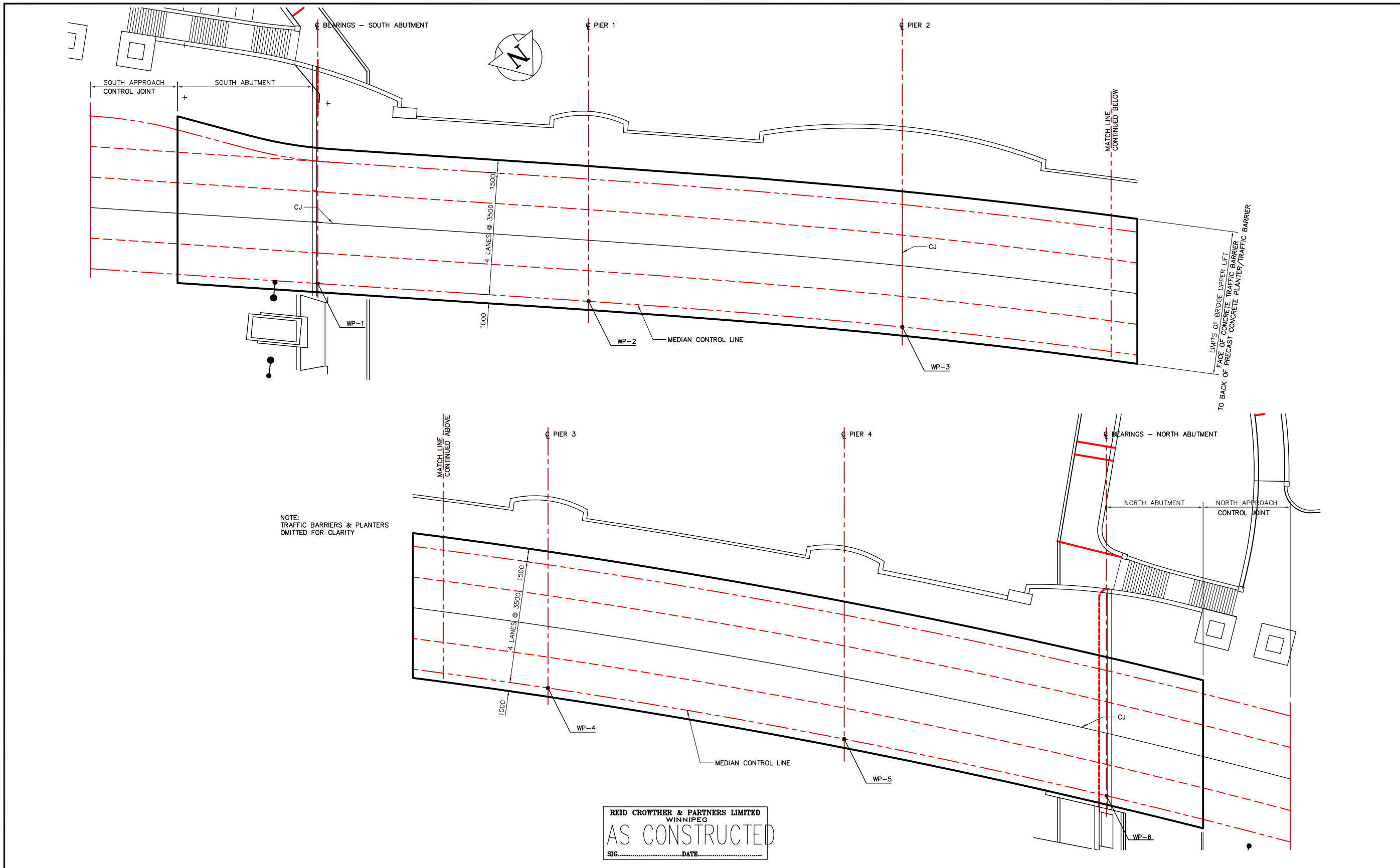
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

CITY DRAWING NUMBER
B103-98-60
SHEET 60 OF

CONSULTANT DRAWING NO.
61440-18-60

CONDUIT LAYOUT

REV-3



METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES				B.M. ELEV.
SURV. 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.				
2	AS-CONSTRUCTED	14/10/99	KAA	
1	ISSUED FOR CONSTRUCTION	03/03/97	C.T.	
0	ISSUED FOR REVIEW	12/18/96	KAA	
NO.	REVISIONS	DATE	BY	DATE

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY	CHECKED BY
DRAWN BY DR	APPROVED BY
AUTHORIZED BY	DATE
B. SPANSPANER / SENIOR BRIDGE ENGINEER ACCEPTED FOR GRAY CONSTRUCTION BY: DATE:	
P. PLAZA / PROJECT MANAGER	

HOR. SCALE: 1:200
VERTICAL: 1:200

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
C. P. GRAY
03/03/97
REGISTERED PROFESSIONAL ENGINEER

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

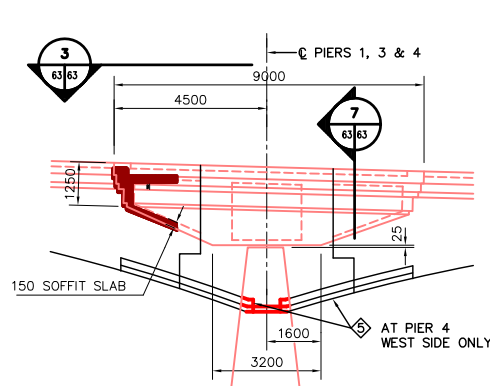
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

CITY DRAWING NUMBER
B103-98-62
SHEET 62 OF

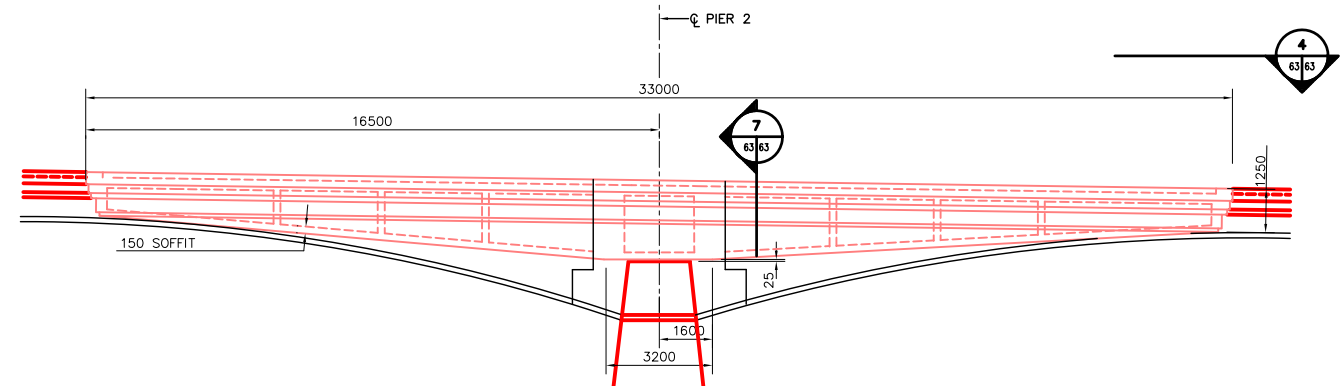
BRIDGE DECK UPPER LIFT
& ABUTMENT UPPER LIFT
CONSTRUCTION JOINT LAYOUT

CONSULTANT DRAWING NO.
61440-18-62

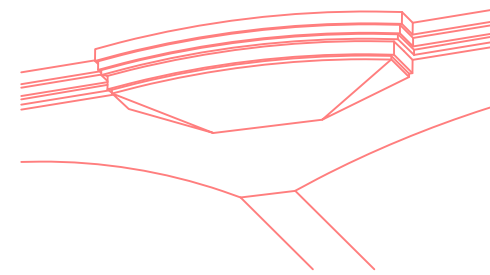
REV-2



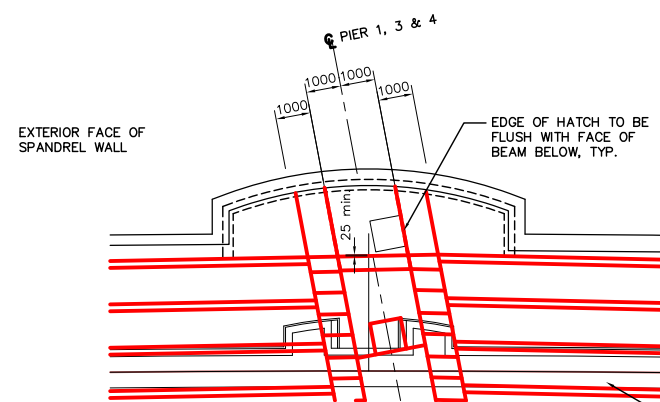
1 ELEVATION
SCALE 1:100



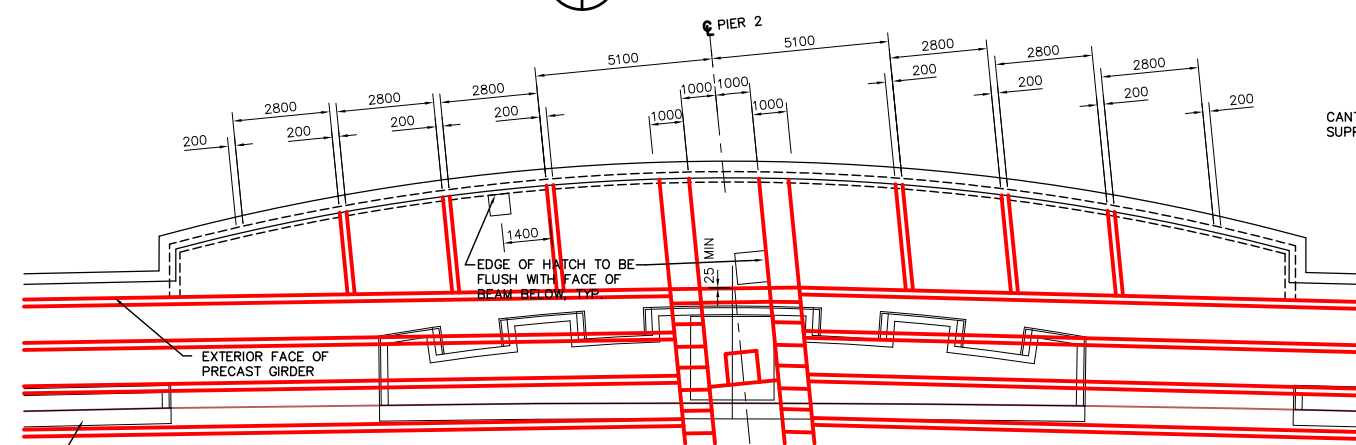
2 ELEVATION
SCALE 1:100



ISOMETRIC VIEW OF OBSERVATION DECKS (LOOKOUT SIMILAR)

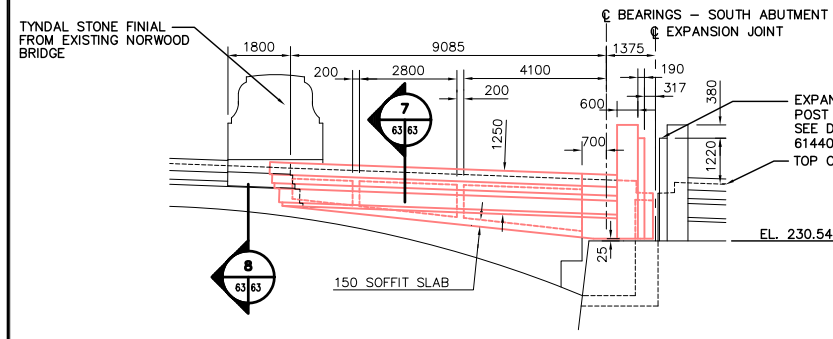


3 DETAIL
SCALE 1:100



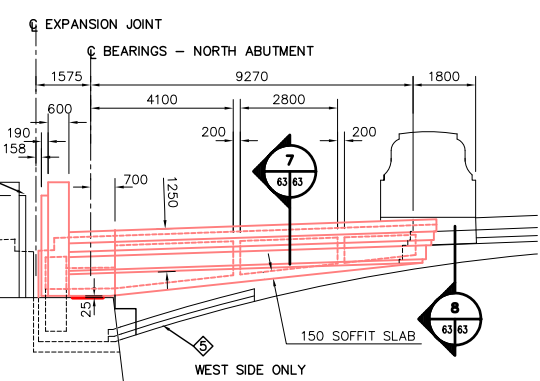
4 DETAIL
SCALE 1:100

CANTILEVER SIDEWALK SUPPORT BEAM, TYP.

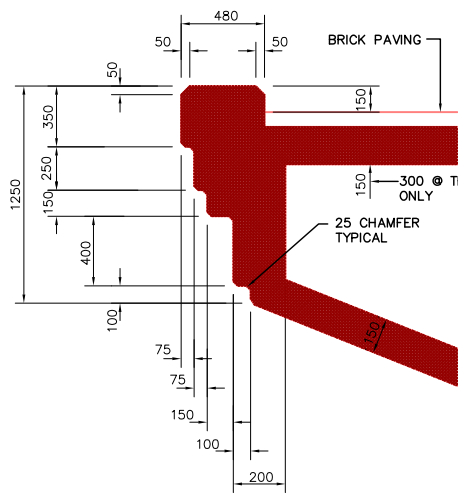


5 ELEVATION
SCALE 1:100

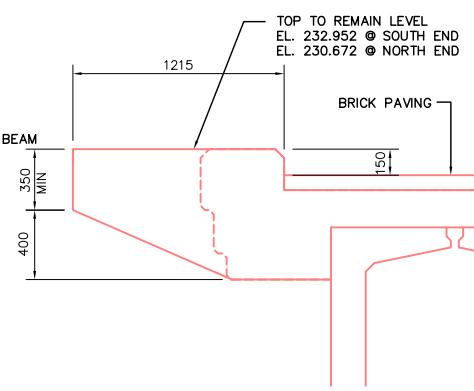
NOTE:
SEE DRAWING 61440-18-61 FOR "LIST OF MISCELLANEOUS METAL AND EMBEDDED PARTS"



6 ELEVATION
SCALE 1:100



7 TYPICAL SECTION
SCALE 1:20



8 TYPICAL SECTION
SCALE 1:20

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES		B.M. ELEV.
SURV. U/G STRUCTURES	DATE	
COMMITTEE		
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.		
2 AS-CONSTRUCTED	14/10/99	KAA
1 ISSUED FOR CONSTRUCTION	03/03/97	C.T.
0 ISSUED FOR REVIEW	01/03/97	KAA
NO. REVISIONS	DATE	BY

Reid Crowther Reid Crowther & Partners Ltd. Engineers Planners Scientists	
DESIGNED BY	CHECKED BY
DRAWN BY DR	APPROVED BY
HOR. SCALE: AS NOTED	AUTHORIZED BY DATE
VERTICAL: AS NOTED	S. SPANSPANER / SENIOR BRIDGE ENGINEER ACCEPTED FOR GRAY CONSTRUCTION BY DATE:
DATE 01/03/97	P. PLAZA / PROJECT MANAGER

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
C. P. GRAY
04/03/97
REGISTERED PROFESSIONAL ENGINEER

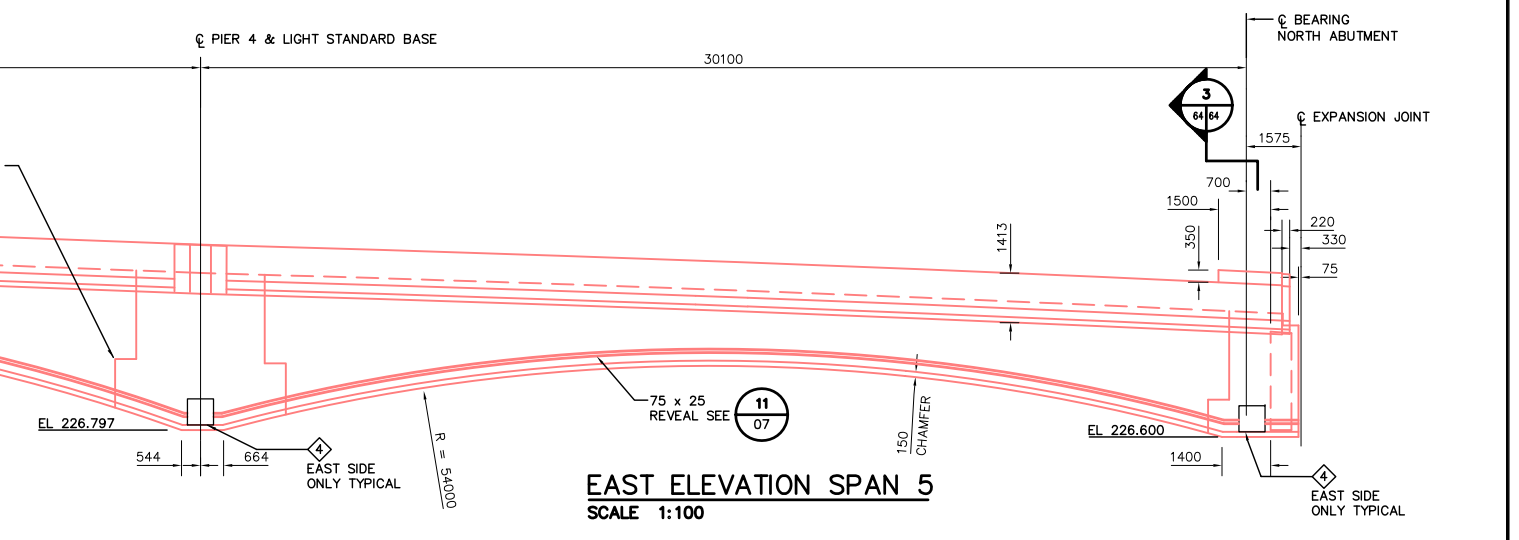
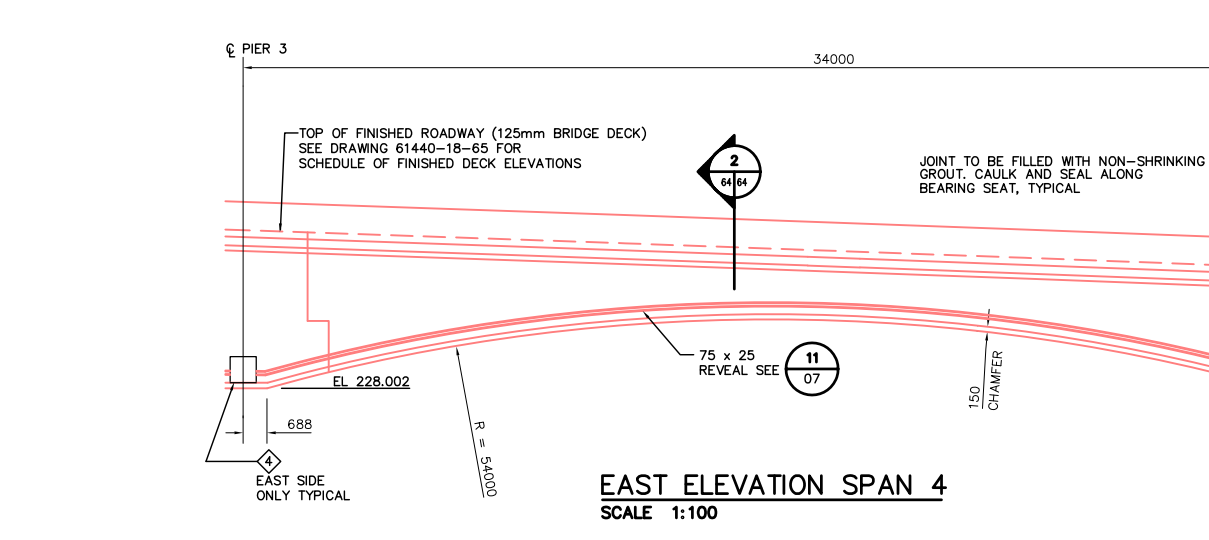
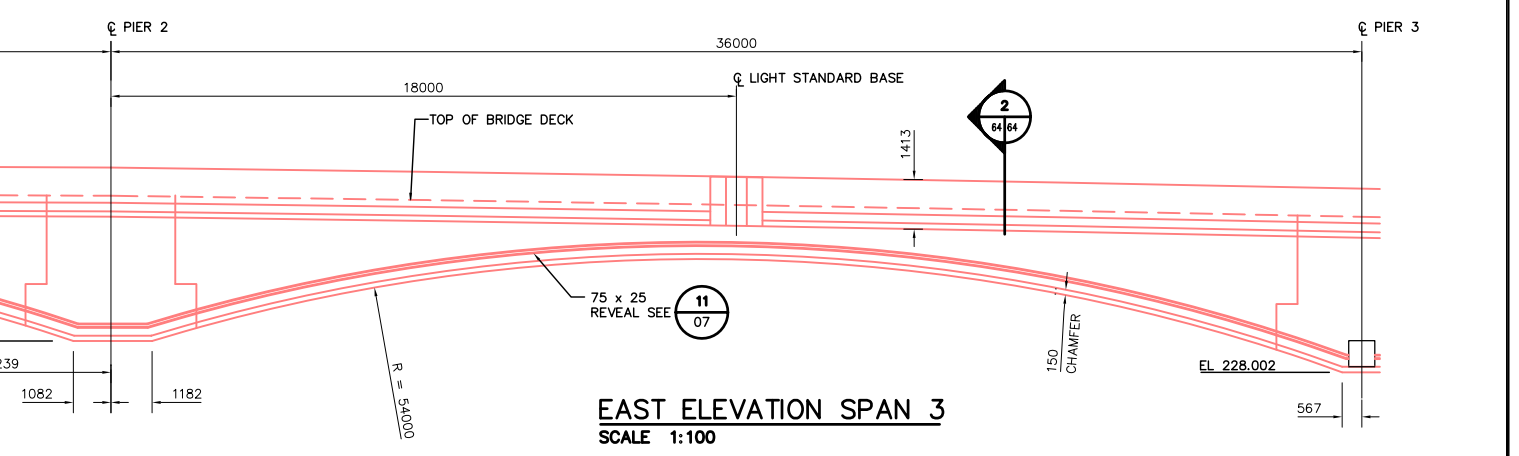
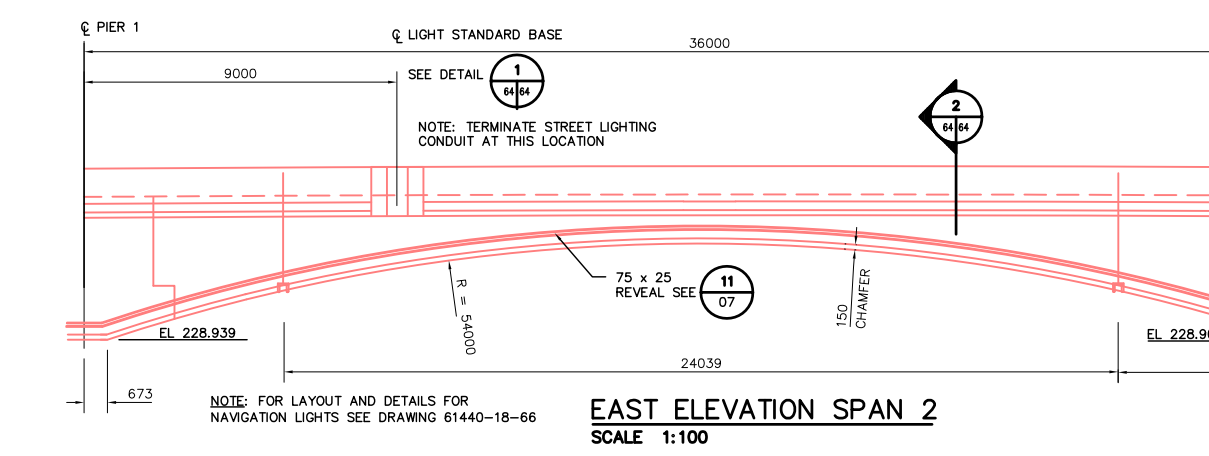
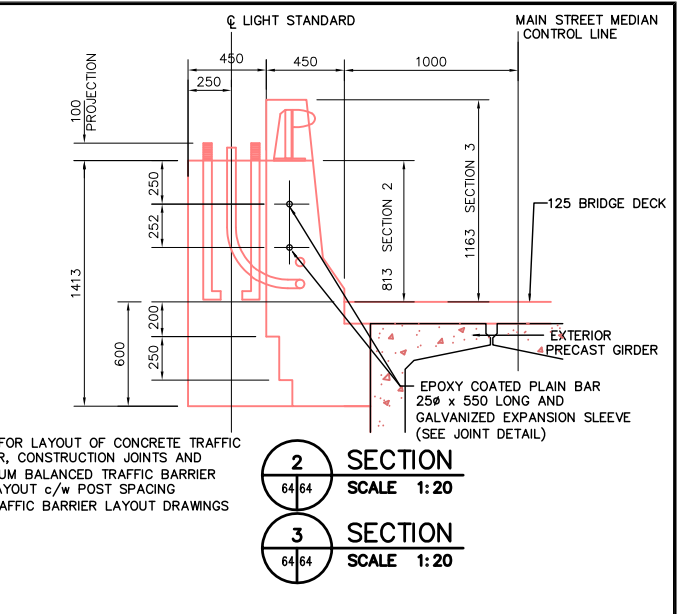
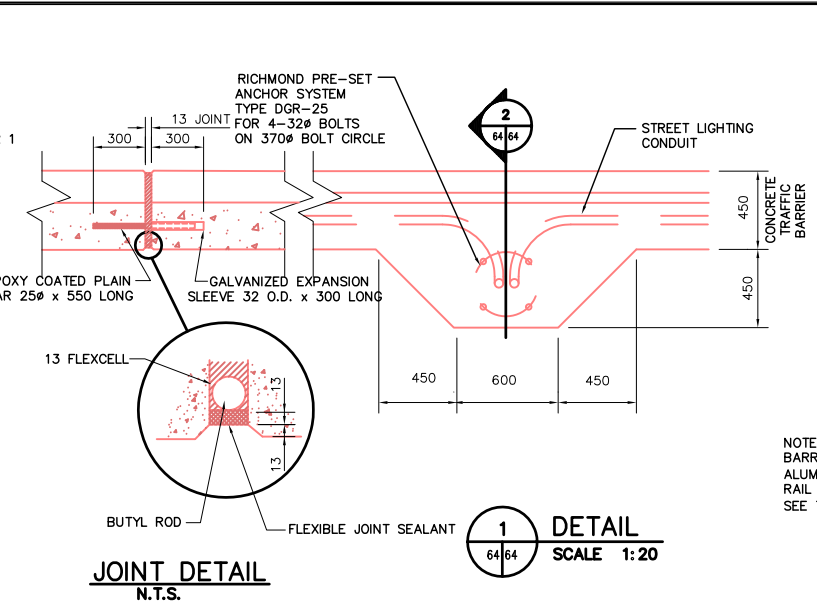
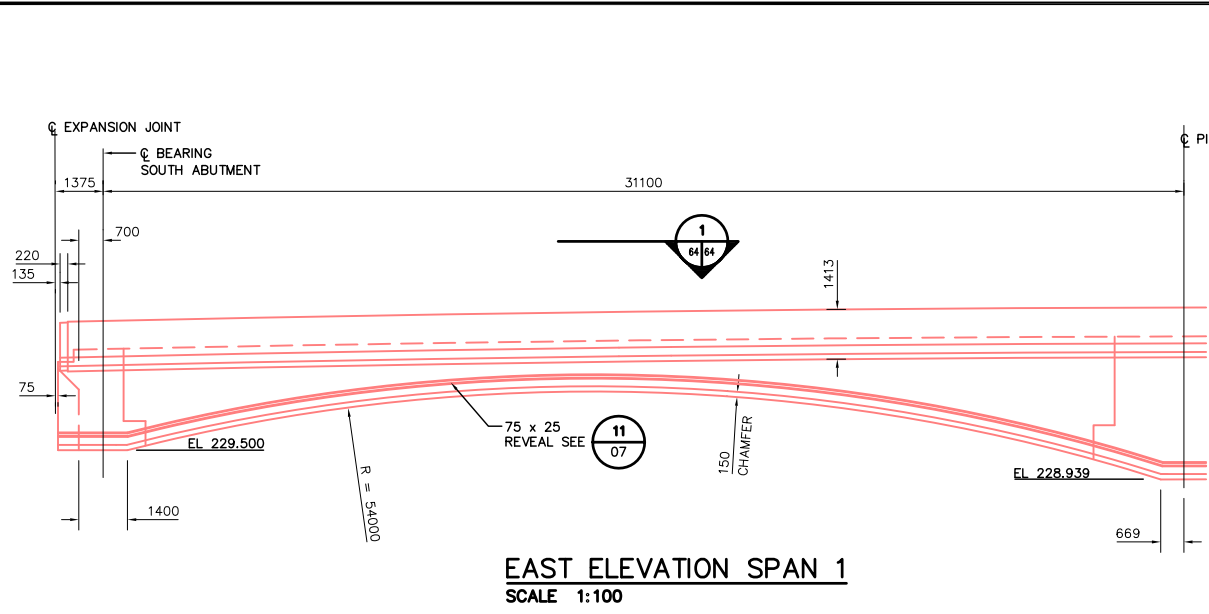
THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

CITY DRAWING NUMBER
B103-98-63
SHEET 63 OF

OBSERVATION DECKS AND LOOKOUTS
PLANS, ELEVATIONS & SECTIONS

REV-2



NOTE:
SEE DRAWING 61440-18-61
FOR "LIST OF MISCELLANEOUS METAL
AND EMBEDDED PARTS"

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES

SURV. U/G STRUCTURES	DATE	COMMITTEE

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.			

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

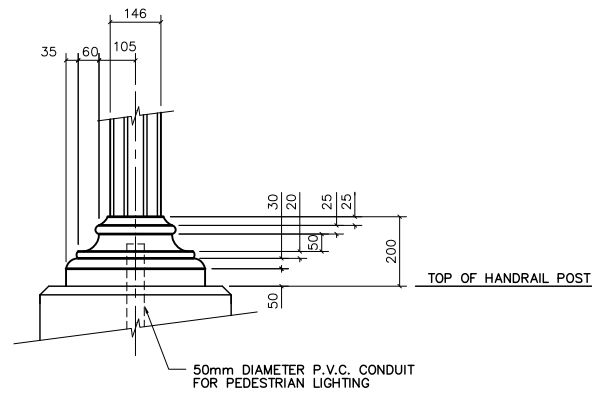
DESIGNED BY: JFK
CHECKED BY: [Signature]
DRAWN BY: JFK
APPROVED BY: [Signature]
HOR. SCALE: AS NOTED
VERTICAL: [Signature]
DATE: 12/20/96

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
C.P. GRAY
21/05/97
REGISTERED PROFESSIONAL ENGINEER

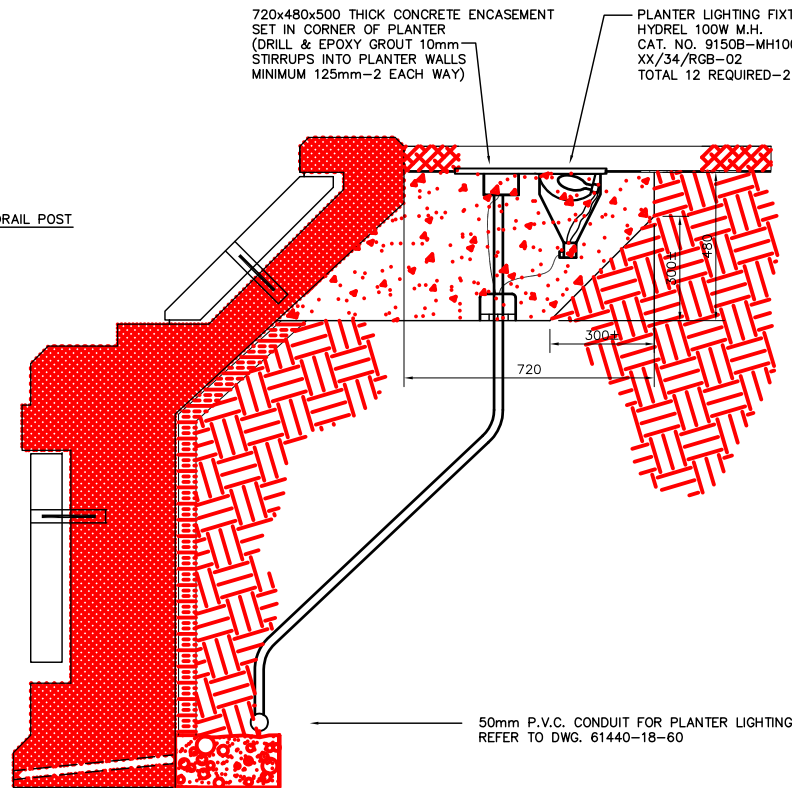
THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

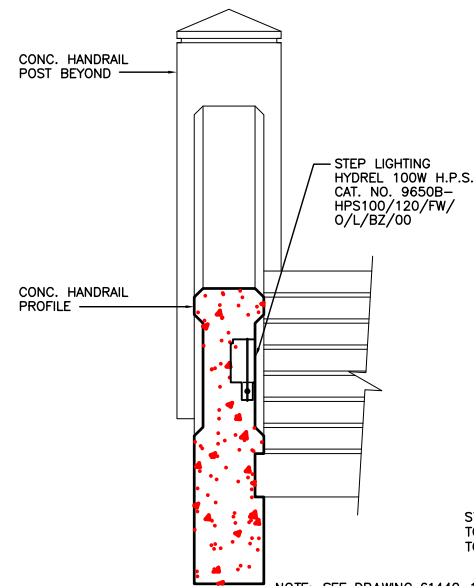
CITY DRAWING NUMBER: B103-98-64
SHEET 64 OF [Total]
EAST ELEVATION SPANS 1 - 5
REV-2



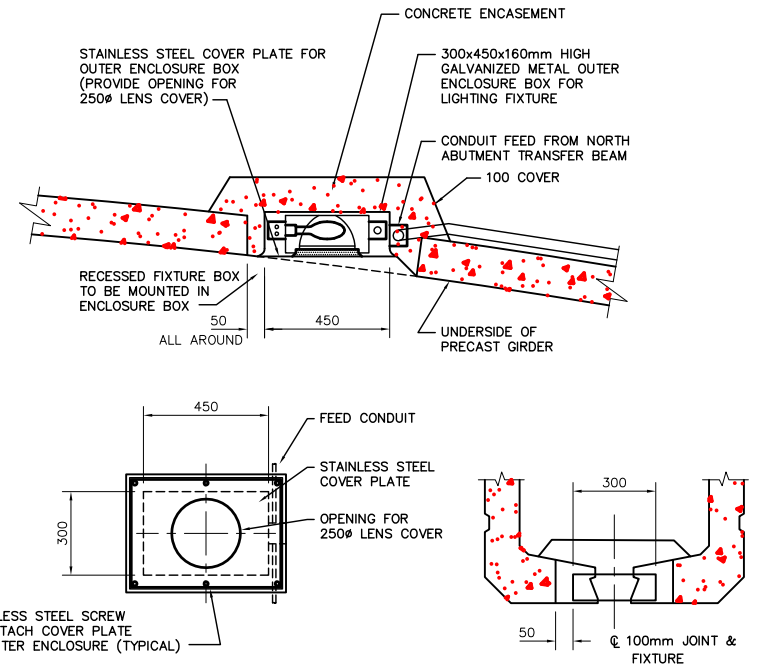
ORNAMENTAL LIGHT BASE DETAIL
SCALE 1:10



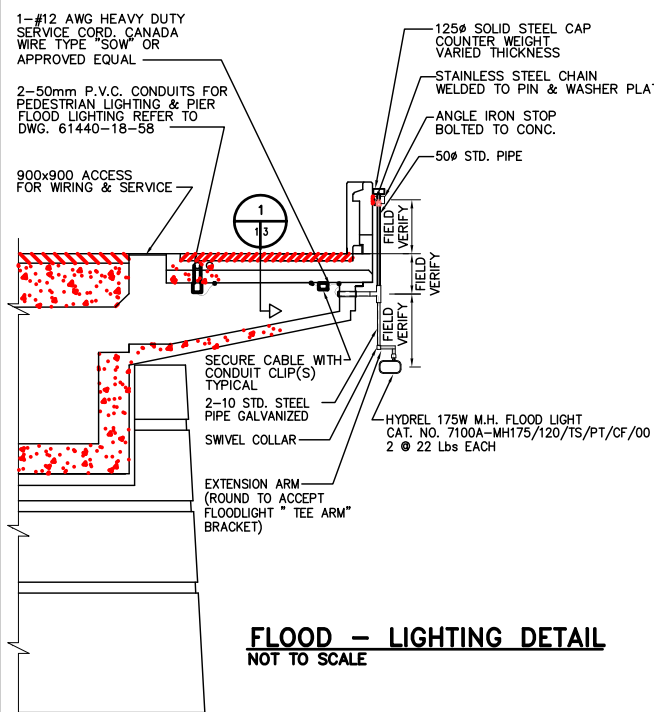
PLANTER - LIGHTING DETAIL
SCALE 1:10



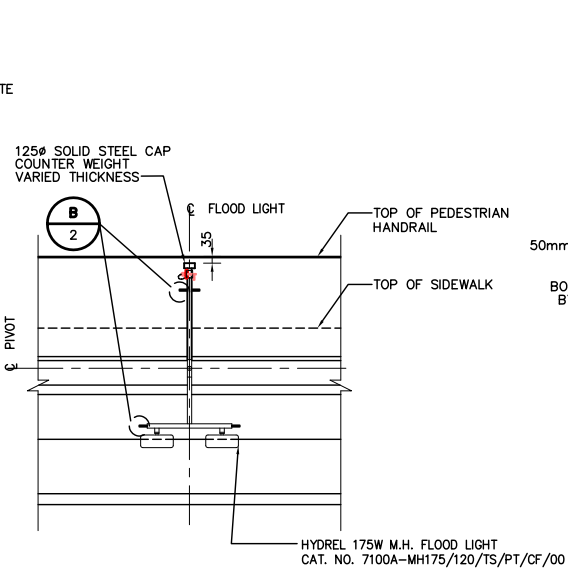
WALKWAY STEP LIGHTING DETAIL
SCALE: 1:20



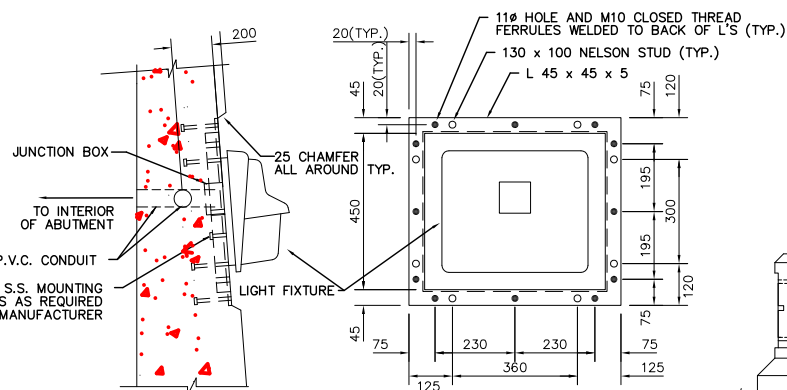
UNDER BRIDGE - RIVERWALK LIGHTING DETAIL
NOT TO SCALE



FLOOD - LIGHTING DETAIL
NOT TO SCALE

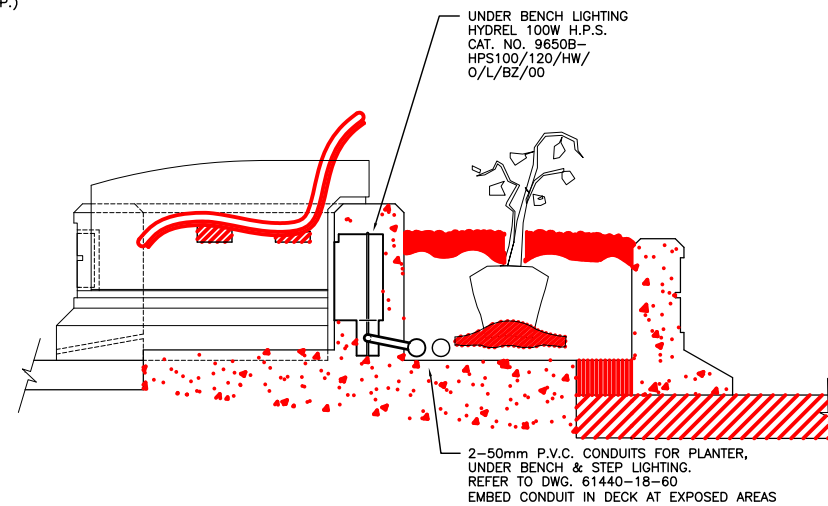


FLOOD - LIGHTING ELEVATION
NOT TO SCALE



- NOTES:**
1. STEEL FRAMES AROUND LIGHT FIXTURES TO BE HOT DIP GALVANIZED TO A MIN. NET RETENTION OF 600 g/m²
 2. FIXTURES TO BE HOLOPHANE WALLPACK 11 LUMINAIRES 70W HPS (UNDERPASS TYPE) OR EQUIVALENT.
 3. TOTAL 5 REQUIRED: 2 AT FRONT FACE SOUTH ABUTMENT, 2 AT FRONT FACE SOUTH ABUTMENT RETAINING WALL, AND 1 AT FRONT FACE NORTH ABUTMENT RETAINING WALL
 4. PROVIDE 25 CHAMFER ALL AROUND FRAME

ABUTMENT MOUNTED LIGHTING FIXTURE LOCATION DETAIL
SCALE 1:10



UNDER BENCH - LIGHTING DETAIL
SCALE 1:10

NOTE: REFER TO DRAWING NUMBER 61440-18-60 FOR LOCATIONS OF CONDUITS AND ALL LIGHTING FIXTURES ON THIS DRAWING.

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

- NOTES:**
1. DETAILS SHOWN ARE FOR PIER 2 LOOKOUT PIER 1, 3 & 4 OBSERVATION DECKS ARE SIMILAR
 2. CONTRACTOR TO FIELD VERIFY DIMENSIONS AND ENSURE UNIT IS BALANCED ABOUT THE PIVOT POINT.

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES		DATE	
SURV. U/G STRUCTURES	DATE	BY	DATE

DESIGNED BY		CHECKED BY	
DRAWN BY	AGT	APPROVED BY	DATE

HOR. SCALE:		AS NOTED	
VERTICAL:		AS NOTED	

ENGINEER'S SEAL	
PROVINCE OF MANITOBA	REGISTERED PROFESSIONAL ENGINEER

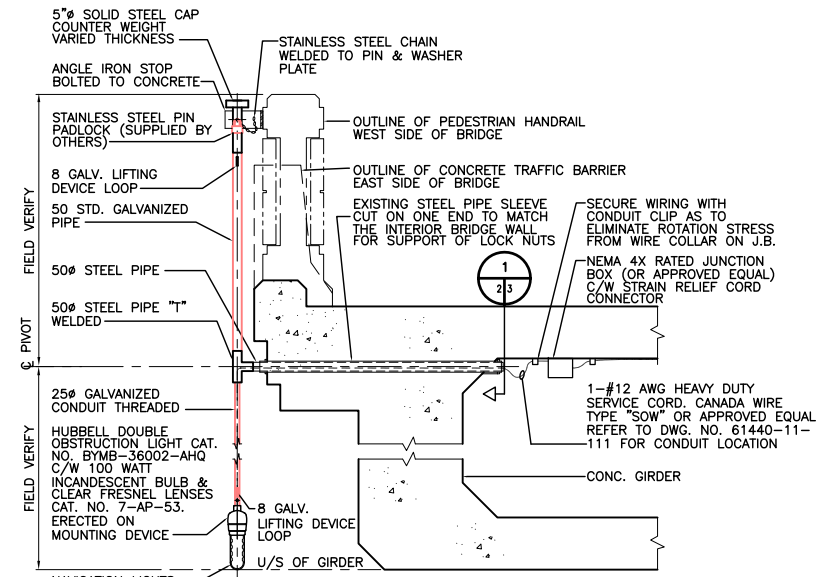
THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

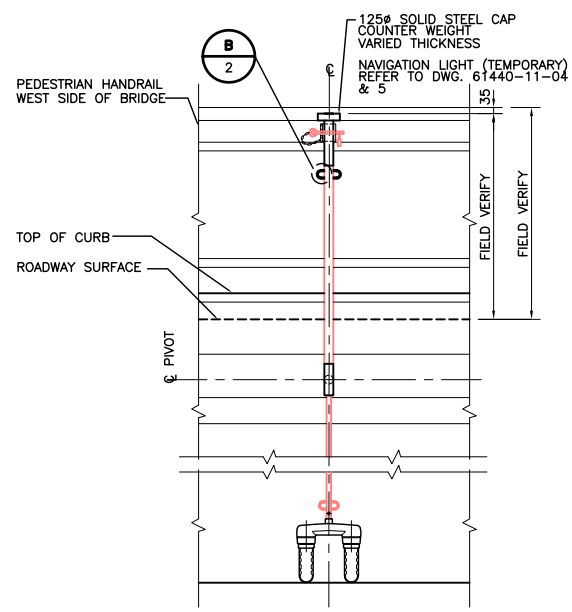
LIGHTING FIXTURES
SECTIONS AND DETAILS

CITY DRAWING NUMBER
B103-96-
SHEET 65 OF

CONSULTANT DRAWING NO.
61440-18-
REV-2

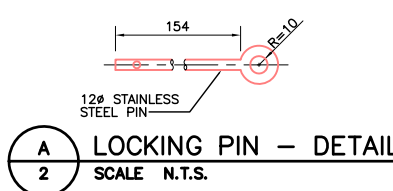


NAVIGATION LIGHT SUPPORT
SCALE 1:20

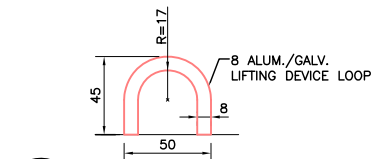


NAVIGATION LIGHT SUPPORT
SCALE 1:20

- NOTES:
1. ALUMINUM SHALL CONFORM TO AA6061.
 2. STEEL SHALL BE G40.21, 300W.
 3. ALL MATERIAL SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH CSA G164 UNLESS OTHERWISE NOTED.
 4. ALL FASTENERS AND HARDWARE SHALL BE STAINLESS STEEL.
 5. CONTRACTOR TO FIELD VERIFY DIMENSIONS AND ENSURE UNIT IS BALANCED ABOUT THE PIVOT POINT.



A LOCKING PIN - DETAIL
SCALE N.T.S.



B LIFTING DEVICE LOOP - DETAIL
SCALE N.T.S.

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

LOCATION APPROVED UNDERGROUND STRUCTURES		B.M. ELEV.
SURV. U/G STRUCTURES	DATE	
COMMITTEE		
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 DATE
2	AS-CONSTRUCTED	14/10/99 KAA
1	ISSUED FOR CONSTRUCTION	08/26/97 KAA
0	ISSUED FOR REVIEW	07/21/97 KAA

Reid Crowther Reid Crowther & Partners Ltd. Engineers Planners Scientists	
DESIGNED BY	CHECKED BY
DRAWN BY JFK/RMT	APPROVED BY
HOR. SCALE: AS NOTED	AUTHORIZED BY DATE
VERTICAL:	B. SPONSORER / SENIOR BRIDGE ENGINEER ACCEPTED FOR GREAT CONSTRUCTION BY DATE:
DATE 02/20/96	P. PLAZA / PROJECT-MANAGER

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
GA WEBSTER
REGISTERED PROFESSIONAL ENGINEER
02/09/97
CONSULTANT DRAWING NO.
61440-18-66

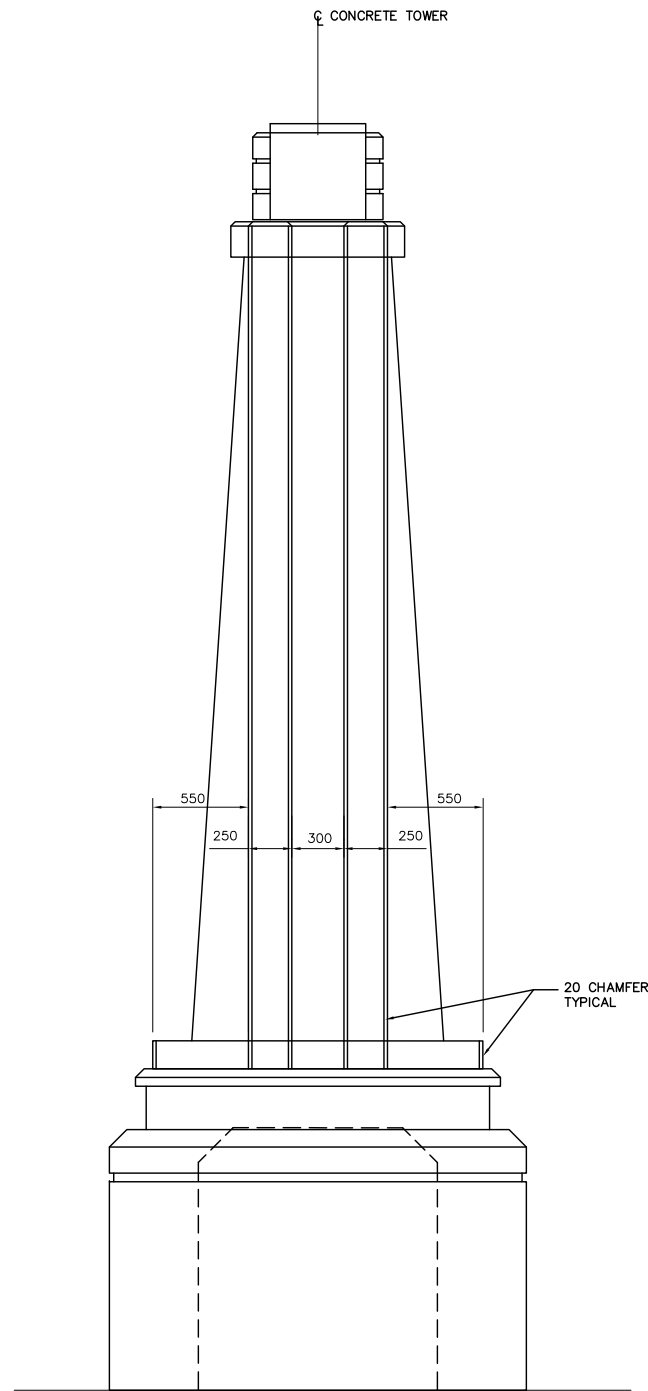
THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

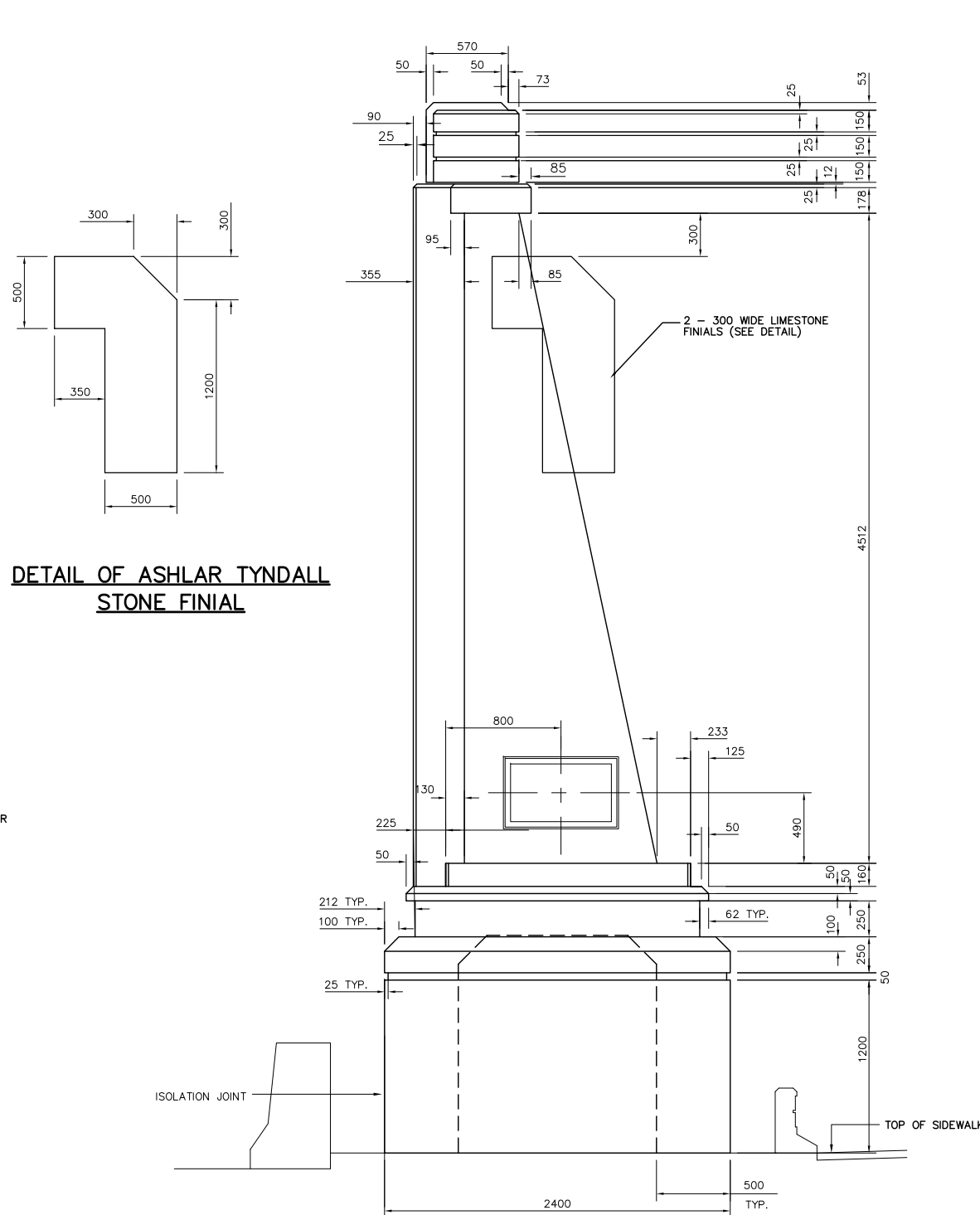
CITY DRAWING NUMBER
B103-98-66
SHEET 66 OF

NAVIGATION LIGHTS
REV-2

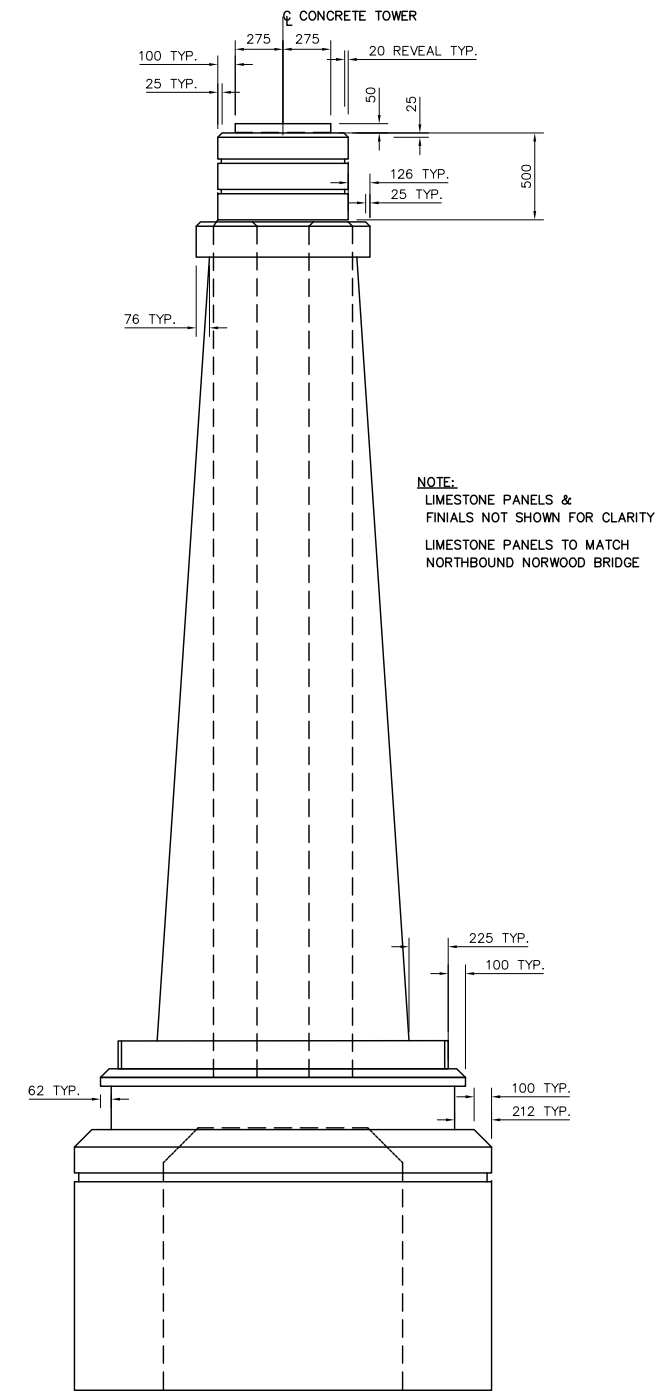
METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES



OVERHEAD SIGN STRUCTURE EAST ELEVATION



OVERHEAD SIGN STRUCTURE NORTH ELEVATION
SOUTH ELEVATION SIMILAR



OVERHEAD SIGN STRUCTURE WEST ELEVATION

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

LOCATION APPROVED UNDERGROUND STRUCTURES				B.M. ELEV.
SURV. 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.				
2	AS-CONSTRUCTED	14/10/99	KAA	
1	ISSUED FOR CONSTRUCTION	06/10/97	KAA	
0	ISSUED FOR REVIEW	05/23/97	KAA	
NO.	REVISIONS	DATE	BY	DATE

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY	CHECKED BY
DRAWN BY NHK	APPROVED BY
HOR. SCALE: AS NOTED	AUTHORIZED BY
VERTICAL: AS NOTED	DATE
	DATE 02/13/96

P. PLAZA / PROJECT MANAGER

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
C.P. GRAY
12/06/97
REGISTERED PROFESSIONAL ENGINEER

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

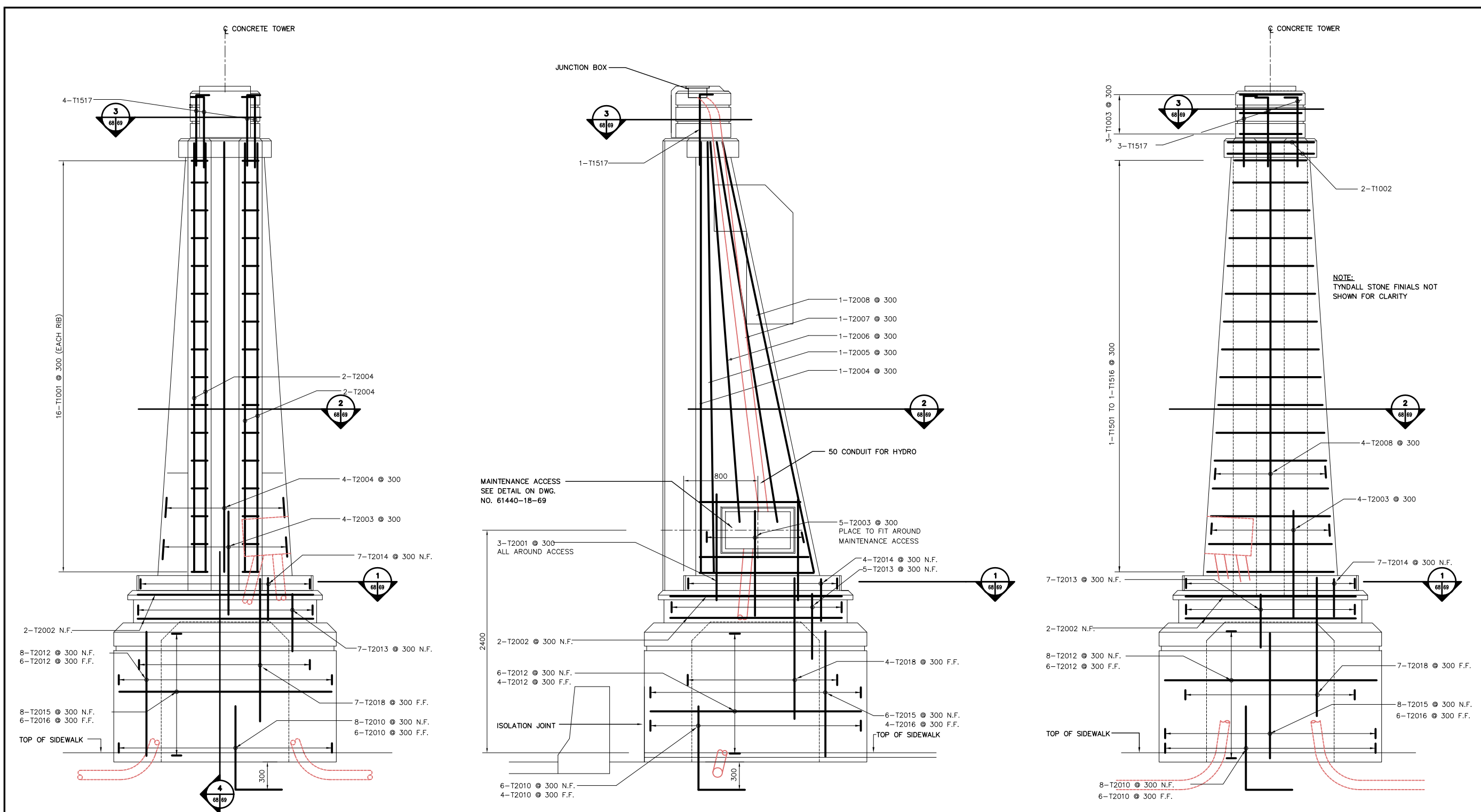
PIER 2 TOWER
CONCRETE

CITY DRAWING NUMBER
B103-98-67
SHEET 67 OF

CONSULTANT DRAWING NO.
61440-18-67

REV-2

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES



OVERHEAD SIGN STRUCTURE EAST ELEVATION

OVERHEAD SIGN STRUCTURE NORTH ELEVATION
SOUTH ELEVATION SIMILAR

OVERHEAD SIGN STRUCTURE WEST ELEVATION

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

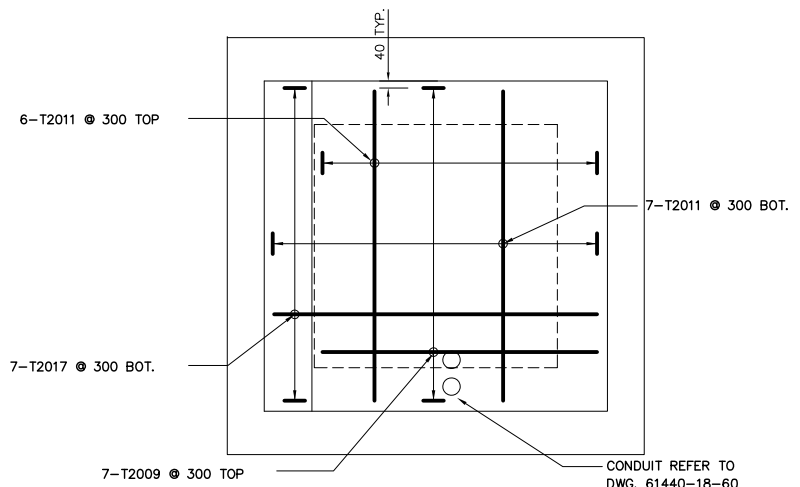
METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES	B.M. ELEV.
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.	
2 AS-CONSTRUCTED	14/10/99 KAA
1 ISSUED FOR CONSTRUCTION	06/10/97 KAA
0 ISSUED FOR REVIEW	05/23/97 KAA
NO. REVISIONS	DATE BY

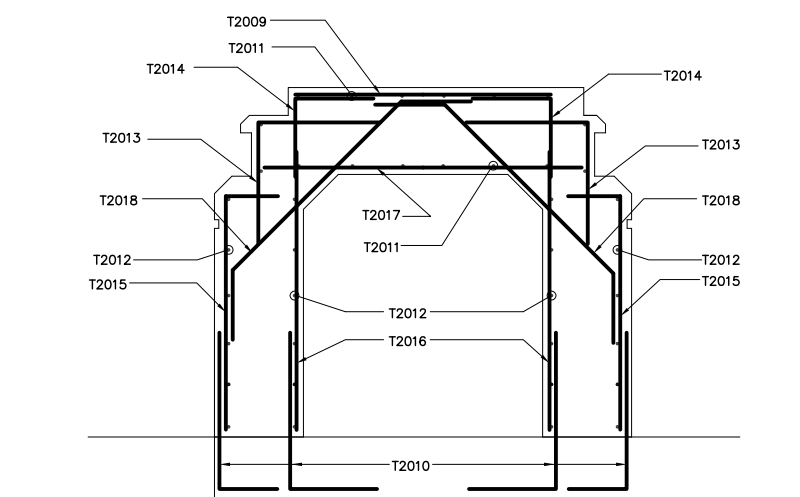
Reid Crowther Reid Crowther & Partners Ltd. Engineers Planners Scientists	
DESIGNED BY	CHECKED BY
DRAWN BY NHK	APPROVED BY
HOR. SCALE: 1:20	AUTHORIZED BY DATE
VERTICAL:	S. SPONSORER / SENIOR BRIDGE ENGINEER ACCEPTED FOR GRANT CONSTRUCTION BY DATE:
DATE 02/13/96	P. PLAZA / PROJECT MANAGER

ENGINEER'S SEAL PROVINCE OF MANITOBA ORIGINAL SIGNED BY C. P. GRAY 12/08/97 REGISTERED PROFESSIONAL ENGINEER
CONSULTANT DRAWING NO. 61440-18-68

THE CITY OF WINNIPEG STREETS AND TRANSPORTATION DEPARTMENT BRIDGE ENGINEERING DIVISION	
MAIN STREET AND NORWOOD BRIDGES PROJECT NORWOOD BRIDGE - SOUTHBOUND AND RELATED ROADWORKS	
PIER 2 TOWER REINFORCING SHEET 1 OF 2	CITY DRAWING NUMBER B103-98-68 SHEET 68 OF
	REV-2



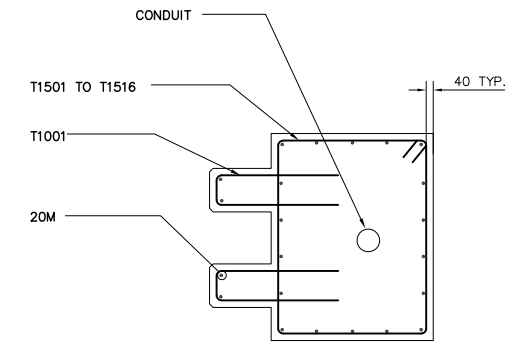
1 PLAN SECTION
SCALE 1:20



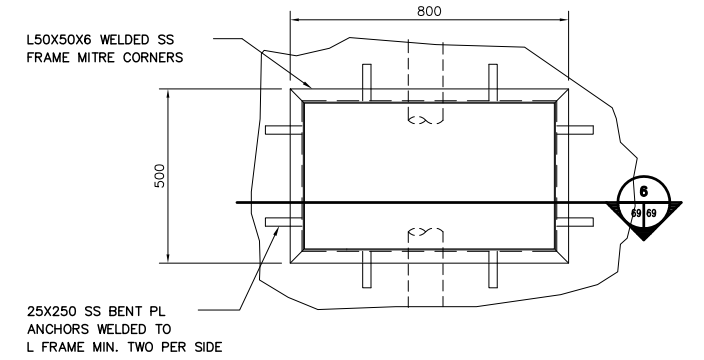
4 SECTION
SCALE 1:20

MARKS	NO. BARS	SIZE	LENGTH	TYPE	A	B	C	D	E	F	G	H	J	K	L	M	S	O	Mass (kg.)
T2001	12	20	1100	STR															31.1
T2002	8	20	2655	17		400	1855	400											50.0
T2003	18	20	1370	17		0	1100	300											58.1
T2004	10	20	4630	STR															109
T2005	2	20	4640	STR															21.9
T2006	2	20	4250	STR															20
T2007	2	20	4150	STR															19.5
T2008	6	20	4735	STR															89.2
T2009	7	20	1580	STR								210						26	
T2010	48	20	1400	17		0	900	500										158.3	
T2011	13	20	1780	STR		1400	1855	1400										54.5	
T2012	48	20	3050	17		400	2250	400										344.8	
T2013	24	20	1400	17		0	700	700										79.1	
T2014	22	20	900	17		0	450	450										46.6	
T2015	28	20	1600	17		0	1300	300										105.5	
T2016	20	20	1600	STR														75.4	
T2017	7	20	1825	STR														30.1	
T2018	22	20	2185	14	400	1385	400					970						113.2	
T1501	1	15	5490	T1	140	1245	1360	1245	1360				140					8.6	
T1502	1	15	5280	T1	140	1180	1320	1180	1320				140					8.3	
T1503	1	15	5080	T1	140	1120	1280	1120	1280				140					8.0	
T1504	1	15	4879	T1	140	1055	1240	1055	1240				140					7.8	
T1505	1	15	4660	T1	140	990	1200	990	1200				140					7.3	
T1506	1	15	4459	T1	140	925	1160	925	1160				140					7.0	
T1507	1	15	4250	T1	140	865	1120	865	1120				140					6.7	
T1508	1	15	4040	T1	140	800	1080	800	1080				140					6.3	
T1509	1	15	3830	T1	140	735	1040	735	1040				140					6.0	
T1510	1	15	3630	T1	140	675	1000	675	1000				140					5.7	
T1511	1	15	3420	T1	140	610	960	610	960				140					5.4	
T1512	1	15	3210	T1	140	545	920	545	920				140					5.0	
T1513	1	15	3000	T1	140	480	880	480	880				140					4.7	
T1514	1	15	2790	T1	140	415	840	415	840				140					4.4	
T1515	1	15	2580	T1	140	355	800	355	800				140					4.1	
T1516	1	15	2400	T1	140	290	770	290	770				140					3.8	
T1517	9	15	900	2	140	760												12.7	
T1001	32	10	1570	17		700	170	700										39.4	
T1002	2	10	3000	T1	100	480	920	480	920				100					4.7	
T1003	3	10	2400	T1	100	630	470	630	470				100					5.7	
TOTAL																			1594

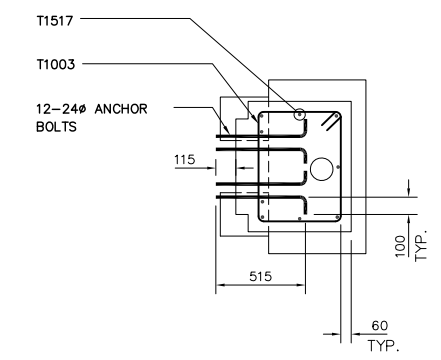
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WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES



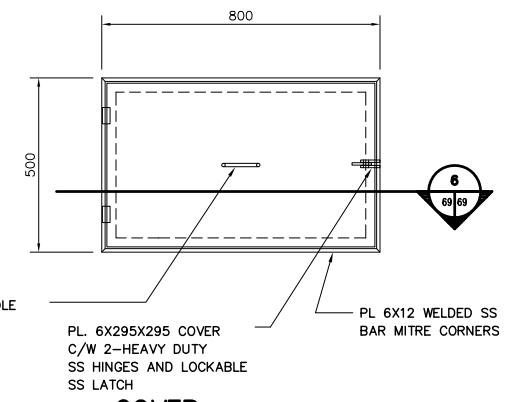
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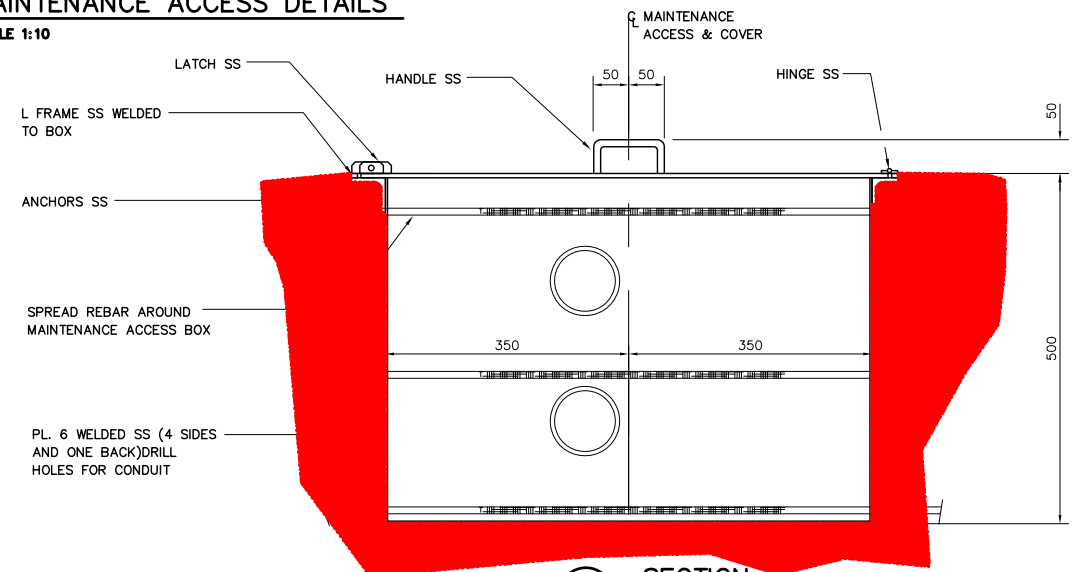
5 MAINTENANCE ACCESS DETAILS
SCALE 1:10



3 PLAN SECTION
SCALE 1:20



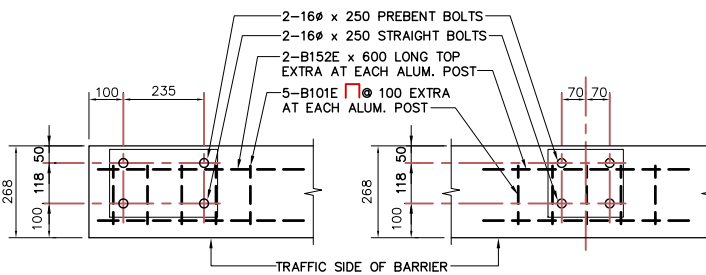
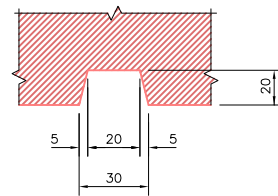
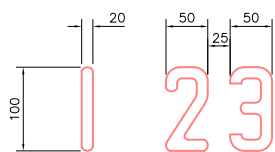
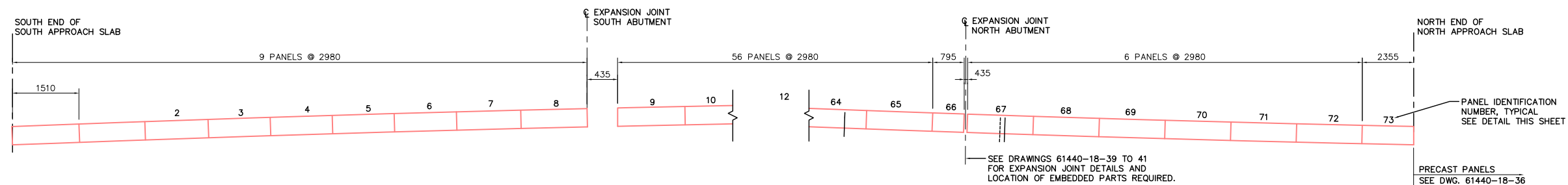
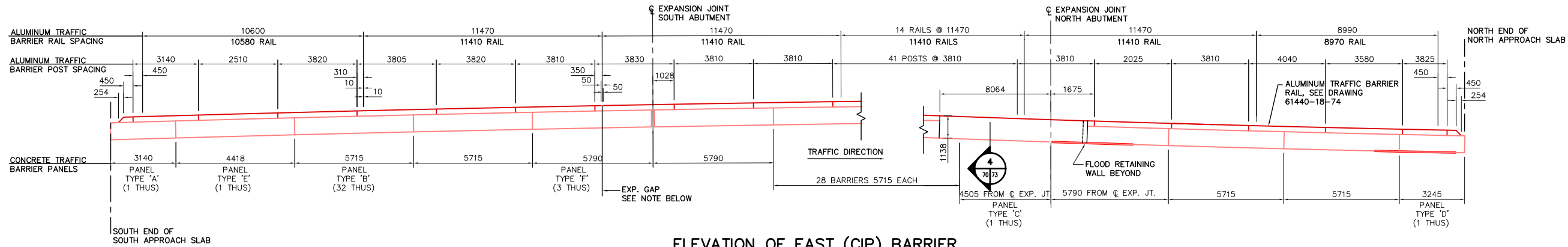
COVER



6 SECTION
SCALE 1:5

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

LOCATION APPROVED UNDERGROUND STRUCTURES SURV. U/G STRUCTURES DATE COMMITTEE 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. <table border="1"> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table>																	 Reid Crowther & Partners Ltd. Engineers Planners Scientists	ENGINEER'S SEAL 	THE CITY OF WINNIPEG STREETS AND TRANSPORTATION DEPARTMENT BRIDGE ENGINEERING DIVISION MAIN STREET AND NORWOOD BRIDGES PROJECT NORWOOD BRIDGE - SOUTHBOUND AND RELATED ROADWORKS	CITY DRAWING NUMBER B103-98-69 SHEET 69 OF
DESIGNED BY DRAWN BY 2 AS-CONSTRUCTED 14/10/99 KAA 1 ISSUED FOR CONSTRUCTION 06/10/97 KAA 0 ISSUED FOR REVIEW 05/23/97 KAA NO. REVISIONS DATE BY	CHECKED BY APPROVED BY AUTHORIZED BY DATE B. BRUNS/PANZER / SENIOR BRIDGE ENGINEER ACCEPTED FOR GRANT CONSTRUCTION BY DATE: P. PLAZA / PROJECT MANAGER	CONSULTANT DRAWING NO. 61440-18-69 PIER 2 TOWER REINFORCING SHEET 2 OF 2	REV-2																		



CONC. TRAFFIC BARRIER ALUM. RAIL - BILL OF MATERIALS	
ITEM	No. REQUIRED
BRIDGE RAIL POSTS BR1 TYPE C	58
11410 RAIL	17
10580 RAIL	1
8970 RAIL	1
RAIL END SECTIONS	2 (1L, 1R)
457.2 STD. SPLICE BAR	18
700 EXPANSION SPLICE BAR	2
146 RAIL CLAMP BAR	116
CAP SCREWS	308
WASHERS	308
SHIMS	AS REQUIRED

ALUMINUM RAIL EXPANSION NOTE :
 - EXPANSION GAP 100mm AT 20° C.
 - TEMPERATURE ADJUSTMENT : +8mm FOR EACH -5° C
 -8mm FOR EACH +5° C

NOTE:
IDENTIFICATION NUMBER TO BE PLACED ON THE TOP RIGHT HAND CORNER OF BACK FACE OF PANEL 100mm FROM EACH FACE

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

LOCATION APPROVED UNDERGROUND STRUCTURES

SURV. U/G STRUCTURES COMMITTEE	DATE

NOTE:
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B.M. ELEV.			

Reid Crowther Reid Crowther & Partners Ltd. Engineers Planners Scientists	
DESIGNED BY	CHECKED BY
DRAWN BY KAA	APPROVED BY
HOR. SCALE: 1:100	AUTHORIZED BY DATE
VERTICAL: 1:100	S. SUPERVISOR / SENIOR BRIDGE ENGINEER ACCEPTED FOR GRANT CONSTRUCTION BY DATE:
NO. REVISIONS	DATE BY DATE 05/20/97
	P. PLAZA / PROJECT MANAGER

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
G.A. WEBSTER
18/06/97
REGISTERED PROFESSIONAL ENGINEER

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

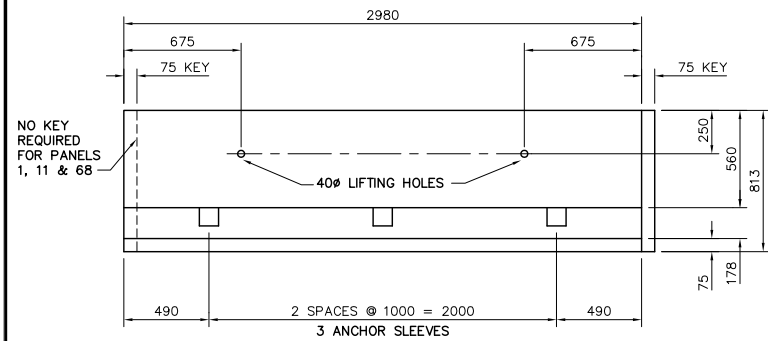
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

EAST AND WEST
CONCRETE TRAFFIC BARRIER

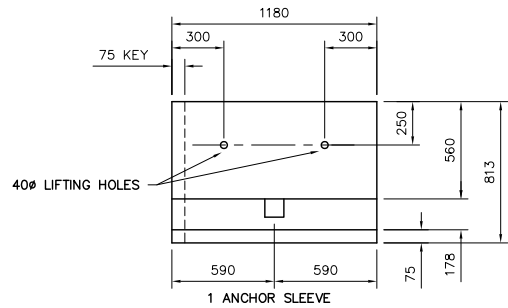
CITY DRAWING NUMBER
B103-98-70
SHEET 70 OF
REV-2

CONSULTANT DRAWING NO.
61440-18-70

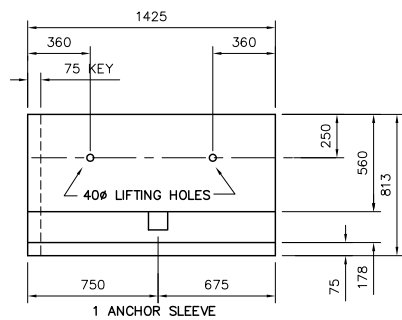
METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES



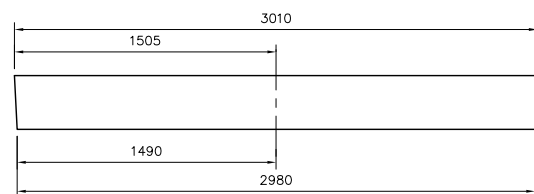
PANELS 1 TO 9, 11 TO 66, 68 TO 73,
SCALE 1:50



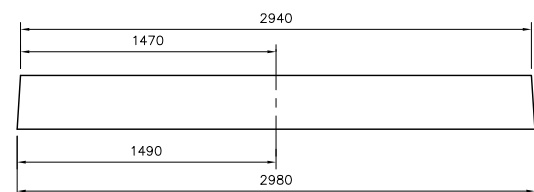
PANEL 10
SCALE 1:50



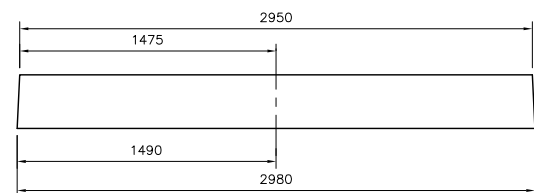
PANEL 67
SCALE 1:50



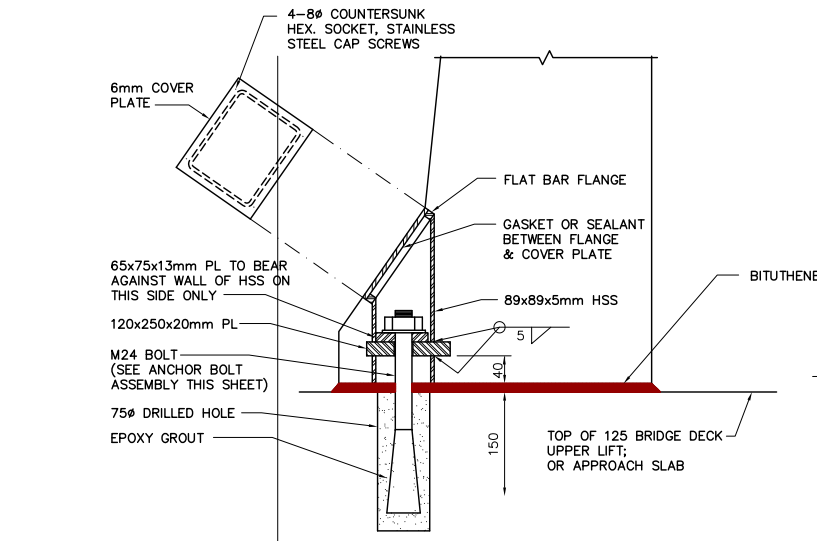
PLAN, PANELS 1-4



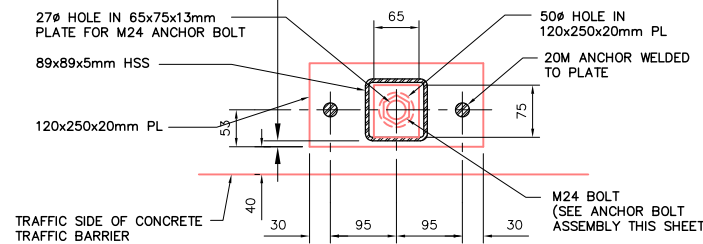
PLAN, PANELS 10-12



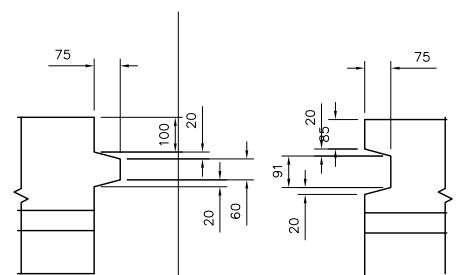
PLAN, PANELS 73-79



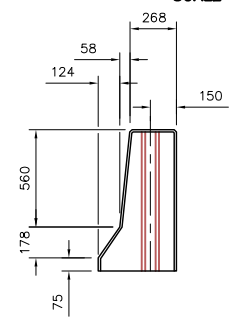
SECTION THROUGH SLEEVE
SCALE 1:5



PLAN OF SLEEVE
SCALE 1:5

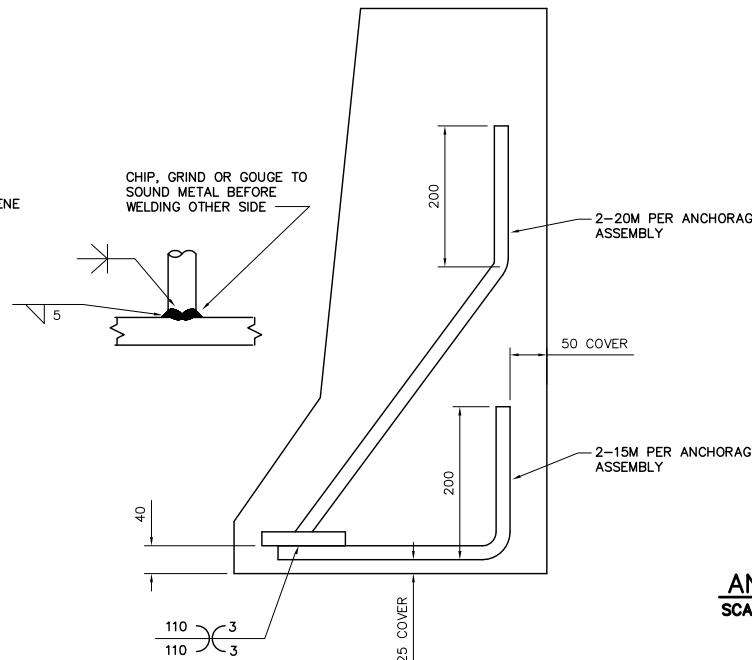


END KEY DETAILS
SCALE 1:50

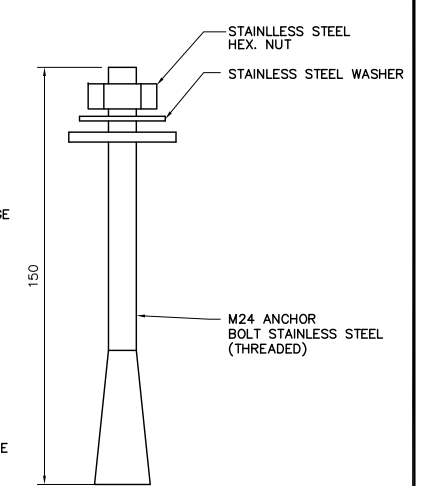


TYPICAL END
SCALE 1:50

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES



SECTION SHOWING INTERNAL ANCHORS
SCALE 1:5



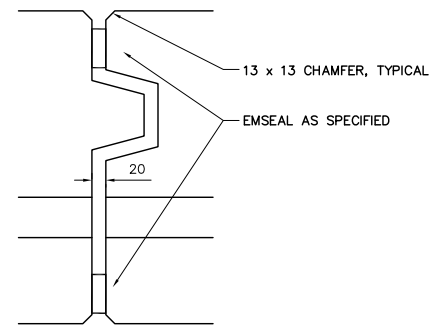
ANCHOR BOLT ASSEMBLY
SCALE 1:5

FABRICATION NOTES

1. CONCRETE MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS = 32 MPa.
2. REINFORCING STEEL FOR ANCHORAGE ASSEMBLIES SHALL BE WELDABLE, LOW ALLOY DEFORMED STEEL BARS CONFORMING TO CSA G30.16, GRADE 400MPa.
3. REBAR WELDING SHALL CONFORM TO CSA W186.
4. REINFORCING STEEL FOR OTHER THAN ANCHORAGE ASSEMBLIES SHALL BE EPOXY COATED DEFORMED STEEL BARS CONFORMING TO CSA G30.12, GRADE 400 MPa.
5. STRUCTURAL STEEL PLATE SHALL CONFORM TO CSA G40.21M, GRADE 300W.
6. HOLLOW STRUCTURAL SECTIONS SHALL CONFORM TO CSA G40.21, GRADE 350W.
7. STRUCTURAL STEEL WELDING SHALL CONFORM TO CSA W47.1 AND W59.
8. ANCHOR BOLTS SHALL BE AISI 5160 HIGH STRENGTH ALLOY STAINLESS STEEL.
9. ALL ANCHORAGE ASSEMBLIES AND COMPONENTS SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION UNLESS NOTED OTHERWISE.
10. HOT-DIP GALVANIZING SHALL BE IN ACCORDANCE WITH CSA G164 TO A MINIMUM NET RETENTION OF 600 g/m²

INSTALLATION NOTES

1. PROPOSED SEQUENCE OF INSTALLATION FOR BARRIER UNITS:
 - a. LOCATE AND DRILL HOLES FOR ANCHOR BOLTS AND INSERTS.
 - b. INSTALL STAINLESS STEEL DAYTON F57 INSERTS IN DRILLED HOLES AND POUR EPOXY GROUT.
 - c. PLACE NON SHRINK GROUT AND ANCHOR BOLT ASSEMBLIES INTO THE PREDRILLED HOLES IN THE CONCRETE SLAB.
 - d. AFTER EPOXY GROUT HAS REACHED DESIGN STRENGTH TIGHTEN NUTS ON ANCHOR BOLTS FOR "SNUG" BEARING AND INSTALL COVER PLATES c/w GASKET OR SEALANT
 - e. INSTALL EMSEAL AS SPECIFIED.
 - f. FOR THE FUTURE BARRIER LOCATIONS WHERE THE ANCHOR BOLTS ARE NOT INSTALLED PROVIDE AND INSTALL STAINLESS STEEL CAP SCREWS IN THE FERRULES/INSERTS.

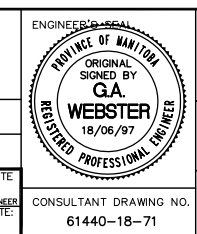


END KEY DETAIL
SCALE 1:50

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

LOCATION APPROVED UNDERGROUND STRUCTURES		B.M. ELEV.
SURV. U/G STRUCTURES	DATE	
COMMITTEE		
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

DESIGNED BY	CHECKED BY	DATE
KA	KA	05/20/97
DRAWN BY	APPROVED BY	
KA		
HOR. SCALE:	AUTHORIZED BY	DATE
VERTICAL: AS NOTED	B. SPANSPANER / SENIOR BRIDGE ENGINEER	
	ACCEPTED FOR GREAT CONSTRUCTION BY: DATE:	
	P. PLAZA / PROJECT MANAGER	



THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

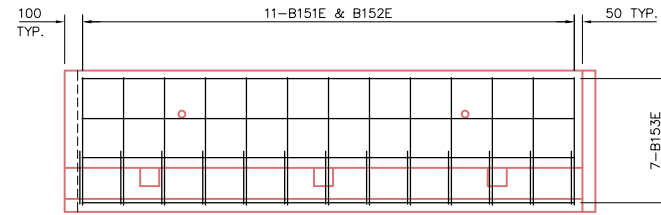
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

PRECAST CONCRETE
TRAFFIC BARRIER
DETAILS

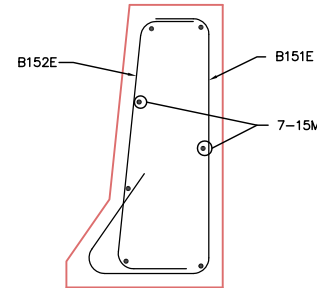
CITY DRAWING NUMBER
B103-98-71
SHEET 71 OF

CONSULTANT DRAWING NO.
61440-18-71

REV-2

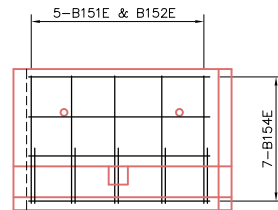


PANELS 1-9, 11-66, 68-73,
SCALE 1:20

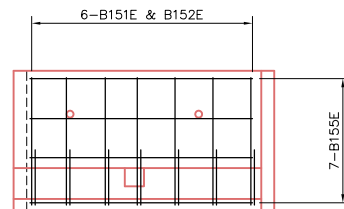


REINFORCING THROUGH PRECAST TRAFFIC BARRIER
SCALE 1:10

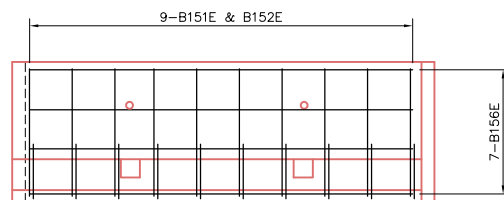
REINFORCING SCHEDULE																			
Marks	No. Bars	Size	Length	Type	A	B	C	D	E	F	G	H	J	K	L	M	S	O	Mass (kg)
B151E	801	15	1633	17	180	733	370	350										200	2054
B152E	801	15	1093	17		180	733	180											1375
B153E	7	15	2825	STR															31
B154E	7	15	1025	STR															11
B155E	7	15	1270	STR															14
B156E	7	15	2200	STR															24
TOTAL																		3509	



PANEL 10
SCALE 1:20



PANEL 67
SCALE 1:20

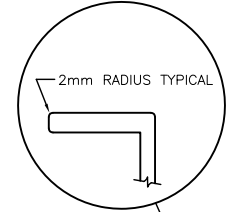
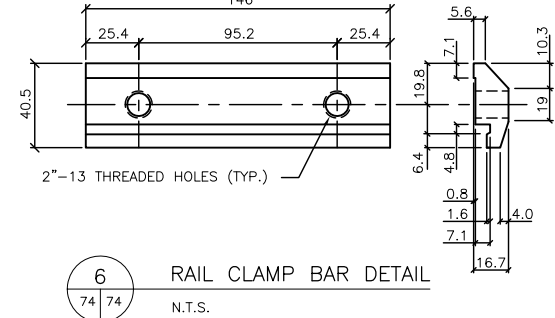
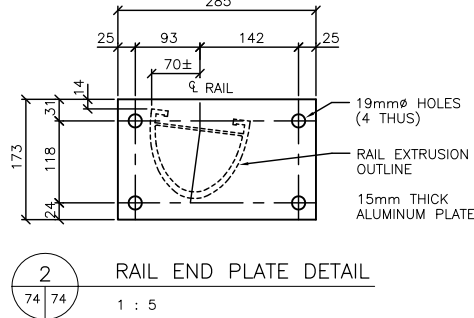
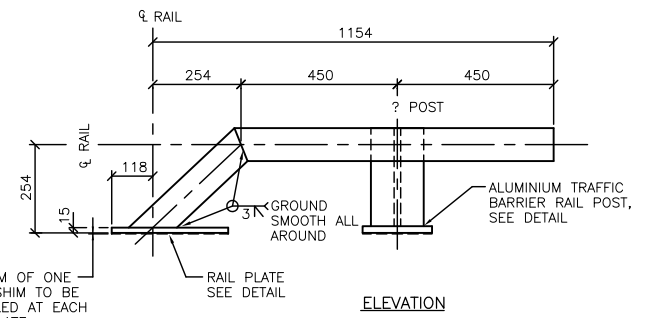
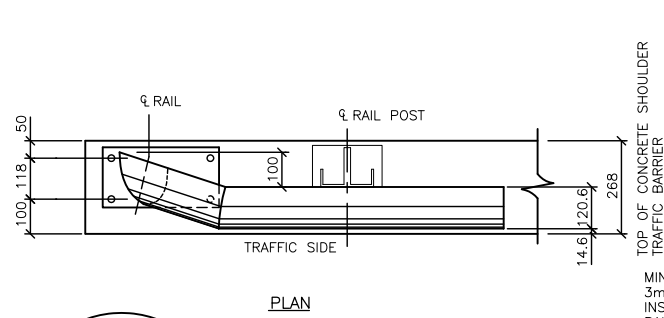


PANEL 74
SCALE 1:20

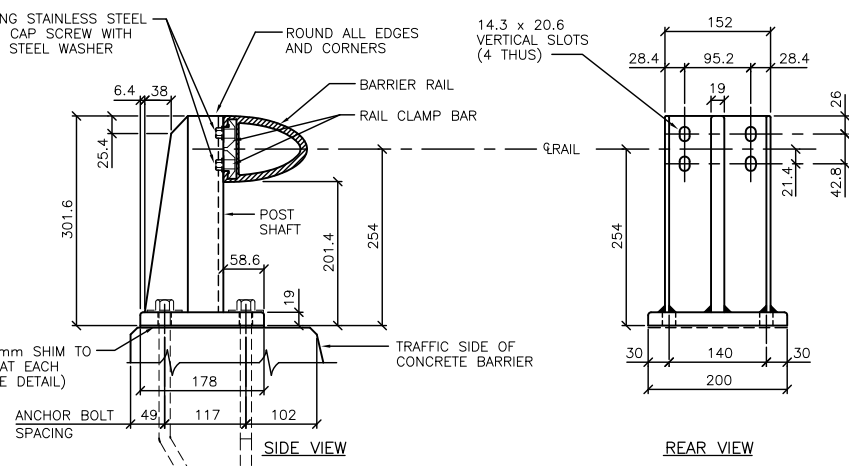
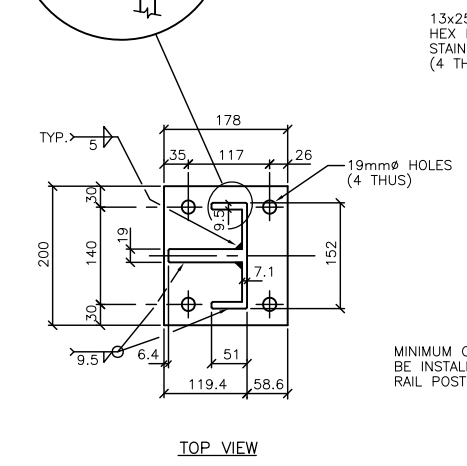
REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

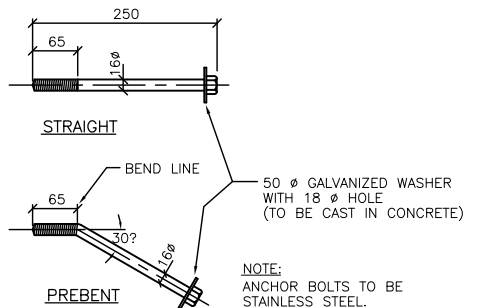
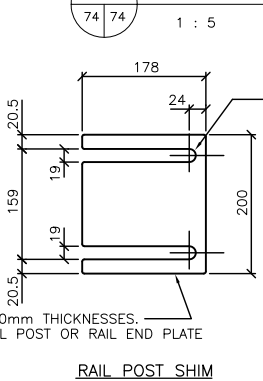
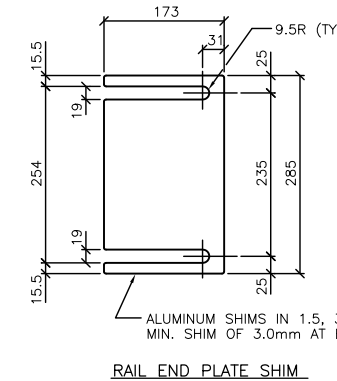
LOCATION APPROVED UNDERGROUND STRUCTURES SURV. U/G STRUCTURES DATE COMMITTEE NOTE: LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE. BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.	B.M. ELEV.	Reid Crowther & Partners Ltd. Engineers Planners Scientists	ENGINEER'S SEAL ORIGINAL SIGNED BY G.A. WEBSTER 18/06/97 REGISTERED PROFESSIONAL ENGINEER	THE CITY OF WINNIPEG STREETS AND TRANSPORTATION DEPARTMENT BRIDGE ENGINEERING DIVISION MAIN STREET AND NORWOOD BRIDGES PROJECT NORWOOD BRIDGE - SOUTHBOUND AND RELATED ROADWORKS	CITY DRAWING NUMBER B103-98-72
	2 AS-CONSTRUCTED 15/10/99 KAA 1 ISSUED FOR CONSTRUCTION 06/10/97 KAA 0 ISSUED FOR REVIEW 05/22/97 KAA NO. REVISIONS DATE BY				DESIGNED BY DRAWN BY KAA HOR. SCALE: VERTICAL: AS NOTED DATE 05/20/97



1 RAIL END SECTION DETAIL
2 REQUIRED : 1 LEFT HAND (AS SHOWN)
1 RIGHT HAND
1 : 10

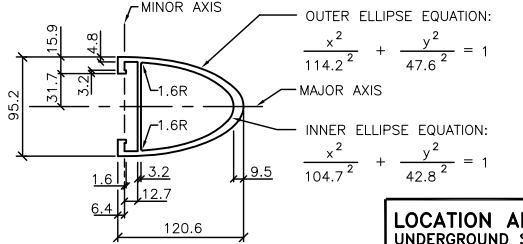
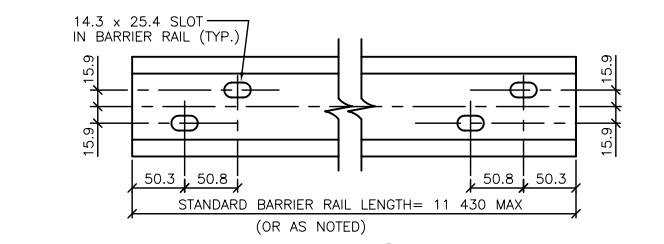


3 WELDED ALUMINIUM TRAFFIC BARRIER RAIL POST DETAIL
ALSO SHOWING RAIL TO POST ASSEMBLY DETAIL
1 : 5

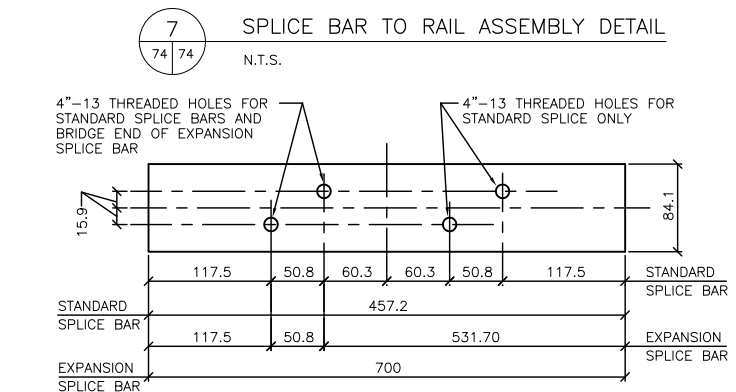
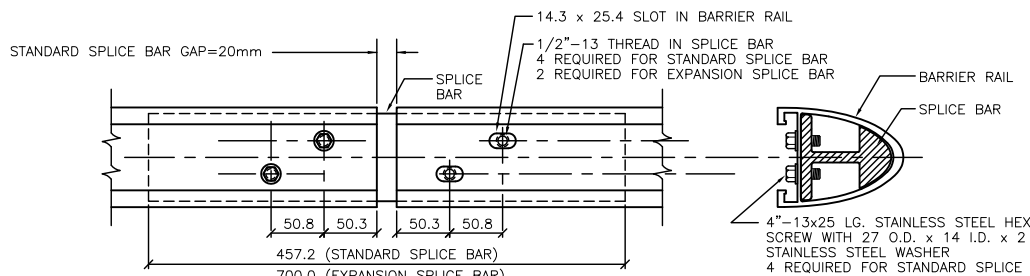


4 SHIM DETAILS
1 : 5

5 ANCHOR BOLT DETAILS
FOR RAIL POSTS AND RAIL END PLATES
N.T.S.



9 BARRIER RAIL DETAIL
N.T.S.



7 SPLICE BAR TO RAIL ASSEMBLY DETAIL
N.T.S.

8 DETAIL OF SPLICE BAR
N.T.S.

NOTES:

- 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 hex nut and one 50mm? galvanized plate washer.
- A combination of 1.5, 3.0 and/or 6.0mm thick aluminum rail post or end 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).
- All edges and corners of the barrier post plates and extrusions shall be rounded in the shop, to a smooth 2mm radius to the satisfaction of the Contract Administrator.
- 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:

- 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%).
- 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.
- Dimensional tolerances not shown or implied are intended to be those consistent with the proper functioning of the part, including its appearance, and accepted manufacturing practices.
- 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.
- Welding shall conform to the requirements of CSA Standards S244-1969, Welded Aluminum Design and Workmanship and W47.2-1967, Aluminum Welding Qualification Codes. Aluminum Filler Alloy shall be one of the following: ER4043, ER5183, ER5356, ER5554, ER5556 and ER5654.
- The contractor shall submit complete shop drawings consisting of three prints and one reproducible set to the Contract Administrator for approval prior to fabrication of aluminum traffic barrier components.
- 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.

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG. DATE

LOCATION APPROVED UNDERGROUND STRUCTURES	B.M. ELEV.
SURV. U/G STRUCTURES DATE COMMITTEE	
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
2	AS CONSTRUCTED	12/02/99	KAA
1	ISSUED FOR CONSTRUCTION	06/10/97	KAA
0	ISSUED FOR REVIEW	05/22/97	KAA

DESIGNED BY	CHECKED BY
DRAWN BY	APPROVED BY
HOR. SCALE:	AUTHORIZED BY
VERTICAL:	DATE
AS NOTED	

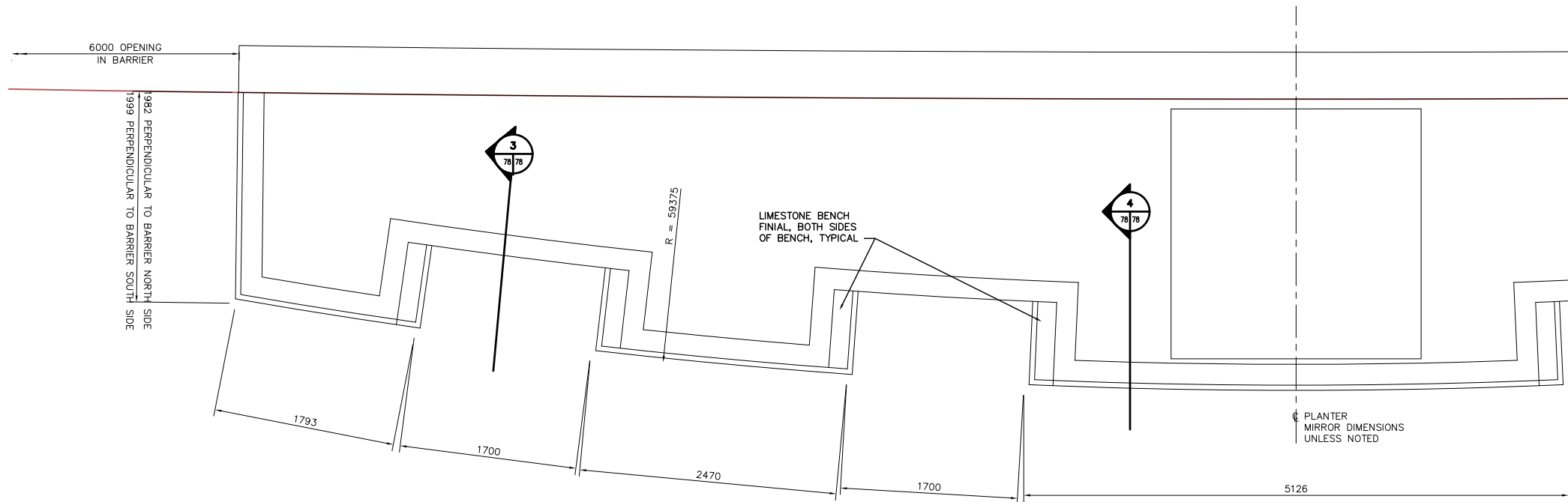
ENGINEER'S SEAL	CONSULTANT DRAWING NO.
PROVINCE OF MANITOBA ORIGINAL SIGNED BY GA WEBSTER 18/06/97 REGISTERED PROFESSIONAL ENGINEER	61440-18-74

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

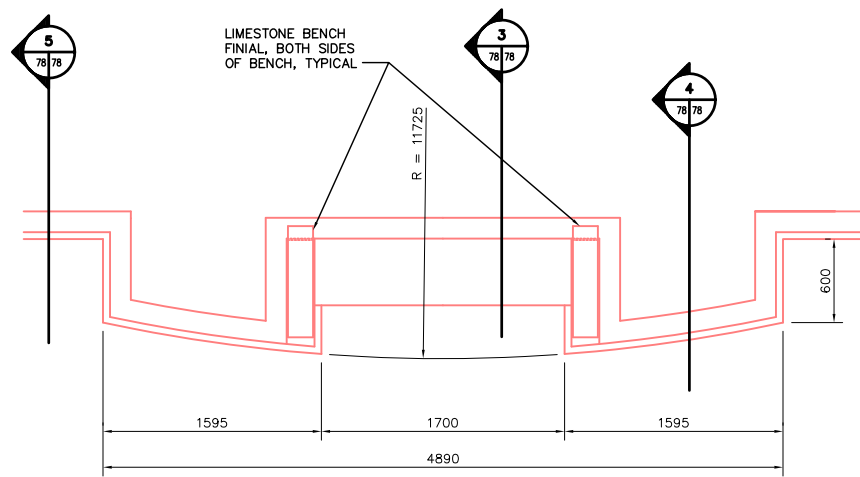
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

CITY DRAWING NUMBER B103-98-74
SHEET 74 OF

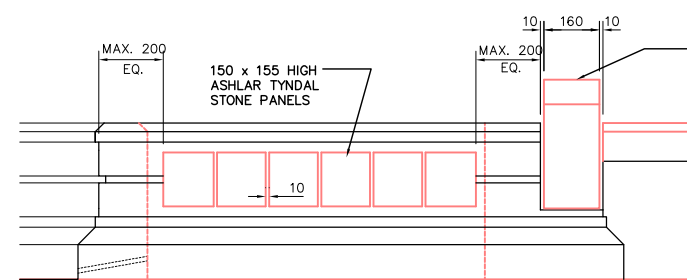
ALUMINIUM TRAFFIC BARRIER RAIL DETAILS
REV-2



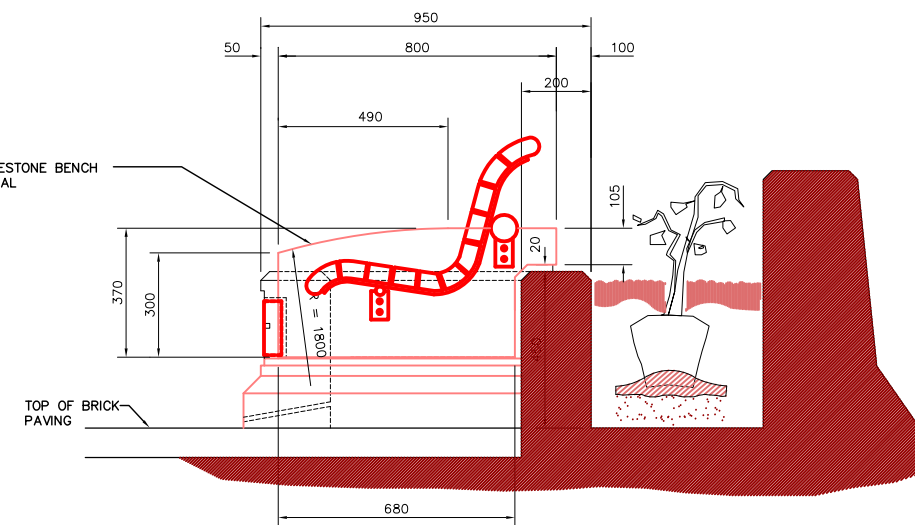
PLAN OF TRAFFIC BARRIER PLANTER AT LOOKOUT



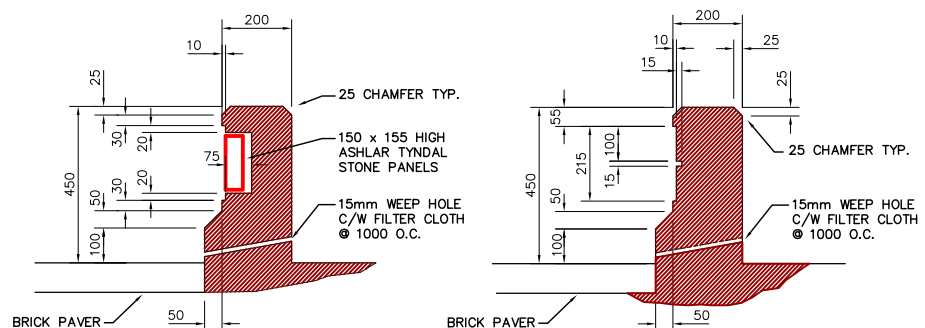
1 PLAN OF TRAFFIC BARRIER PLANTER AT OBSERVATION DECK SCALE 1:25



2 ELEVATION OF TRAFFIC BARRIER PLANTER TYPICAL BETWEEN BENCHES SCALE 1:10



3 SECTION THROUGH BENCH BLOCK SCALE 1:10



4 SECTION SCALE 1:10

5 SECTION SCALE 1:10

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

LOCATION APPROVED UNDERGROUND STRUCTURES		B.M. ELEV.
SURV. U/G STRUCTURES	DATE	
COMMITTEE		
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.		
2	AS CONSTRUCTED	12/02/99 KAA
1	ISSUED FOR CONSTRUCTION	06/10/97 KAA
0	ISSUED FOR REVIEW	05/23/97 KAA
NO.	REVISIONS	DATE BY

DESIGNED BY	CHECKED BY
DRAWN BY KAA	APPROVED BY
HOR. SCALE: AS NOTED	AUTHORIZED BY
VERTICAL: AS NOTED	DATE
DATE 05/22/97	

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
G.A. WEBSTER
18/06/97
REGISTERED PROFESSIONAL ENGINEER

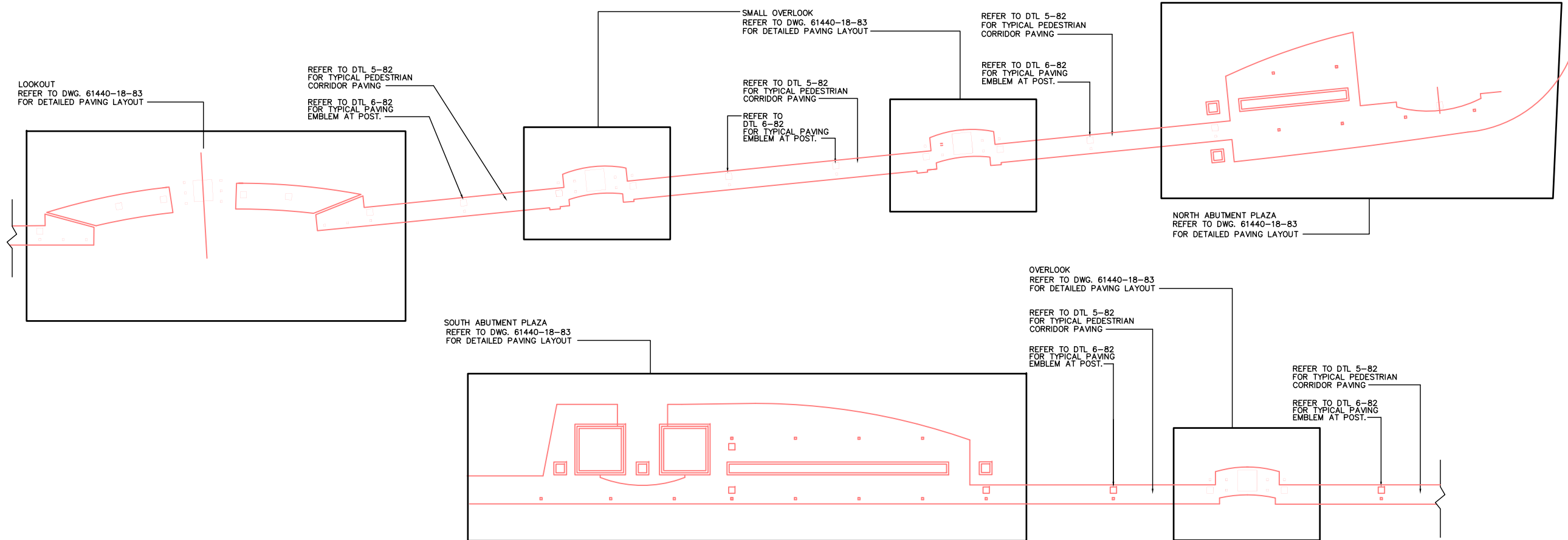
THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

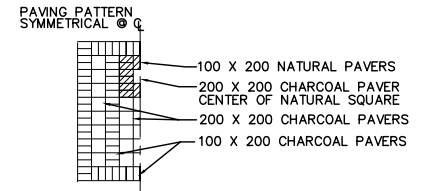
CITY DRAWING NUMBER B103-98-78
SHEET 78 OF

TRAFFIC BARRIER PLANTER DETAILS

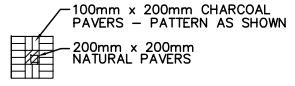
REV-2



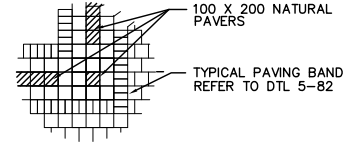
1 GENERAL LAYOUT PLAN - PAVING PATTERN
SCALE NTS



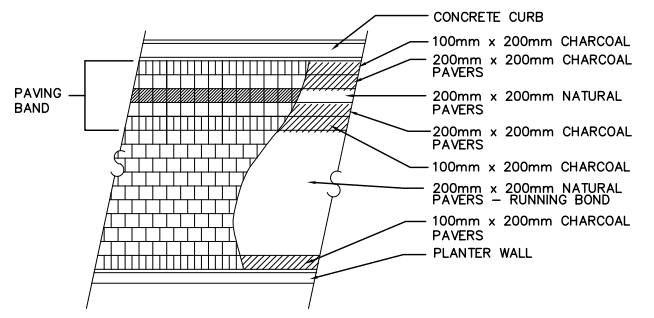
2 LOOKOUT & OVERLOOK PAVER EMBLEM
SCALE 1:50



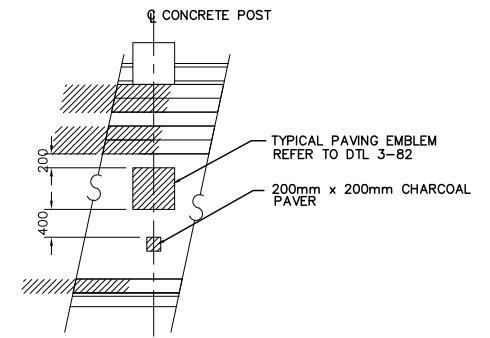
3 TYPICAL PAVER EMBLEM
SCALE 1:50



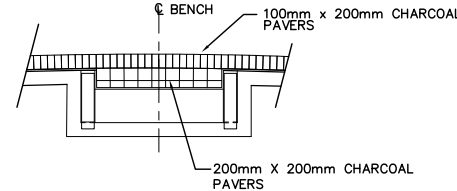
4 TYPICAL PAVER TERMINATION
SCALE 1:50



5 TYPICAL PEDESTRIAN CORRIDOR PAVING PATTERN
SCALE 1:50



6 PEDESTRIAN CORRIDOR EMBLEM LAYOUT AT POST
SCALE 1:50

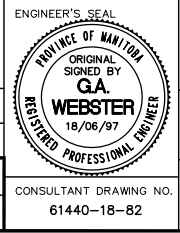


7 TYPICAL PAVING AT BENCH
SCALE 1:50

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

LOCATION APPROVED UNDERGROUND STRUCTURES				B.M. ELEV.
SURV. U/G STRUCTURES	DATE			
COMMITTEE				
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.				
2	AS CONSTRUCTED	12/02/99	KAA	
1	ISSUED FOR CONSTRUCTION	06/10/97	KAA	
0	ISSUED FOR REVIEW	05/23/97	KAA	
NO.	REVISIONS	DATE	BY	DATE
				05/23/97

Reid Crowther Reid Crowther & Partners Ltd. Engineers Planners Scientists	
DESIGNED BY	CHECKED BY
DRAWN BY	APPROVED BY
JFK	
HOR. SCALE: AS NOTED	AUTHORIZED BY
VERTICAL: AS NOTED	DATE
	B. BRUNSPANER / SENIOR BRIDGE ENGINEER
	ACCEPTED FOR GRANT CONSTRUCTION BY: DATE:
	P. PLAZA / PROJECT MANAGER



THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

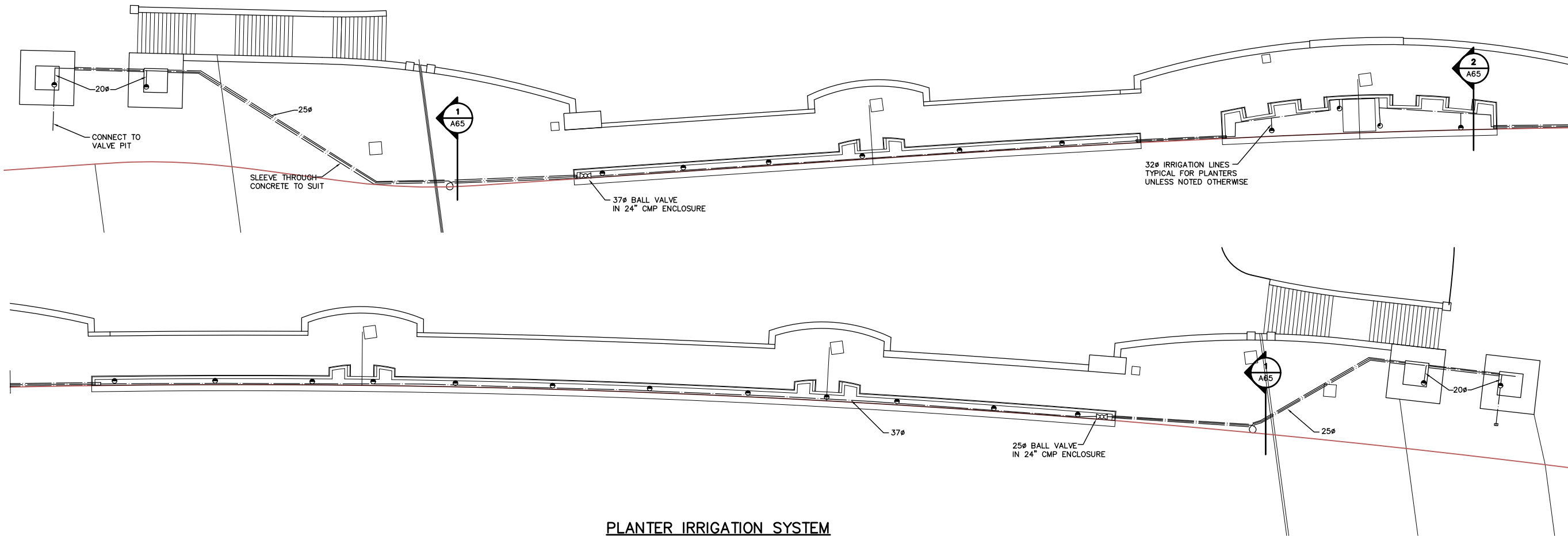
CITY DRAWING NUMBER
B103-98-82
SHEET 82 OF

BRICK PAVING
KEY PLAN

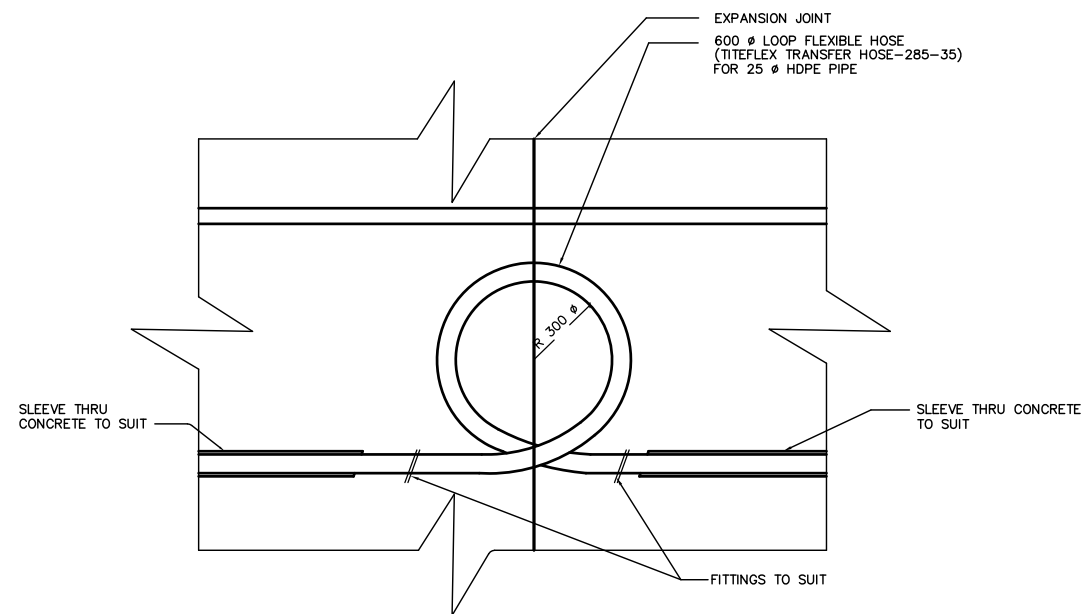
CONSULTANT DRAWING NO.
61440-18-82

REV-2

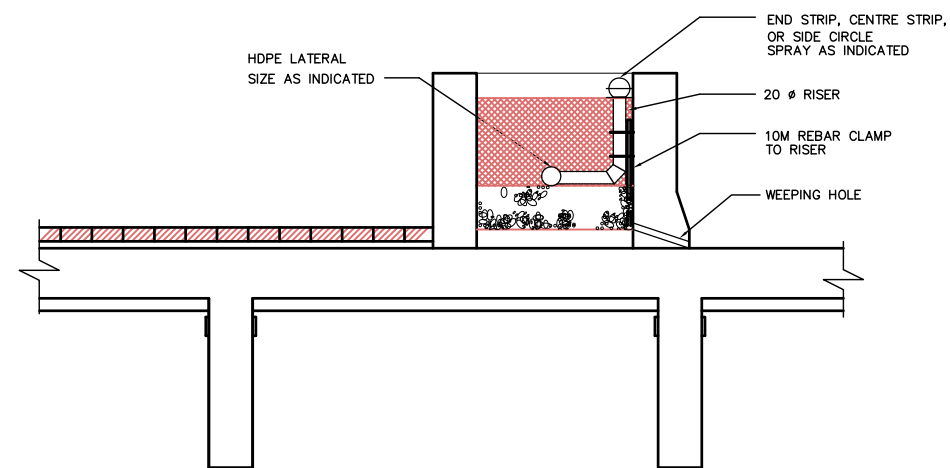
METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES



PLANTER IRRIGATION SYSTEM
SCALE 1:150



1 EXPANSION LOOP DETAIL
SCALE N.T.S.



2 TYPICAL DETAIL
SCALE N.T.S.

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES

SURV. U/G STRUCTURES DATE COMMITTEE

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.	DATE	BY
2	AS CONSTRUCTED	12/02/99	KAA
1	ISSUED FOR CONSTRUCTION	08/26/97	KAA
0	ISSUED FOR REVIEW	07/21/97	KAA
NO.	REVISIONS	DATE	BY

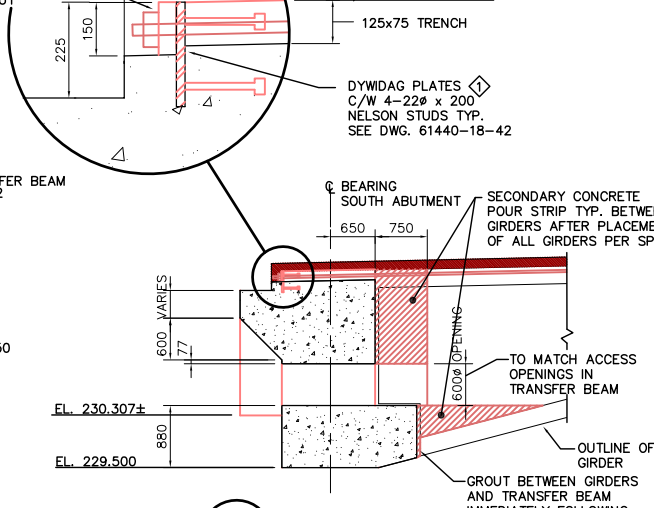
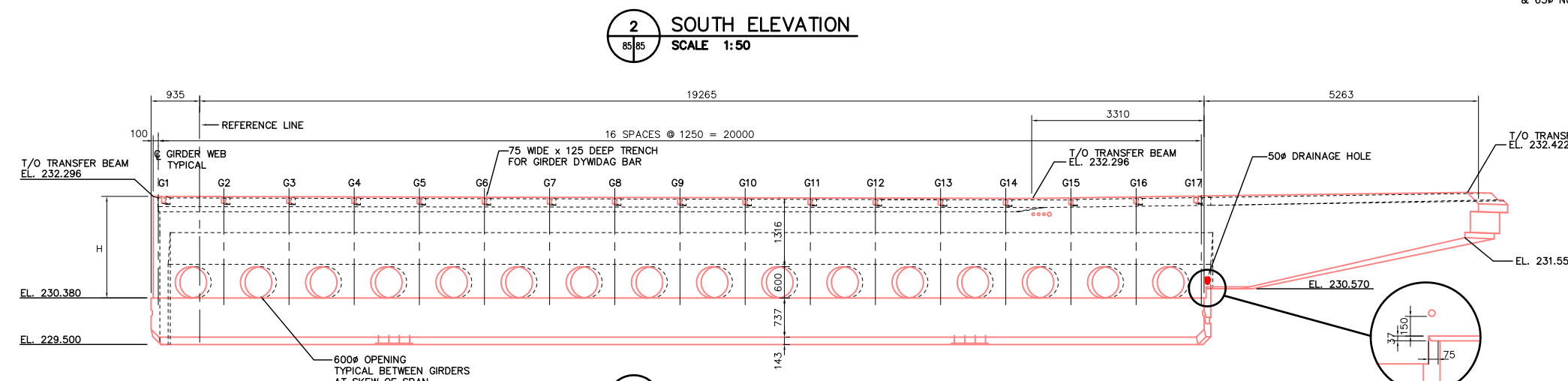
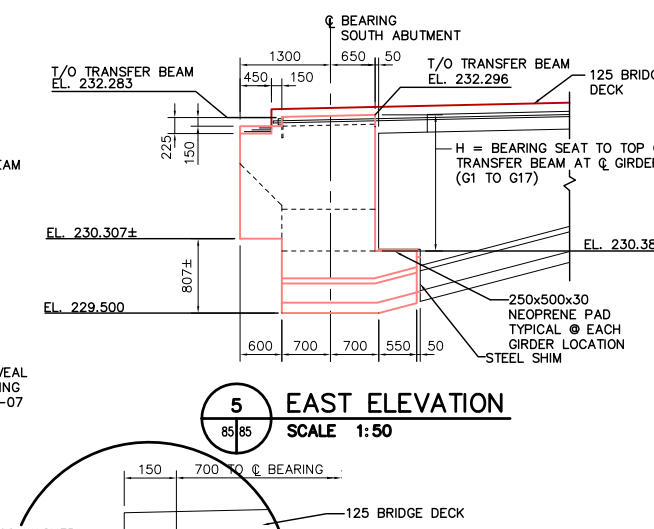
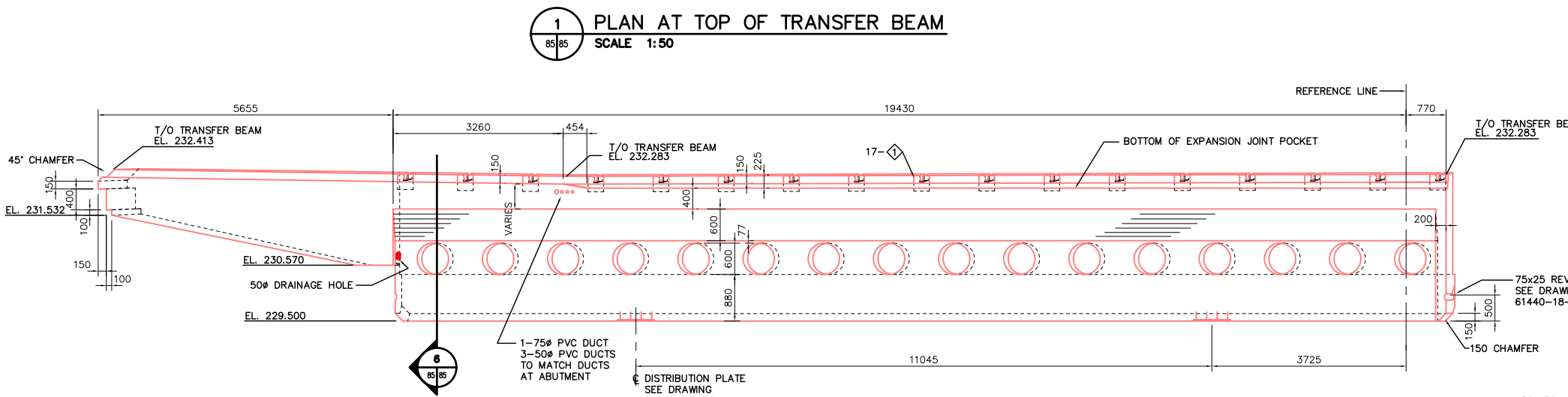
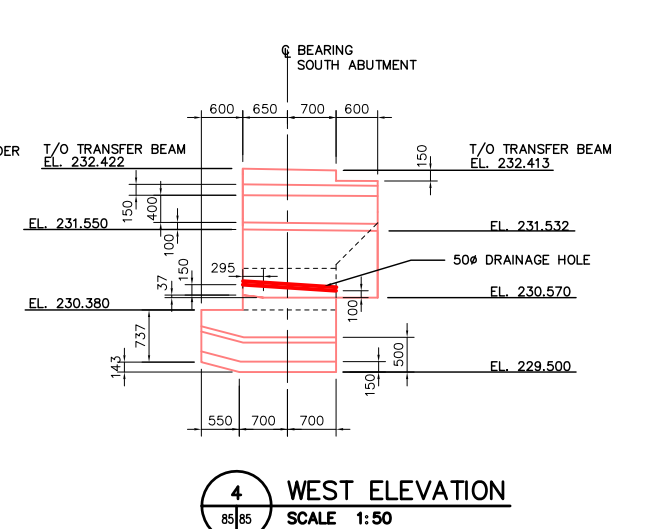
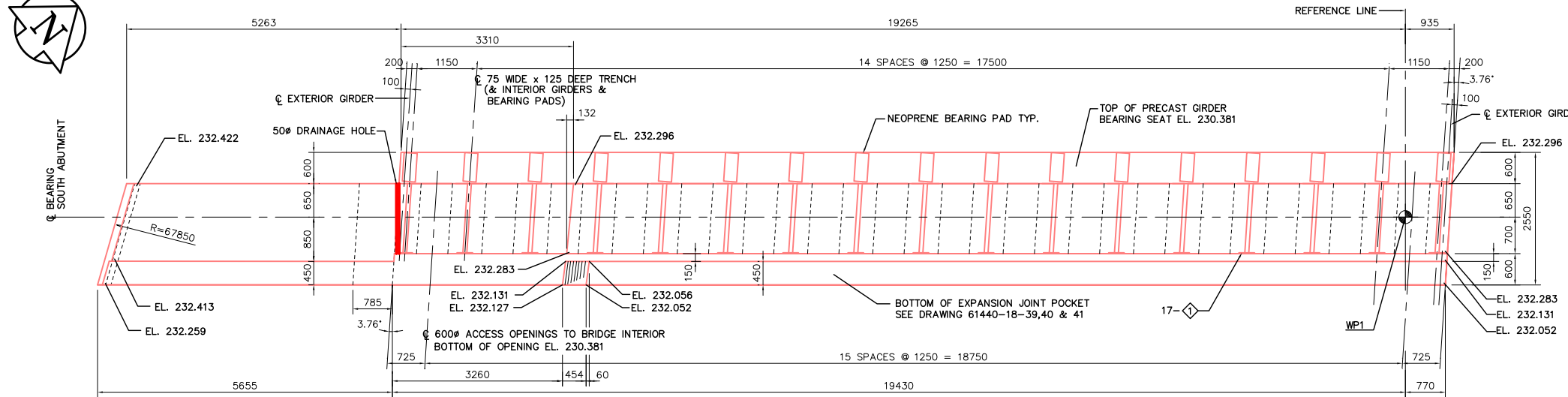
Reid Crowther Reid Crowther & Partners Ltd. Engineers Planners Scientists	
DESIGNED BY	CHECKED BY
DRAWN BY AGT	APPROVED BY
HOR. SCALE:	AUTHORIZED BY DATE
VERTICAL: AS NOTED	R. BRUNSCHWIGER / SENIOR BRIDGE ENGINEER ACCEPTED FOR BRIDGE CONSTRUCTION BY: DATE:
DATE 07/21/97	P. PLAZA / PROJECT MANAGER

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
GA WEBSTER
REGISTERED PROFESSIONAL ENGINEER
CONSULTANT DRAWING NO.
61440-18-84

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS
PLANTER IRRIGATION SYSTEMS
LAYOUT AND DETAILS

CITY DRAWING NUMBER
B103-97-84
SHEET 84 OF

REV-2



LOCATION	H
G1	1915
G2	1915
G3	1915
G4	1915
G5	1915
G6	1915
G7	1915
G8	1915
G9	1915
G10	1915
G11	1915
G12	1915
G13	1915
G14	1915
G15	1933
G16	1951
G17	1969

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

3 NORTH ELEVATION
SCALE 1:50

LOCATION APPROVED UNDERGROUND STRUCTURES		B.M. ELEV.
SURV. U/G STRUCTURES	DATE	
4 AS CONSTRUCTED	12/02/99	KAA
3 PVC DUCTS	08/07/97	KAA
2 UNDERSIDE OF LOOKOUT	04/29/97	KAA
1 ISSUED FOR CONSTRUCTION	04/04/97	KAA
0 ISSUED FOR REVIEW	02/25/97	KAA
NO. REVISIONS	DATE	BY

DESIGNED BY	CHECKED BY
KA	KA
DRAWN BY	APPROVED BY
KA	KA
HOR. SCALE:	AUTHORIZED BY
VERTICAL: AS NOTED	DATE
	02/11/97

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: KA
CHECKED BY: KA
DRAWN BY: KA
APPROVED BY: KA
HORIZONTAL SCALE: AS NOTED
VERTICAL SCALE: AS NOTED
DATE: 02/11/97

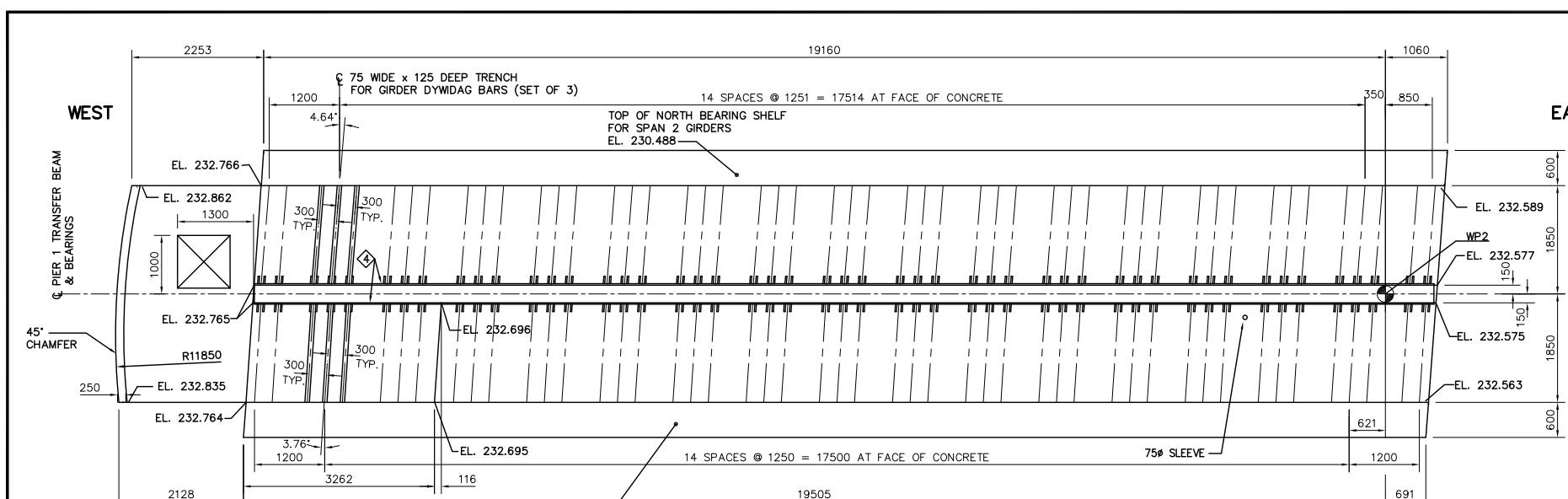
ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
C.P. GRAY
08/08/97
REGISTERED PROFESSIONAL ENGINEER

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

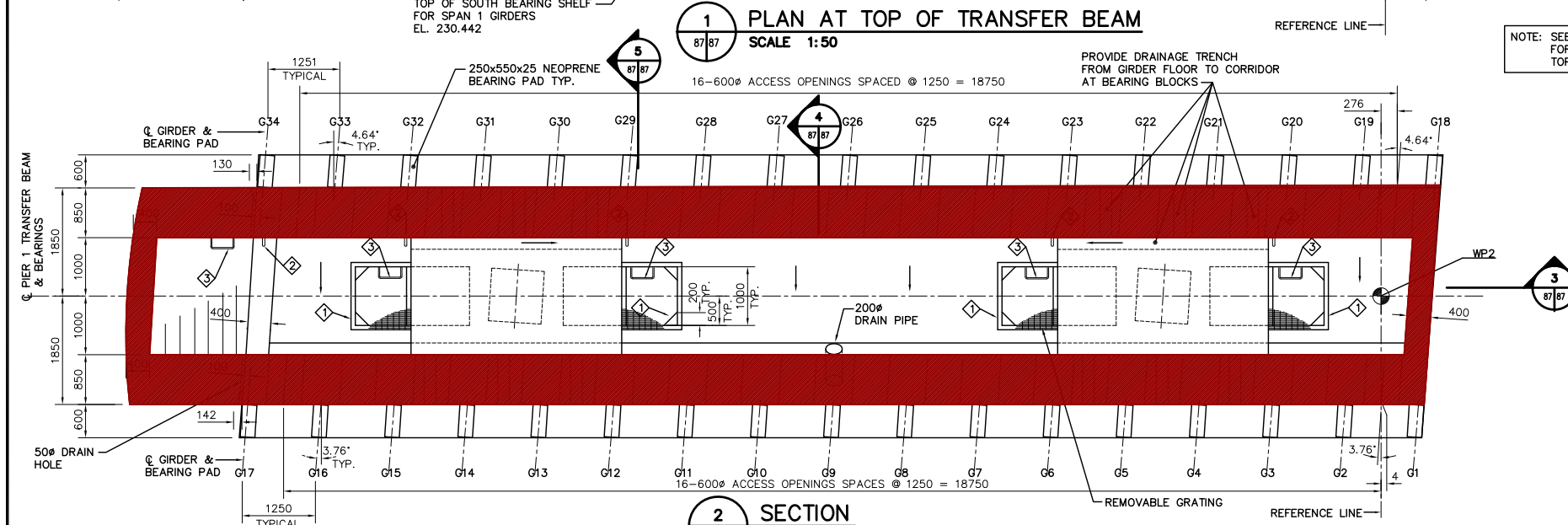
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

SOUTH ABUTMENT
TRANSFER BEAM
SHEET 1 OF 2

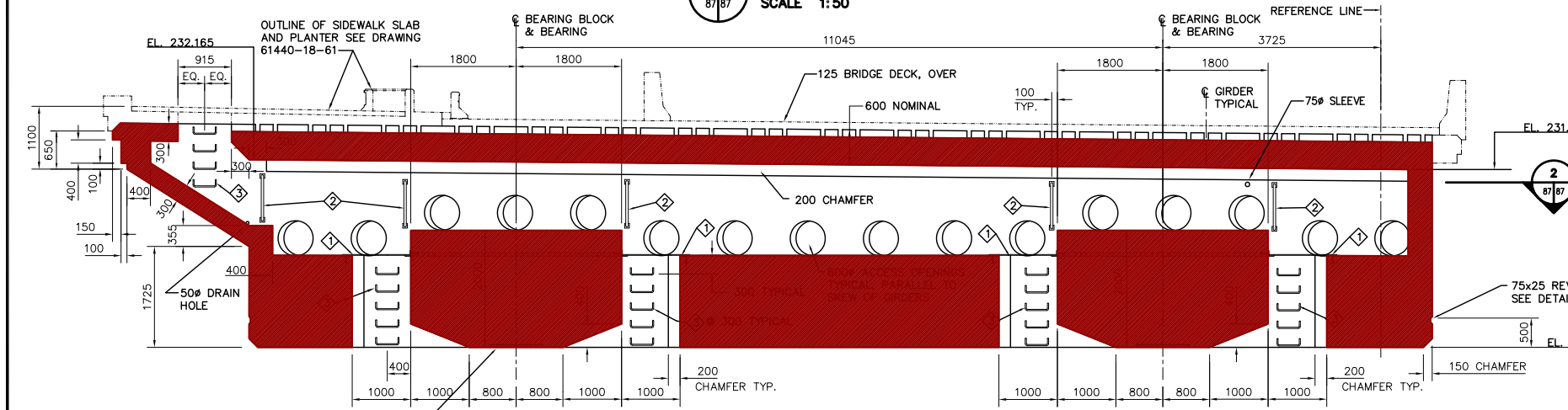
CITY DRAWING NUMBER
B103-98-85
SHEET 85 OF
REV-4



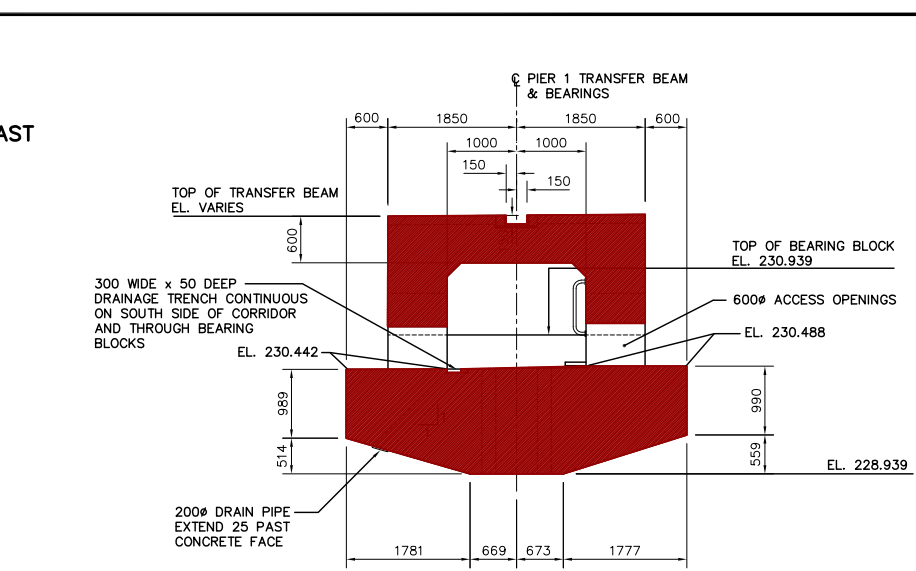
1 PLAN AT TOP OF TRANSFER BEAM
SCALE 1:50



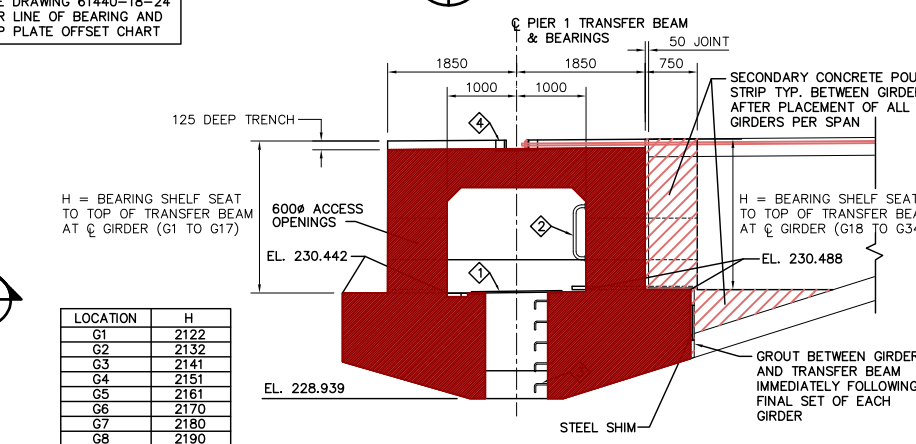
2 SECTION
SCALE 1:50



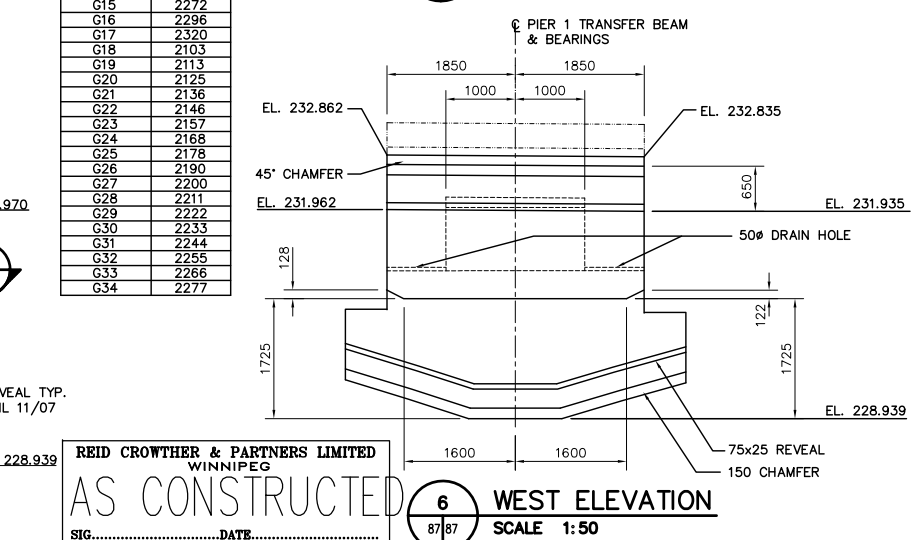
3 SECTION @ PIER
SCALE 1:50



4 SECTION
SCALE 1:50



5 SECTION
SCALE 1:50



6 WEST ELEVATION
SCALE 1:50

LOCATION	H
G1	2122
G2	2132
G3	2141
G4	2151
G5	2161
G6	2170
G7	2180
G8	2190
G9	2200
G10	2209
G11	2219
G12	2229
G13	2238
G14	2248
G15	2272
G16	2296
G17	2320
G18	2103
G19	2113
G20	2125
G21	2136
G22	2146
G23	2157
G24	2168
G25	2178
G26	2190
G27	2200
G28	2211
G29	2222
G30	2233
G31	2244
G32	2255
G33	2266
G34	2277

LIST OF MISCELLANEOUS METAL & EMBEDDED PARTS

ITEM No.	MARK No.	QUANTITY	DESCRIPTION	DRAWING REFERENCE
1	S23-J	4	BEARING ACCESS GRATING	61440-18-23
2	S23-C	5	GRAB BAR	61440-18-23
3	S23-F	24	LADDER RUNG	61440-18-23
4	S42-D	1	DYWIDAG SUPPORT PLATE	61440-18-42

LOCATION APPROVED UNDERGROUND STRUCTURES

SURV. U/G STRUCTURES	DATE	B.M. ELEV.
4 AS CONSTRUCTED	12/02/99	KAA
3 75# SLEEVE	06/07/97	KAA
2 HATCH LOC'N & 50# HOLES	06/24/97	KAA
1 ISSUED FOR CONSTRUCTION	04/04/97	KAA
0 ISSUED FOR REVIEW	03/03/97	KAA
NO. REVISIONS	DATE	BY

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: []
CHECKED BY: []
DRAWN BY: KAA
APPROVED BY: []
HOR. SCALE: AS NOTED
VERTICAL: AS NOTED
AUTHORIZED BY: [] DATE: []
DATE: 02/20/97

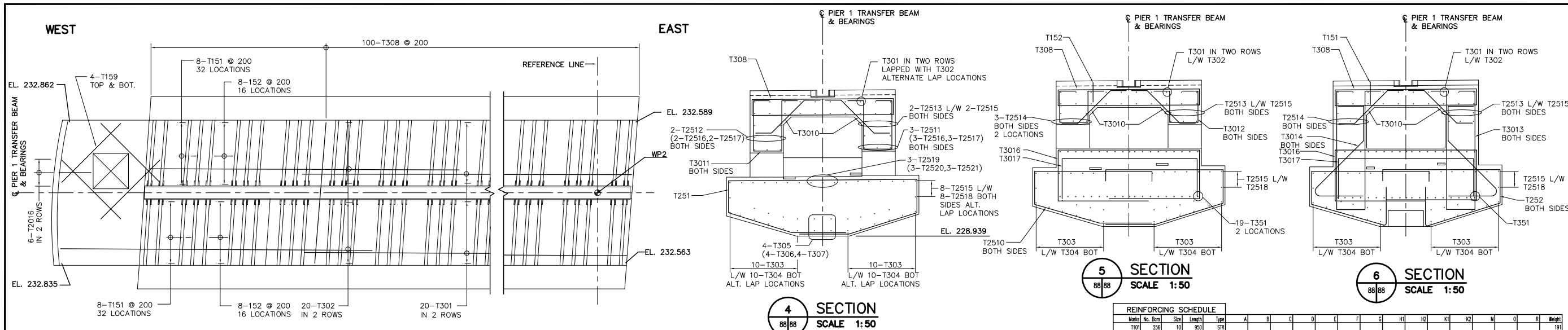
ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
C.P. GRAY
REGISTERED PROFESSIONAL ENGINEER
08/08/97
CONSULTANT DRAWING NO. 61440-18-87

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

PIER 1
TRANSFER BEAM
SHEET 1 OF 2

CITY DRAWING NUMBER B103-98-87
SHEET 87 OF []
REV-4

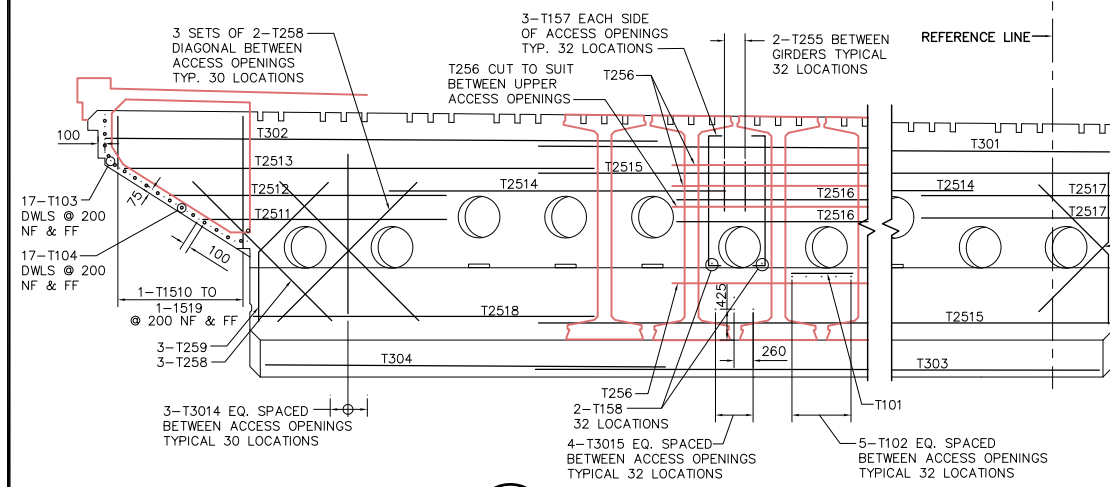


1 PLAN AT TOP OF TRANSFER BEAM
SCALE 1:50

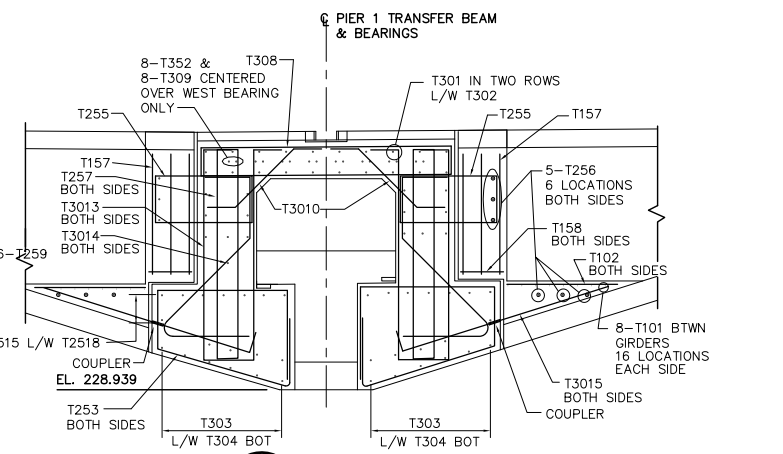
4 SECTION
SCALE 1:50

5 SECTION
SCALE 1:50

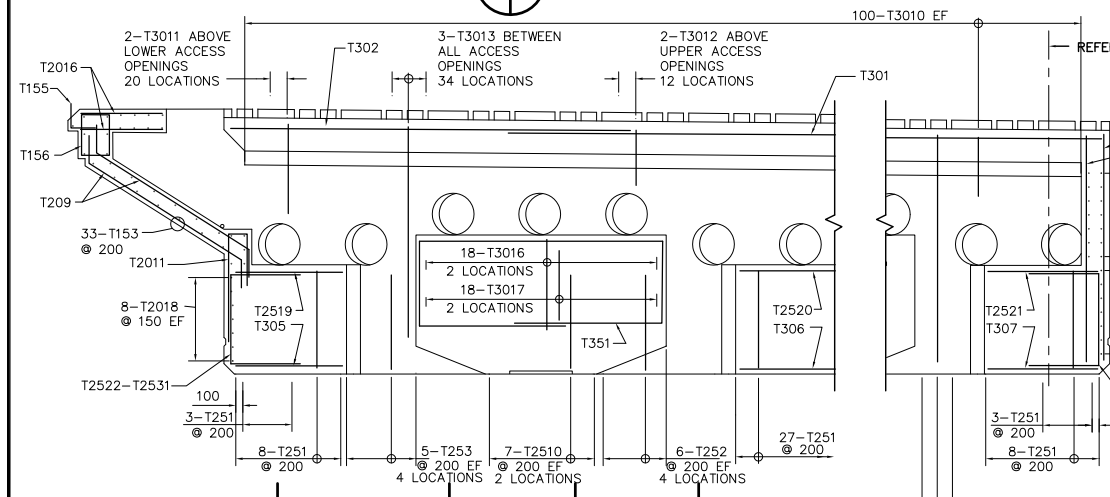
6 SECTION
SCALE 1:50



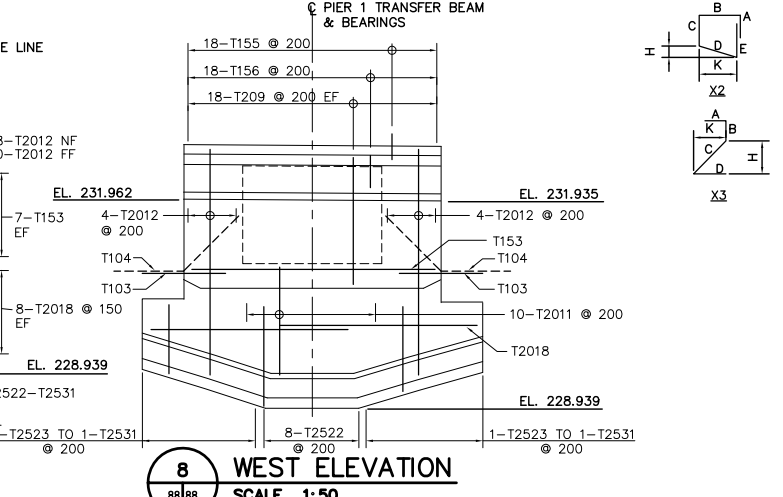
2 PARTIAL SOUTH ELEVATION
SCALE 1:50



7 SECTION
SCALE 1:50

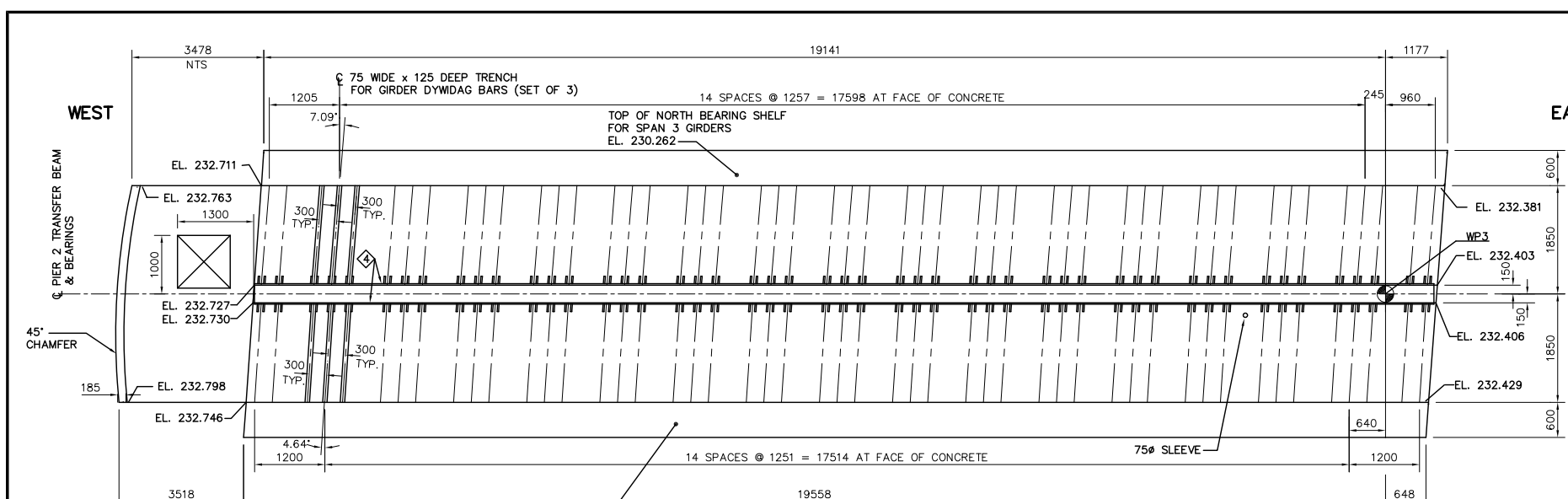


3 SECTION @ PIER
SCALE 1:50

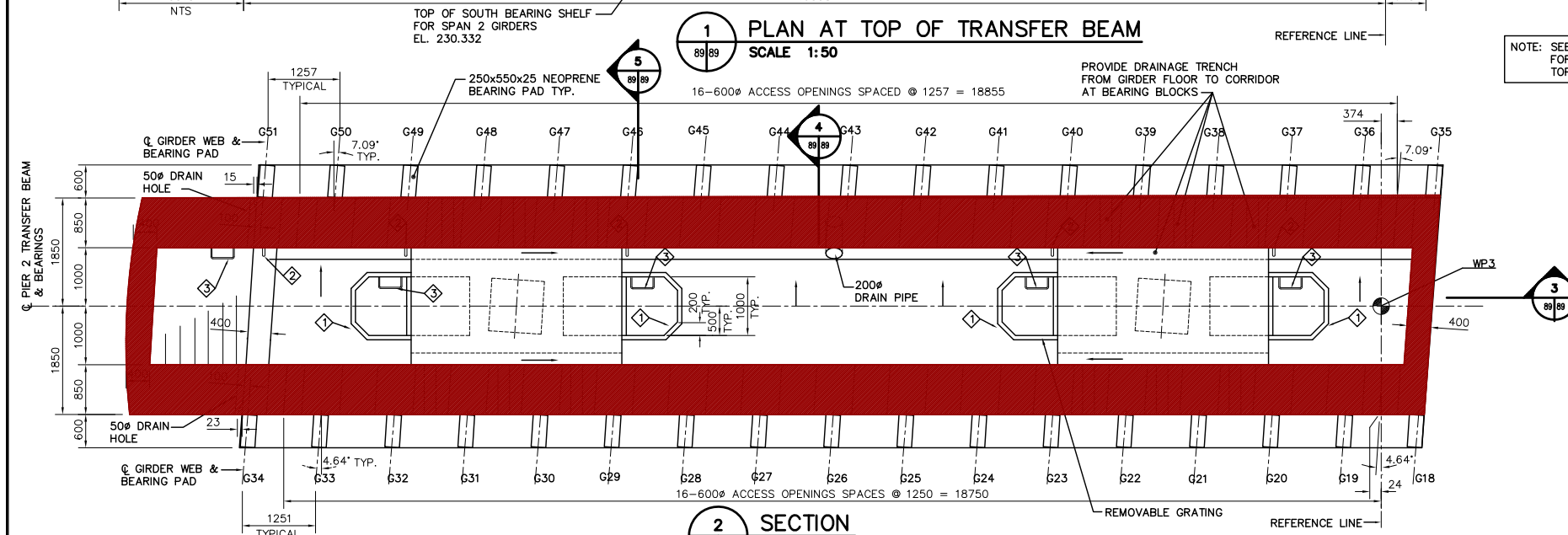


8 WEST ELEVATION
SCALE 1:50

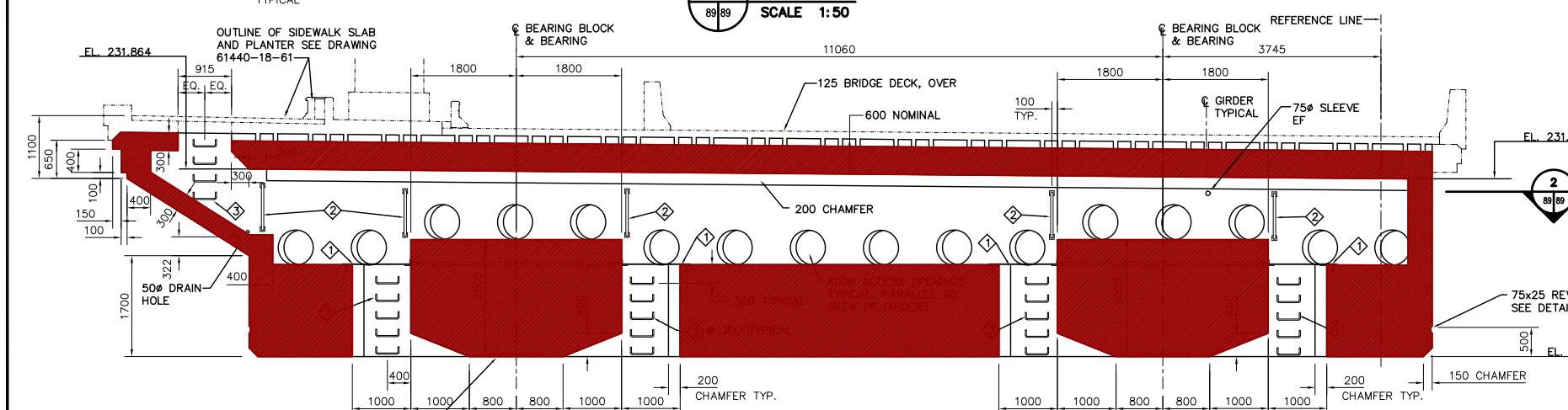
Mark	No.	Bar	Size	Length	Type	A	B	C	D	E	F	G	H1	H2	K1	K2	W	D	R	Height
T101	256	10	950	STR																191
T102	160	10	1590	STR																200
T103	34	10	1200	STR																32
T104	34	10	2125	16			1000	1125					795		795					57
T151	512	15	1025	17		450	725	450												824
T152	256	15	1375	17		450	475	450												533
T153	41	15	3600	STR																266
T2018	37	20	4800	17		2000	2800													362
T155	18	15	700	17		350	350													20
T156	18	15	2400	12		170	400	600	400	650										621
T157	192	15	2060	2		170	1720													68
T158	64	15	450	STR																65
T159	8	15	1590	STR																19
T1510	2	15	3556	12		170	750	858	750	858										11
T1511	2	15	3808	12		170	750	894	750	894										12
T1512	2	15	4062	12		170	750	1111	750	1111										13
T1513	2	15	4316	12		170	750	1238	750	1238										14
T1514	2	15	4570	12		170	750	1365	750	1365										14
T1515	2	15	4822	12		170	750	1491	750	1491										15
T1516	2	15	5076	12		170	750	1618	750	1618										16
T1517	2	15	5330	12		170	750	1745	750	1745										17
T1518	2	15	5582	12		170	750	1871	750	1871										18
T1519	2	15	5818	12		170	750	1988	750	1988										18
T2511	6	25	3505	STR																83
T2512	4	25	3980	STR																62
T2513	4	25	4600	STR																107
T2514	12	25	4835	STR																228
T2515	20	25	16000	STR																1256
T2516	10	25	8000	STR																314
T2517	10	25	2700	STR																106
T2518	16	25	4900	STR																308
T209	36	20	3625	19		400	2825	400					338		215					307
T2522	16	25	5430	17		2000	1430	2000												341
T2011	10	20	3625	17		1500	300	800												62
T2012	36	20	3300	STR																254
T2519	3	25	1535	STR																18
T2520	3	25	5345	STR																63
T2521	3	25	1580	STR																19
T2016	6	20	850	STR																12
T2017	48	25	12640	11		1255	1815	850	4800	850	1815	1255	540		1735	1735				713
T252	48	25	7205	K2		280	2990	850	1985	1100					1900					1357
T253	40	25	7050	K2		1250	1965	850	1985	1100					550					1107
T3015	128	30	3400	17		300	3100													2391
T255	64	25	4680	17		280	1390	670	1390	670			280							1176
T256	60	25	4825	STR																1136
T257	24	25	7210	12		280	3025	300	3025	300			280							679
T258	186	25	3200	STR																2336
T259	18	25	3600	STR																226
T2510	28	25	7190	11		1255	1815	850	2990	280			1130		1130					290
T301	20	30	14000	STR																1538
T302	20	30	9940	STR																1092
T303	20	30	16000	STR																1758
T304	20	30	5750	STR																632
T305	4	30	5325	STR																34
T306	4	30	5345	STR																117
T307	4	30	1580	STR																35
T308	200	30	8600	12		350	350	3600	350	3600			350							9451
T309	8	30	10000	STR																440
T3010	200	30	1980	19		400	1180	400					283		283					2178
T3011	40	30	4170	55		400	1310	750	1310				400							917
T3012																				



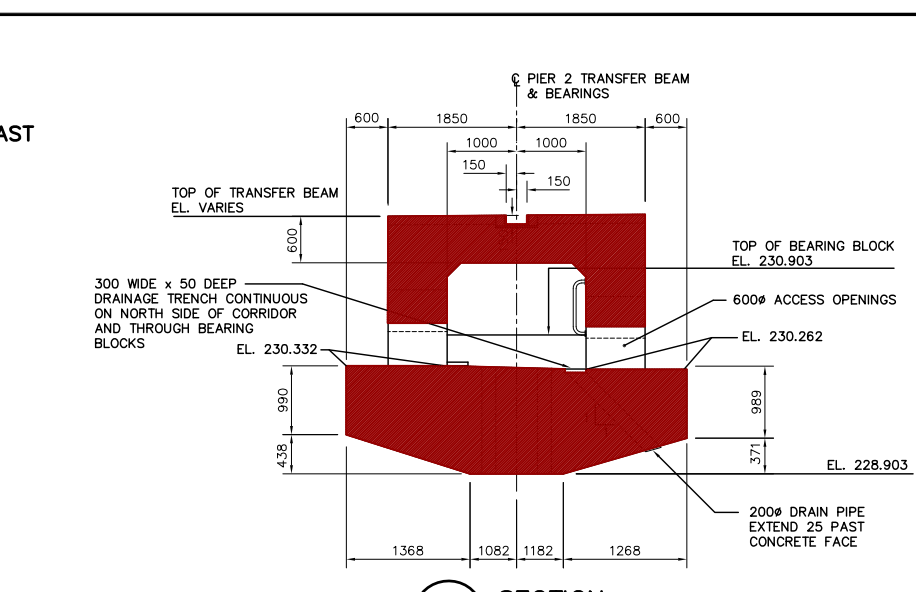
1 PLAN AT TOP OF TRANSFER BEAM
SCALE 1:50



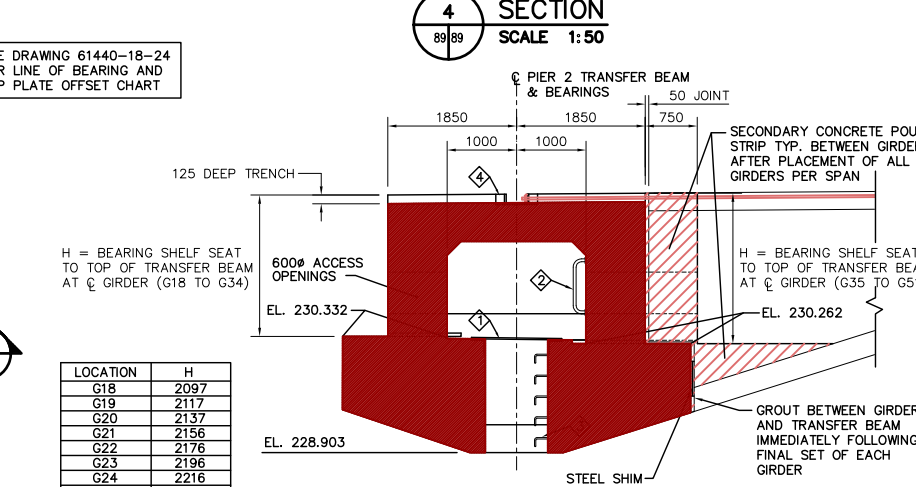
2 SECTION
SCALE 1:50



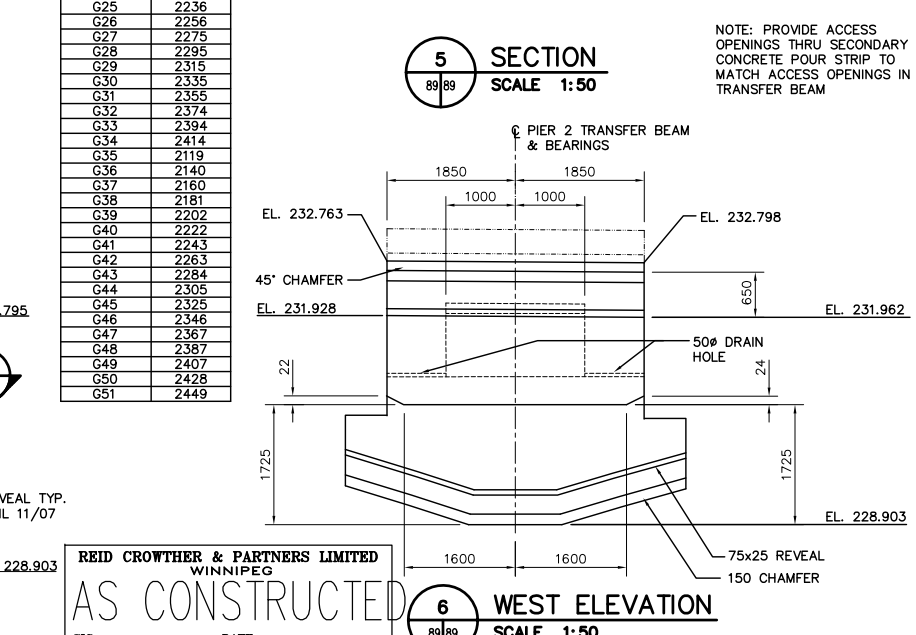
3 SECTION @ PIER
SCALE 1:50



4 SECTION
SCALE 1:50



5 SECTION
SCALE 1:50



6 WEST ELEVATION
SCALE 1:50

NOTE: SEE DRAWING 61440-18-24 FOR LINE OF BEARING AND TOP PLATE OFFSET CHART

LOCATION	H
G18	2097
G19	2117
G20	2137
G21	2156
G22	2176
G23	2196
G24	2216
G25	2236
G26	2256
G27	2275
G28	2295
G29	2315
G30	2335
G31	2355
G32	2374
G33	2394
G34	2414
G35	2434
G36	2454
G37	2474
G38	2494
G39	2514
G40	2534
G41	2554
G42	2574
G43	2594
G44	2614
G45	2634
G46	2654
G47	2674
G48	2694
G49	2714
G50	2734
G51	2754

LIST OF MISCELLANEOUS METAL & EMBEDDED PARTS

ITEM No.	MARK No.	QUANTITY	DESCRIPTION	DRAWING REFERENCE
1	S23-E	4	BEARING ACCESS HATCH	61440-18-23
2	S23-C	5	GRAB BAR	61440-18-23
3	S23-F	24	LADDER RUNG	61440-18-23
4	S42-D	1	DYWIDAG SUPPORT PLATE	61440-18-42

LOCATION APPROVED UNDERGROUND STRUCTURES

NO.	REVISIONS	DATE	BY
4	AS CONSTRUCTED	12/02/99	KAA
3	75 SLEEVE	06/07/97	KAA
2	HATCH LOC'N & 50 HOLES	06/24/97	KAA
1	ISSUED FOR CONSTRUCTION	04/04/97	KAA
0	ISSUED FOR REVIEW	03/11/97	KAA

REID CROWTHER & PARTNERS LIMITED WINNIPEG

AS CONSTRUCTED

SIG.....DATE.....

ENGINEER'S SEAL

PROVINCE OF MANITOBA

ORIGINAL SIGNED BY C. P. GRAY

08/08/97

REGISTERED PROFESSIONAL ENGINEER

THE CITY OF WINNIPEG

STREETS AND TRANSPORTATION DEPARTMENT

BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT

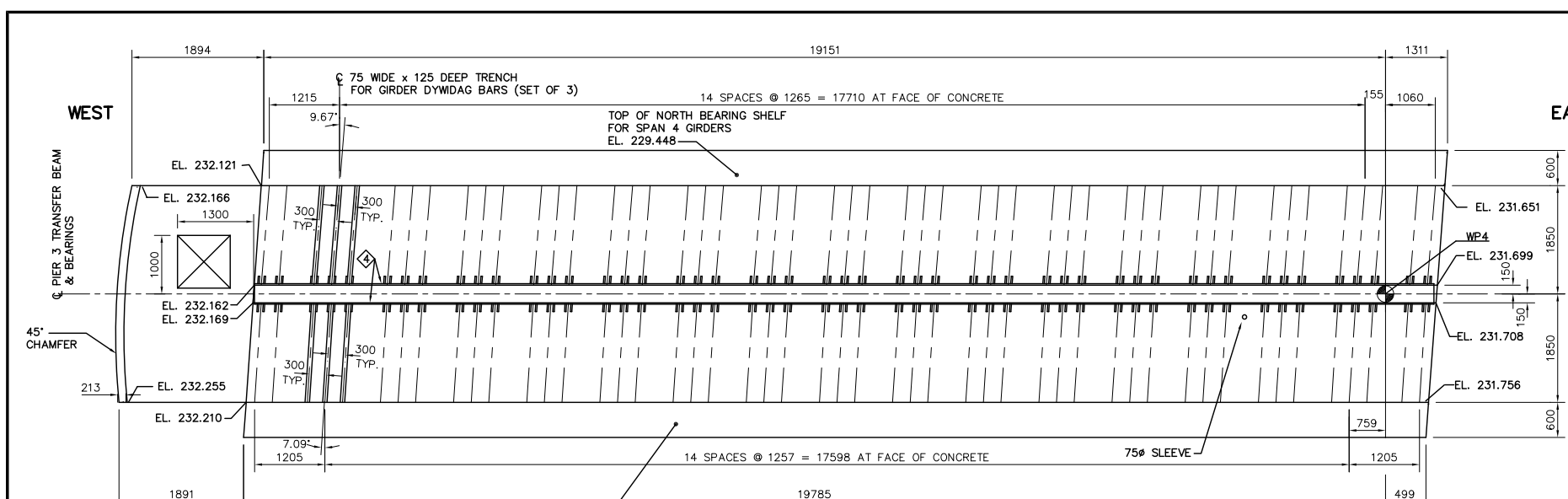
NORWOOD BRIDGE - SOUTHBOUND AND RELATED ROADWORKS

PIER 2 TRANSFER BEAM SHEET 1 OF 2

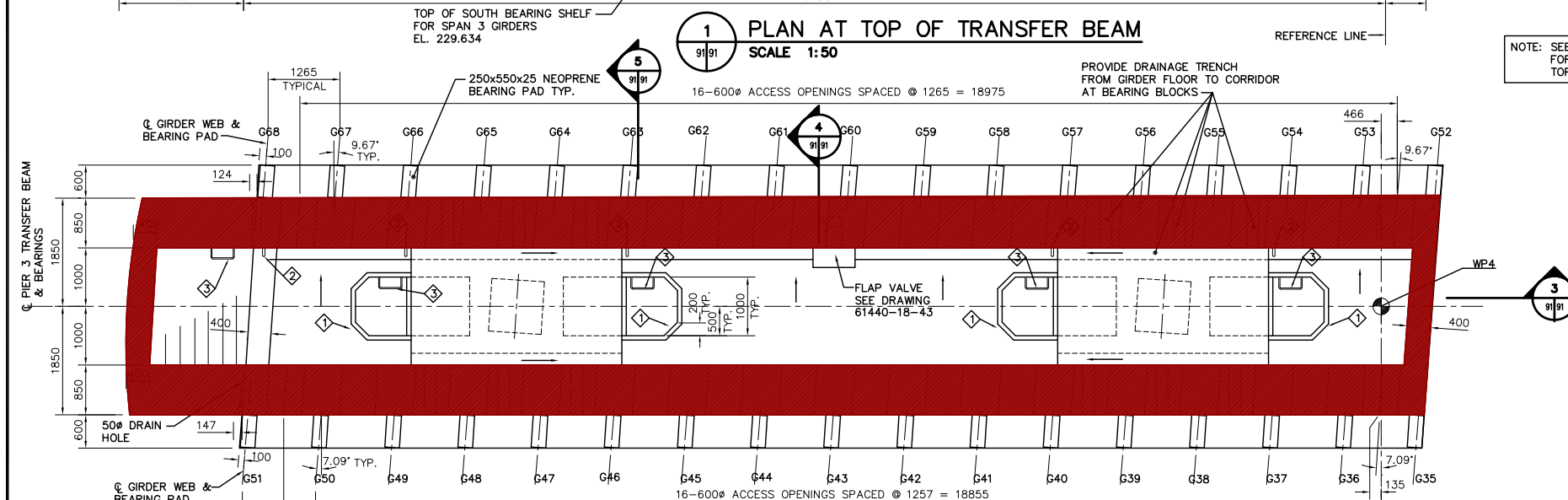
CITY DRAWING NUMBER B103-98-89

SHEET 89 OF

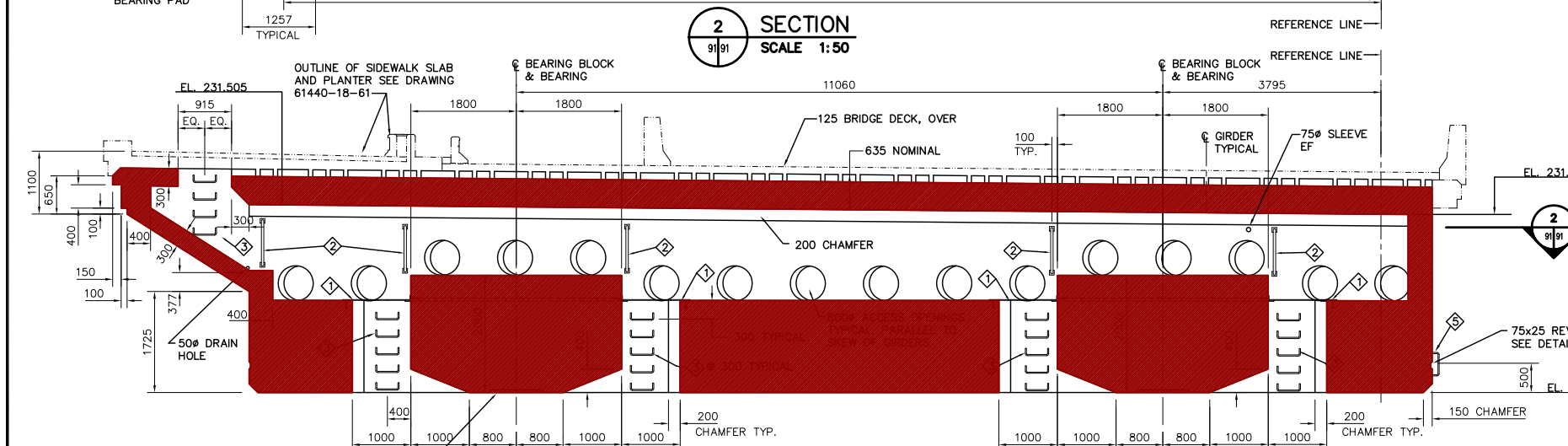
REV-4



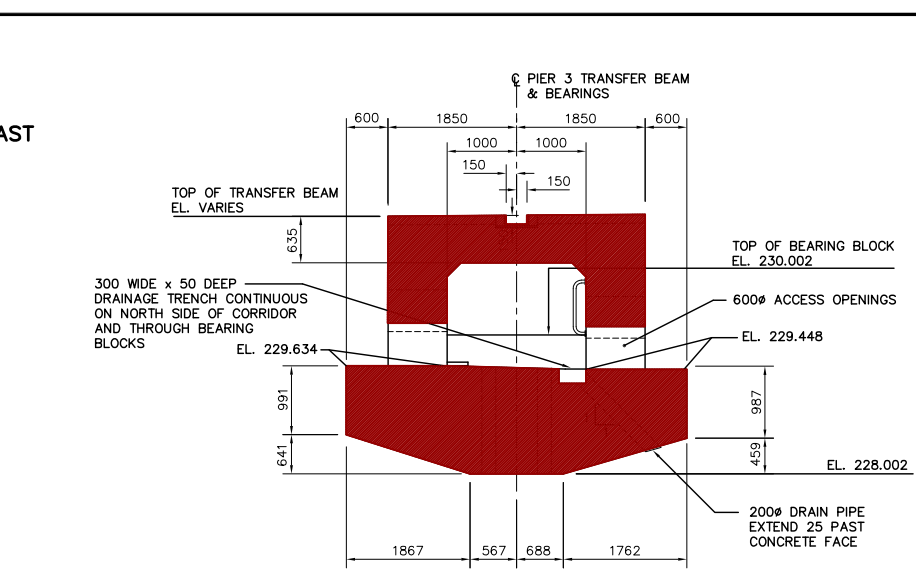
1 PLAN AT TOP OF TRANSFER BEAM
SCALE 1:50



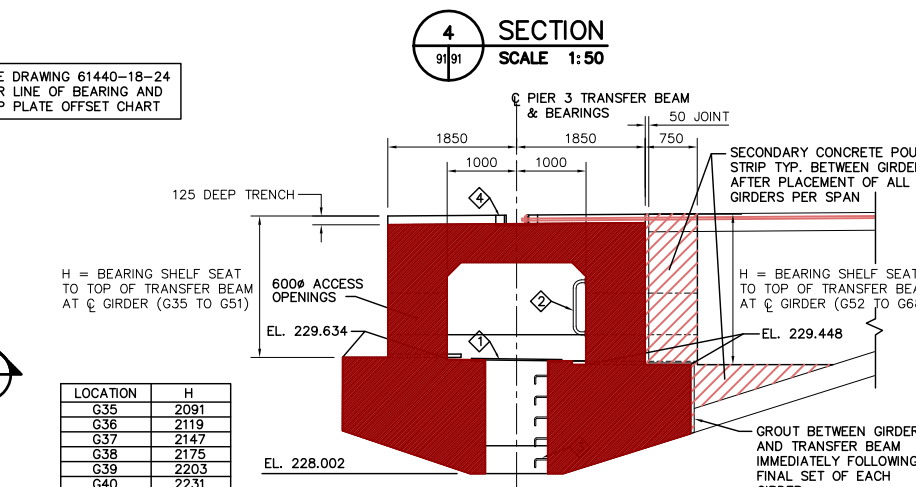
2 SECTION
SCALE 1:50



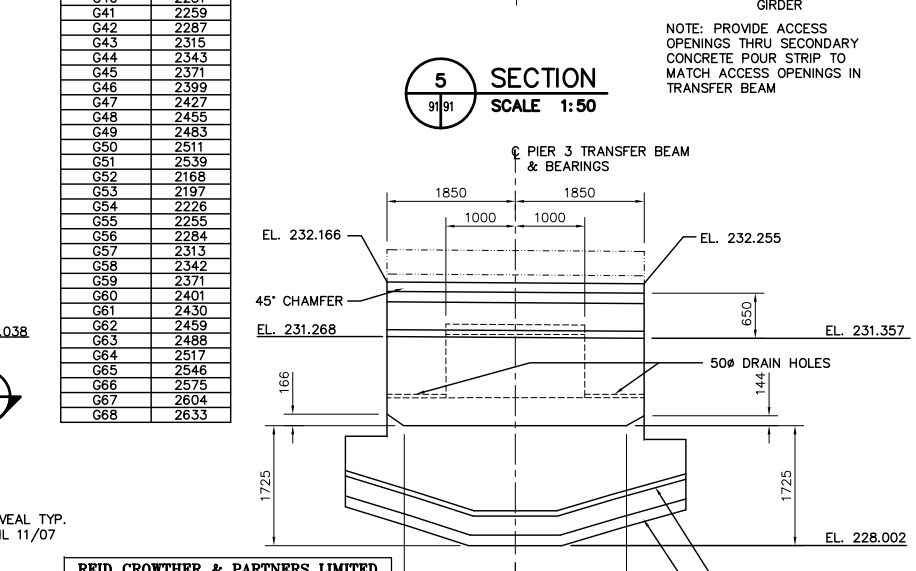
3 SECTION @ PIER
SCALE 1:50



4 SECTION
SCALE 1:50



5 SECTION
SCALE 1:50



6 WEST ELEVATION
SCALE 1:50

LOCATION	H
G35	2091
G36	2119
G37	2147
G38	2175
G39	2203
G40	2231
G41	2259
G42	2287
G43	2315
G44	2343
G45	2371
G46	2399
G47	2427
G48	2455
G49	2483
G50	2511
G51	2539
G52	2168
G53	2197
G54	2226
G55	2255
G56	2284
G57	2313
G58	2342
G59	2371
G60	2401
G61	2430
G62	2459
G63	2488
G64	2517
G65	2546
G66	2575
G67	2604
G68	2633

LIST OF MISCELLANEOUS METAL & EMBEDDED PARTS
SEE DWG. 61440-18-24 FOR DETAILS & LOCATIONS

ITEM No.	MARK No.	QUANTITY	DESCRIPTION	DRAWING REFERENCE
1	S23-E	4	BEARING ACCESS HATCH	61440-18-23
2	S23-C	5	GRAB BAR	61440-18-23
3	S23-F	24	LADDER RUNG	61440-18-23
4	S42-D	1	DYWIDAG SUPPORT PLATE	61440-18-42
5	S23-B	1	SLIP PLATE	61440-18-23

3 SECTION @ PIER
SCALE 1:50

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES

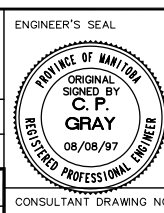
SURV. U/G STRUCTURES	DATE	COMMITTEE

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.

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

NO.	REVISIONS	DATE	BY
4	AS CONSTRUCTED	12/02/99	KAA
3	75 SLEEVE	06/07/97	KAA
2	HATCH LOC'N & 50 HOLES	06/24/97	KAA
1	ISSUED FOR CONSTRUCTION	04/04/97	KAA
0	ISSUED FOR REVIEW	03/17/97	KAA

DESIGNED BY: KAA
DRAWN BY: KAA
CHECKED BY: KAA
APPROVED BY: KAA
HORIZONTAL SCALE: AS NOTED
VERTICAL SCALE: AS NOTED
DATE: 03/13/97

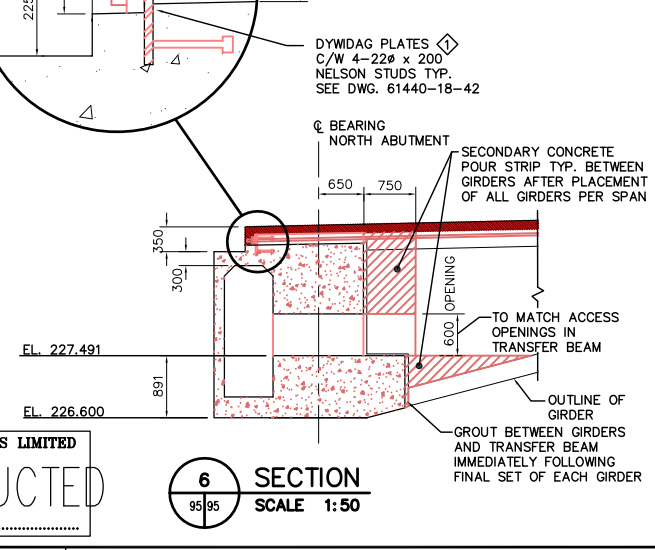
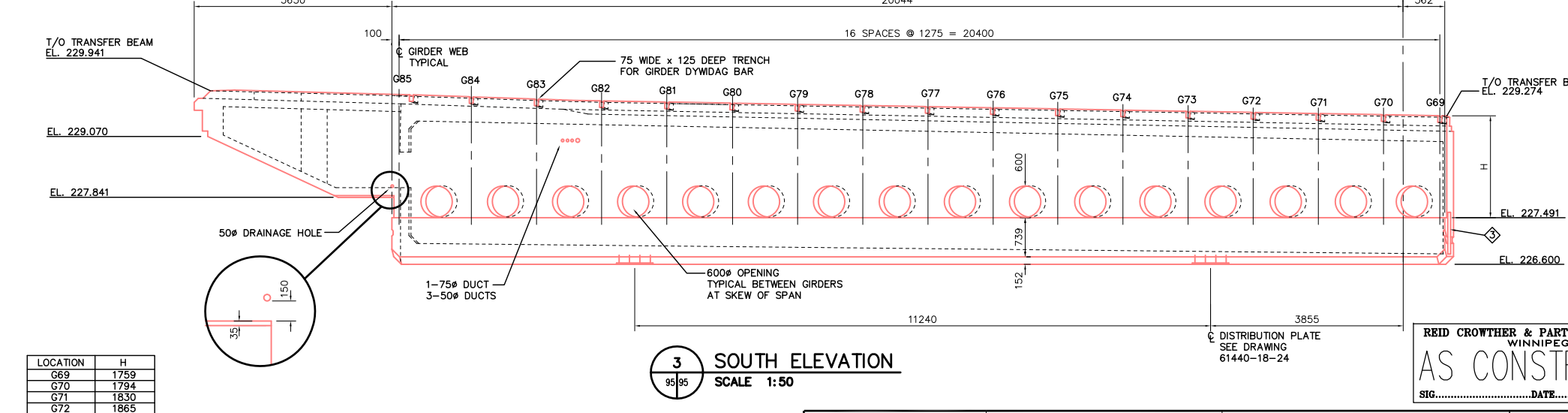
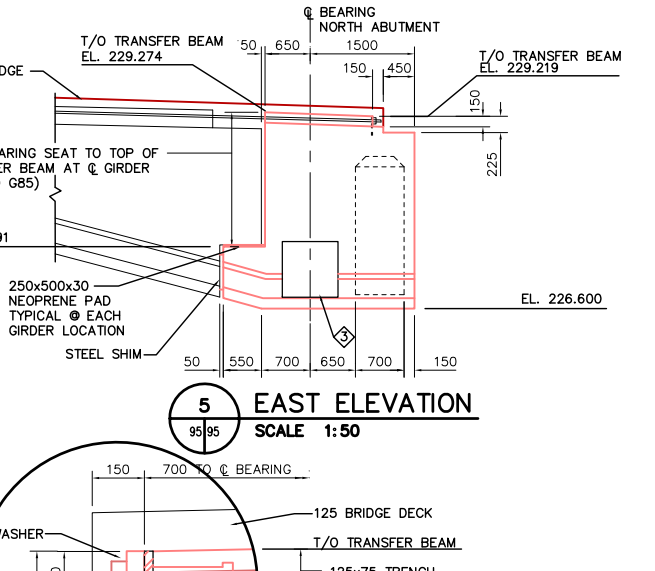
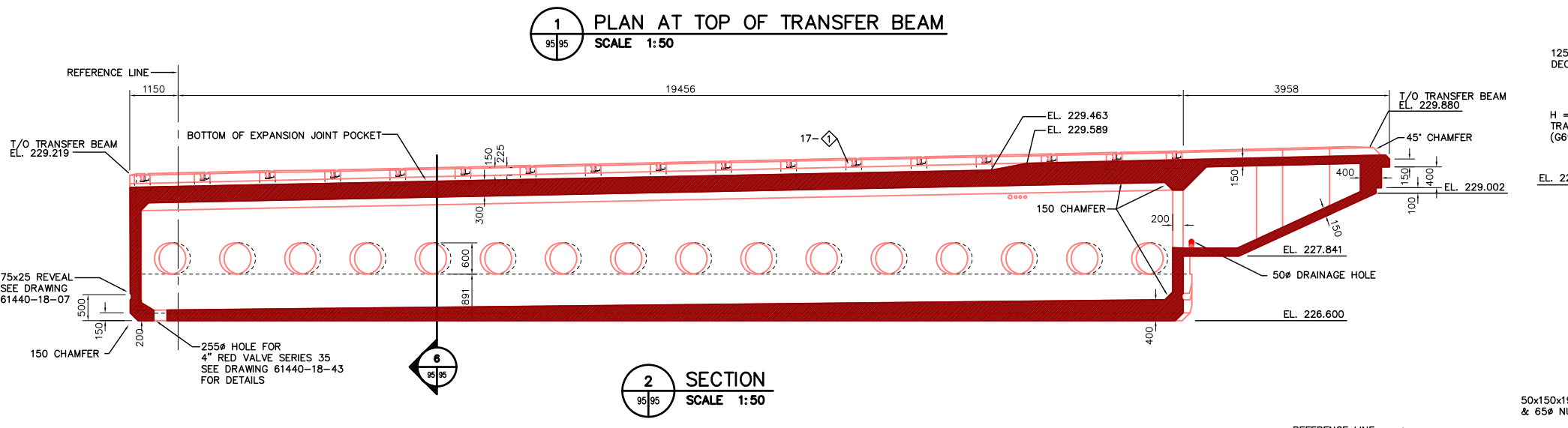
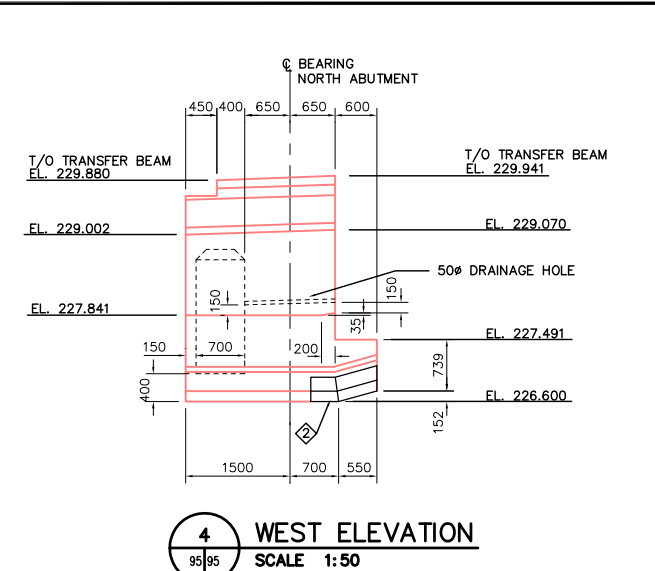
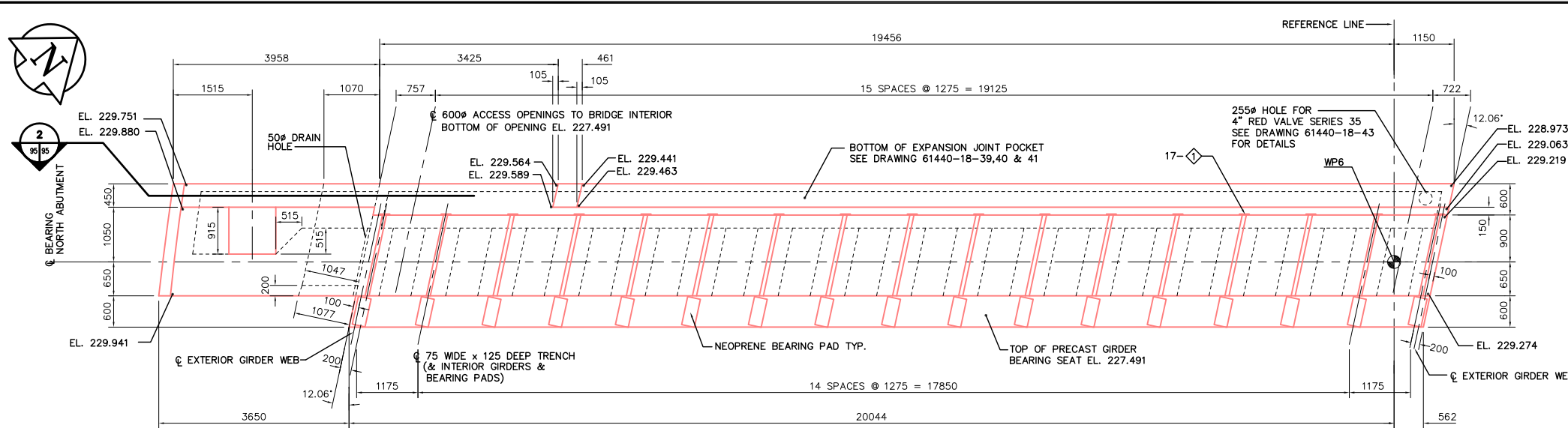


THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

PIER 3
TRANSFER BEAM
SHEET 1 OF 2

CITY DRAWING NUMBER
B103-98-91
SHEET 91 OF
REV-4



LOCATION	H
G69	1759
G70	1794
G71	1830
G72	1865
G73	1901
G74	1936
G75	1972
G76	2007
G77	2043
G78	2078
G79	2114
G80	2149
G81	2185
G82	2220
G83	2255
G84	2290
G85	2325

LIST OF MISCELLANEOUS METAL & EMBEDDED PARTS				
ITEM NO.	MARK NO.	QUANTITY SPANS 1-5	DESCRIPTION	DRAWING REFERENCE
1	S42-C	17	DYWDAG SUPPORT PLATES	61440-18-42
2	S42-A	1	HIGH ICE PROTECTION PLATE	61440-18-42
3	S23-B	1	SLIP PLATE	61440-18-23

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES
SURV. U/G STRUCTURES DATE COMMITTEE

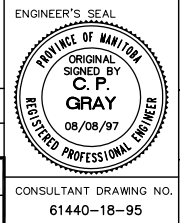
NOTE:
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE. BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES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

B.M. ELEV.	NO.	REVISIONS	DATE	BY
	3	AS CONSTRUCTED	12/02/99	KAA
	2	PVC DUCTS	06/07/97	KAA
	1	ISSUED FOR CONSTRUCTION	05/27/97	KAA
	0	ISSUED FOR REVIEW	04/21/97	KAA

Reid Crowther
Reid Crowther & Partners Ltd
Engineers Planners Scientists

DESIGNED BY: KAA
DRAWN BY: KAA
HOR. SCALE: AS NOTED
VERTICAL: AS NOTED
DATE: 04/10/97

CHECKED BY: KAA
APPROVED BY: KAA
AUTHORIZED BY: DATE: 08/08/97
P. PLAZA / PROJECT MANAGER



THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

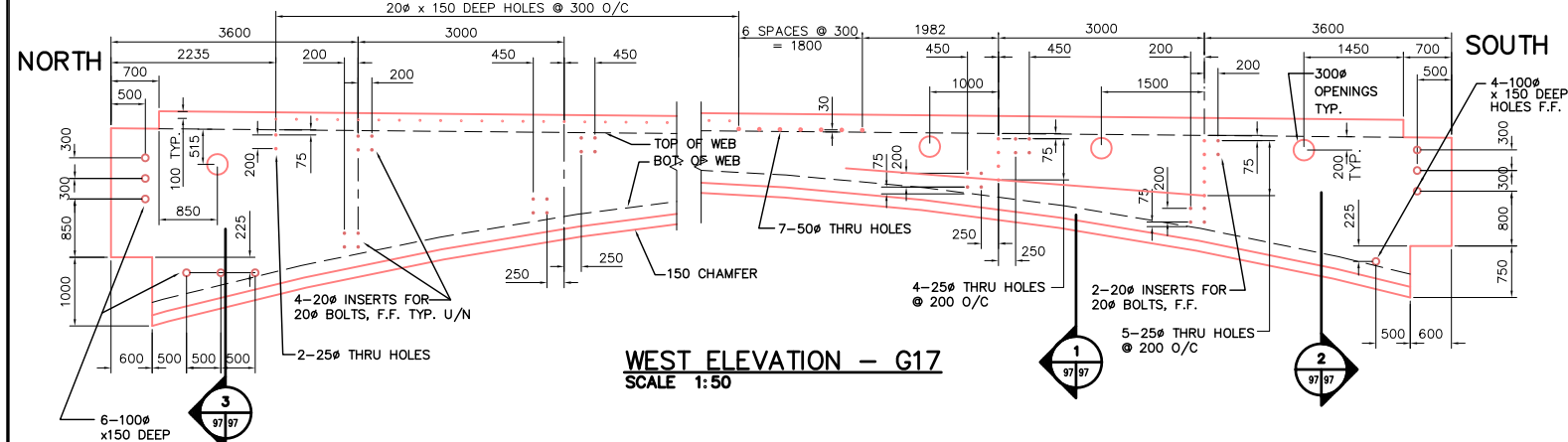
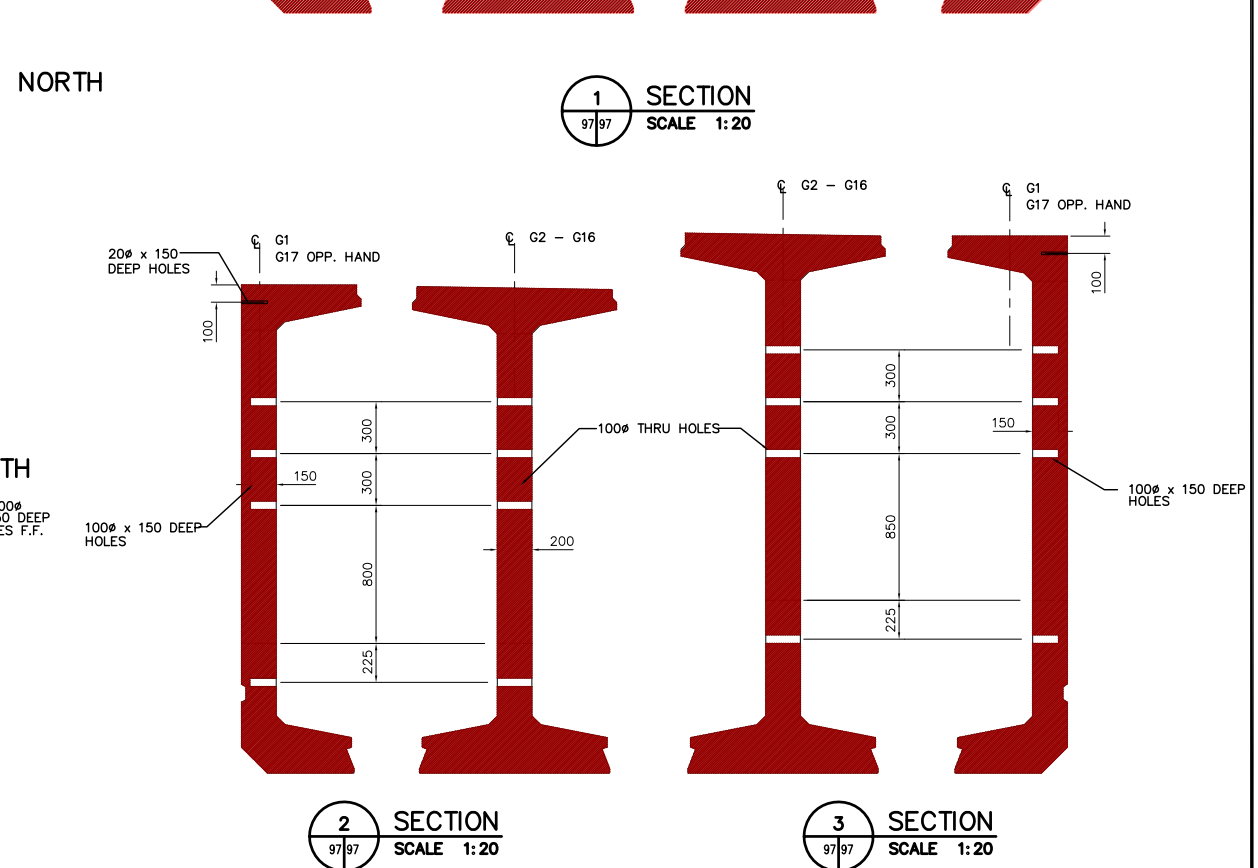
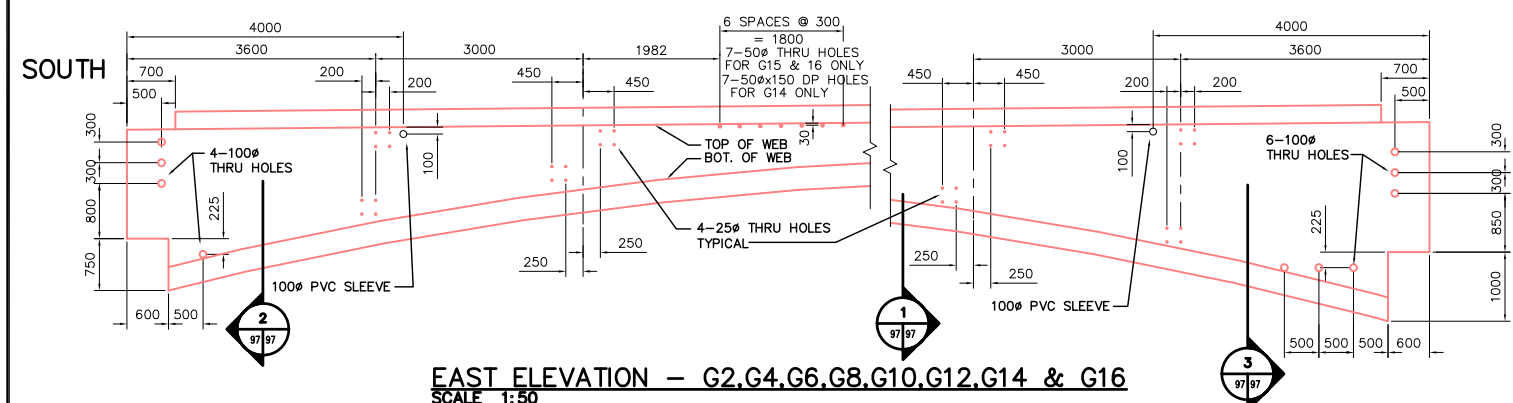
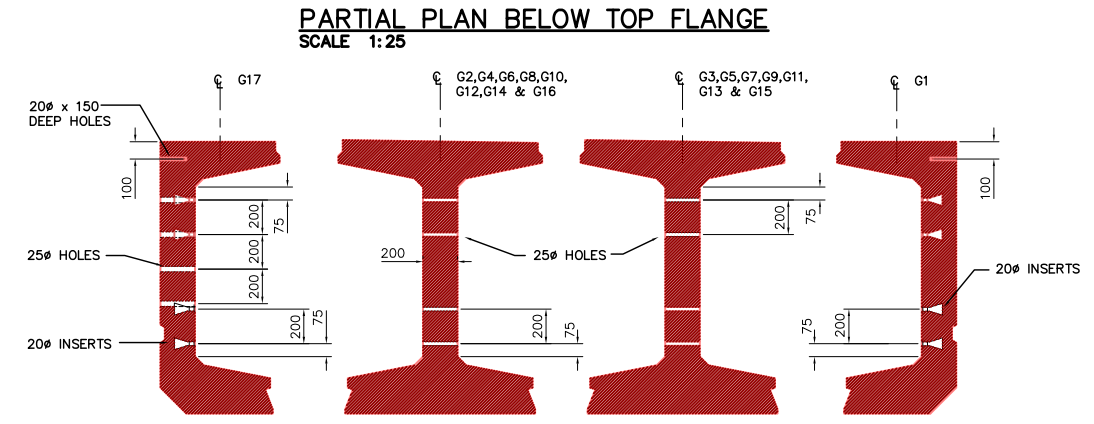
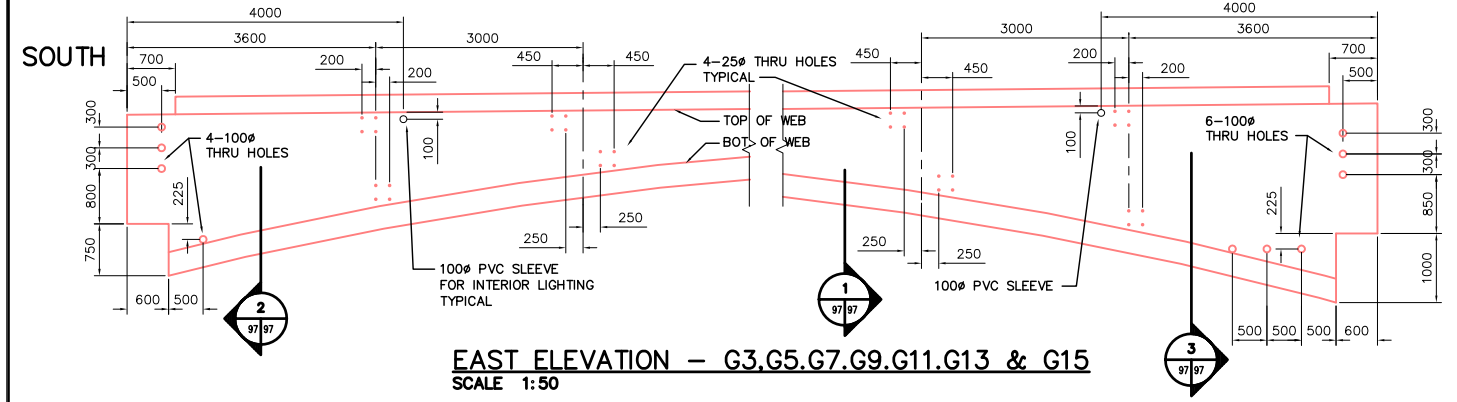
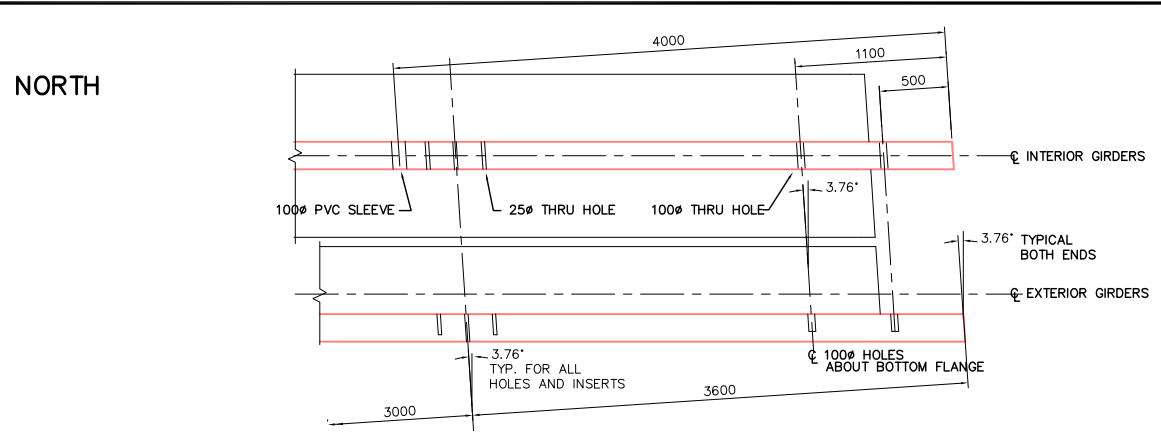
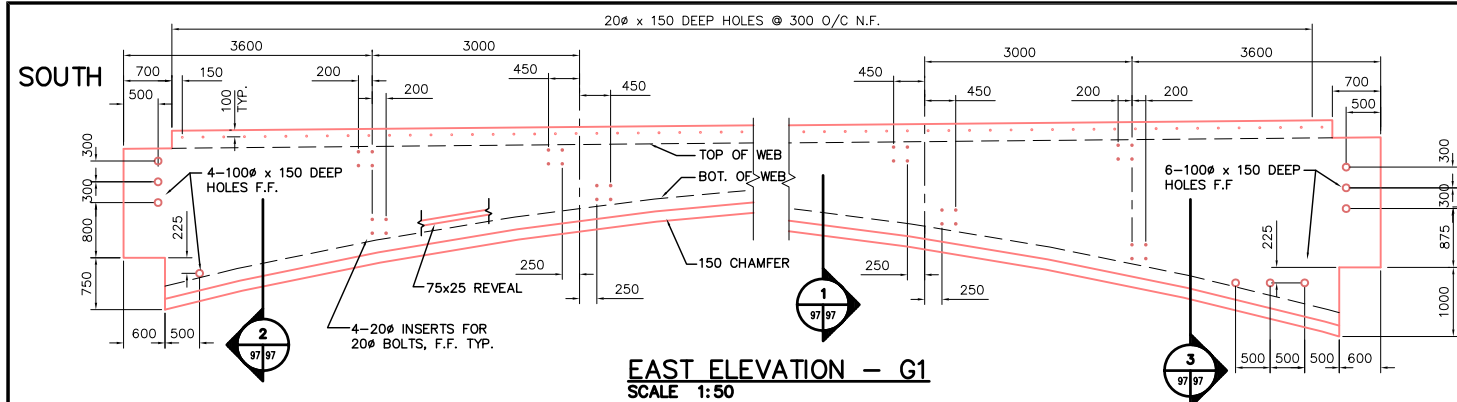
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

CITY DRAWING NUMBER: B103-98-95
SHEET 95 OF

NORTH ABUTMENT
TRANSFER BEAM
SHEET 1 OF 2

CONSULTANT DRAWING NO. 61440-18-95

REV-3



- NOTES:
1. TYPICAL INSERT ACROW-RICHMOND TYPE LF-W
 2. ALL HORIZONTAL DISTANCES MEASURED PERPENDICULAR TO GIRDER END SKEW.
 3. SEE DRAWING 61440-18-25 FOR GIRDER GEOMETRY

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES		B.M. ELEV.	
SUPV. U/G STRUCTURES COMMITTEE	DATE		
7 AS CONSTRUCTED	12/03/99	KA	AA
6 REVISED 40# HOLES/INSERTS	05/23/97	KA	AA
5 REMOVE 20# HOLES & LOOKOUTS	04/28/97	KA	AA
4 NEW & REVISED HOLES	03/31/97	KA	AA
3 REVISED G17 (2-25# LOC'N)	03/07/97	KA	AA
2 REVISED 50# THRU HOLES	02/19/97	KA	AA
1 ISSUED FOR CONSTRUCTION	02/17/97	KA	AA
0 ISSUED FOR REVIEW	02/07/97	KA	AA
NO. REVISIONS	DATE	BY	

Reid Crowther
Road Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: _____ CHECKED BY: _____
DRAWN BY: KAA APPROVED BY: _____
HOR. SCALE: _____ AUTHORIZED BY: _____ DATE: _____
VERTICAL: AS NOTED

DATE: 01/29/97

ENGINEER'S SEAL
PROV. OF MANITOBA
ORIGINAL SIGNED BY
C.P. GRAY
26/05/97
REGISTERED PROFESSIONAL ENGINEER

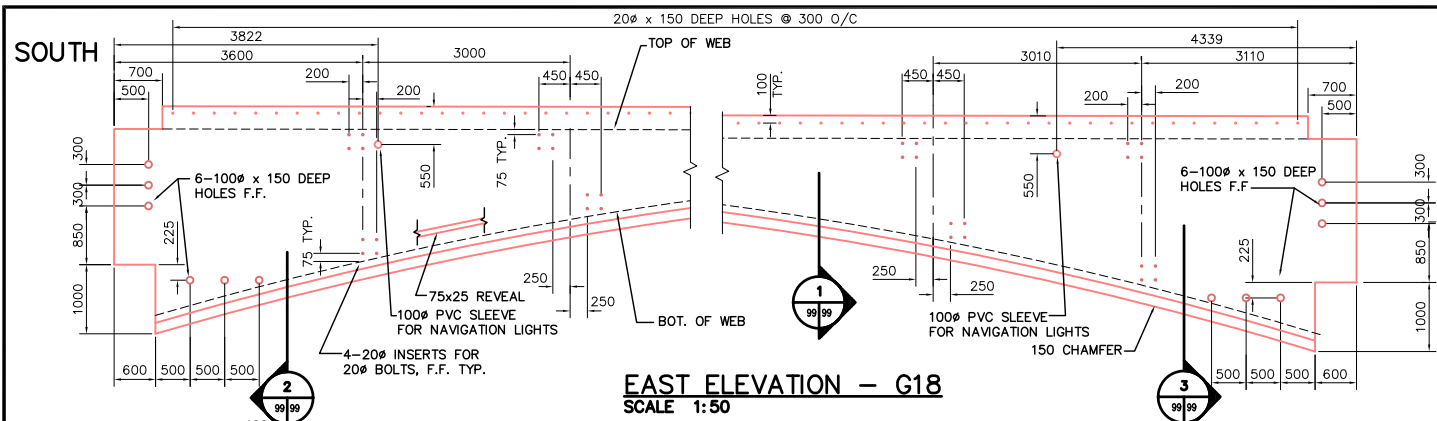
THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

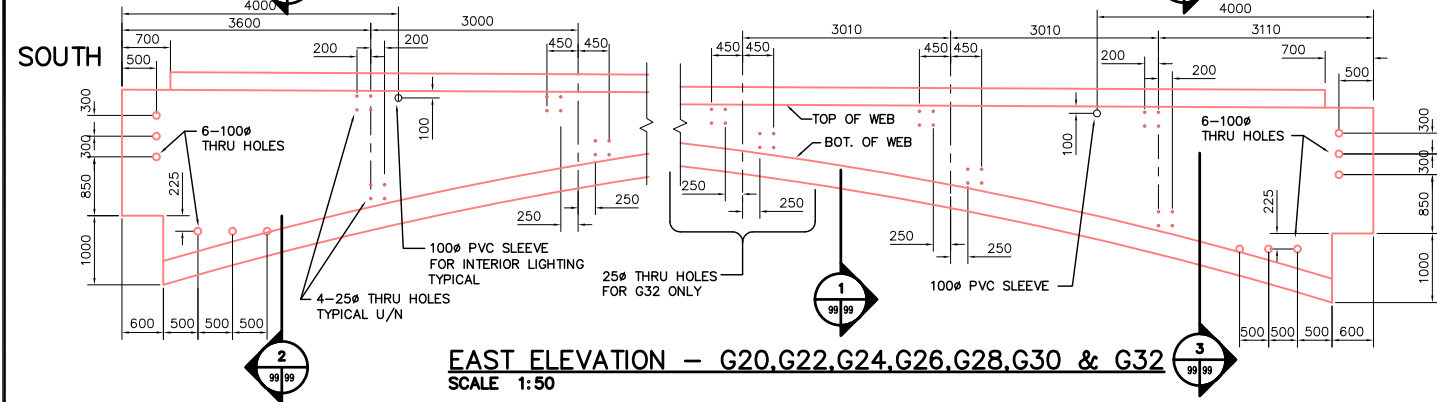
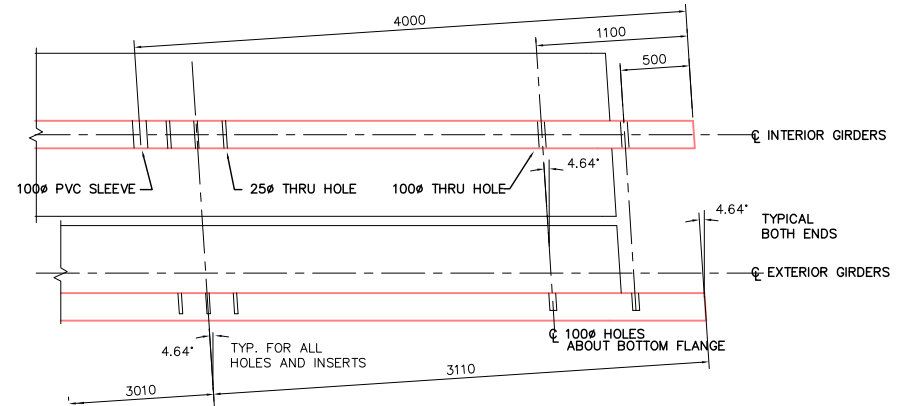
CITY DRAWING NUMBER
8103-98-97
SHEET 97 OF _____

PRECAST CONCRETE GIRDERS
SPAN 1
SHEET 1 OF 2

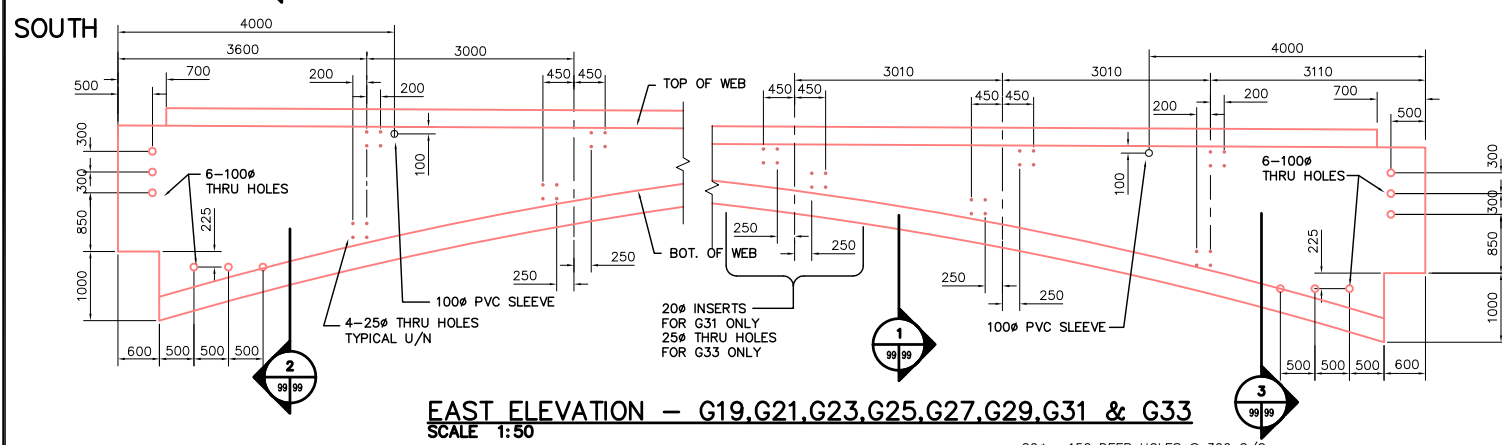
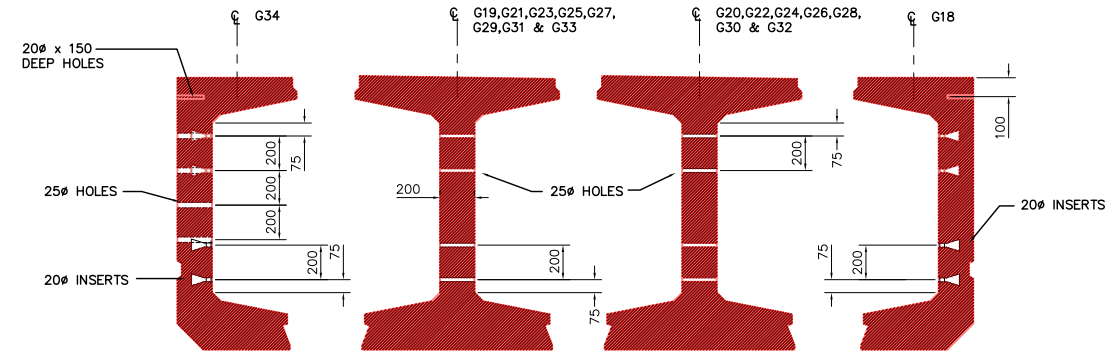
REV-7



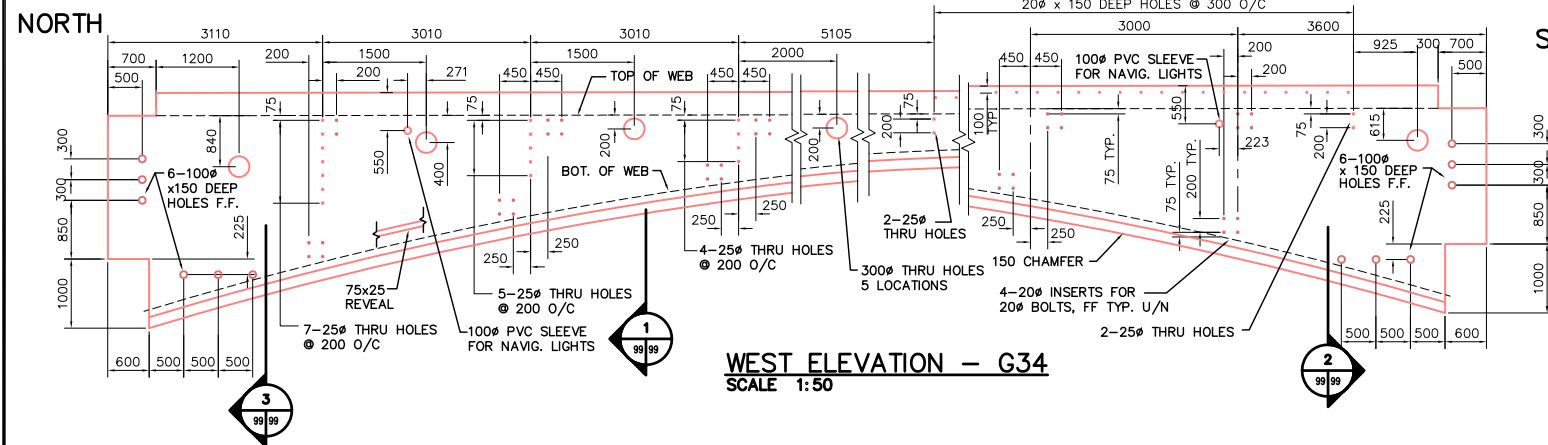
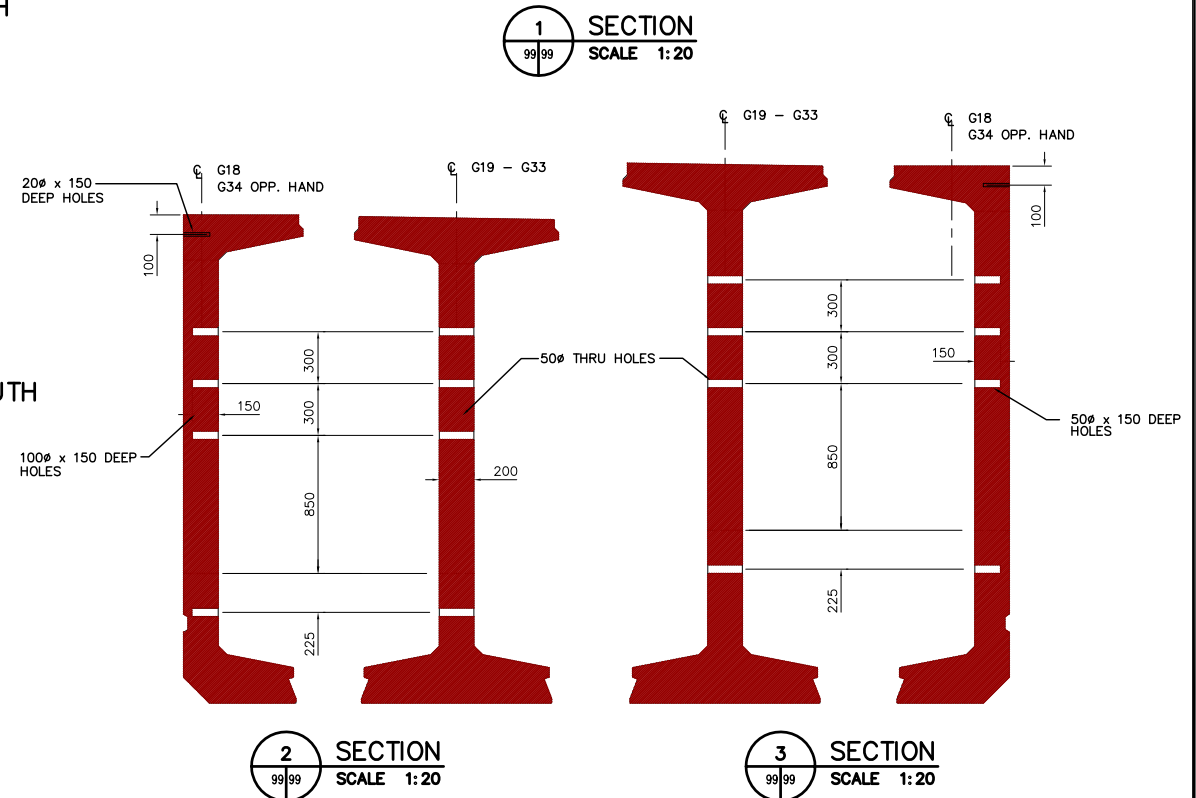
NORTH



NORTH



NORTH



SOUTH

- NOTES:
1. TYPICAL INSERT ACROW-RICHMOND TYPE LF-W
 2. ALL HORIZONTAL DISTANCES MEASURED PERPENDICULAR TO GIRDER END SKEW.
 3. SEE DRAWING 61440-18-25 FOR GIRDER GEOMETRY

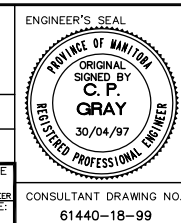
REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES		B.M. ELEV.
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
3	AS CONSTRUCTED	12/03/99	KAA
2	DELETE 20# HOLES @ LOOKOUTS	04/29/97	KAA
1	ISSUED FOR CONSTRUCTION	04/04/97	KAA
0	ISSUED FOR REVIEW	03/06/97	KAA

Reid Crowther Reid Crowther & Partners Ltd. Engineers Planners Scientists	
DESIGNED BY	CHECKED BY
DRAWN BY KAA	APPROVED BY
HOR. SCALE: AS NOTED	AUTHORIZED BY DATE
VERTICAL: AS NOTED	B. EIBENSPANER / SENIOR BRIDGE ENGINEER ACCEPTED FOR RAPID CONSTRUCTION BY DATE:
DATE 03/04/97	P. PLAZA / PROJECT MANAGER



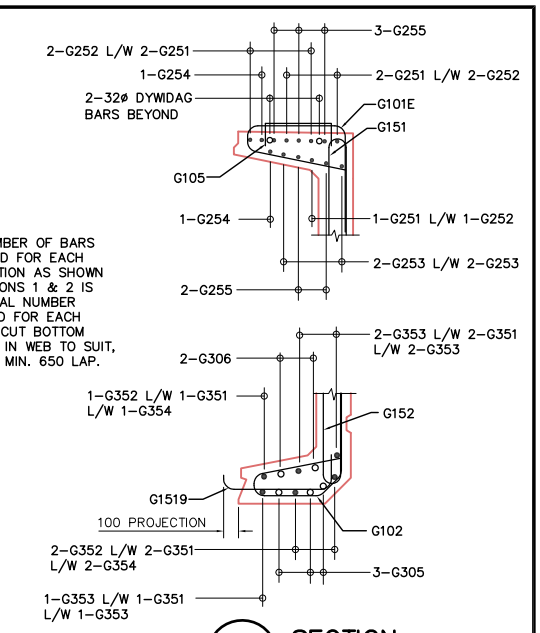
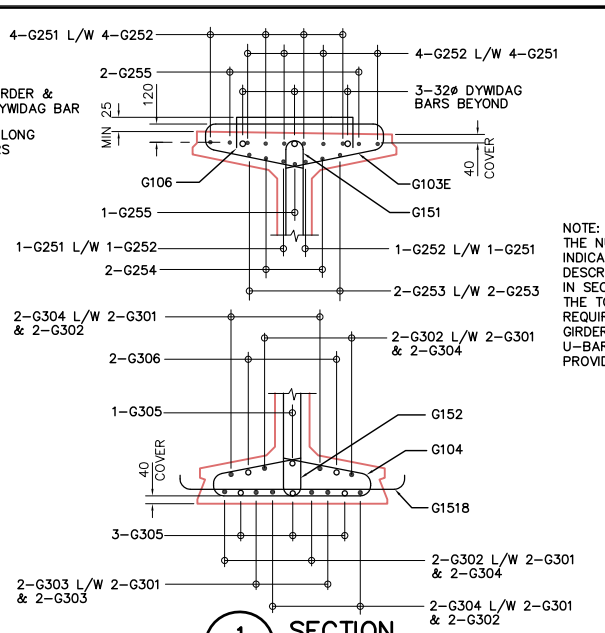
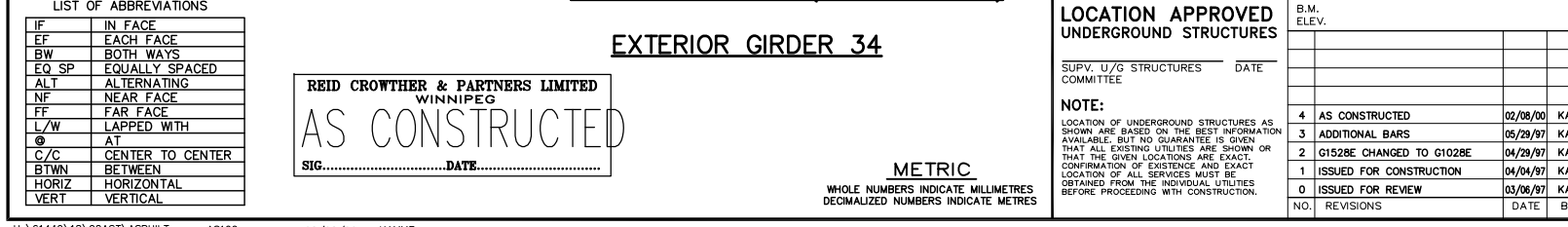
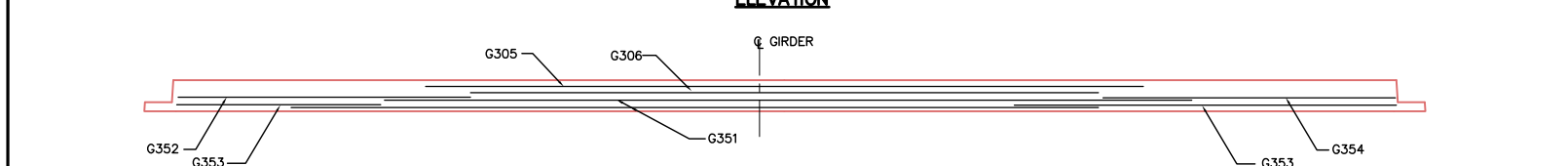
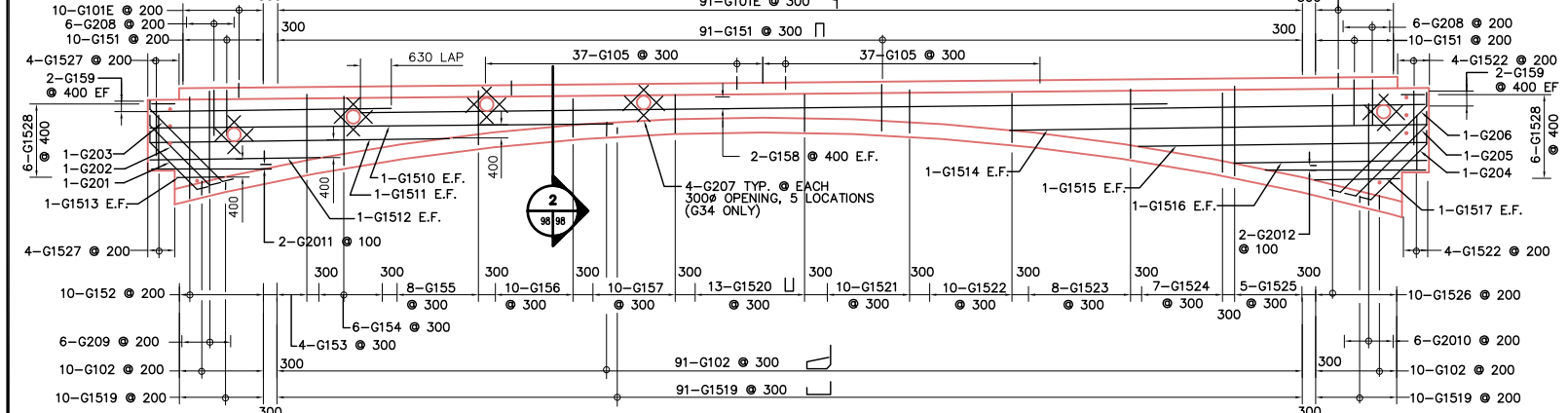
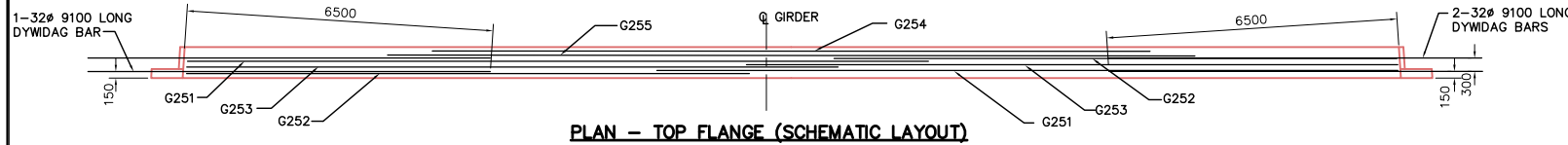
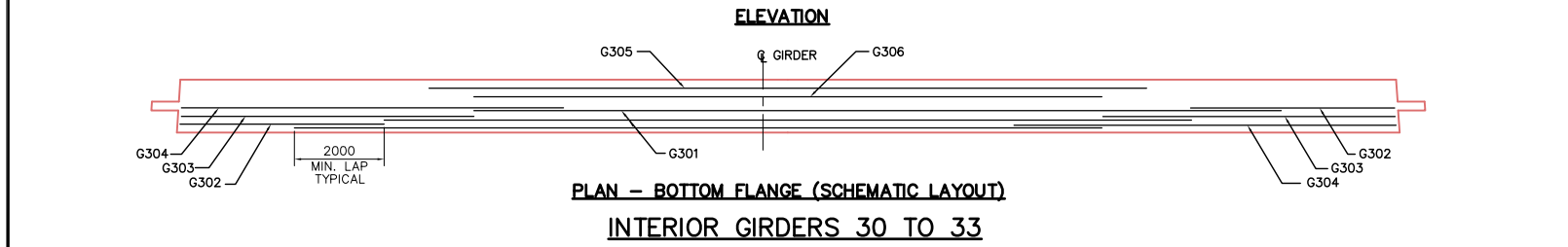
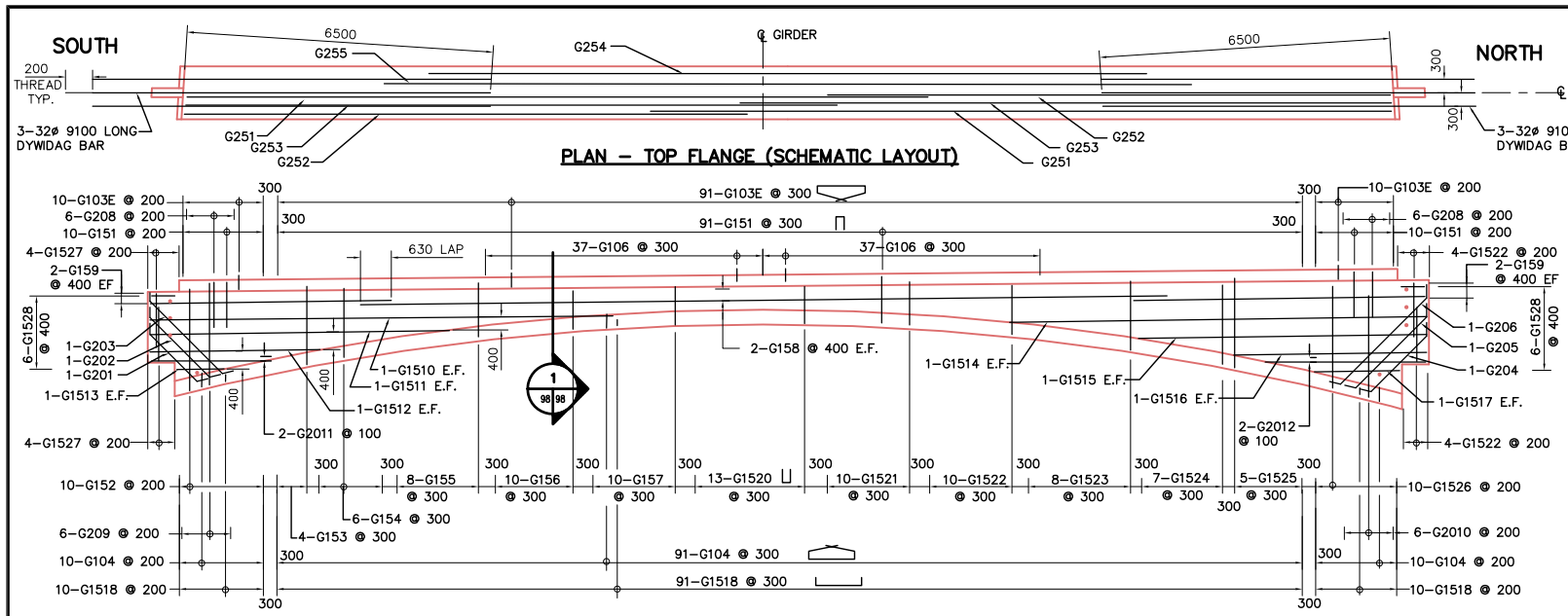
THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

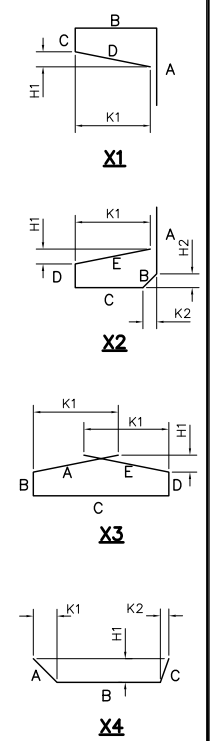
PRECAST CONCRETE GIRDERS
SPAN 2
SHEET 1 OF 3

CITY DRAWING NUMBER 8103-98-99
SHEET 99 OF
REV-3

CONSULTANT DRAWING NO. 61440-18-99



Mark	No.	Size	Length	Type	A	B	C	D	E	F	G	H1	H2	K1	K2	M	S	O	Weight
G101E	111	10	1835	X1	555	565	140	575				115		563					160
G102	111	10	1590	X2	400	170	385	120	515			99	120	505	120				139
G103E	444	10	2460	X3	575	140	1030	140	575			115		563					857
G104	444	10	2180	X3	515	120	910	120	515			99		505					760
G105	74	10	890	17		150	590	150											52
G106	296	10	1380	17		150	1080	150											321
G151	555	15	1430	S11								715						100	1246
G152	50	15	5870	S11								2835						100	461
G153	20	15	5070	S11								2535						100	158
G154	30	15	4350	S11								2175						100	205
G155	40	15	3560	S11								1780						100	224
G156	50	15	2750	S11								1375						100	216
G157	50	15	2020	S11								1010						100	159
G158	20	15	1800	STR														100	565
G159	40	15	7730	STR														100	485
G1510	10	15	11800	STR														100	185
G1511	10	15	8175	STR														100	128
G1512	10	15	5780	STR														100	91
G1513	10	15	3214	STR														100	50
G1514	10	15	12190	STR														100	191
G1515	10	15	8540	STR														100	134
G1516	10	15	6145	STR														100	96
G1517	10	15	3640	STR														100	57
G1518	444	15	1460	17		80	1300	80										1018	
G1519	1111	15	905	17		200	625	80										158	
G1520	65	15	1430	S11								715						100	146
G1521	50	15	1940	S11								970						100	152
G1522	90	15	2610	S11								1305						100	369
G1523	40	15	3390	S11								1695						100	213
G1524	35	15	4260	S11								2130						100	234
G1525	25	15	5140	S11								2570						100	202
G1526	50	15	6100	S11								3050						100	479
G1527	40	15	2500	S11								1250						100	157
G1528	60	15	1200	S11								600						100	113
G201	5	20	2470	X4	300	1925	245					212		212	121			29	
G202	5	20	2940	X4	300	2395	245					212		212	121			35	
G203	5	20	3415	X4	300	2870	245					212		212	121			40	
G204	5	20	2495	X4	300	1950	245					212		212	121			29	
G205	5	20	2965	X4	300	2420	245					212		212	121			35	
G206	5	20	3435	X4	300	2890	245					212		212	121			40	
G207	20	20	800	STR														100	38
G208	60	20	1430	S11								715						100	202
G209	30	20	5870	S11								2835						100	415
G2010	30	20	6100	S11								3060						100	431
G2011	10	20	6630	S11								3315						100	156
G2012	10	20	6400	S11								3200						100	151
G251	45	25	18000	STR														100	3179
G252	45	25	16000	STR														100	2868
G253	20	25	17000	STR														100	1335
G254	10	25	12000	STR														100	471
G255	17	25	14000	STR														100	934
G301	40	30	18000	STR														100	3956
G302	32	30	7000	STR														100	1231
G303	16	30	9000	STR														100	791
G304	32	30	11000	STR														100	1934
G305	19	30	16000	STR														100	1670
G306	10	30	14000	STR														100	769
G351	6	35	18000	STR														100	848
G352	3	35	7000	STR														100	165
G353	6	35	9000	STR														100	424
G354	3	35	11000	STR														100	259
TOTAL																			32575



LIST OF ABBREVIATIONS

IF	IN FACE
EF	EACH FACE
BW	BOTH WAYS
EQ SP	EQUALLY SPACED
ALT	ALTERNATING
NF	NEAR FACE
FF	FAR FACE
L/W	LAPPED WITH
@	AT
C/C	CENTER TO CENTER
B/TWN	BETWEEN
HORIZ	HORIZONTAL
VERT	VERTICAL

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

EXTERIOR GIRDER 34

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES	DATE
COMMITTEE	

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
4	AS CONSTRUCTED	02/08/00	KAA
3	ADDITIONAL BARS	05/29/97	KAA
2	G1528E CHANGED TO G1028E	04/29/97	KAA
1	ISSUED FOR CONSTRUCTION	04/04/97	KAA
0	ISSUED FOR REVIEW	03/06/97	KAA

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: KAA
DRAWN BY: KAA
HOR. SCALE: AS NOTED
VERTICAL: AS NOTED
DATE: 03/05/97

CHECKED BY:
APPROVED BY:
AUTHORIZED BY: DATE:
B. EIBENSPANER / SENIOR BRIDGE ENGINEER
ACCEPTED FOR BRARY CONSTRUCTION BY: DATE:
P. PLAZA / PROJECT MANAGER

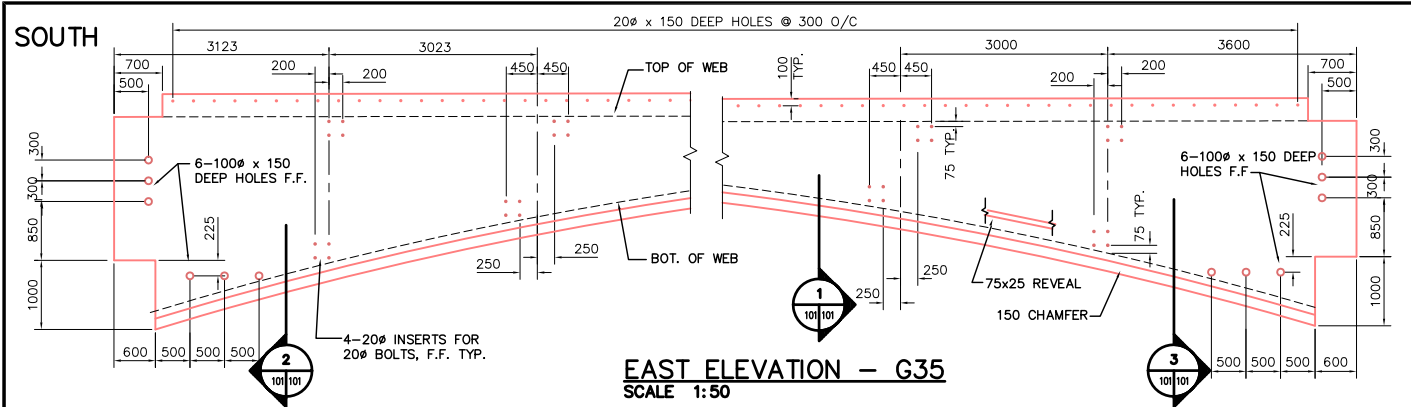
ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
C. P. GRAY
30/05/97
REGISTERED PROFESSIONAL ENGINEER

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

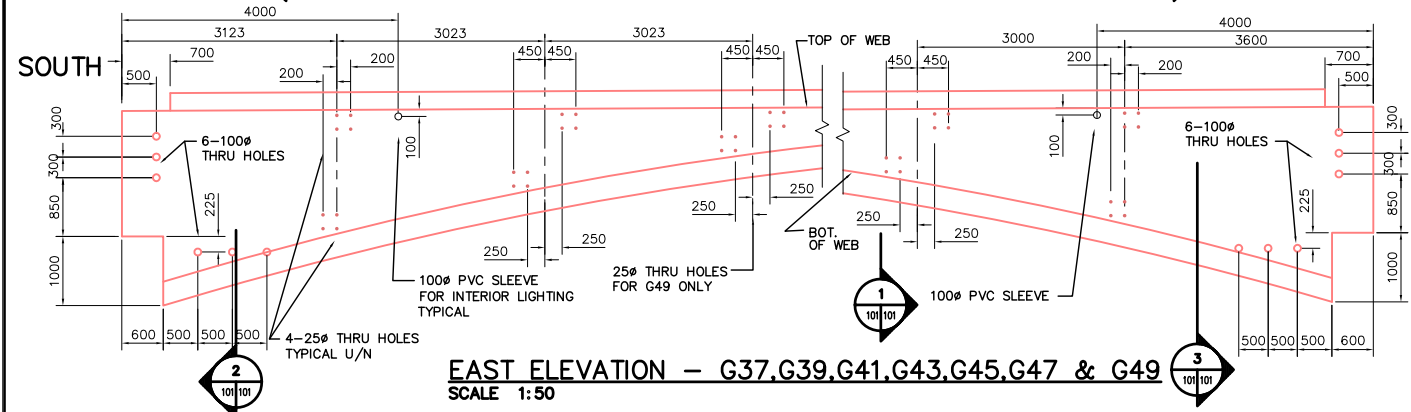
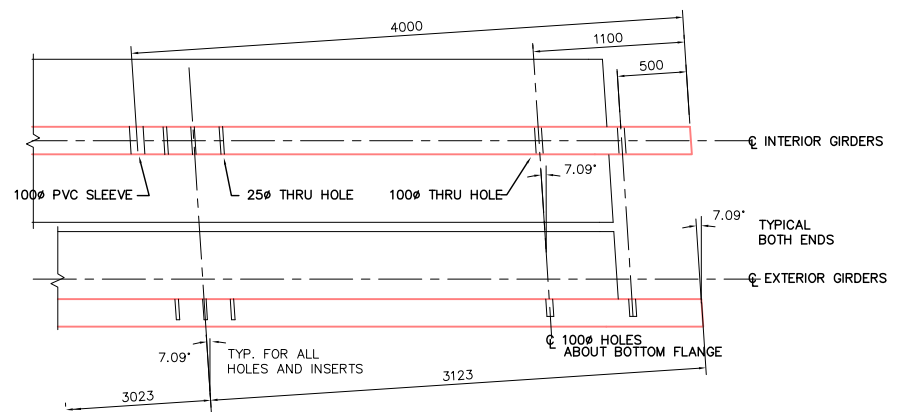
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

PRECAST CONCRETE GIRDERS
SPAN 2 (GIRDERS 30-34)
SHEET 2 OF 3

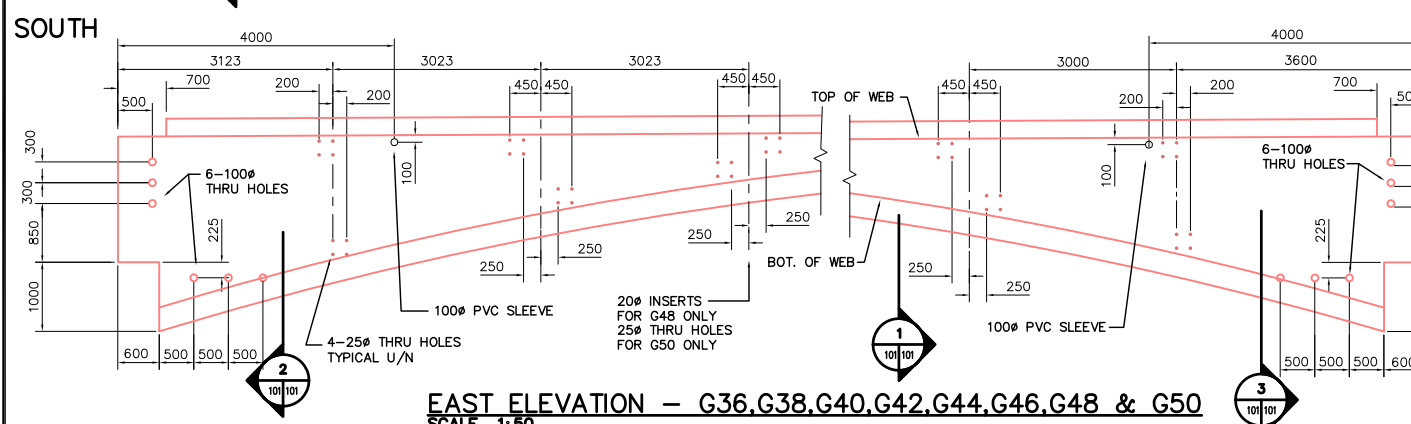
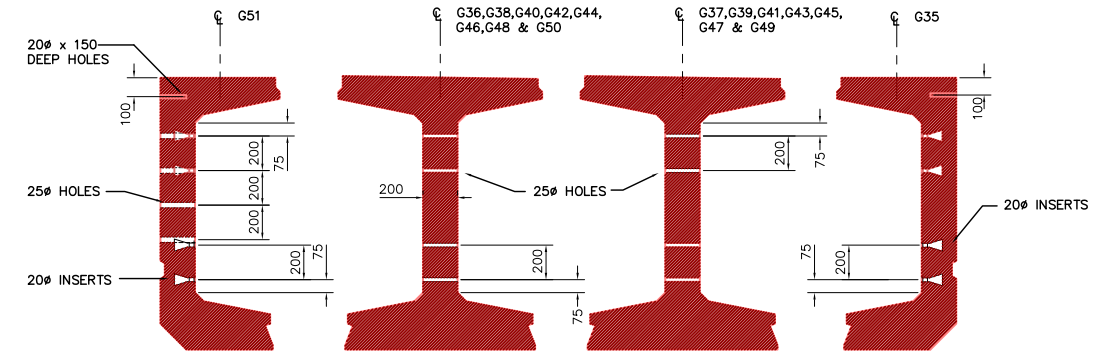
CITY DRAWING NUMBER
B103-98-100
SHEET 100 OF
REV-4



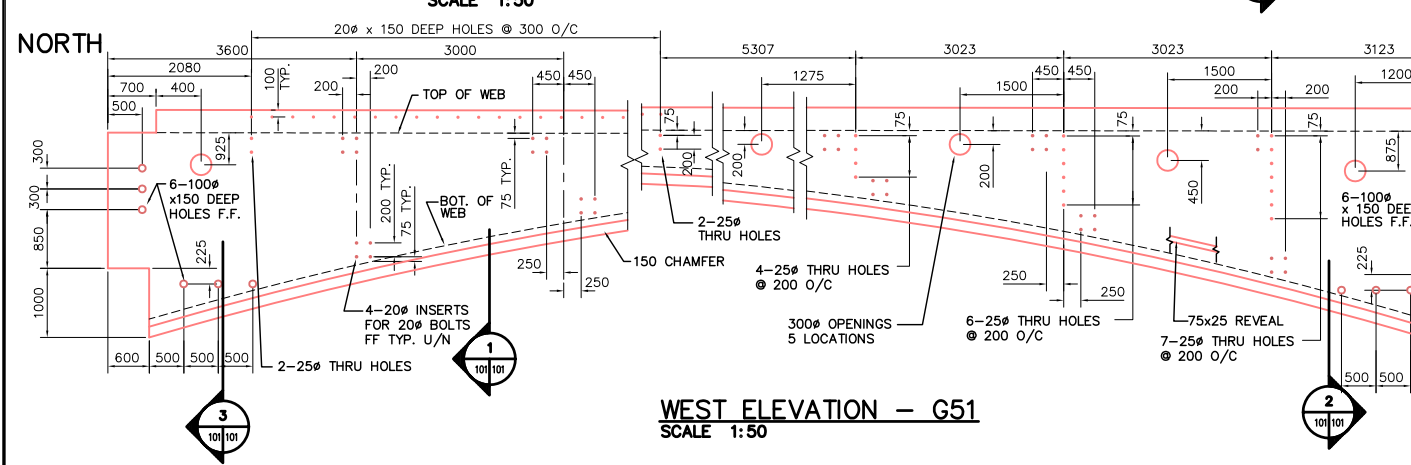
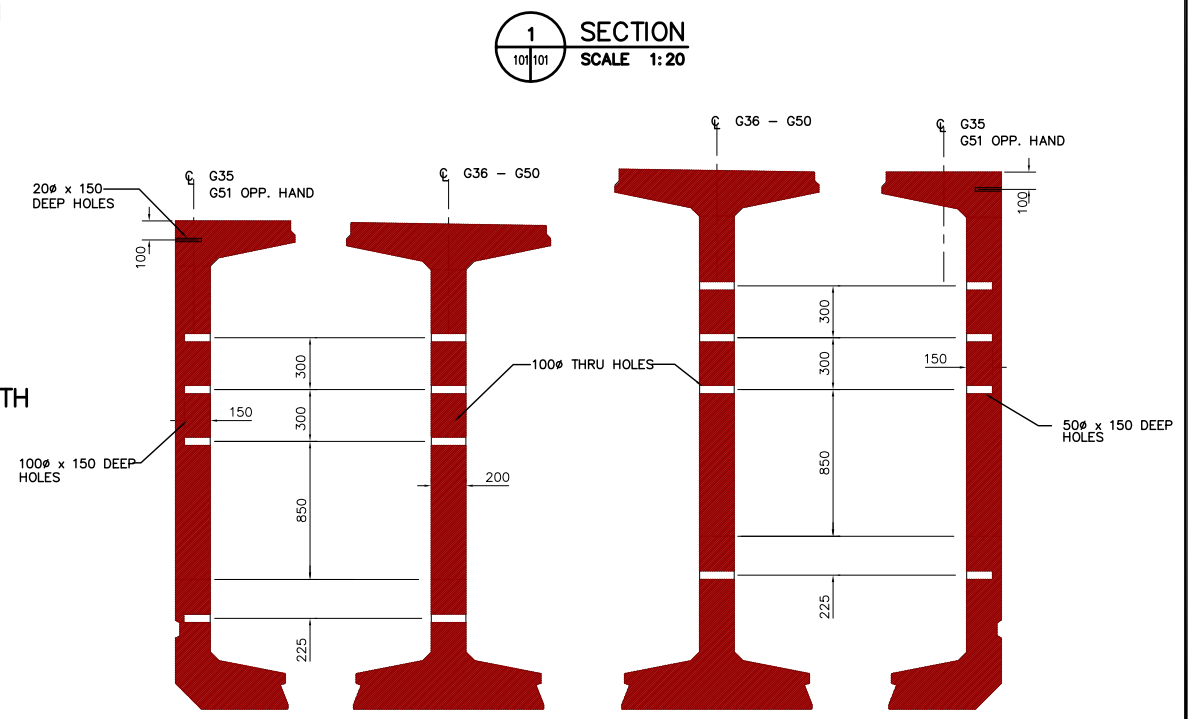
NORTH



NORTH



NORTH



SOUTH

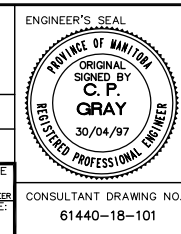
REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

- NOTES:
1. TYPICAL INSERT ACROW-RICHMOND TYPE LF-W
 2. ALL HORIZONTAL DISTANCES MEASURED PERPENDICULAR TO GIRDER END SKEW.
 3. SEE DRAWING 61440-18-25 FOR GIRDER GEOMETRY

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES		B.M. ELEV.
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

DESIGNED BY		CHECKED BY	
DRAWN BY		APPROVED BY	
HOR. SCALE:		AUTHORIZED BY	
VERTICAL: AS NOTED		DATE	
DATE		DATE	
03/11/97		P. PLAZA / PROJECT MANAGER	



THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

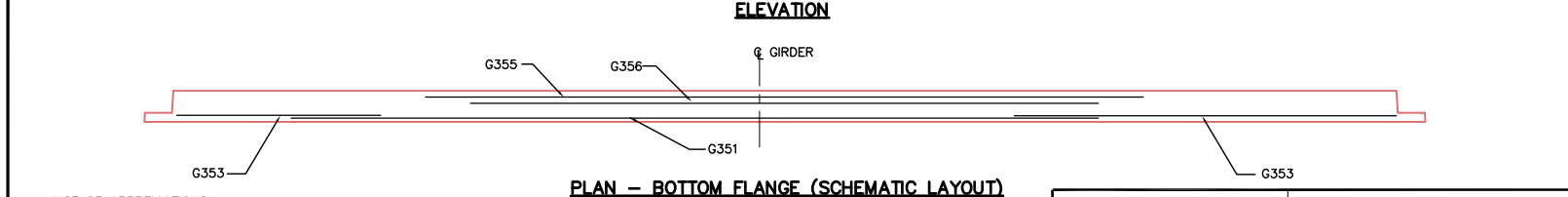
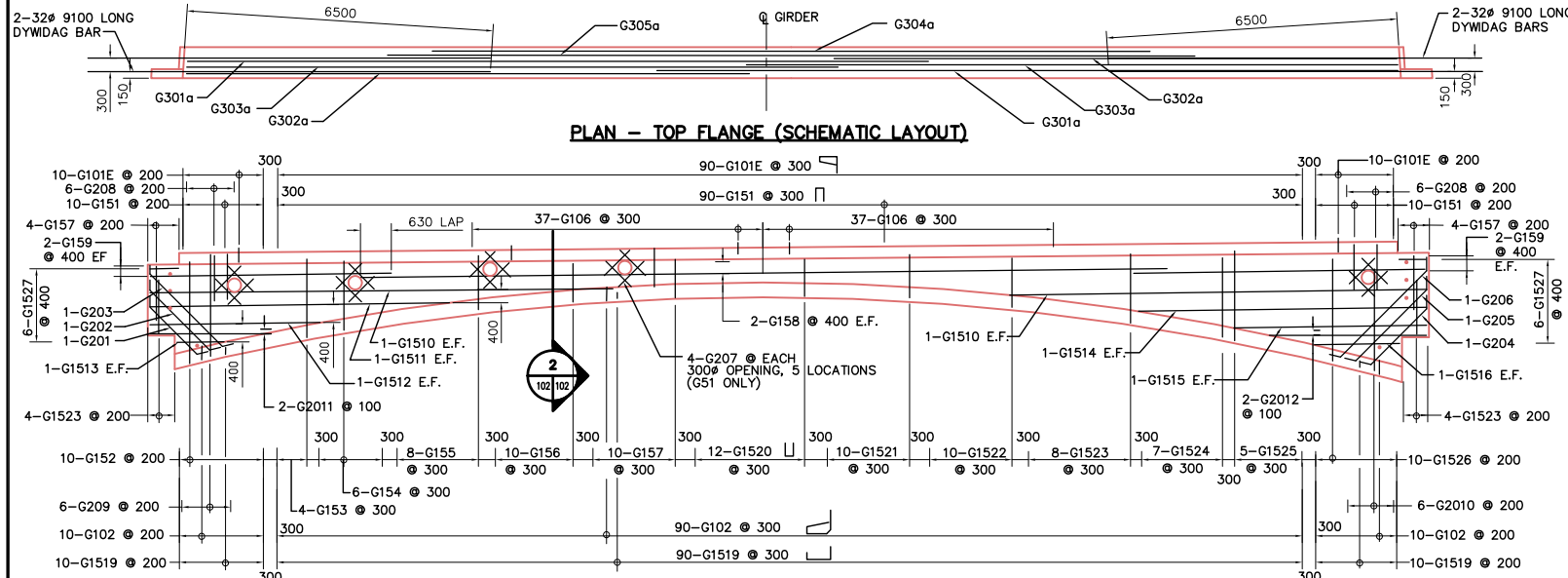
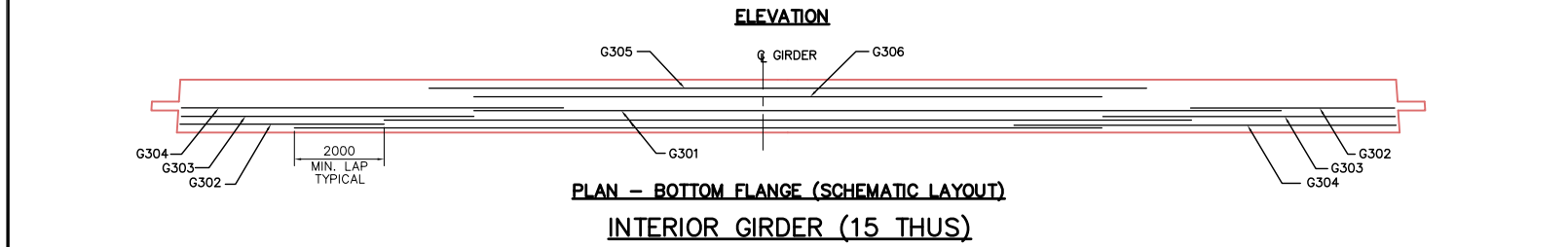
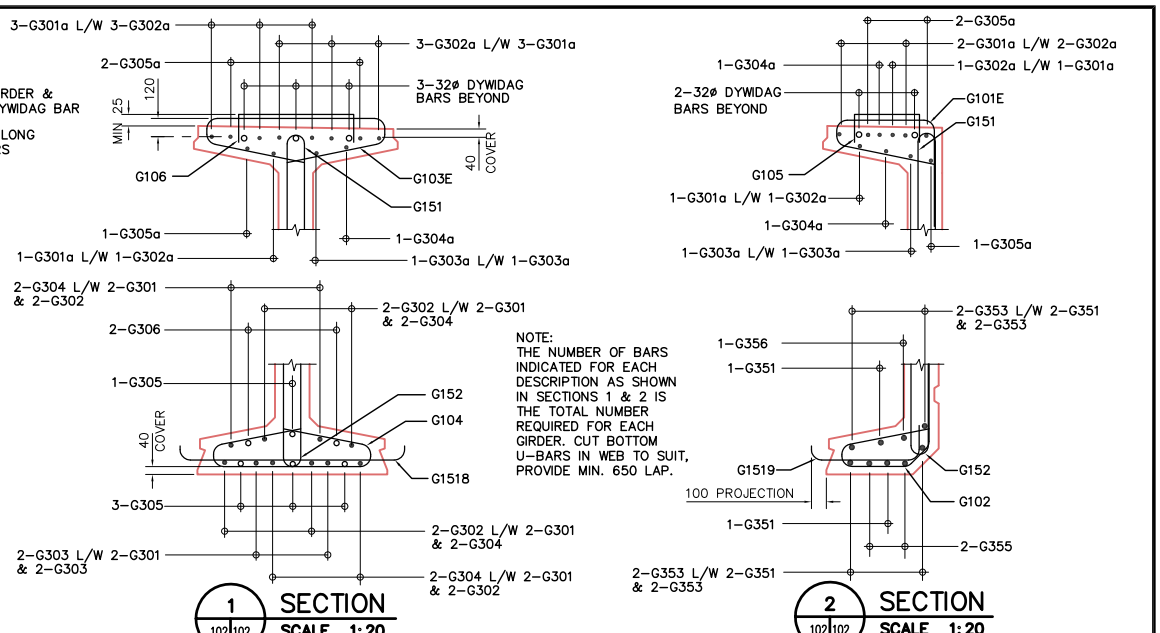
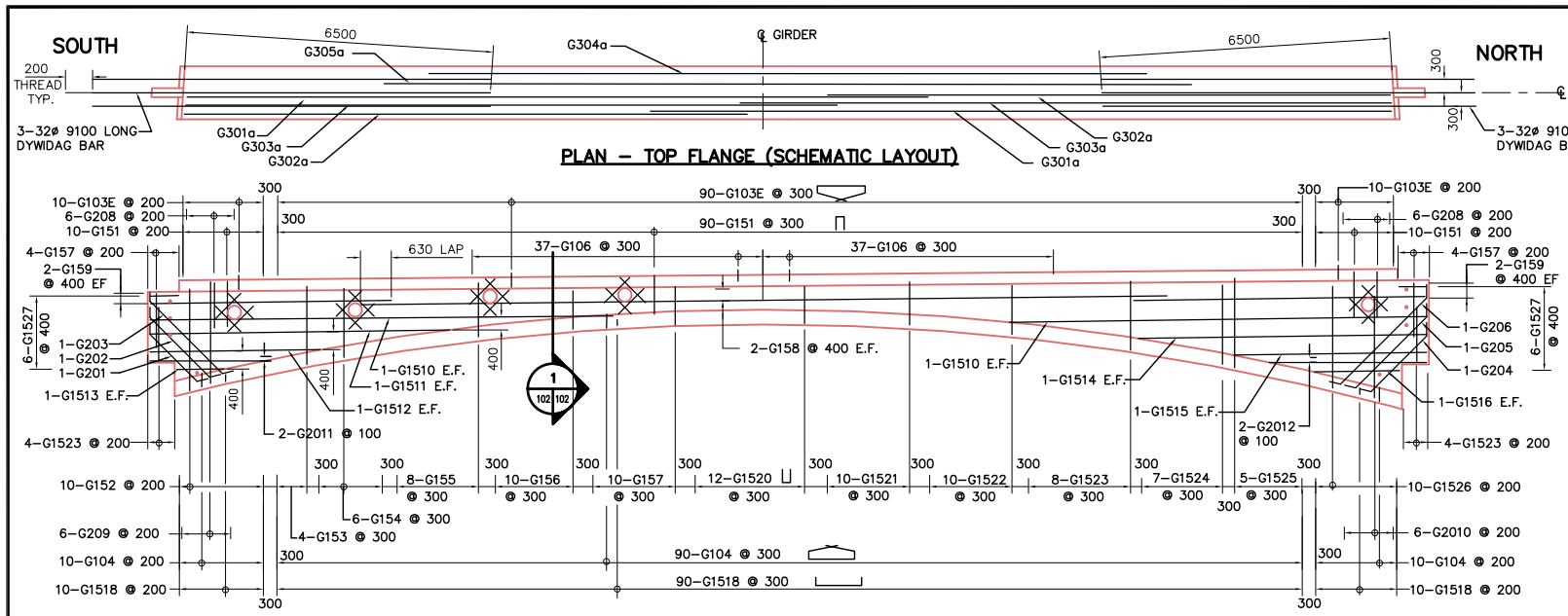
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

PRECAST CONCRETE GIRDERS
SPAN 3
SHEET 1 OF 2

CITY DRAWING NUMBER
B103-98-101
SHEET 101 OF

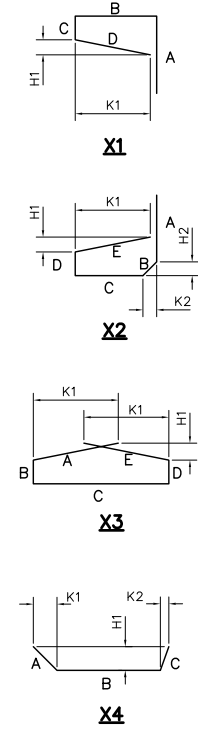
REV-2

CONSULTANT DRAWING NO.
61440-18-101



REINFORCING SCHEDULE

Mark	No. Bars	Size	Length	Type	A	B	C	D	E	F	G	H1	H2	K1	K2	W	S	O	Weight
G101E	220	10	1835	X1	555	565	140	575				115		563					317
G102	220	10	1590	X2	400	170	385	120	515				120	505	120				275
G103E	1650	10	2460	X3	575	140	1030	140	575					115	563				3186
G104	1650	10	2180	X3	515	120	910	120	515					99	505				2824
G105	148	10	890	T7															103
G106	1110	10	1380	T7															1202
G151	1870	15	1380	S11								690						100	4525
G152	170	15	6040	S11								3020						100	1612
G153	88	15	4970	S11								2485						100	531
G154	102	15	4400	S11								2200						100	705
G155	136	15	3650	S11								1825						100	779
G156	170	15	2850	S11								1425						100	761
G157	306	15	2140	S11								1070						100	1028
G158	88	15	18000	STR															1922
G159	136	15	7805	STR															1667
G1510	88	15	12000	STR															1281
G1511	34	15	8365	STR															447
G1512	34	15	5955	STR															318
G1513	34	15	3420	STR															183
G1514	34	15	8370	STR															447
G1515	34	15	5975	STR															319
G1516	34	15	3465	STR															185
G1517	-	15	-	-															-
G1518	1650	15	1460	T7		80	1300	80											3782
G1519	220	15	905	T7		200	625	80											313
G1520	204	15	1760	S11								880						100	564
G1521	170	15	2030	S11								1015						100	542
G1522	170	15	2670	S11								1335						100	713
G1523	272	15	3430	S11								1715						100	1465
G1524	119	15	4270	S11								2135						100	796
G1525	85	15	4980	S11								2480						100	685
G1526	170	15	6130	S11								3065						100	1636
G1527	204	15	1200	S11								600						100	304
G201	17	20	2462	X4	300	1915	247					212		212	126				261
G202	17	20	2462	X4	300	2395	247					212		212	126				118
G203	17	20	3422	X4	300	2875	247					212		212	126				137
G204	17	20	2460	X4	300	1860	240					212		212	114				96
G205	17	20	2865	X4	300	2325	240					212		212	114				115
G206	17	20	3330	X4	300	2790	240					212		212	114				133
G207	20	20	800	STR															38
G208	204	20	1380	S11								690						100	663
G209	102	20	6040	S11								3020						100	1451
G2010	102	20	6130	S11								3065						100	1472
G2011	34	20	6800	S11								3400						100	544
G2012	34	20	6070	S11								3035						100	486
G301a	113	30	18000	STR															11177
G302a	113	30	15000	STR															9066
G303a	34	30	16500	STR															3045
G304a	19	30	12000	STR															1253
G305a	51	30	14000	STR															3923
G301	150	30	18000	STR															14837
G302	120	30	6800	STR															3825
G303	60	30	8800	STR															2572
G304	120	30	10800	STR															6462
G305	60	30	16000	STR															5275
G306	30	30	14000	STR															2308
G301	12	35	18000	STR															1696
G302	-	35	-	STR															-
G303	16	35	8800	STR															735
G304	-	35	-	STR															-
G305	4	35	16000	STR															502
G306	2	35	14000	STR															220
TOTAL																			107254



LIST OF ABBREVIATIONS

IF	IN FACE
EF	EACH FACE
BW	BOTH WAYS
EQ SP	EQUALLY SPACED
ALT	ALTERNATING
NF	NEAR FACE
FF	FAR FACE
L/W	LAPPED WITH
@	AT
C/C	CENTER TO CENTER
B/TWN	BETWEEN
HORIZ	HORIZONTAL
VERT	VERTICAL

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

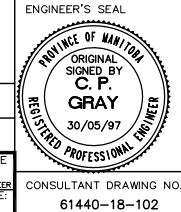
LOCATION APPROVED UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES	DATE	COMMITTEE
NOTE:		
4 AS CONSTRUCTED	12/03/99	KAA
3 ADDITIONAL BARS	05/29/97	KAA
2 G1527E CHANGED TO G1027E	04/29/97	KAA
1 ISSUED FOR CONSTRUCTION	04/04/97	KAA
0 ISSUED FOR REVIEW	03/14/97	KAA
NO. REVISIONS	DATE	BY

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: KAA
DRAWN BY: KAA
HOR. SCALE: AS NOTED
VERTICAL: AS NOTED
DATE: 03/12/97

CHECKED BY:
APPROVED BY:
AUTHORIZED BY: DATE:
B. EIBENSPANGER / SENIOR BRIDGE ENGINEER
ACCEPTED FOR BRIFT CONSTRUCTION BY: DATE:
P. PLAZA / PROJECT MANAGER



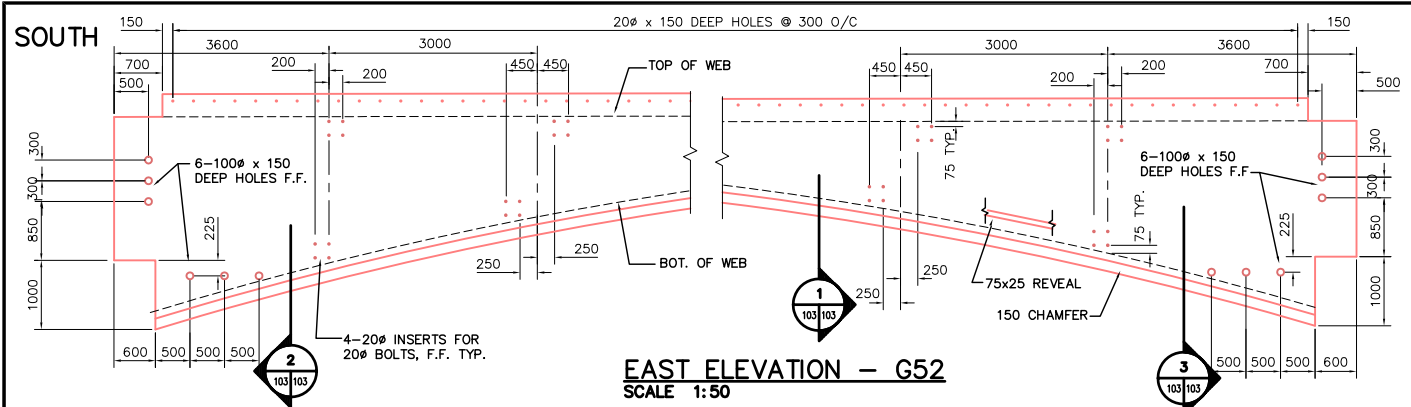
THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

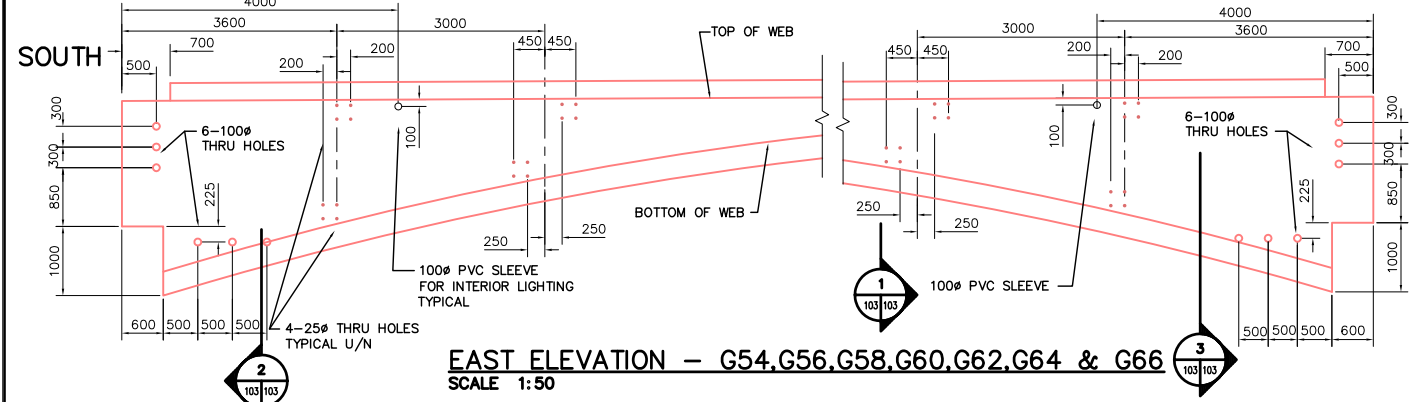
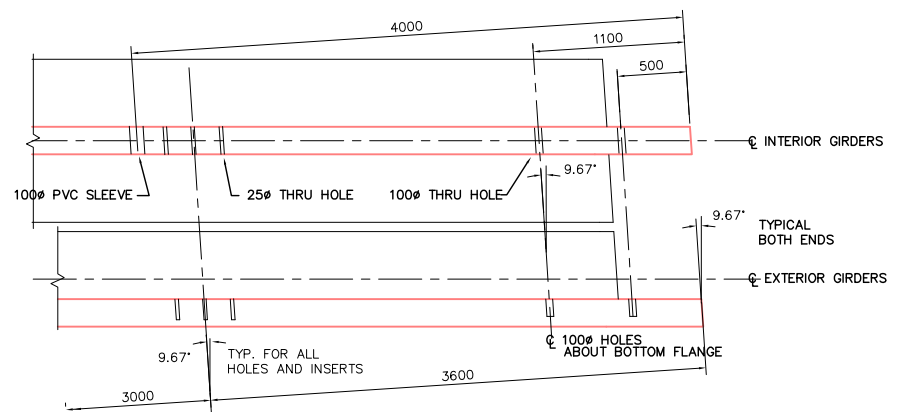
PRECAST CONCRETE GIRDERS
SPAN 3
SHEET 2 OF 2

CITY DRAWING NUMBER: B103-98-102
SHEET 102 OF
REV-4

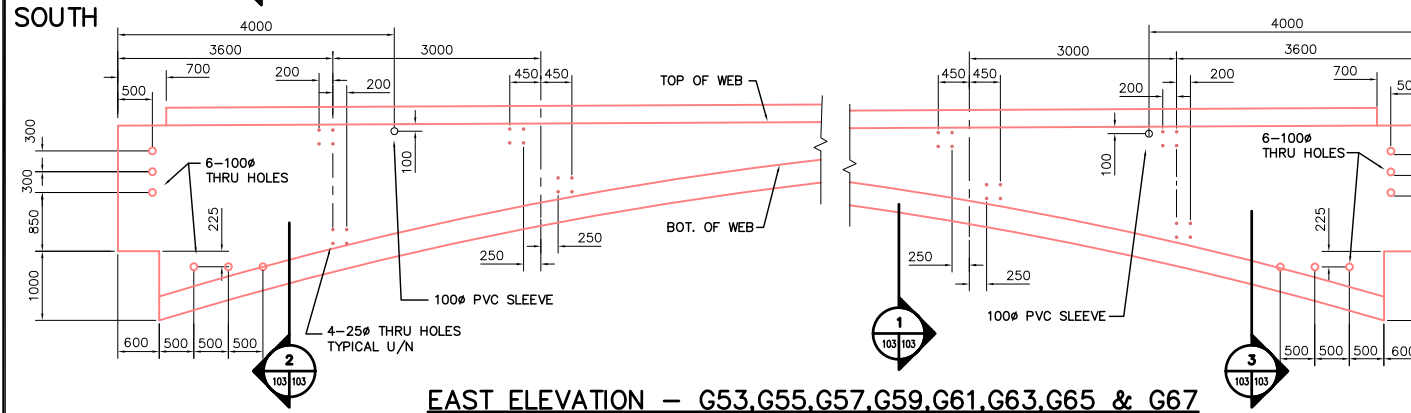
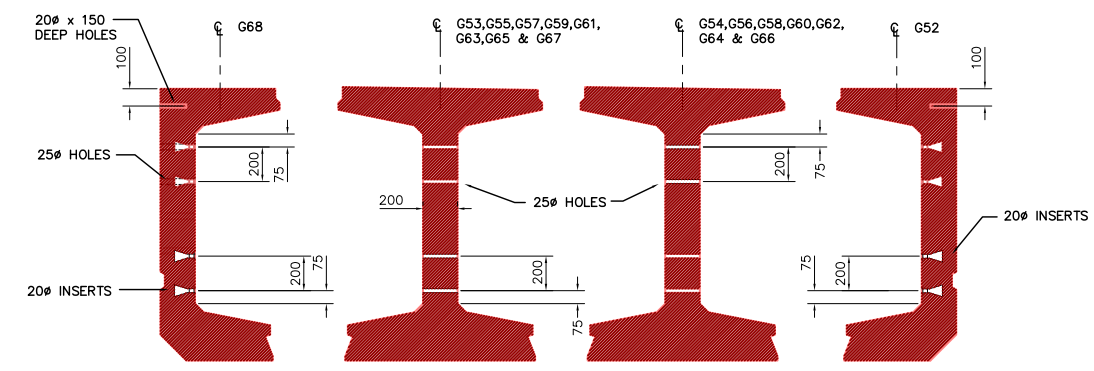
CONSULTANT DRAWING NO.: 61440-18-102



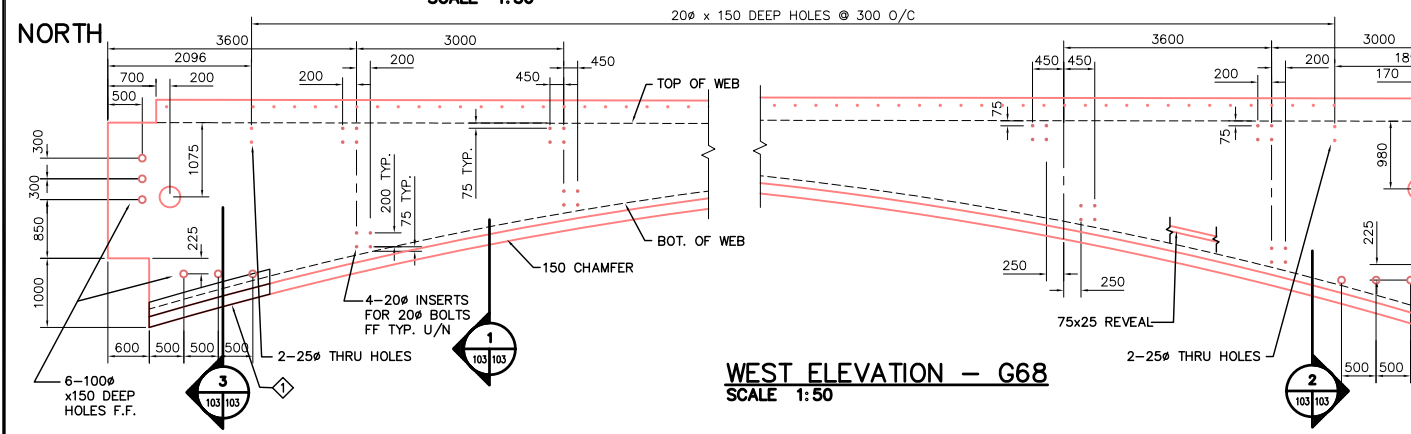
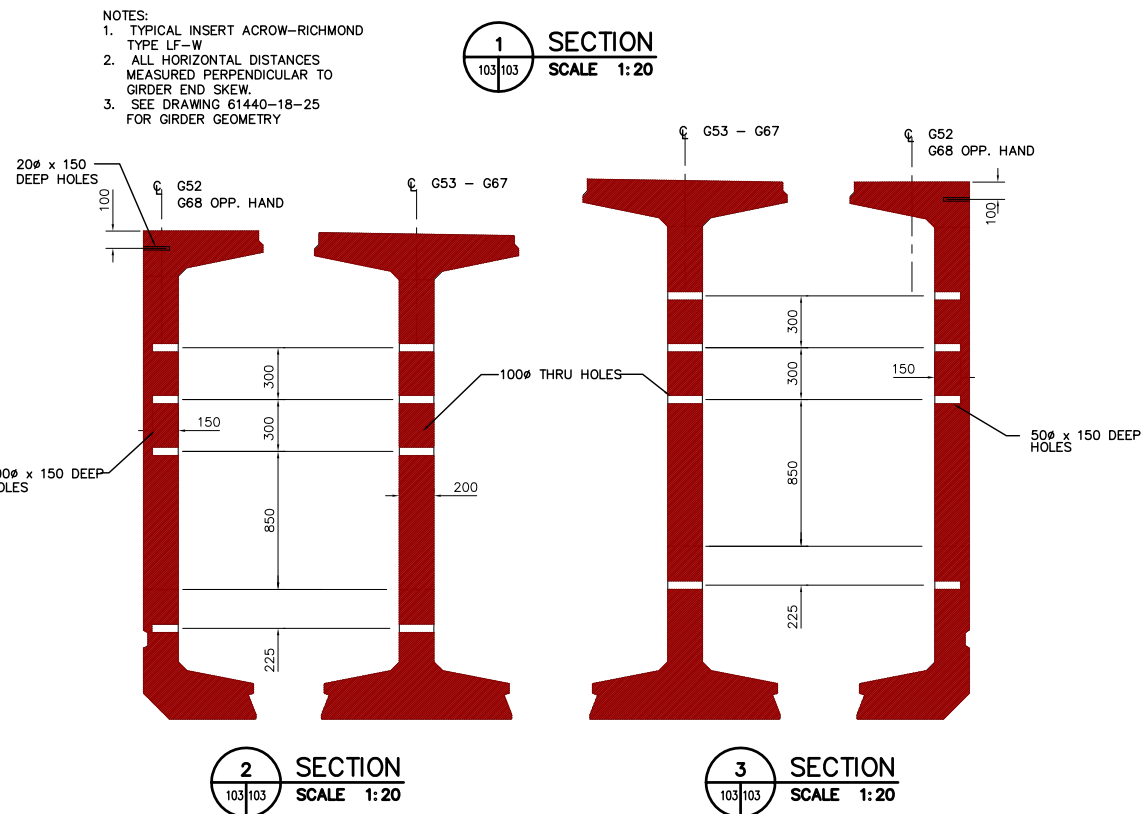
NORTH



NORTH



NORTH



SOUTH

LIST OF MISCELLANEOUS METAL & EMBEDDED PARTS					
ITEM NO.	MARK NO.	QUANTITY	DESCRIPTION	DRAWING REFERENCE	SPECIFICATION REFERENCE
1	S42-B	1	HIGH ICE PROTECTION PLATE	61440-18-42	

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIC.....DATE.....

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES				B.M. ELEV.
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.			
3	AS CONSTRUCTED	12/03/99	KAA	
2	DELETE 20# HOLES @ LOOKOUTS	04/29/97	KAA	
1	ISSUED FOR CONSTRUCTION	04/04/97	KAA	
0	ISSUED FOR REVIEW	03/27/97	KAA	
NO.	REVISIONS	DATE	BY	

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: KAA
DRAWN BY: KAA
HOR. SCALE: AS NOTED
VERTICAL: AS NOTED
DATE: 03/19/97

CHECKED BY:
APPROVED BY:
AUTHORIZED BY: DATE:
B. EIBENSPIGNER / SENIOR BRIDGE ENGINEER
ACCEPTED FOR TRAFFIC CONSTRUCTION BY: DATE:
P. PLAZA / PROJECT MANAGER

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
C. P. GRAY
30/04/97
REGISTERED PROFESSIONAL ENGINEER

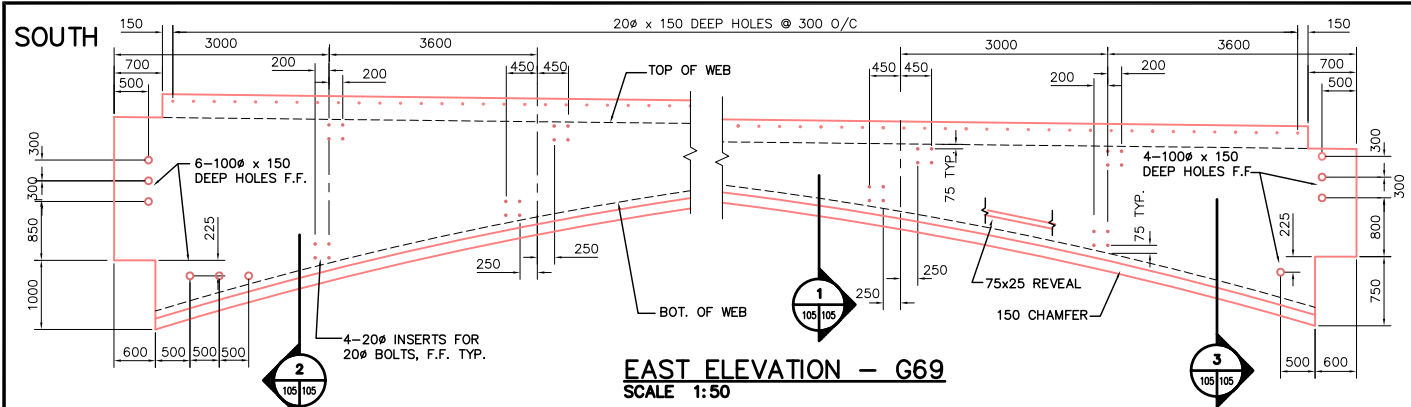
THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

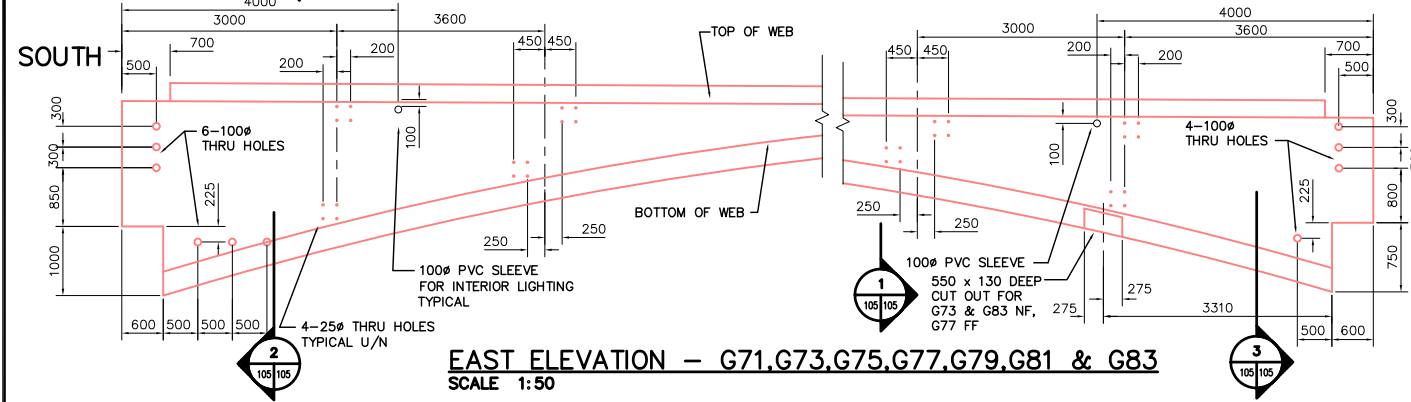
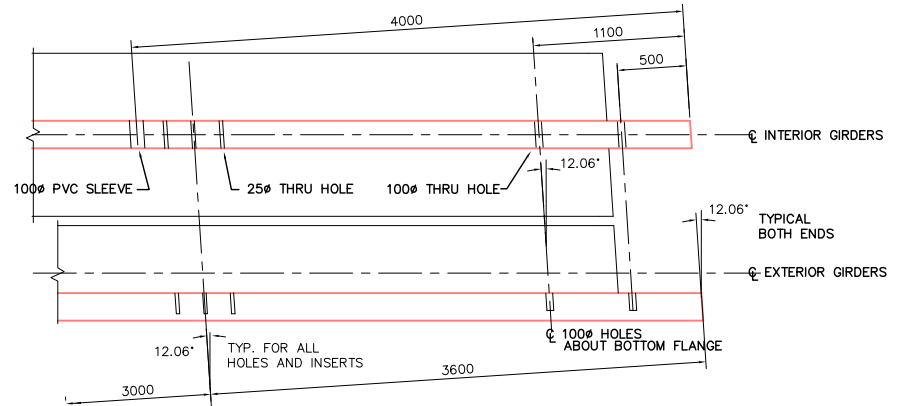
PRECAST CONCRETE GIRDERS
SPAN 4
SHEET 1 OF 2

CITY DRAWING NUMBER
B103-98-103
SHEET 103 OF
REV-3

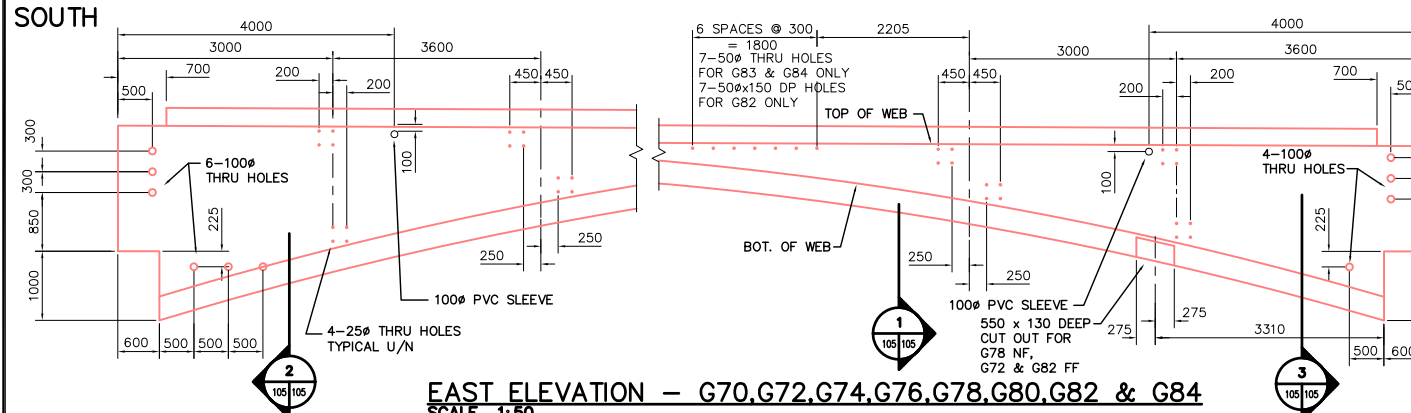
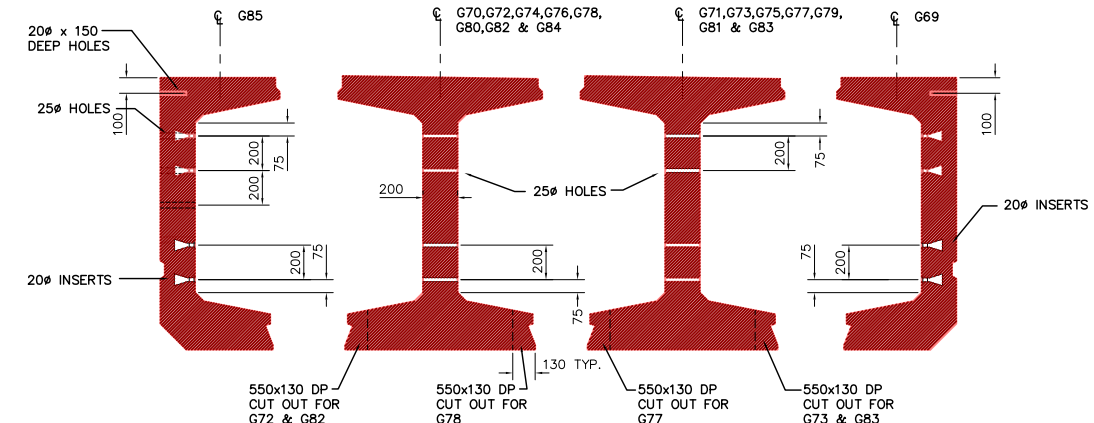
CONSULTANT DRAWING NO.
61440-18-103



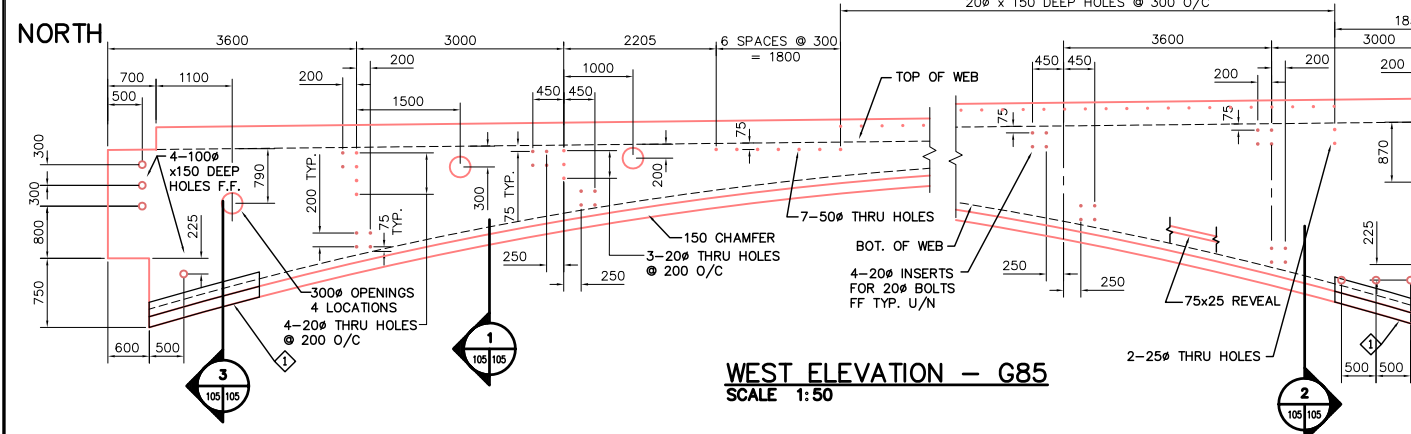
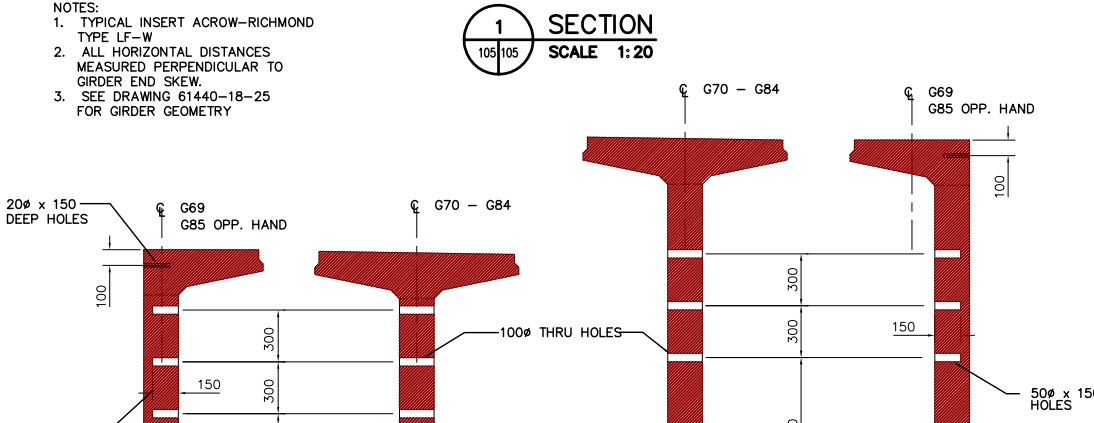
NORTH



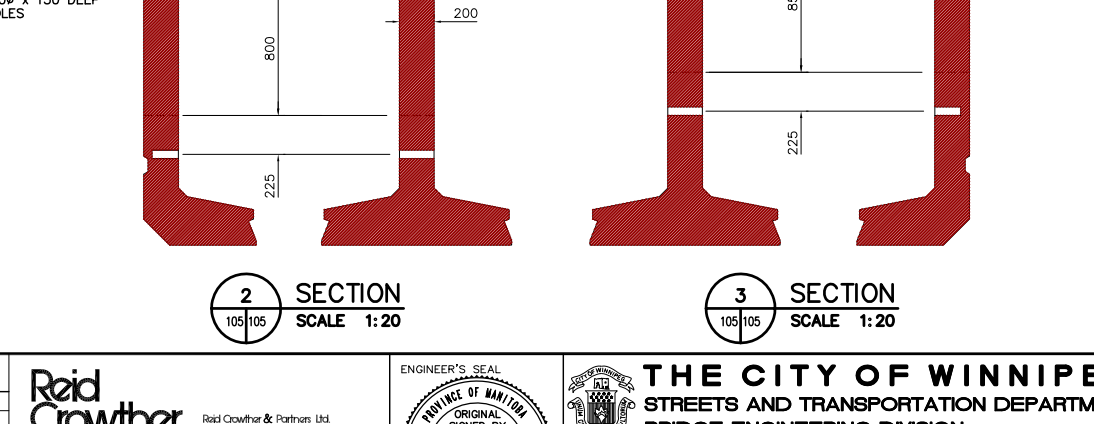
NORTH



NORTH



SOUTH



ITEM NO.	MARK NO.	QUANTITY	DESCRIPTION	DRAWING REFERENCE	SPECIFICATION REFERENCE
1	S42-B	2	HIGH ICE PROTECTION PLATE	61440-18-42	

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES				B.M. ELEV.
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	
4	AS CONSTRUCTED	12/03/99	KA	
3	REVISED 40# HOLES/INSERTS	05/23/97	KA	
2	DELETE 20# HOLES @ LOOKOUTS	04/29/97	KA	
1	ISSUED FOR CONSTRUCTION	04/04/97	KA	
0	ISSUED FOR REVIEW	03/27/97	KA	

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: _____ CHECKED BY: _____
DRAWN BY: KAA APPROVED BY: _____
HOR. SCALE: _____ AUTHORIZED BY: _____ DATE: _____
VERTICAL: AS NOTED
DATE: 03/24/97

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
C.P. GRAY
27/05/97
REGISTERED PROFESSIONAL ENGINEER

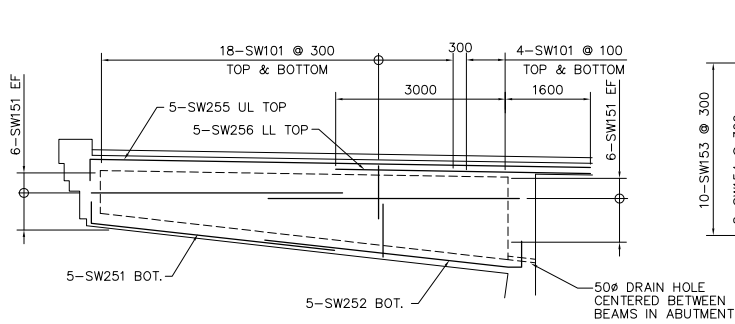
THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

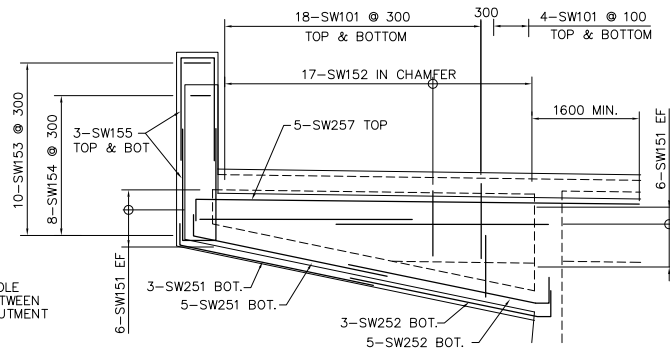
PRECAST CONCRETE GIRDERS
SPAN 5
SHEET 1 OF 2

CITY DRAWING NUMBER
8103-98-105
SHEET 105 OF _____
REV-4

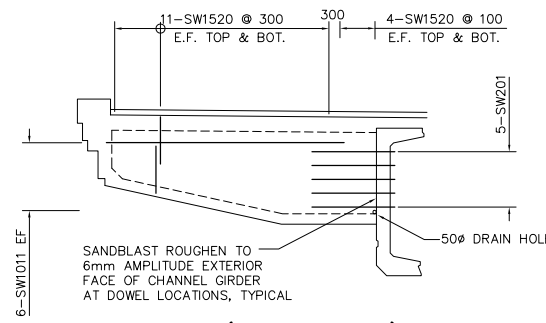
CONSULTANT DRAWING NO.
61440-18-105



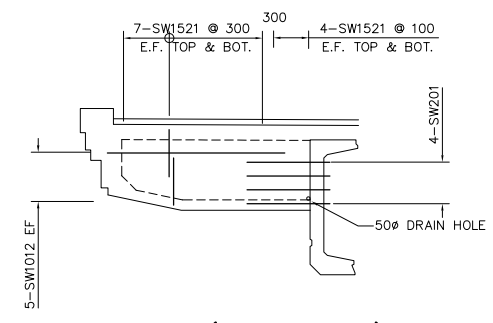
SWB01 (4 REQUIRED)



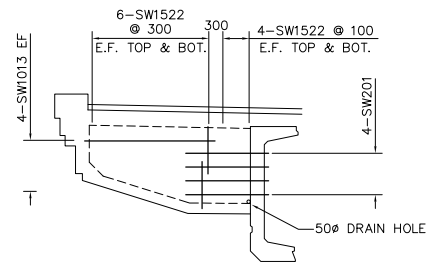
SWB02 (1 REQUIRED)



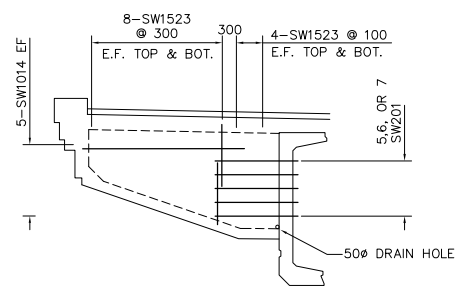
SWB03 (1 REQUIRED)



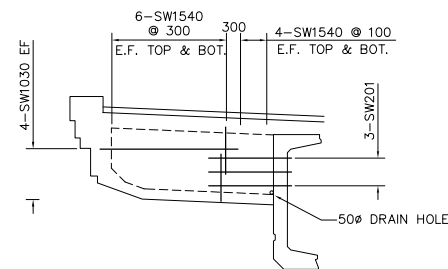
SWB04 (1 REQUIRED)



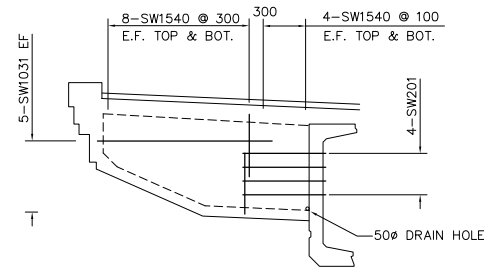
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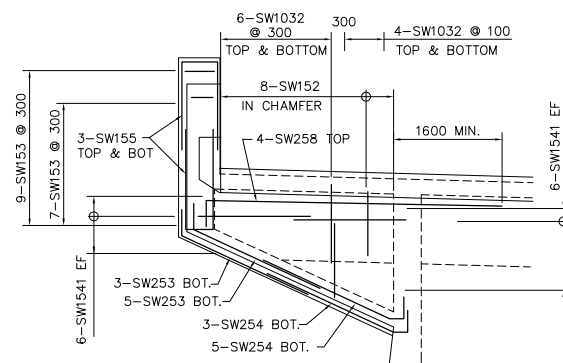
SWB06 (4 REQUIRED)



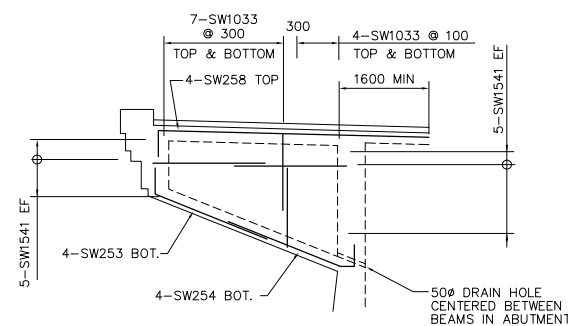
SWB07 (1 REQUIRED)



SWB08 (1 REQUIRED)



SWB09 (1 REQUIRED)



SWB10 (2 REQUIRED)

REINFORCING SCHEDULE														Weight					
Mark	No. Bars	Size	Length	Type	A	B	C	D	E	F	G	H	J	K	L	M	O	R	Weight
SW101	220	10	2630	17		1140	350	1140											454
SW102	32	10	8450	STR															212
SW103	8	10	5700	STR															36
SW104	8	10	3100	STR															19
SW105E	16	10	10350	STR															130
SW106E	4	10	7800	STR															24
SW107E	4	10	5000	STR															16
SW108	16	10	10350	STR															130
SW109	4	10	7800	STR															24
SW110	4	10	5000	STR															16
SW111	12	10	3320	STR															31
SW112	10	10	2200	STR															17
SW113	16	10	2000	STR															25
SW114	40	10	2600	STR															82
SW115E	18	10	8240	STR															116
SW116E	3	10	6775	STR															16
SW117E	3	10	5285	STR															12
SW118	18	10	8240	STR															116
SW119	3	10	6775	STR															16
SW120	3	10	5285	STR															12
SW259E	24	25	8780	STR															827
SW2510E	13	25	17230	STR															879
SW2511E	1	25	14000	STR															55
SW2512	24	25	8780	STR															827
SW2513	13	25	17230	STR															879
SW2514	1	25	14000	STR															55
SW1027	96	10	2550	16			2300	250				226			107				192
SW1028	48	10	7325	STR															276
SW1029	36	10	7575	17			250	7325											214
SW1030	8	10	2080	STR															13
SW1031	10	10	2600	STR															20
SW1032E	20	10	2830	17			1240	350	1240										44
SW1033E	44	10	2550	17			1100	350	1100										88
SW1034	60	10	4595	STR															216
SW1035E	27	10	5675	STR															120
SW1036	27	10	5675	STR															120
SW151	120	15	3445	STR															649
SW152	25	15	3190	14			630	1930	630					226					125
SW153	37	15	2500	12			250	500	500	500				500					145
SW154	29	15	1460	17				540	380	540									67
SW155	24	15	3680	17			1595	500	1595										139
SW156	70	15	14250	STR															1566
SW157	6	15	11000	STR															104
SW158	8	15	7000	STR															77
SW159	37	15	4130	16				370	200	3560									240
SW1510	37	15	3930	16					370	3560									228
SW1511	284	15	3560	STR															1587
SW1512	13	15	5340	16				1150	4190					874					109
SW1513	13	15	4420	16					1400	3020				630					90
SW1514	16	15	3850	16					2000	1850				386					97
SW1515E	6	15	6300	STR															59
SW1516E	13	15	7300	STR															149
SW1517E	13	15	8300	STR															169
SW1518E	13	15	9300	STR															190
SW1519E	7	15	10300	STR															113
SW1520	60	15	1425	17				1025	400										134
SW1521	44	15	1270	17					870	400									88
SW1522	80	15	1400	17					1000	400									178
SW1523	192	15	1675	17					1275	400									505
SW1524E	57	15	5650	STR															506
SW1525E	162	15	7000	STR															1780
SW1526E	57	15	7650	STR															685
SW1527E	57	15	9650	STR															864
SW1528	283	15	600	STR															276
SW1529	30	15	900	16					450	450				229					42
SW1530	36	15	1450	16					1000	450				229					82
TOTAL																			17370

SEE DRAWING 61440-18-110 FOR REMAINING REINFORCING

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

NOTE:
SEE DRAWING 61440-18-110
FOR SIDEWALK BEAM LOCATIONS

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES DATE COMMITTEE

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
	4	AS CONSTRUCTED	12/06/99	KAA
	3	CHANGED EPOXY TO PLAIN	08/25/97	KAA
	2	REVISED REINFORCING	08/11/97	KAA
	1	ISSUED FOR CONSTRUCTION	05/27/97	KAA
	0	ISSUED FOR REVIEW	04/28/97	KAA

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: KAA
DRAWN BY: KAA
HOR. SCALE: 1:100
VERTICAL: 1:100

CHECKED BY:
APPROVED BY:
AUTHORIZED BY: DATE
B. EISENBERGER / SENIOR BRIDGE ENGINEER
ACCEPTED FOR BRIFT CONSTRUCTION BY: DATE:
P. PLAZA / PROJECT MANAGER

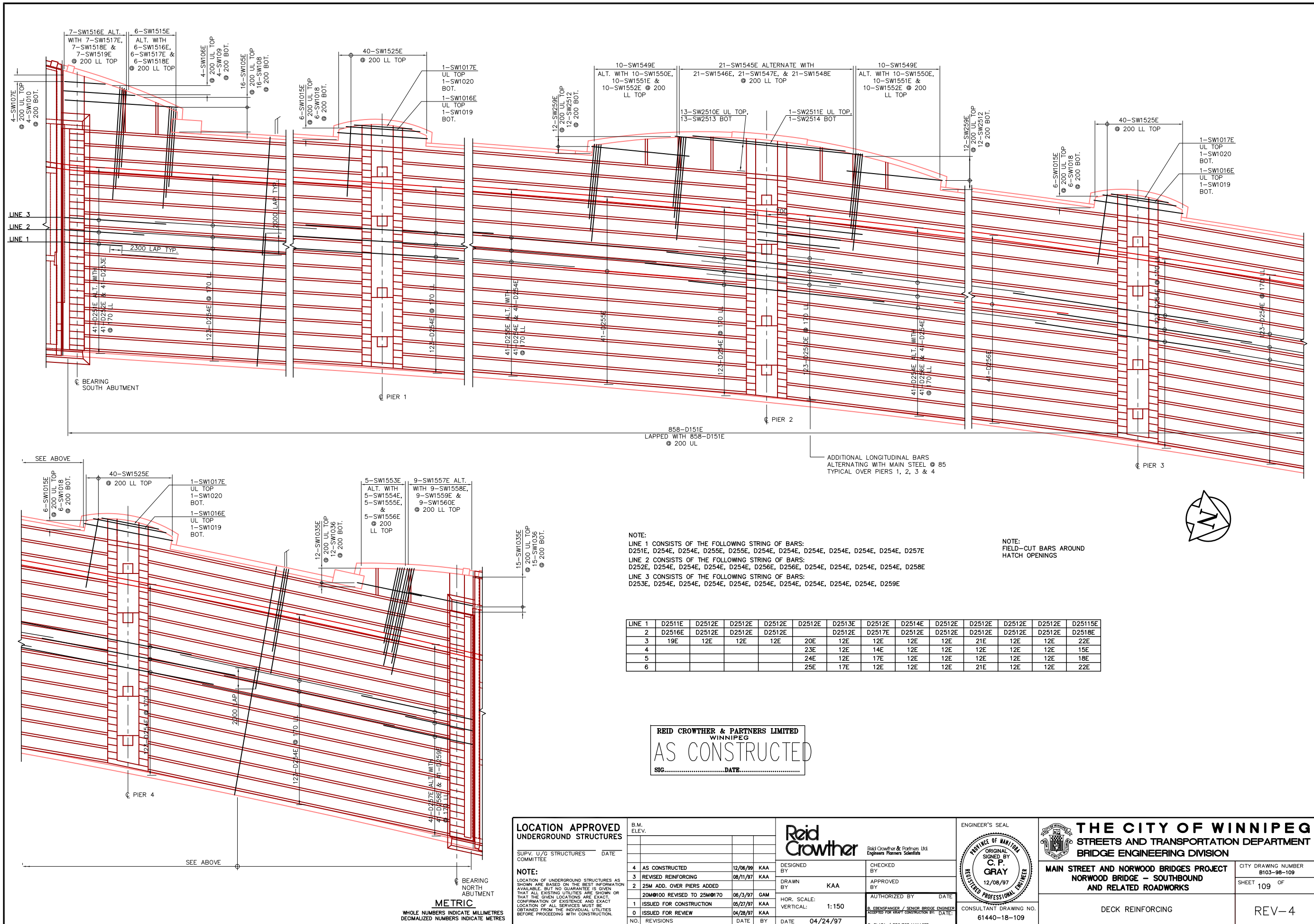
ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
C. P. GRAY
22/09/97
REGISTERED PROFESSIONAL ENGINEER

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

CITY DRAWING NUMBER
8103-96-108
SHEET 108 OF
CONCRETE SIDEWALK
BEAMS &
REINFORCING SCHEDULE

REV-4



REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

LOCATION APPROVED UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES COMMITTEE	DATE
4 AS CONSTRUCTED	12/06/99 KAA
3 REVISED REINFORCING	08/11/97 KAA
2 25M ADD. OVER PIERS ADDED	
20M@100 REVISED TO 25M@170	06/3/97 GAM
1 ISSUED FOR CONSTRUCTION	05/27/97 KAA
0 ISSUED FOR REVIEW	04/28/97 KAA
NO. REVISIONS	DATE BY

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.	DATE	BY

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: _____ CHECKED BY: _____
 DRAWN BY: KAA APPROVED BY: _____
 AUTHORIZED BY: _____ DATE: _____
 HOR. SCALE: _____ VERTICAL: 1:150
 B. EBENSFANGER / SENIOR BRIDGE ENGINEER
 ACCEPTED FOR DRAFT CONSTRUCTION BY: _____ DATE: _____
 P. PLAZA / PROJECT MANAGER

ENGINEER'S SEAL

PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
C. P. GRAY
12/08/97
REGISTERED PROFESSIONAL ENGINEER

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

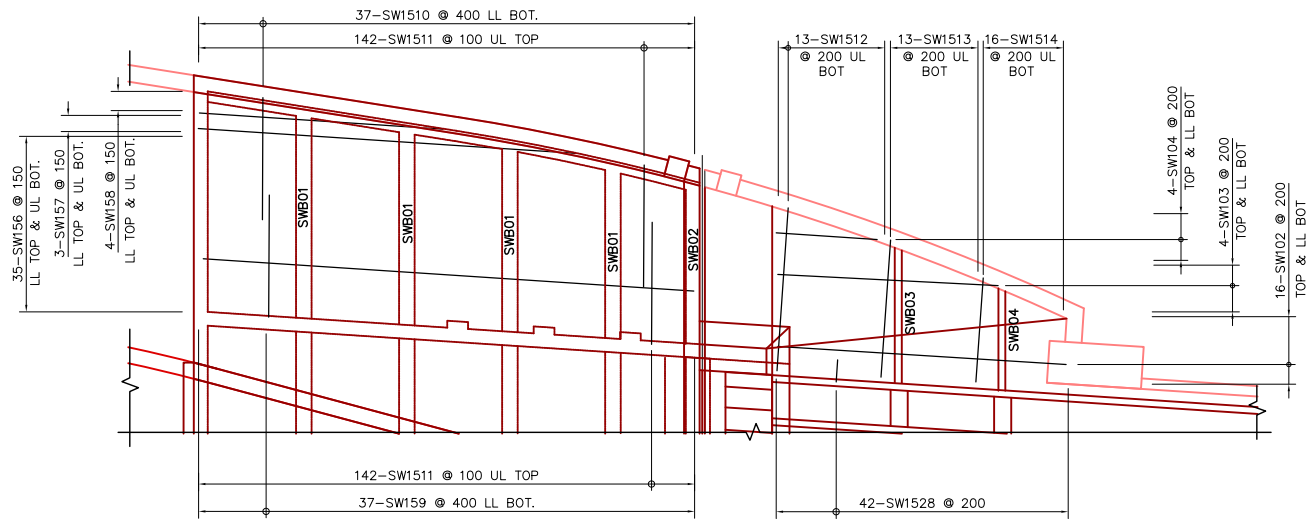
CITY DRAWING NUMBER
B103-98-109
SHEET 109 OF _____

CONSULTANT DRAWING NO.
61440-18-109

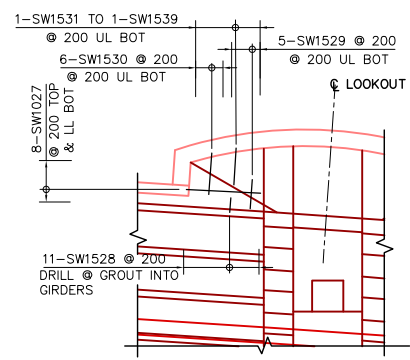
DECK REINFORCING

REV-4

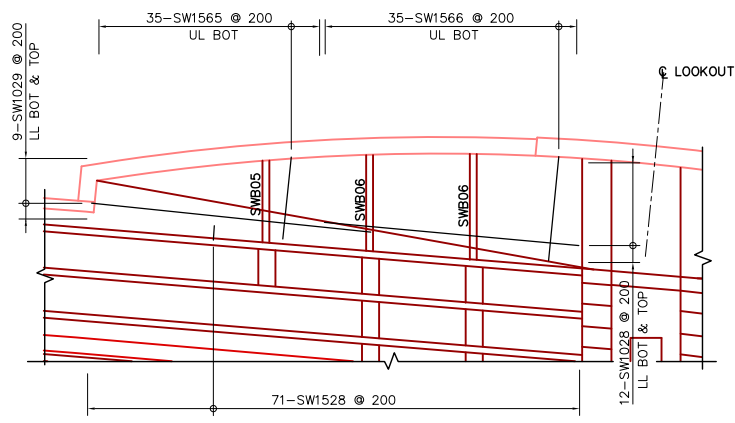
METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMAL NUMBERS INDICATE METRES



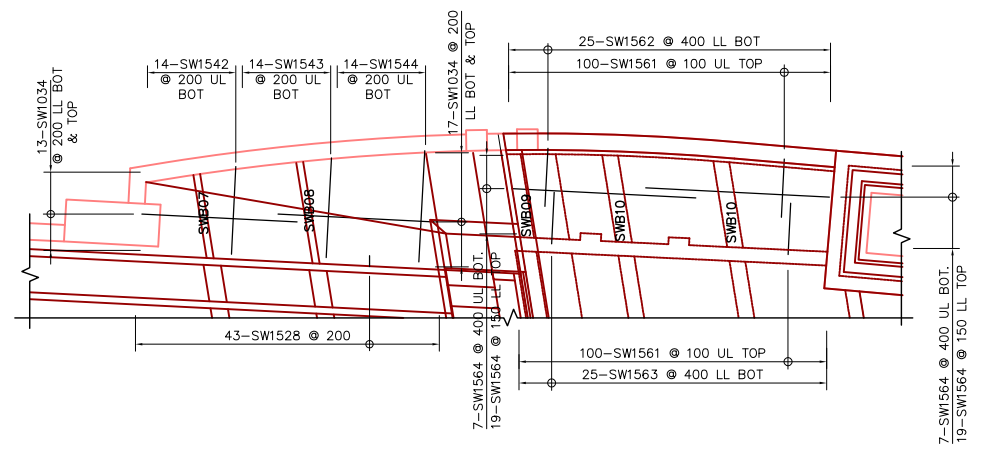
LOOKOUT AT SOUTH ABUTMENT



PIERS 1, 3 & 4 LOOKOUTS



PIER 2 LOOKOUT



LOOKOUT AT NORTH ABUTMENT

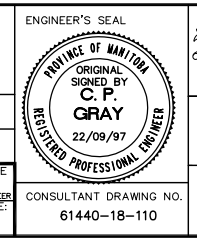
REINFORCING SCHEDULE																			
Marks	No. Bars	Size	Length	Type	A	B	C	D	E	F	G	H	J	K	L	M	O	R	Weight
SW1531	6	15	900	16			650	250				216			126				8
SW1532	6	15	1075	16			825	250				216			126				10
SW1533	6	15	1250	16			1000	250				216			126				12
SW1534	6	15	1445	16			1195	250				216			126				14
SW1535	6	15	1620	16			1370	250				216			126				15
SW1536	6	15	1790	16			1540	250				216			126				17
SW1537	6	15	1965	16			1715	250				216			126				19
SW1538	6	15	2120	16			1870	250				216			126				20
SW1539	6	15	2280	16			2030	250				216			126				21
SW1540E	176	15	1450	17		1050	400												401
SW1541	64	15	1795	STR															180
SW1542	14	15	3075	16			2155	920				1118			2292				68
SW1543	14	15	3565	16			1830	1735				761			1559				78
SW1544	14	15	4050	16			1500	2550				403			827				89
SW1545E	21	15	5100	STR															169
SW1546E	21	15	6100	STR															202
SW1547E	21	15	7100	STR															235
SW1548E	21	15	8100	STR															268
SW1549E	20	15	4500	STR															142
SW1550E	20	15	5500	STR															173
SW1551E	20	15	6500	STR															205
SW1552E	20	15	7500	STR															236
SW1553E	5	15	4700	STR															37
SW1554E	5	15	5700	STR															45
SW1555E	5	15	6700	STR															53
SW1556E	5	15	7700	STR															109
SW1557E	9	15	5400	STR															77
SW1558E	9	15	6400	STR															91
SW1559E	9	15	7400	STR															105
SW1560E	9	15	8400	STR															119
SW1561	200	15	1755	STR															551
SW1562	25	15	2125	16			1755	370				347			128				83
SW1563	25	15	2325	16			370	200	1755			606			1647				91
SW1564	52	15	5295	STR															432
SW1565	70	15	3405	16			1380	2025				658			1915				187
SW1566	70	15	4240	16			720	3520				1305			3270				233
SW201	49	20	1200	STR															138
SW251	28	25	4345	16				3695	650			646			76				478
SW252	28	25	4545	16			650	200	3695			432			3670				499
SW253	16	25	2950	16				2300	650			587			280				185
SW254	16	25	3150	16			650	200	2300			990			2075				198
SW255	20	25	8350	17			650	770											655
SW256	20	25	4600	STR															361
SW257	5	25	7050	17			650	6400											138
SW258	12	25	4850	17			650	4200											228
TOTAL																			7675

REINFORCING SCHEDULE																			
Marks	No. Bars	Size	Length	Type	A	B	C	D	E	F	G	H	J	K	L	M	O	R	Weight
D251E	1716	15	11400	STR															30713
D251E	19	25	5400	STR															403
D252E	19	25	7400	STR															552
D253E	19	25	9400	STR															701
D254E	152	25	18000	STR															10739
D255E	38	25	12500	STR															1864
D2510E	492	25	12000	STR															23173
D2511E	22	25	9400	STR															812
D2512E	941	25	18000	STR															66482
D2513E	34	25	7700	STR															1028
D2514E	42	25	7555	STR															1245
D2515E	18	25	12500	STR															883
D2516E	33	25	11700	STR															1515
D2517E	40	25	12920	STR															2028
D2518E	40	25	10200	STR															1601
D2519E	33	25	7100	STR															920
D2520E	33	25	13000	STR															1684
D2521E	40	25	9200	STR															1445
D2522E	40	25	7900	STR															1240
D2523E	8	25	10900	STR															342
D2524E	7	25	7800	STR															214
D2525E	7	25	13900	STR															382
TOTAL																			149966

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

LOCATION APPROVED UNDERGROUND STRUCTURES			
SUPV. U/G STRUCTURES COMMITTEE	DATE	B.M. ELEV.	
5	AS CONSTRUCTED	12/06/99	KAA
4	CHANGED EPOXY TO PLAIN	08/25/97	KAA
3	REVISED REINFORCING	08/11/97	KAA
2	SCHEDULE REVISED	06/03/97	GAM
1	ISSUED FOR CONSTRUCTION	05/27/97	KAA
0	ISSUED FOR REVIEW	04/28/97	KAA
NO.	REVISIONS	DATE	BY

DESIGNED BY		CHECKED BY	
DRAWN BY		APPROVED BY	
HOR. SCALE:		AUTHORIZED BY	
VERTICAL: 1:100		DATE	
DATE 04/24/97		P. PLAZA / PROJECT MANAGER	



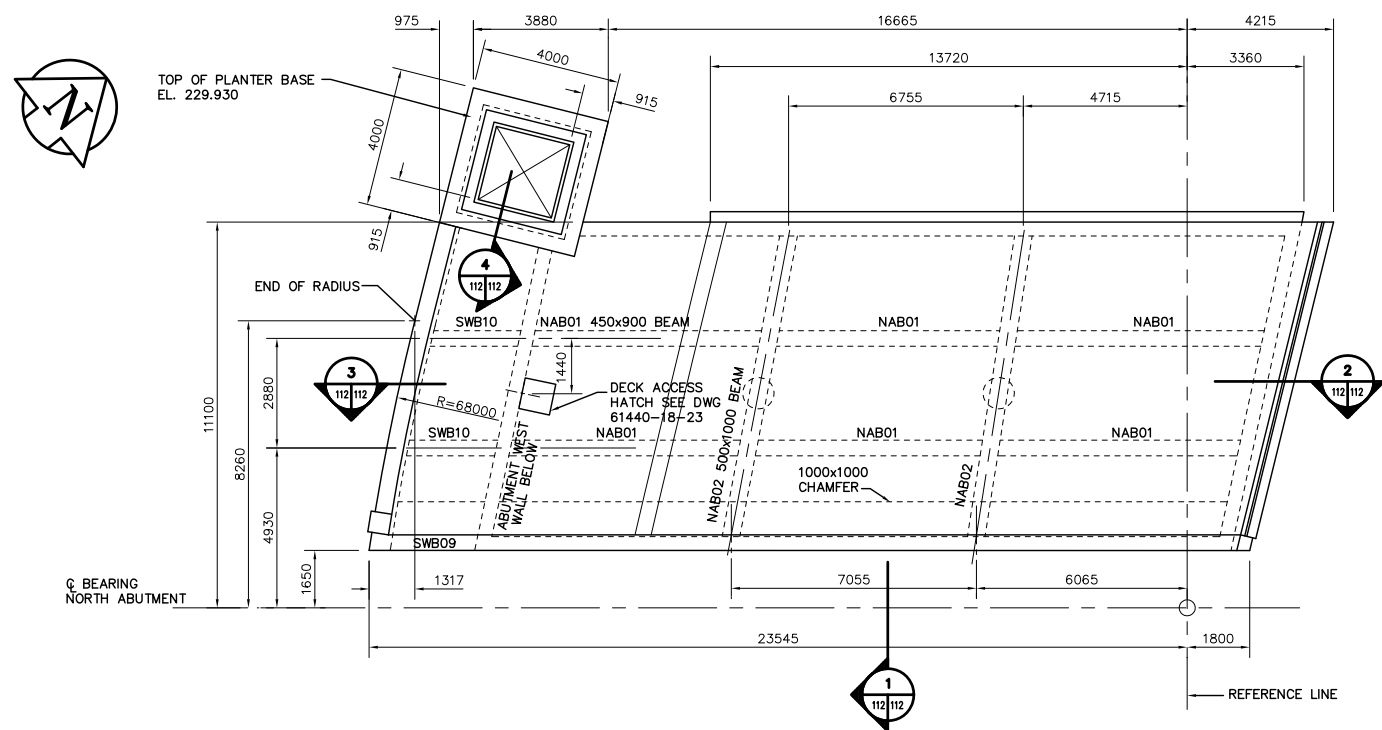
THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

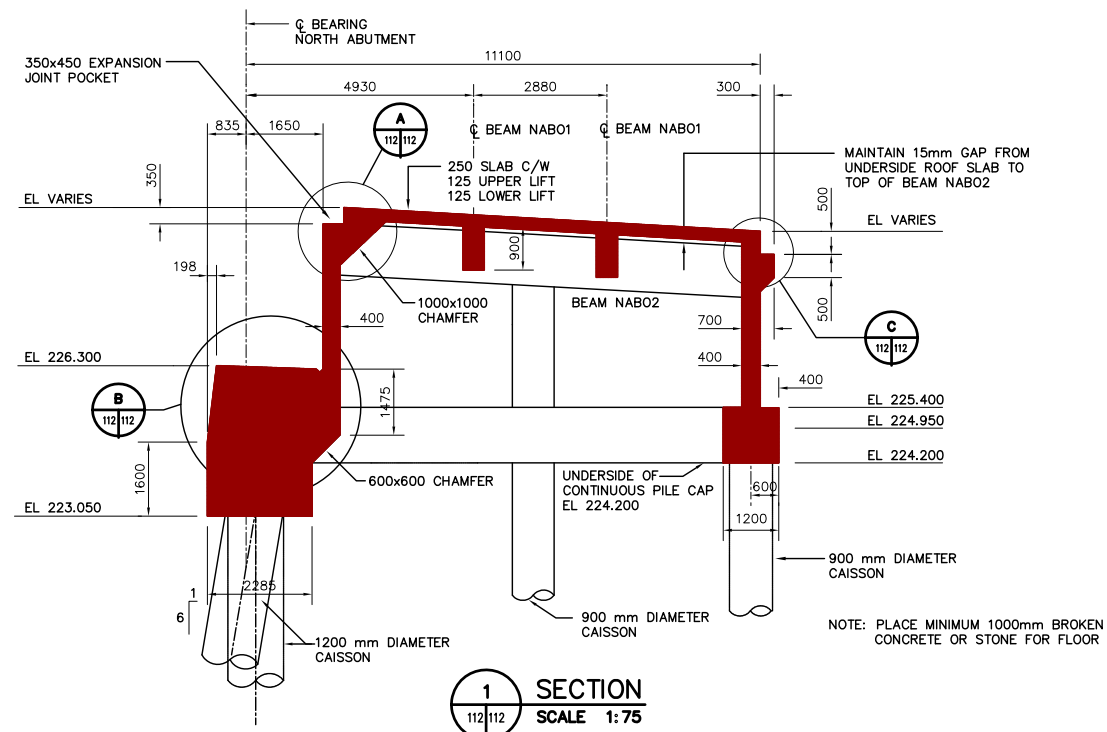
LOOKOUT SOFFIT SLAB
REINFORCING AND
REINFORCING SCHEDULE

CITY DRAWING NUMBER
B103-98-110
SHEET 110 OF
REV-5

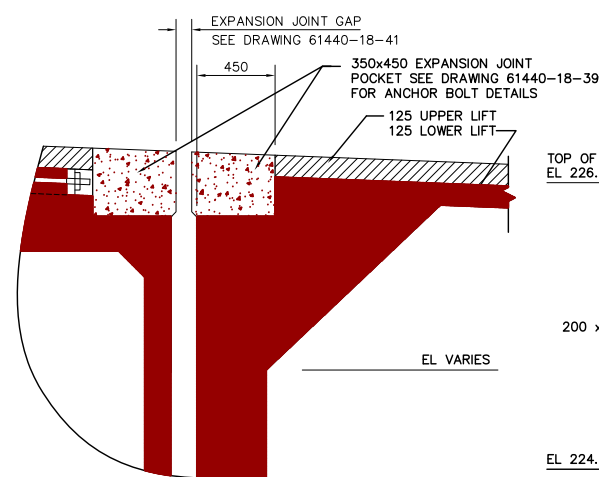
CONSULTANT DRAWING NO.
61440-18-110



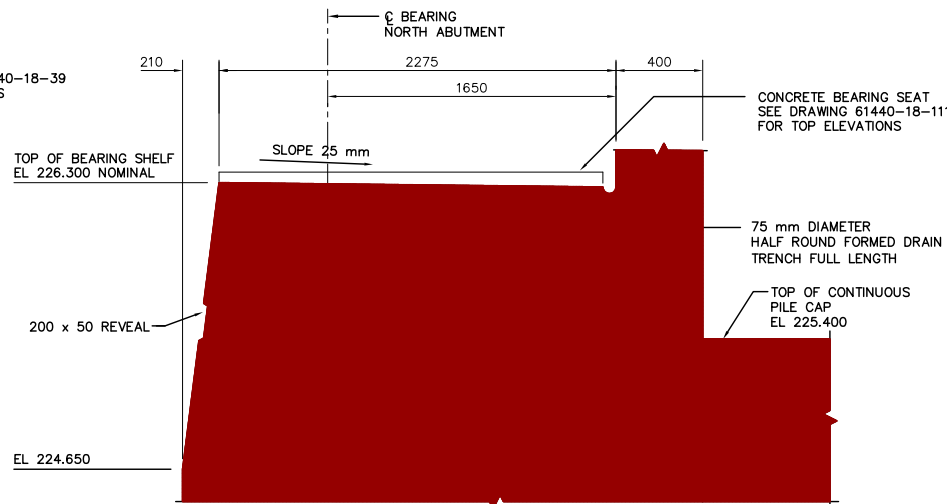
PLAN AT ROADWAY
SCALE 1:100



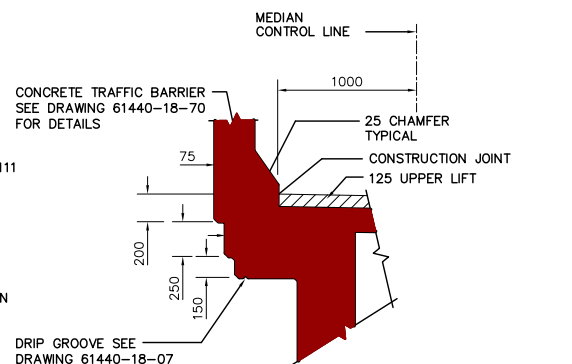
SECTION 1
SCALE 1:75



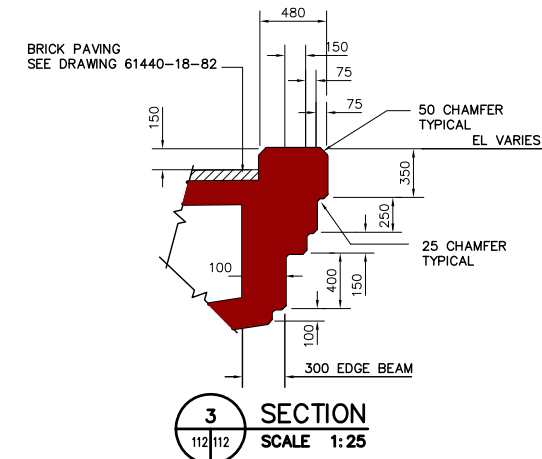
DETAIL A
SCALE 1:20



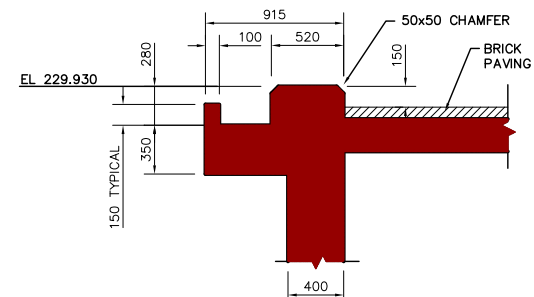
DETAIL B
SCALE 1:20



SECTION 2
SCALE 1:25



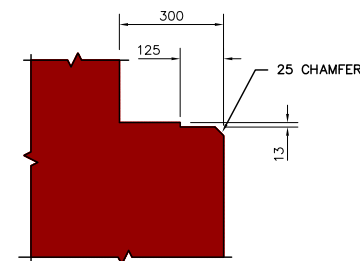
SECTION 3
SCALE 1:25



SECTION 4
SCALE 1:25

NOTE :
DECK GEOMETRY IS SET OUT FROM CONTROL LINES
ROADSIDE FACES OF CONCRETE TRAFFIC BARRIER ARE DETERMINED AS OFFSETS FROM THE CONTROLLING CONTROL LINE AT INDIVIDUAL LOCATIONS.

NOTE :
LOCATION FOR CONSTRUCTION JOINT IN 125 UPPER LIFT SEE DRAWING 61440-18-62



DETAIL C
SCALE 1:20

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

LOCATION APPROVED UNDERGROUND STRUCTURES

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
3	AS CONSTRUCTED	12/06/99	KAA
2	HATCH & CATCH BASIN	06/11/97	KAA
1	ISSUED FOR CONSTRUCTION	05/27/97	KAA
0	ISSUED FOR REVIEW	04/09/97	KAA

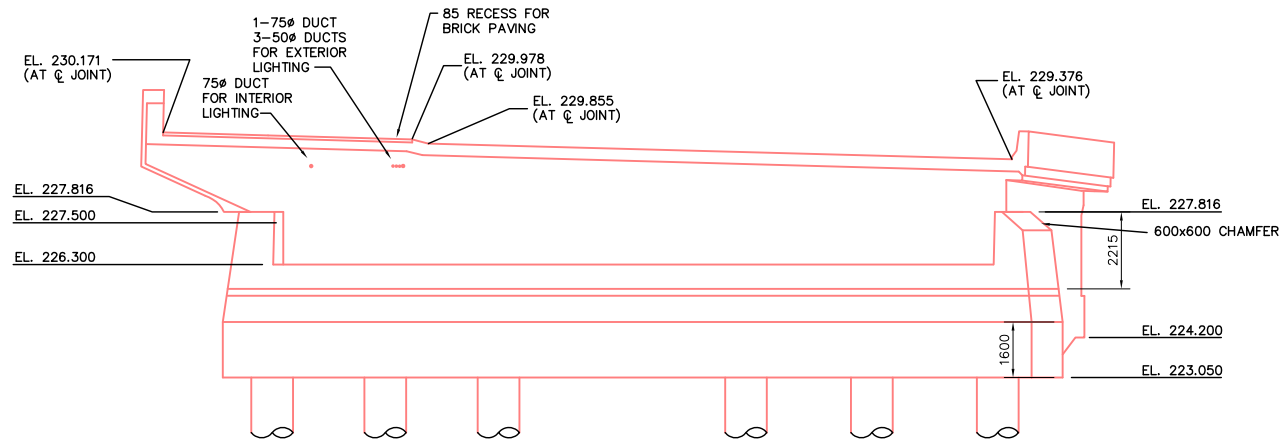
Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY	CHECKED BY
DRAWN BY KAA	APPROVED BY
HOR. SCALE: AS NOTED	AUTHORIZED BY DATE
VERTICAL: AS NOTED	B. BRUNSPANER / SENIOR BRIDGE ENGINEER ACCEPTED FOR GRANT CONSTRUCTION BY DATE:
DATE 04/08/97	P. PLAZA / PROJECT MANAGER

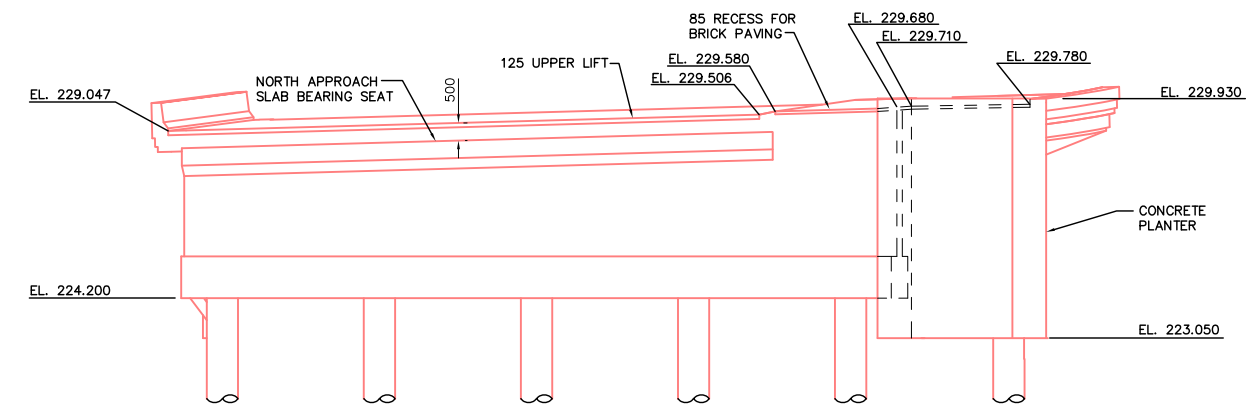
ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
D.C. MacFARLANE
REGISTERED PROFESSIONAL ENGINEER
12/08/97
CONSULTANT DRAWING NO. 61440-18-112

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS
NORTH ABUTMENT
CONCRETE
SHEET 2 OF 3

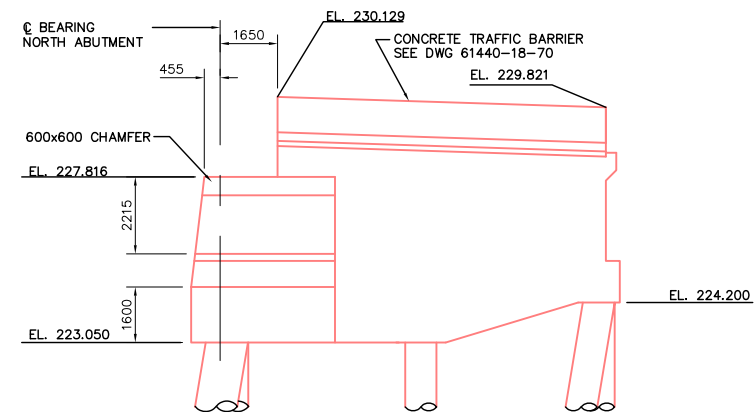
CITY DRAWING NUMBER
B103-98-112
SHEET 112 OF
REV-3



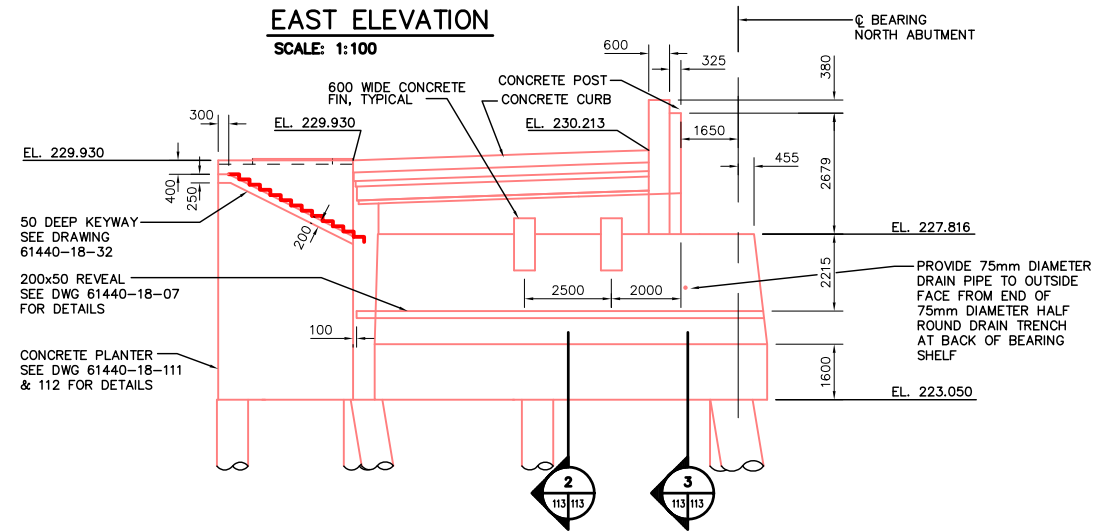
FRONTWALL ELEVATION
SCALE: 1:100



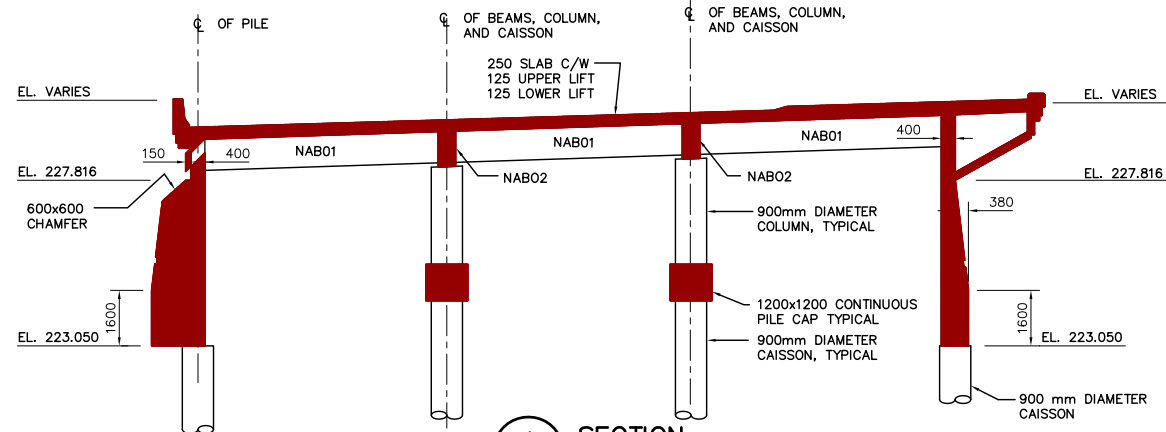
BACKWALL ELEVATION
SCALE: 1:100



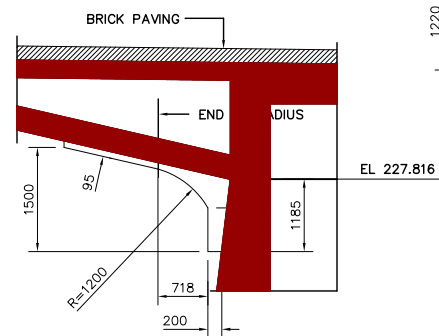
EAST ELEVATION
SCALE: 1:100



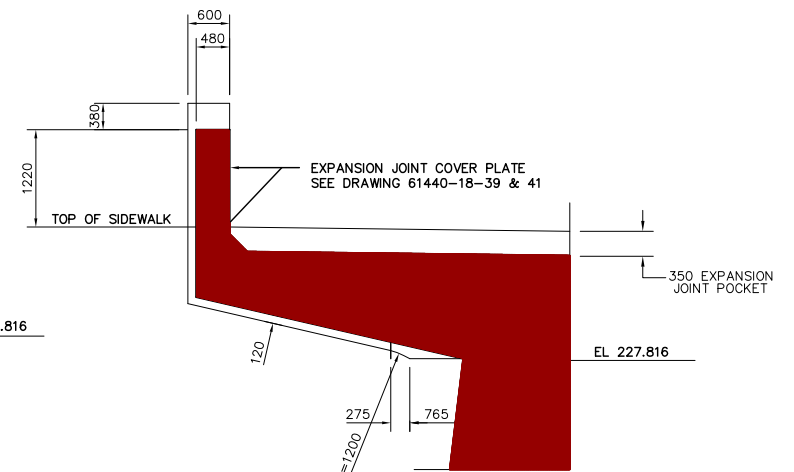
WEST ELEVATION
SCALE: 1:100



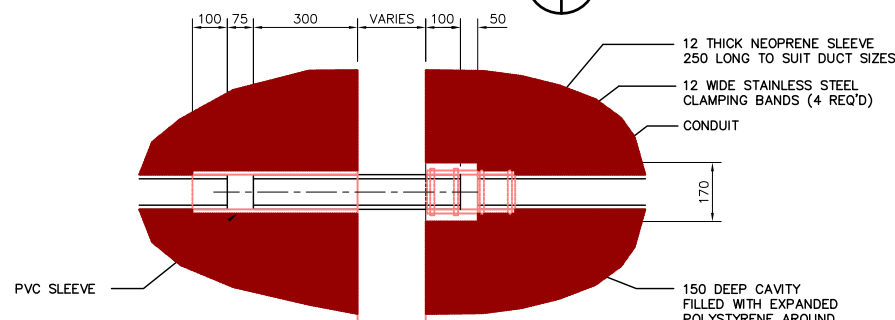
SECTION 1
SCALE: 1:100



SECTION 2: CONCRETE FIN
SCALE: 1:50



SECTION 3: EXPANSION JOINT CONCRETE POST
SCALE: 1:50



TYPICAL DUCT EXPANSION JOINT ASSEMBLY
SCALE: 1:10

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG. DATE

LOCATION APPROVED UNDERGROUND STRUCTURES

SURV. U/G STRUCTURES	DATE	COMMITTEE
3 AS CONSTRUCTED	12/06/99	KAA
2 LIGHTING DUCTS	06/11/97	KAA
1 ISSUED FOR CONSTRUCTION	05/27/97	KAA
0 ISSUED FOR REVIEW	04/09/97	KAA
NO. REVISIONS	DATE	BY

B.M. ELEV.	DATE	BY

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: KAA
CHECKED BY: KAA
DRAWN BY: KAA
APPROVED BY: KAA
HOR. SCALE: AS NOTED
VERTICAL: AS NOTED
AUTHORIZED BY: DATE: 04/08/97
P. PLAZA / PROJECT-MANAGER

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY D.C.
MacFARLANE
REGISTERED PROFESSIONAL ENGINEER
12/08/97
CONSULTANT DRAWING NO. 61440-18-113

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND AND RELATED ROADWORKS
NORTH ABUTMENT CONCRETE
SHEET 3 OF 3

CITY DRAWING NUMBER B103-98-113
SHEET 113 OF
REV-3



AT SOUTH ABUTMENT:
ARROW HART CR-15
SPLIT DUPLEX RECEPTACLE
c/w FSC1-FA DEVICE
BOX & DS-23G COVER
TO BE WALL MOUNTED AT
2200mm A.F.F. OR AS
HIGH AS POSSIBLE
(TYPICAL)

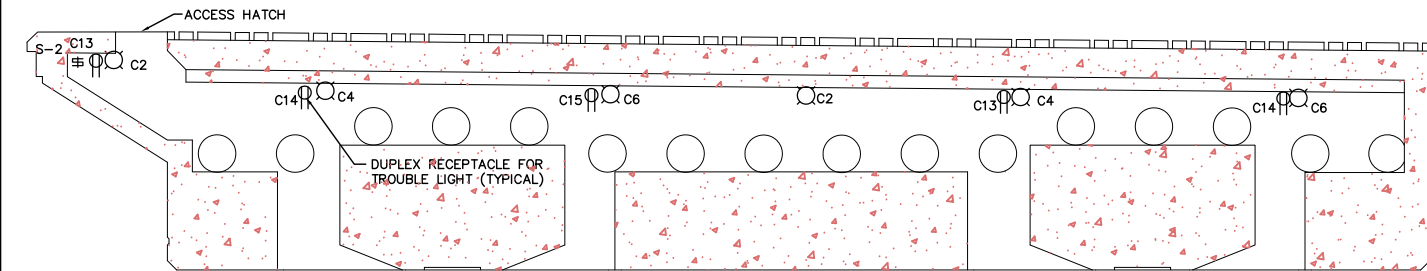
BREAKER 1,
TRANSFORMER T3,
& PANEL 'C'
LOCATED AS HIGH AS
ACCEPTABLE WITH THE
RULING AUTHORITIES

MAIN BREAKER,
SPLITTER 1, &
BREAKER 2

SERVICE GROUNDING
REFER TO DETAIL
ON THIS DRAWING

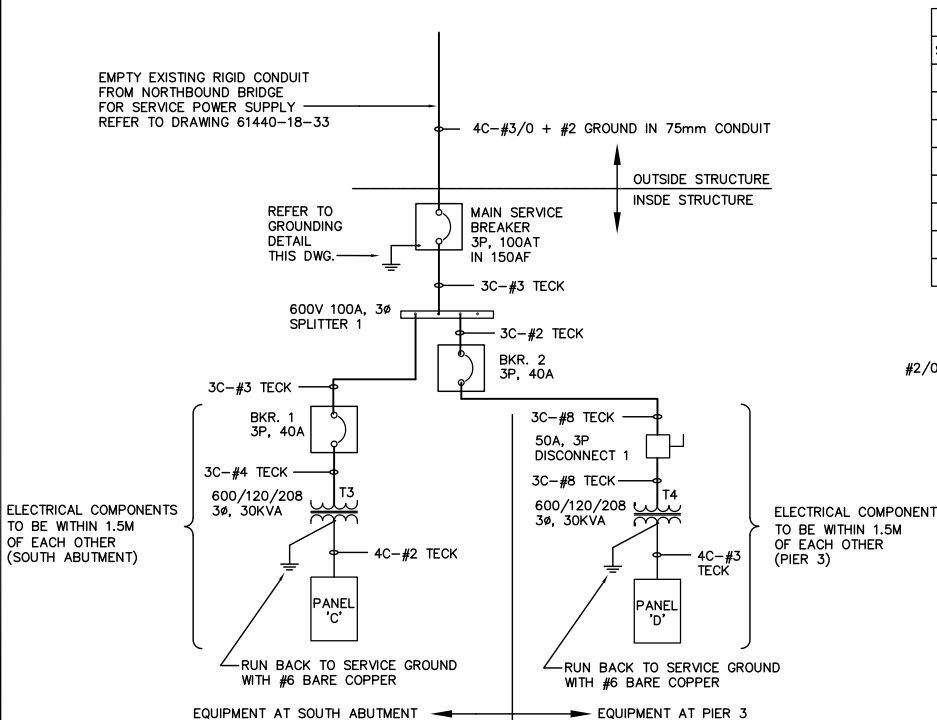
EXISTING 75mm RIGID
CONDUIT FROM NORTHBOUND
BRIDGE. FOR LOCATION SEE
DWG. 61440-18-33

PLAN - BRIDGE INTERIOR LIGHTING & POWER
SCALE: - 1:375



NOTE: ELECTRICAL EQUIPMENT LAYOUT SHOWN FOR PIER 1. PIERS 2, 3, & 4 SIMILAR EXCEPT:
FOR PIER 1: LIGHTS - CIRCUITS C2, C4, & C6, ON SWITCH S-2. RECEPTACLES - CIRCUITS C13, C14, & C15.
FOR PIER 2: LIGHTS - CIRCUITS C7, C9, & C11, ON SWITCH S-3. RECEPTACLES - CIRCUITS C16, C17, & C18.
FOR PIER 3: LIGHTS - CIRCUITS D1, D3, & D5, ON SWITCH S-4. RECEPTACLES - CIRCUITS D8, D17, & D12.
FOR PIER 4: LIGHTS - CIRCUITS D2, D4, & D6, ON SWITCH S-5. RECEPTACLES - CIRCUITS D13, D14, & D15.

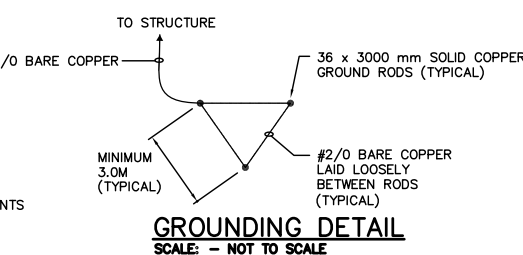
SECTION 'B' - TYPICAL PIER CORRIDOR LIGHTING, SWITCHING & POWER
SCALE: - NOT TO SCALE



NOTE: ALL ENCLOSURES TO BE NEMA 4X RATED

MAIN DISTRIBUTION
SCALE: - NOT TO SCALE

SWITCHING SCHEDULE		
SWITCH NO.	TYPE	CIRCUITS CONTROLLED
S-1	(3) 1 POLE	C1, C3, C5 (SPAN 1)
S-1A	(3) 1 POLE	C1, C3, C5 (SOUTH ABUTMENT)
S-2	(3) 1 POLE	C2, C4, C6 (SPAN 1, PIER 1, SPAN 2)
S-3	(3) 1 POLE	C7, C9, C11 (SPAN 2, PIER 3, SPAN 3)
S-4	(3) 1 POLE	D1, D3, D5 (SPAN 3, PIER 4, SPAN 4)
S-5	(3) 1 POLE	D2, D4, D6 (SPAN 4, PIER 5, SPAN 5)
S-6	(3) 1 POLE	D7, D9, D11 (SPAN 5)
S-6A	(3) 1 POLE	D7, D9, D11 (NORTH ABUTMENT)



GROUNDING DETAIL
SCALE: - NOT TO SCALE

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LEGEND

- INCANDESCENT LIGHT FIXTURE
- CIRCUIT NUMBER (TO BE SWITCHED)
- PANEL DESIGNATION
- 120V, 15A DUPLEX RECEPTACLE
- SWITCH BANK (SEE SCHEDULE)
- DISTRIBUTION DEVICE
- ELECTRICAL EQUIPMENT

- NOTES:
- WARNING SIGN, TO BE PROVIDED AT EACH ENTRY POINT TO POTENTIAL FLOOD AREA, SHALL STATE "IF FLOODING HAS OCCURRED A QUALIFIED ELECTRICIAN MUST BE CALLED TO INSPECT ELECTRICAL EQUIPMENT".
 - CONTRACTOR TO USE TECK CABLE & WATERTITE CONNECTORS IN "POTENTIAL FLOOD AREA".
 - ALL ELECTRICAL EQUIPMENT INSIDE STRUCTURE TO BE MOUNTED AS HIGH AS ACCEPTABLY POSSIBLE.
 - SUPPLY AND INSTALL 4"x6" LAMACOID PLATE ATTACHED TO THE INSIDE OF EACH ACCESS HATCH DOOR READING IN 3/4" HIGH LETTERING: "ALL LIGHTS MUST BE SHUT OFF BEFORE LEAVING THE STRUCTURE".

NON-ESSENTIAL		225A RATING		PANEL ' C '		120/208/3Ø 30CCT PANEL	
DESCRIPTION	LOAD KVA	BKR. SIZE	CIRCUIT	BKR. SIZE	LOAD KVA	DESCRIPTION	
LIGHTS - SOUTH ABUTMENT, SPAN 1	0.9	15 A	1	2	15 A	LIGHTS - SPAN 1, PIER 1, SPAN 2	
LIGHTS - SOUTH ABUTMENT, SPAN 1	0.8	15 A	3	4	15 A	LIGHTS - SPAN 1, PIER 1, SPAN 2	
LIGHTS - SOUTH ABUTMENT, SPAN 1	0.7	15 A	5	6	15 A	LIGHTS - SPAN 1, PIER 1, SPAN 2	
LIGHTS - SPAN 2, PIER 2, SPAN 3	1.3	15 A	7	8	15 A	RECEPTACLES - SOUTH ABUTMENT	
LIGHTS - SPAN 2, PIER 2, SPAN 3	1.3	15 A	9	10	15 A	RECEPTACLES - SOUTH ABUTMENT	
LIGHTS - SPAN 2, PIER 2, SPAN 3	1.2	15 A	11	12	15 A	SPARE	
RECEPTACLES - PIER 1	1.0	15 A	13	14	15 A	RECEPTACLES - PIER 1	
RECEPTACLES - PIER 1	1.0	15 A	15	16	15 A	RECEPTACLES - PIER 2	
RECEPTACLES - PIER 2	1.0	15 A	17	18	15 A	RECEPTACLES - PIER 2	
SPARE		15 A	19	20	15 A	SPARE	
SPARE		15 A	21	22	15 A	SPARE	
SPARE		15 A	23	24	15 A	SPARE	
SPARE		15 A	25	26	15 A	SPARE	
SPARE		15 A	27	28	15 A	SPARE	
SPARE		15 A	29	30	15 A	SPARE	
TOTALS	9.2				8.8	= 18.0 KW= 150 AMPS	

NON-ESSENTIAL		225A RATING		PANEL ' D '		120/208/3Ø 30CCT PANEL	
DESCRIPTION	LOAD KVA	BKR. SIZE	CIRCUIT	BKR. SIZE	LOAD KVA	DESCRIPTION	
LIGHTS - SPAN 3, PIER 3, SPAN 4	1.3	15 A	1	2	15 A	LIGHTS - SPAN 4, PIER 4, SPAN 5	
LIGHTS - SPAN 3, PIER 3, SPAN 4	1.3	15 A	3	4	15 A	LIGHTS - SPAN 4, PIER 4, SPAN 5	
LIGHTS - SPAN 3, PIER 3, SPAN 4	1.2	15 A	5	6	15 A	LIGHTS - SPAN 4, PIER 4, SPAN 5	
LIGHTS - SPAN 5, NORTH ABUTMENT	0.8	15 A	7	8	15 A	RECEPTACLES - PIER 3	
LIGHTS - SPAN 5, NORTH ABUTMENT	0.7	15 A	9	10	15 A	SPARE	
LIGHTS - SPAN 5, NORTH ABUTMENT	0.7	15 A	11	12	15 A	RECEPTACLES - PIER 3	
RECEPTACLES - PIER 4	1.0	15 A	13	14	15 A	RECEPTACLES - PIER 4	
RECEPTACLES - PIER 4	1.0	15 A	15	16	15 A	RECEPTACLES - NORTH ABUTMENT	
RECEPTACLES - PIER 3	1.0	15 A	17	18	15 A	RECEPTACLES - NORTH ABUTMENT	
SPARE		15 A	19	20	15 A	SPARE	
SPARE		15 A	21	22	15 A	SPARE	
SPARE		15 A	23	24	15 A	SPARE	
SPARE		15 A	25	26	15 A	SPARE	
SPARE		15 A	27	28	15 A	SPARE	
SPARE		15 A	29	30	15 A	SPARE	
TOTALS	9.0				8.8	= 17.8 KW= 148 AMPS	

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG. _____ DATE _____

LOCATION APPROVED UNDERGROUND STRUCTURES		B.M. ELEV.
SURV. U/O STRUCTURES	DATE	
COMMITTEE		
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.		
2	AS CONSTRUCTED	03/30/00 VB
1	ISSUED FOR CONSTRUCTION	06/10/97 CPG
0	ISSUED FOR REVIEW	03/31/97 RMT
NO.	REVISIONS	DATE BY

Reid Crowther
David Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: _____
DRAWN BY: RMT
HOR. SCALE: 1:375
VERTICAL: _____

CHECKED BY: _____
APPROVED BY: _____
AUTHORIZED BY: _____ DATE: _____
B. BRENSPANNER / SENIOR BRIDGE ENGINEER
ACCEPTED FOR BRIDGE CONSTRUCTION BY: DATE: _____
P. PLAZA / PROJECT MANAGER

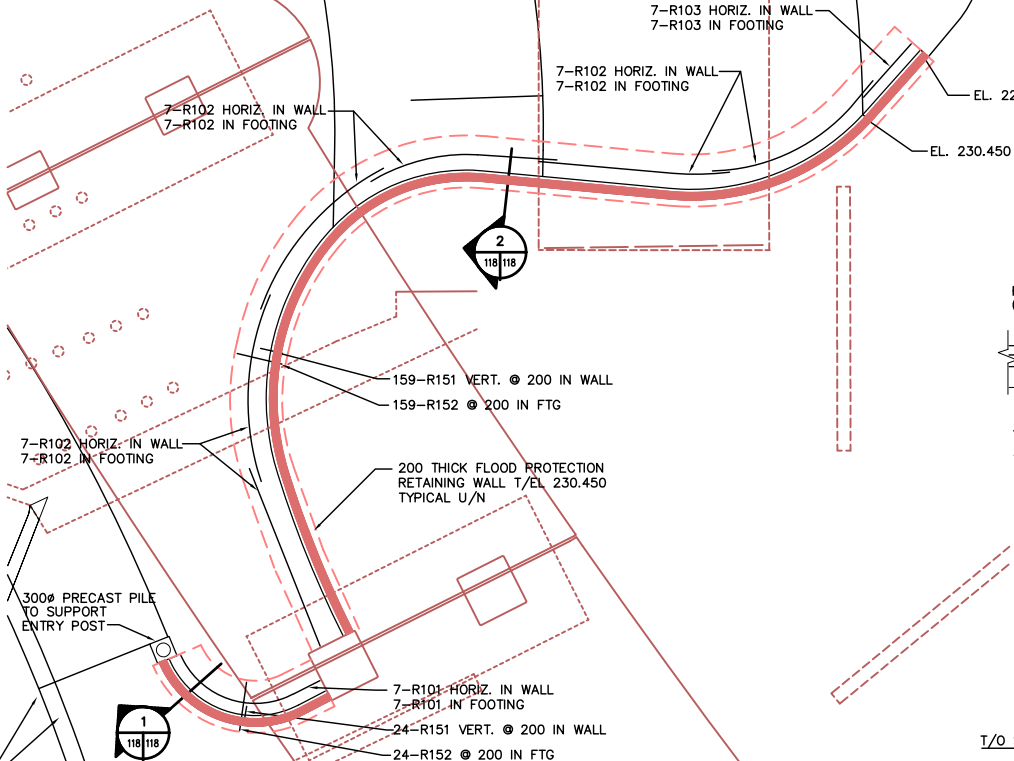
THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

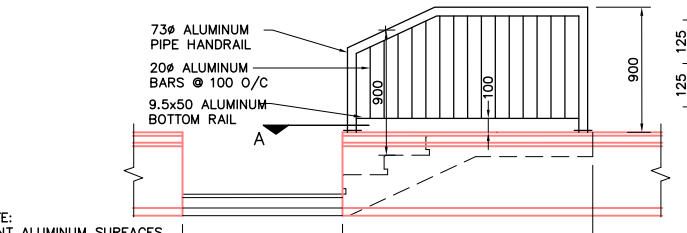
CITY DRAWING NUMBER: B103-98-117
SHEET 117 OF _____

ELECTRICAL INTERIOR LIGHTING
REV-2

CONSULTANT DRAWING NO. 61440-18-117



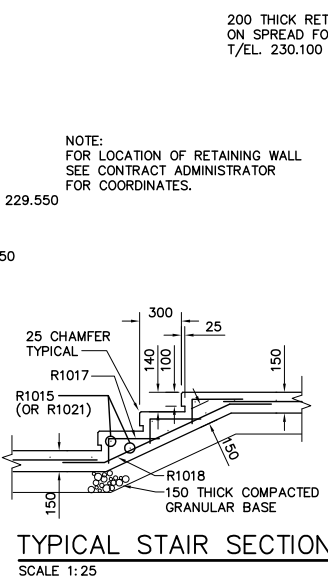
PLAN OF FLOOD PROTECTION RETAINING WALL AT CNR OVERPASS PIER NO. 4
SCALE 1:100



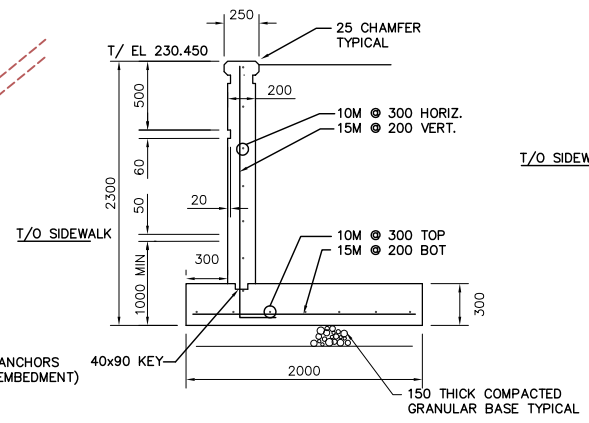
ELEVATION OF HANDRAIL
SCALE 1:25

MARKS	NO. BARS	SIZE	LENGTH	TYPE	A	B	C	D	E	F	G	H	J	K	O	WEIGHT
R101	14	10	5560	STR												61
R102	84	10	5500	STR												363
R103	14	10	2055	STR												23
R104	4	10	1800	T2	100	400	400	400	400							6
R105	9	10	1900	S9	350	400	400	400			350			90		13
R106	14	10	5555	STR												67
R107	20	10	1500	17		1000	500									24
R108	7	10	1100	STR												6
R109	6	10	1850	STR												9
R110	14	10	7165	STR												79
R111	7	10	900	STR												5
R112	7	10	1375	STR												8
R113	14	10	4735	STR												52
R114	21	10	600	STR												10
R115	10	10	800	STR												6
R116	4	10	1050	STR												3
R117	40	10	540	17		175	365	300					127		272	15
R118	12	10	1595	19		300	995	300								15
R119	4	10	1145	STR												4
R120	5	10	990	STR												4
R121	6	10	2300	STR												11
R122	23	10	630	2	180	450										11
R151	250	15	2375	2	250	2125										932
R152	250	15	1650	STR												648
R153	8	15	1950	STR												24
R154	18	15	3400	STR												96
R155	126	15	1250	2	250	1000										247
R156	128	15	850	STR												171
R157	6	15	300	STR												3
R158	8	15	2275	STR												29
TOTAL																
2845																

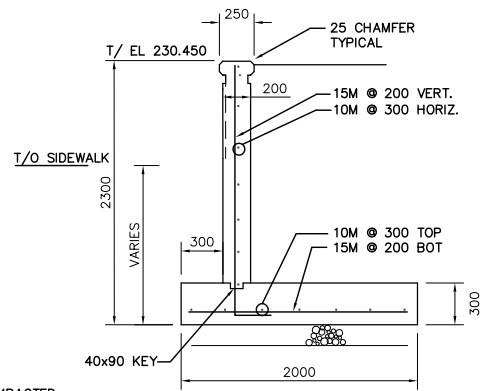
METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMAL NUMBERS INDICATE METRES



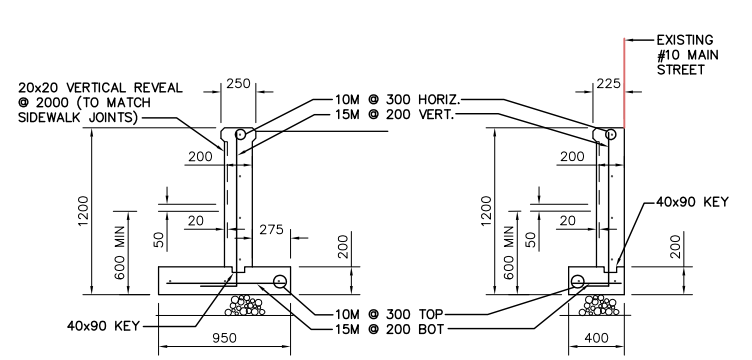
TYPICAL STAIR SECTION
SCALE 1:25



1 SECTION
SCALE 1:20

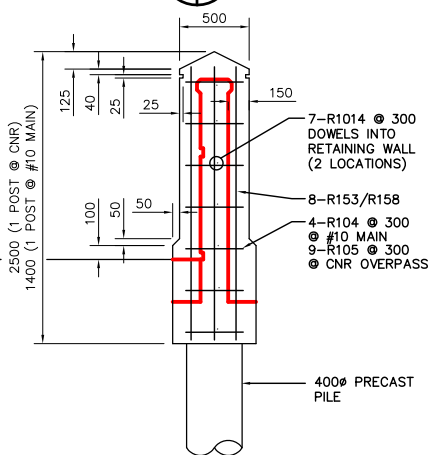


2 SECTION
SCALE 1:20

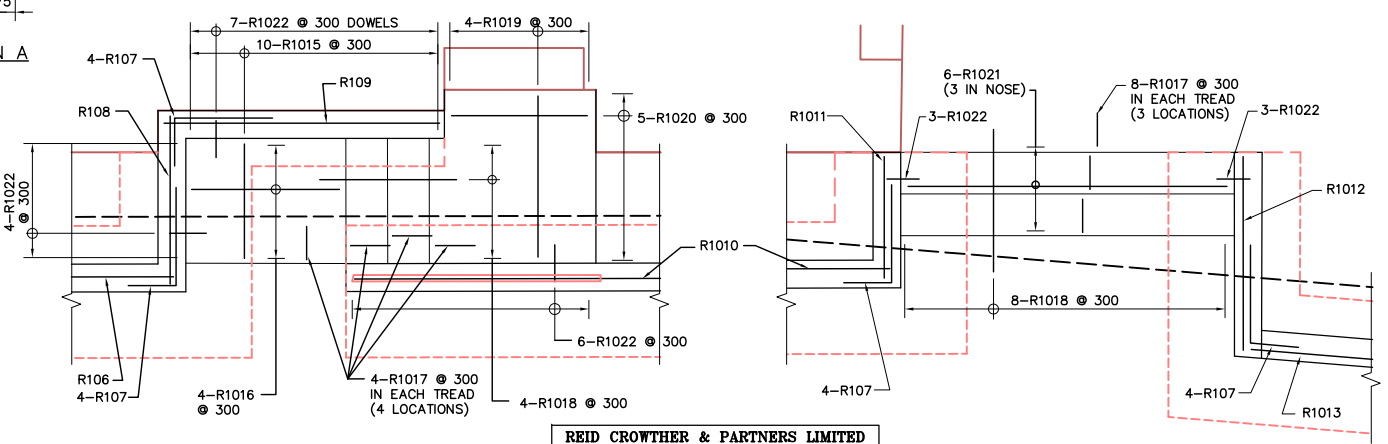


3 SECTION
SCALE 1:20

4 SECTION
SCALE 1:20



TYPICAL POST (2 REQ'D)
SCALE 1:25



5 DETAIL
SCALE 1:25

6 DETAIL
SCALE 1:25

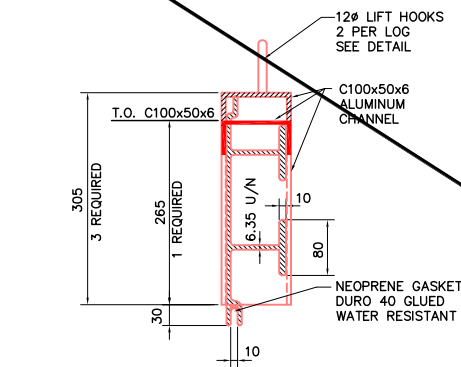
REID CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG.....DATE.....

NO.	REVISIONS	DATE	BY
3	AS CONSTRUCTED	12/06/99	KAA
2	POSTS & PILES REVISED	12/16/97	KAA
1	ISSUED FOR CONSTRUCTION	08/29/97	KAA
0	ISSUED FOR REVIEW	08/07/97	KAA

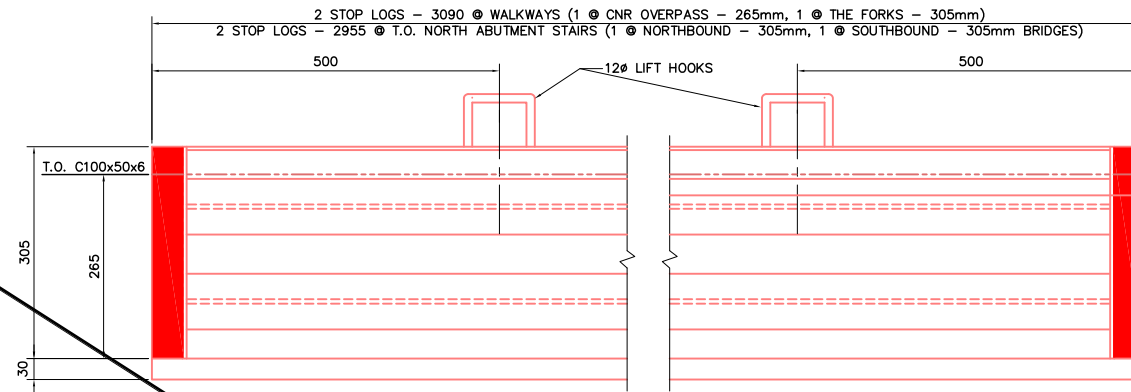
DESIGNED BY	CHECKED BY	AUTHORIZED BY	DATE
DESIGNED BY: <i>[Signature]</i>	CHECKED BY:	AUTHORIZED BY:	DATE:
DRAWN BY: KAA	APPROVED BY:		
HOR. SCALE: AS NOTED			
VERTICAL: AS NOTED			
NO. REVISIONS	DATE	BY	DATE
			97/12/16

REID CROWTHER & PARTNERS LIMITED
WINNIPEG
B.M. ELEV.
ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
D.C. MacFARLANE
07/04/98
REGISTERED PROFESSIONAL ENGINEER

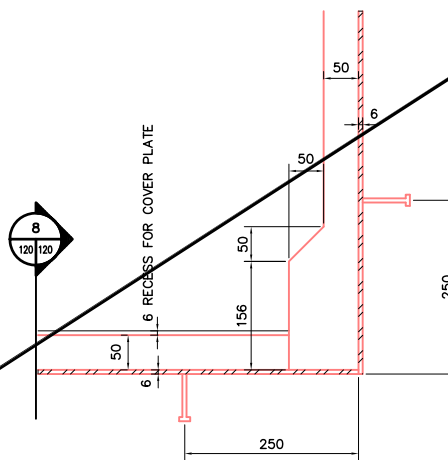
THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION
MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS
FLOOD PROTECTION RETAINING WALL
AND MODIFICATIONS TO #10 MAIN STREET
CITY DRAWING NUMBER
B103-98-118
SHEET 118 OF
REV-3



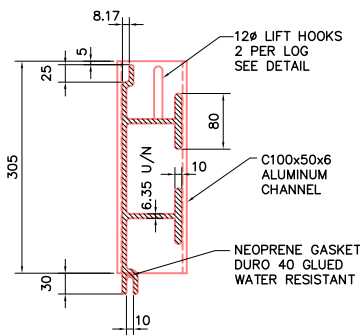
1 TYPICAL TOP STOP LOG
SCALE 1:5
4 REQUIRED



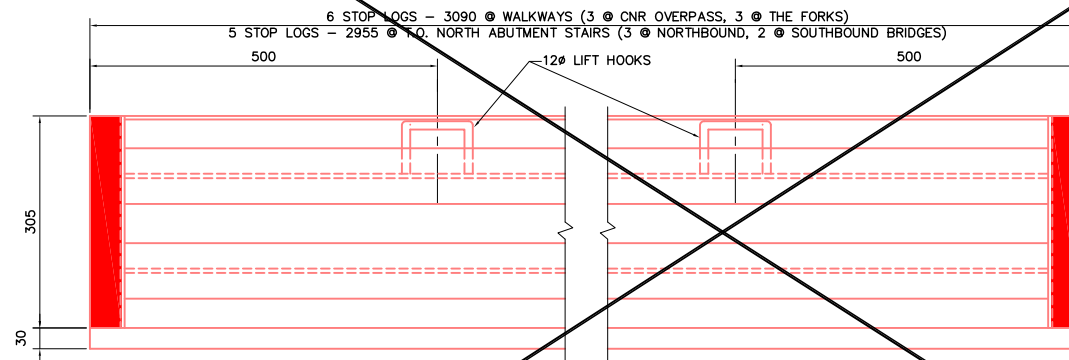
4 TYPICAL ELEVATION OF TOP STOP LOG
SCALE 1:5



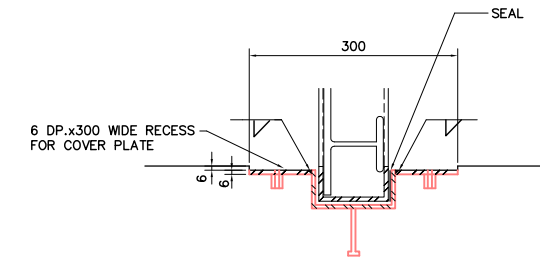
7 SECTIONAL ELEVATION THRU STOP LOG GUIDE AT BOTTOM OF POST
SCALE 1:5



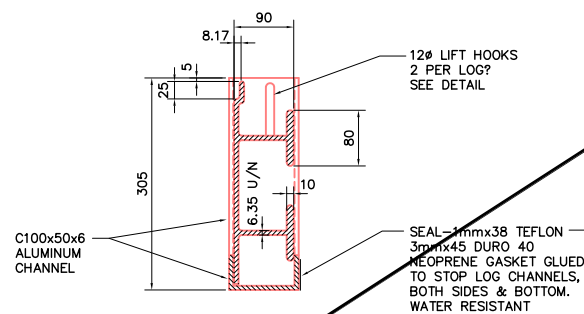
2 TYPICAL MID STOP LOG
SCALE 1:5
11 REQUIRED



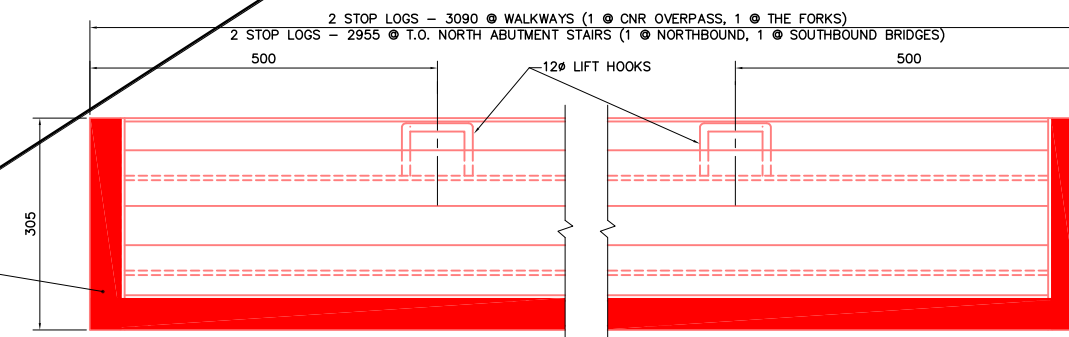
5 TYPICAL ELEVATION OF MID STOP LOG
SCALE 1:5



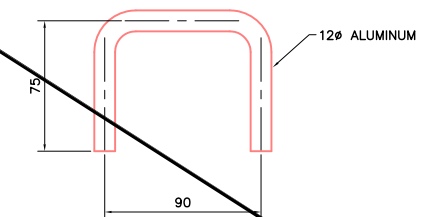
8 SECTION THRU BOTTOM STOP LOG GUIDE
SCALE 1:5



3 TYPICAL BOTTOM STOP LOG
SCALE 1:5
4 REQUIRED



6 TYPICAL ELEVATION OF BOTTOM STOP LOG
SCALE 1:5



LIFT HOOK DETAIL
SCALE 1:2

LOCATION APPROVED UNDERGROUND STRUCTURES

SURV. U/G STRUCTURES DATE COMMITTEE

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	DATE	B.M. ELEV.
2	NOT CONSTRUCTED	12/06/99	KAA		
1	ISSUED FOR CONSTRUCTION	98/04/07	KAA		

Reid Crowther
Reid Crowther & Partners Ltd.
Engineers Planners Scientists

DESIGNED BY: []
CHECKED BY: []

DRAWN BY: KAA
APPROVED BY: []

HOR. SCALE: AS NOTED
VERTICAL: AS NOTED

AUTHORIZED BY: [] DATE: []

R. BRUNSCHWIGER / SENIOR BRIDGE ENGINEER
ACCEPTED FOR GREAT CONSTRUCTION BY: DATE: []

P. PLAZA / PROJECT MANAGER

ENGINEER'S SEAL
PROVINCE OF MANITOBA
ORIGINAL SIGNED BY
G.A. WEBSTER
04/07/98
REGISTERED PROFESSIONAL ENGINEER

THE CITY OF WINNIPEG
STREETS AND TRANSPORTATION DEPARTMENT
BRIDGE ENGINEERING DIVISION

MAIN STREET AND NORWOOD BRIDGES PROJECT
NORWOOD BRIDGE - SOUTHBOUND
AND RELATED ROADWORKS

STOP LOG DETAILS

CITY DRAWING NUMBER
B103-98-120
SHEET 120 OF []

CONSULTANT DRAWING NO.
61440-18-120

REV-2

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES