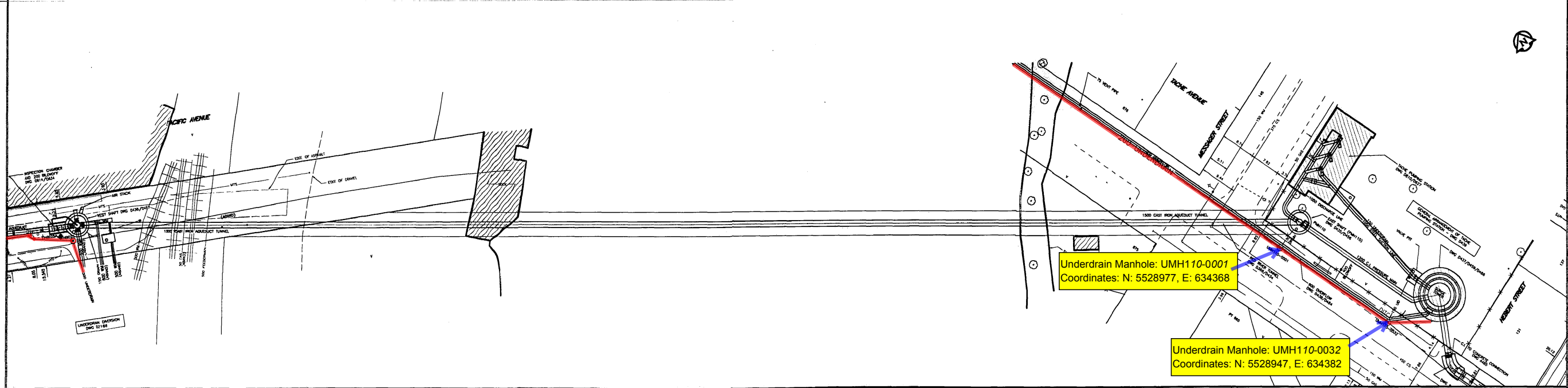
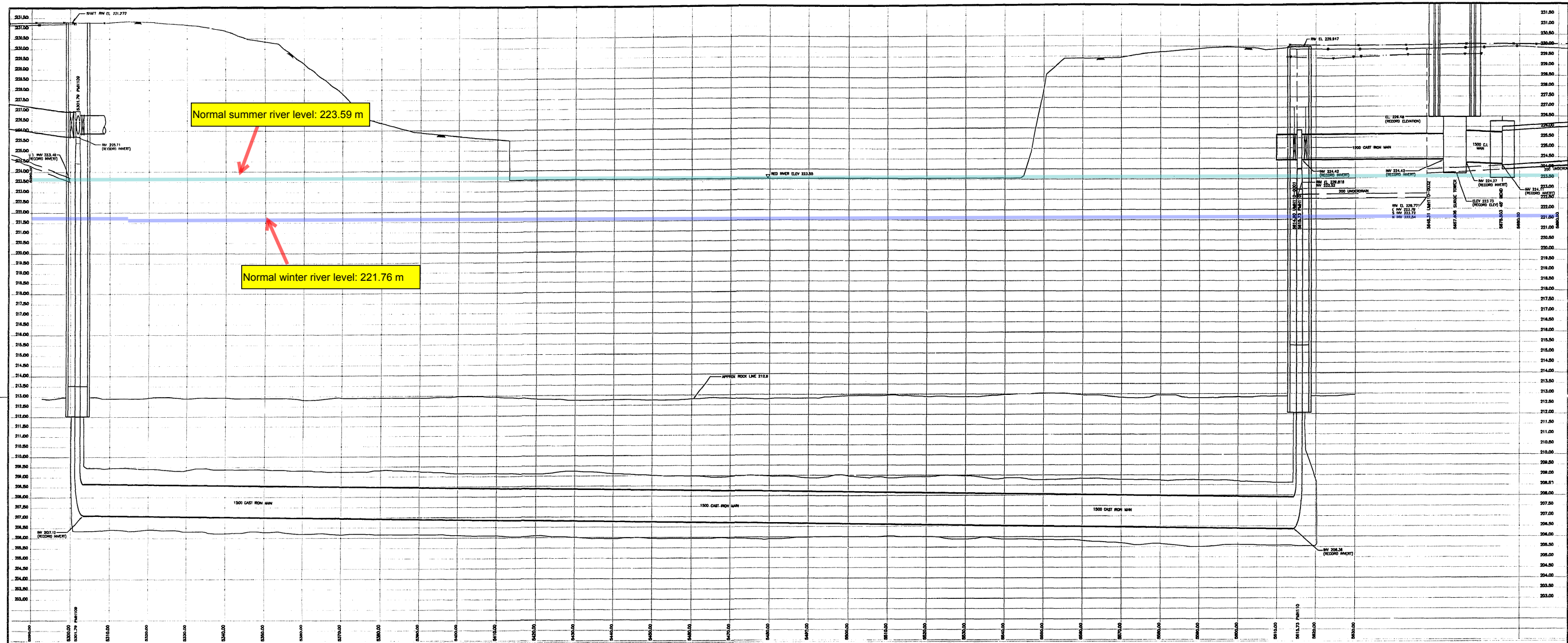
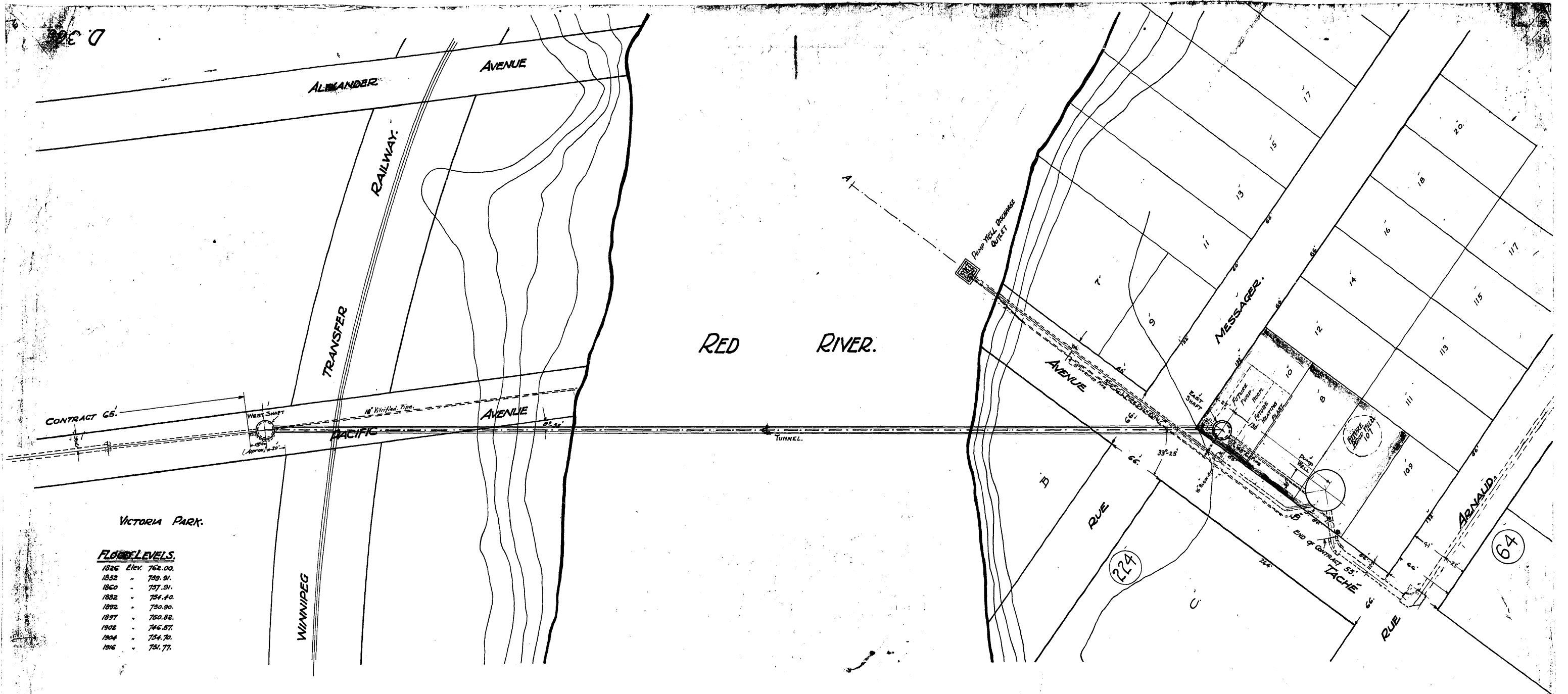


APPENDIX 'A'
RECORD DRAWINGS



150 mm WM	WATERMAIN	300 mm LGS	LAND DRAINAGE SEWER	HYDRO	190	AQUEDUCT JOINT	AQUEDUCT PIPE	NO.	REVISIONS	DATE	BY	UMA UMA Engineering Ltd. Engineers and Planners	CGSS CH2M GORE & STORRE LIMITED	ENGINEER'S SEAL C. C. MACEY REGISTERED ENGINEER	THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT	Plan and Profile of Branch I Aqueduct From Joint J108-009 To Joint J110-006 From Mile 3.34 To Mile 3.55	SHEET 24 OF 214 CITY DRAWING NUMBER D-6302 REV
HYDRANT VALVE REDUCER COUPLING WM FITTINGS CURB STOP EDGE OF PAVEMENT RAILWAY TRACK GEODETIC BENCHMARK SURVEY BAR EXISTING	250 mm WWS MANHOLE CATCH BASIN CURB INLET CULVERT DITCH LAMP STANDARD TRAFFIC SIGNAL WOOD POLE POLE ANCHOR EXISTING	WASTE WATER SEWER MANHOLE CATCH BASIN CURB INLET CULVERT DITCH LAMP STANDARD TRAFFIC SIGNAL WOOD POLE POLE ANCHOR EXISTING	COMMUNICATION TRAFFIC SIGNALS PEDESTAL SIGNAL CONTROLLER GAS STEAM HEAT FENCE TREE BUILDING SUBSURFACE STRUCTURE EXISTING	AQUEDUCT JOINT UNDERDRAIN MANHOLE UNDERDRAIN RISER UNDERDRAIN WELL TESTHOLE PEIZOMETER	UNDERDRAIN GROUNDLINE CENTERLINE N/W GUTTER S/E GUTTER N/W DITCH S/E DITCH N/W PROPERTY LINE S/E PROPERTY LINE EXISTING	DATA SOURCES Aqueduct Joints: Integrated From Manholes Located in 1994 UMA Total Station Survey and 1995 Internal Inspections Unless Otherwise Noted Surface Features: UMA Total Station Survey (1994) Legal Right of Way M11 to M12: City of Wpg LBS (1994) Legal Right of Way M12 to M17: Pollock & Wright (1995) Utilities: Compiled From Information Obtained From City of Winnipeg Underground Structures (1994)	DESIGNED BY: BC CHECKED BY: CCM DRAWN BY: BC/MAG APPROVED BY: CCM HOR. SCALE: 1:500 VERTICAL: 1:100 DATE:	CONSULTANT DRAWING NO. 24 41-02-0265-136-01									

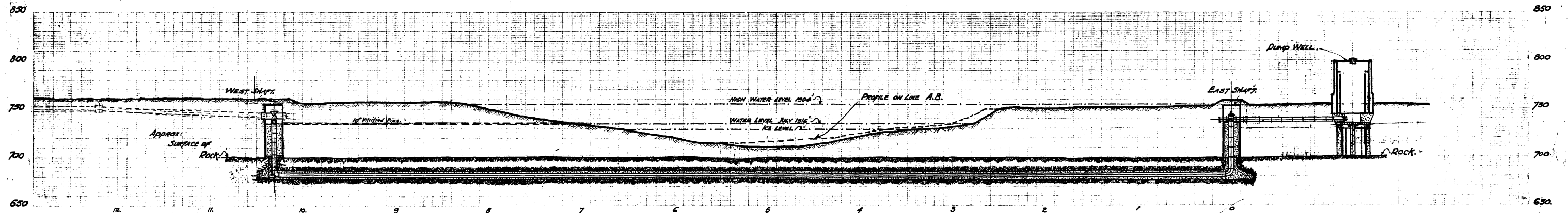
D-6302.dwg



VICTORIA PARK.

FLOOD LEVELS.

1826	Elev.	762.00.
1852	"	759.91.
1860	"	757.91.
1882	"	754.40.
1892	"	750.90.
1897	"	750.82.
1902	"	746.87.
1904	"	754.70.
1916	"	751.77.



PROFILE ON $\frac{1}{2}$ OF TUNNEL.

R.D. Maugh
CHAIRMAN OF COMMISSIONERS.
J.H. Morrison
CHAIRMAN OF ADMINISTRATION BOARD.

CONTRACT. 56. D. 366.

DRAWN BY *A.P.*
TRACED *A.P.*
CHECKED *M. Sauer*
APPROVED *M. Sauer*

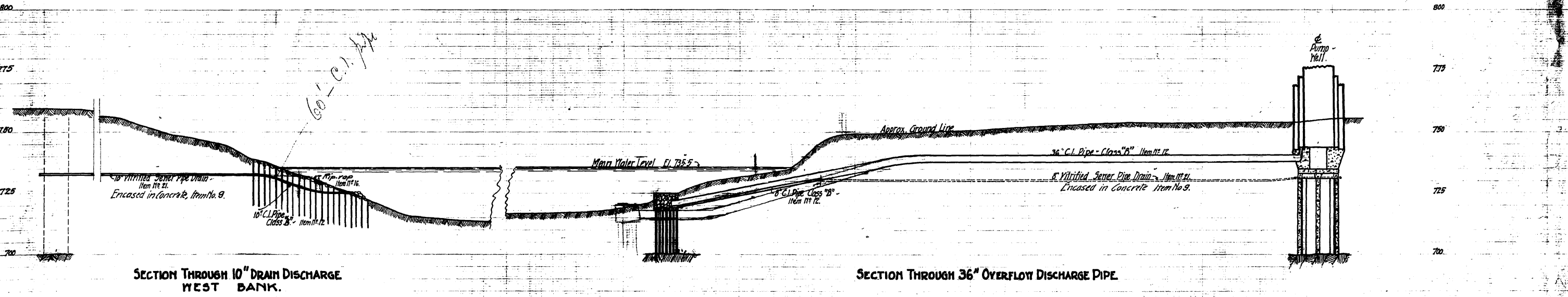
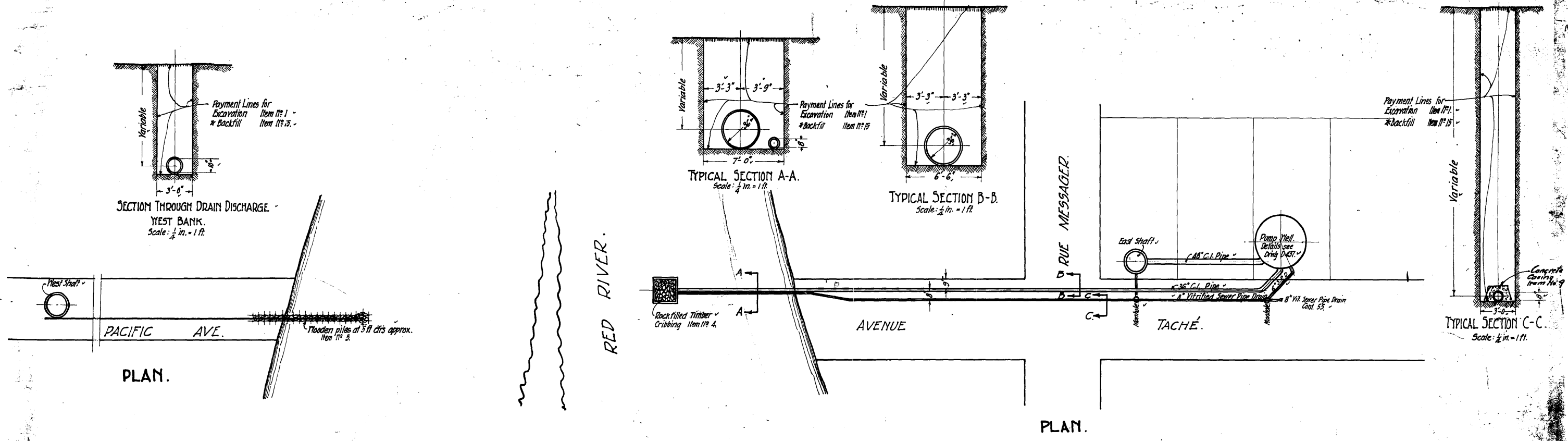
Location of pipe line. cont 55 changed Jan 7-1918.

APPROVED FOR CITY OF ST DONIFACE
J. McNeill MAYOR
J. McNeill C.E.T. CITY ENGINEER
CITY CLERK
DATE 1918

APPROVED FOR CITY OF WINNIPEG
J.H. Morrison MAYOR
J.H. Morrison C.E.T. CITY ENGINEER
CITY CLERK
DATE 1918

(Sgd) James H. Ewart
CONSULTING ENGINEER
W. Schae
CHIEF ENGINEER

GREATER WINNIPEG WATER DISTRICT.
RED RIVER TUNNEL
PLAN & SECTION.
SCALE: 1" = 100'



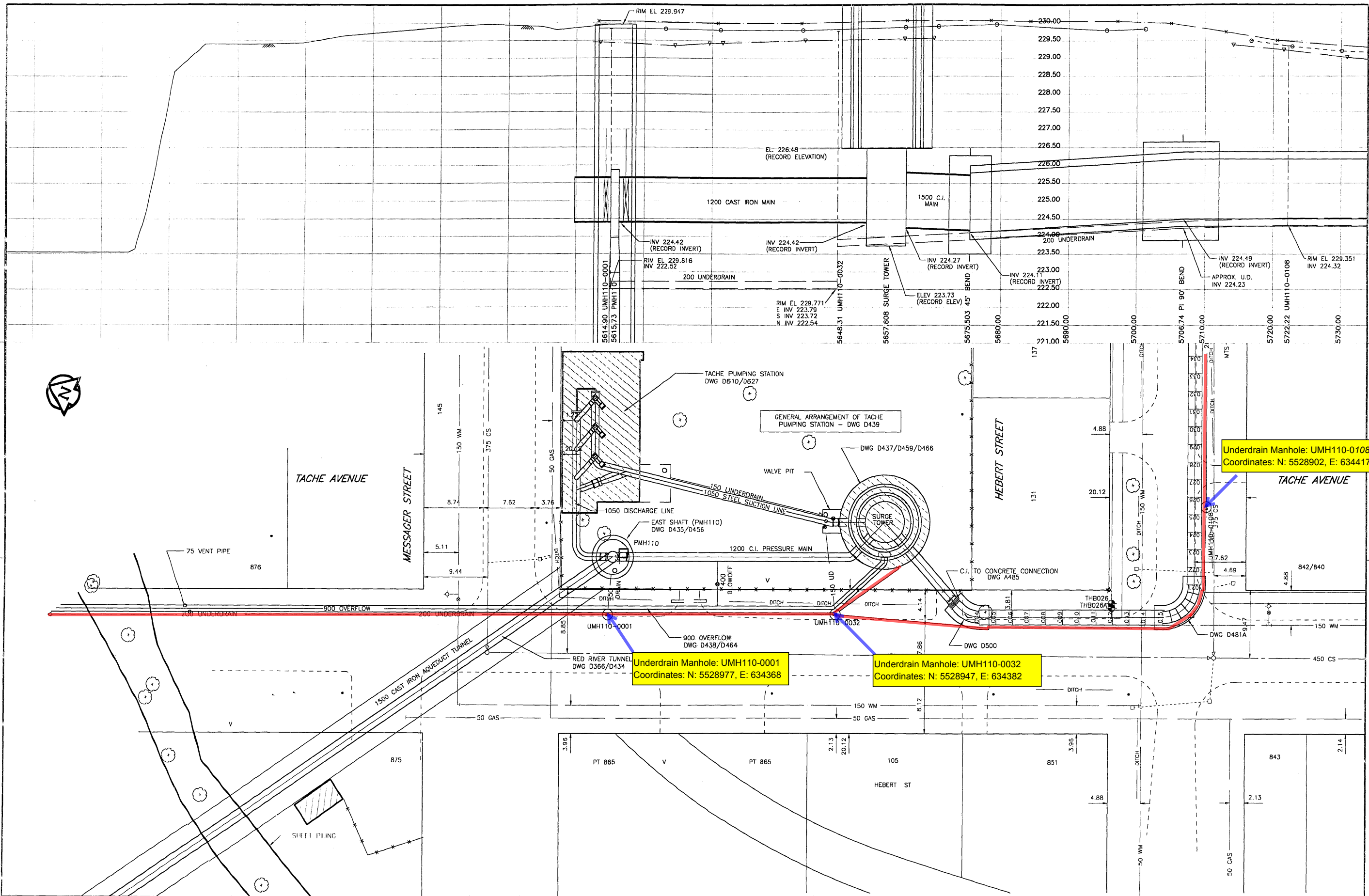
Drawn by: [Signature]
Traced by: [Signature]
Checked by: [Signature]
Approved: [Signature]

Deep Pipe drains "encased in concrete" Nov 19, 1917, Inds.

Chairman of Administration Board.
Chairman of Commissioners.
Date: 1918

Approved for Harbor Commissioners of Winnipeg and St. Boniface.
Chairman.
Secretary.
[Signature] Consulting Engineer.
[Signature] Chief Engineer.

CONTRACT 56 D438.
GREATER WINNIPEG WATER DISTRICT.
RED RIVER TUNNEL
PUMP WELL OVERFLOW DISCHARGE.
Oct. 30th 1917.
Scales: Vert. 1 in. = 20 ft. except otherwise.
Hori. 1 in. = 40 ft.



Underdrain Manhole: UMH110-0108
Coordinates: N: 5528902, E: 634417

Underdrain Manhole: UMH110-0001
Coordinates: N: 5528977, E: 634368

Underdrain Manhole: UMH110-0032
Coordinates: N: 5528947, E: 634382

150 mm WM	WATERMAIN	300 mm LOS	LAND DRAINAGE SEWER	HYDRO	AQUEDUCT JOINT	AQUEDUCT PIPE
⊕	HYDRANT	250 mm WWS	WASTE WATER SEWER	COMMUNICATION	UNDERDRAIN MANHOLE	UNDERDRAIN
⊕	VALVE		MANHOLE	TRAFFIC SIGNALS	UNDERDRAIN RISER	GROUNDLINE
⊕	REDUCER		CATCH BASIN	PEDESTAL	UNDERDRAIN WELL	CENTERLINE
⊕	COUPLING		CURB INLET	SIGNAL CONTROLLER	TESTHOLE	N/W GUTTER
⊕	WM FITTINGS		CULVERT	GAS	PEIZOMETER	S/E GUTTER
⊕	CURB STOP		DITCH	STEAM HEAT		N/W DITCH
⊕	EDGE OF PAVEMENT		LAMP STANDARD	FENCE		S/E DITCH
⊕	RAILWAY TRACK		TRAFFIC SIGNAL	TREE		N/W PROPERTY LINE
⊕	GEODETIC BENCHMARK		WOOD POLE	BUILDING		S/E PROPERTY LINE
⊕	SURVEY BAR		POLE ANCHOR	SUBSURFACE STRUCTURE		

NO.	REVISIONS	DATE	BY

DATA SOURCES
 Aqueduct Joints: Interpreted From Manholes Located in 1994
 UMA Total Station Survey and 1995 Internal Inspections
 Unless Otherwise Noted
 Surface Features: UMA Total Station Survey (1994)
 Legal Right of Way M12 to M17: Pollock & Wright (1995)
 Utilities: Compiled from Information Obtained From
 City of Winnipeg Underground Structures (1994)

UMA
UMA Engineering Ltd.
Engineers and Planners

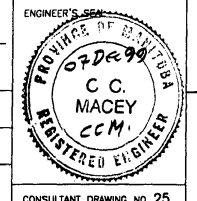
CGSS
CHYM GORE & STORRE LIMITED

DESIGNED BY: BC
 DRAWN BY: BC/MAG
 CHECKED BY: CCM
 APPROVED BY: CCM

HOR. SCALE: 1:250
 VERTICAL: 1:50

RELEASED FOR CONSTRUCTION

CONSULTANT DRAWING NO. 25



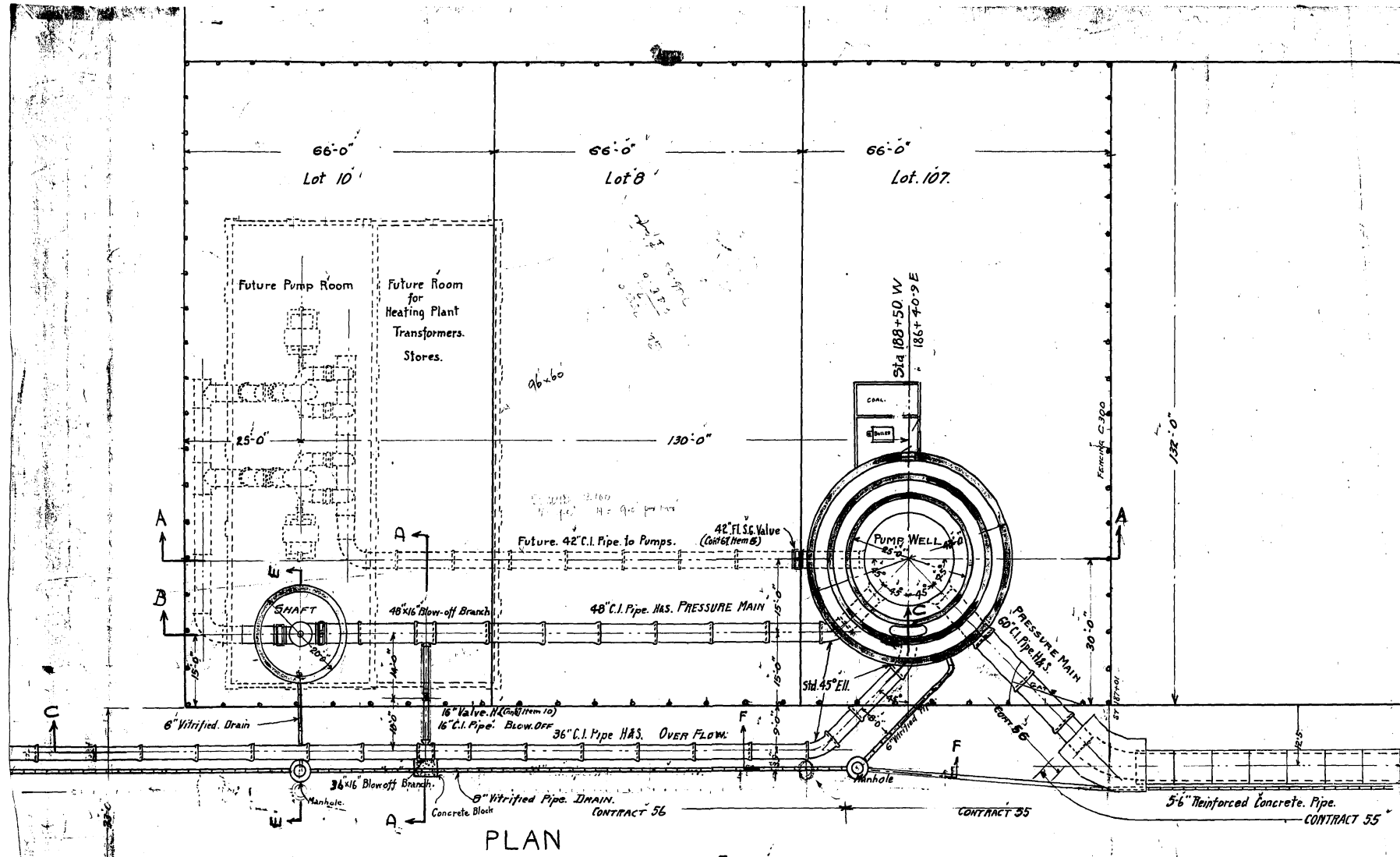
THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

Plan and Profile of
Branch I Aqueduct

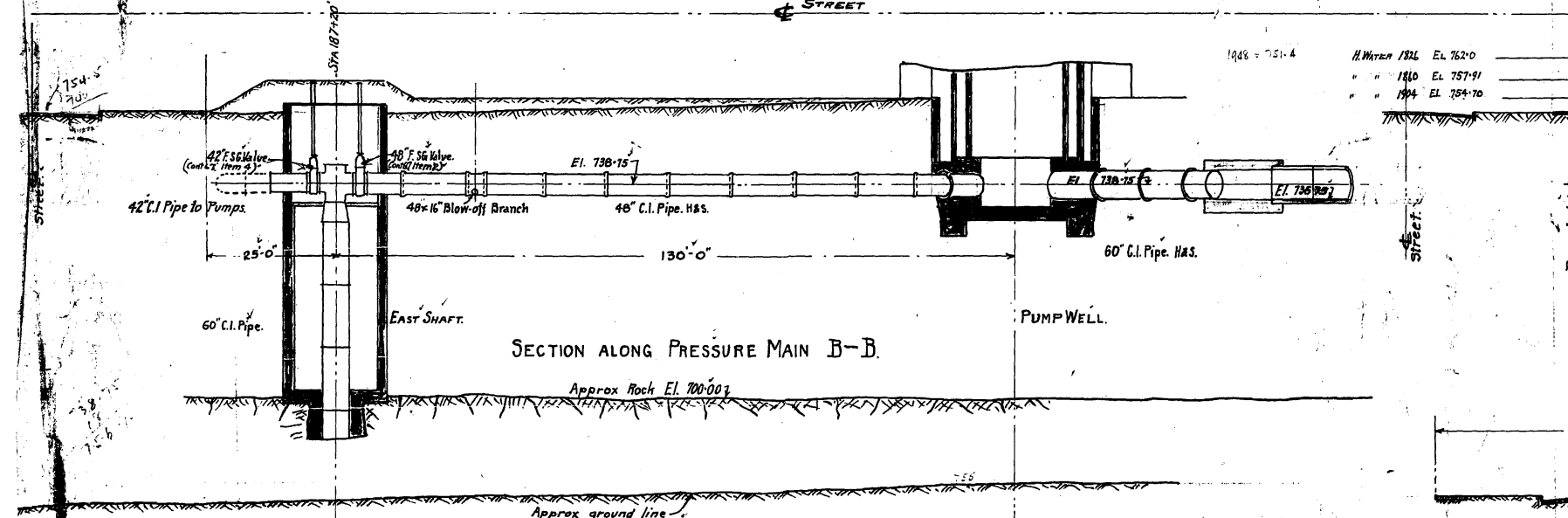
From Joint J110-001 To Joint J110-034
From Mile 3.54 To Mile 3.58

SHEET 25 OF 214
CITY DRAWING NUMBER
D-6303 REV

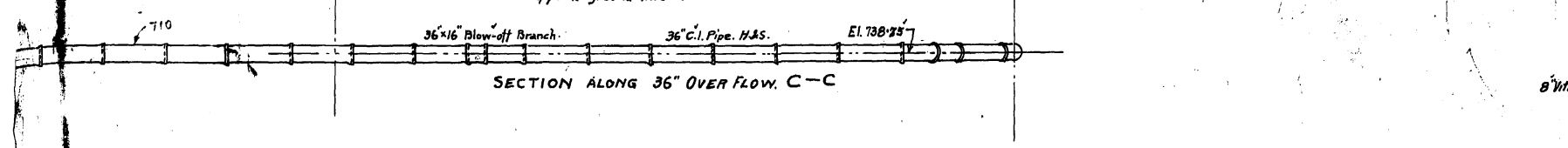
63303.dwg



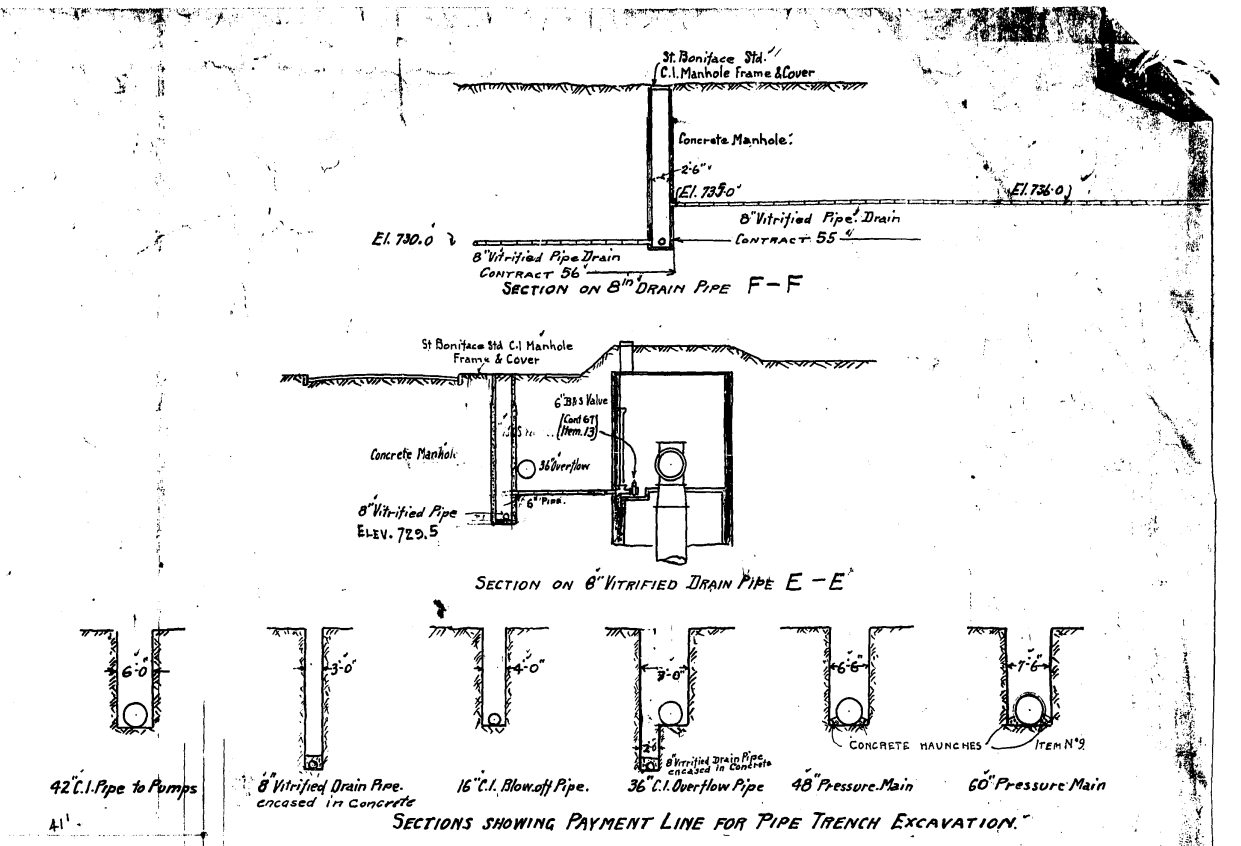
PLAN



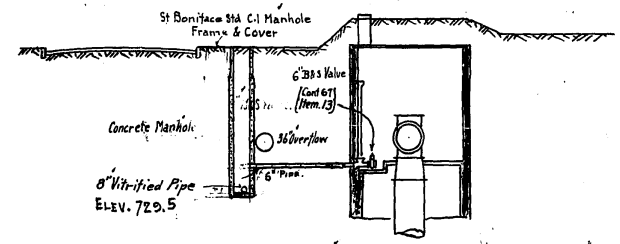
SECTION ALONG PRESSURE MAIN B-B



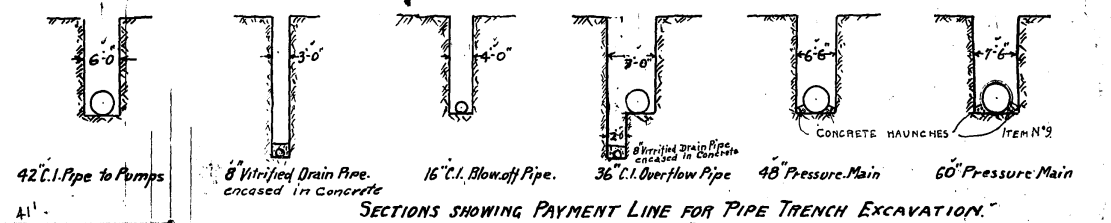
SECTION ALONG 36\"/>



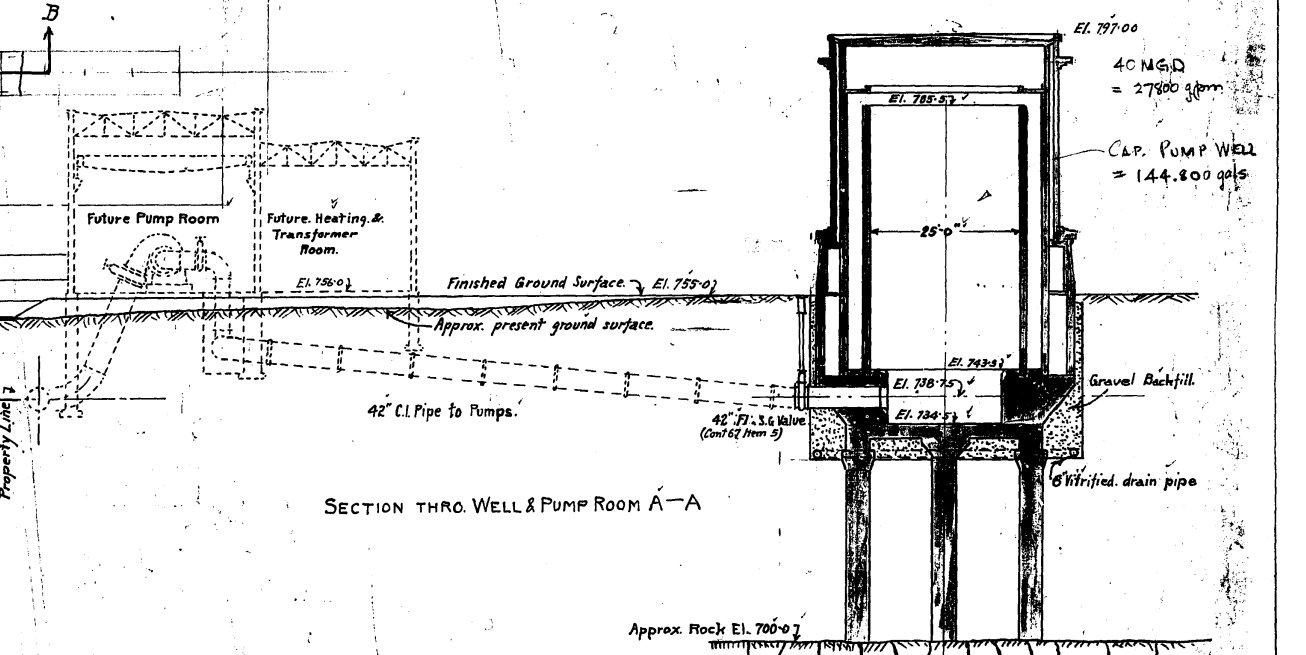
SECTION ON 8\"/>



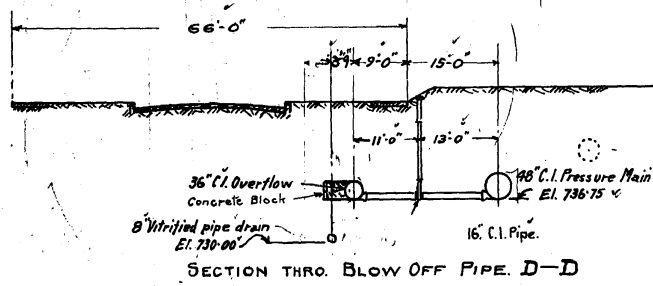
SECTION ON 8\"/>



SECTIONS SHOWING PAYMENT LINE FOR PIPE TRENCH EXCAVATION



SECTION THRU WELL & PUMP ROOM A-A



SECTION THRU BLOW OFF PIPE D-D

PLAN & SECTION RED RIVER CROSSING	D366
EAST SHAFT	D435
WEST SHAFT	D436
WELL DETAILS	D437
WELL OVERFLOW DISCHARGE	D438

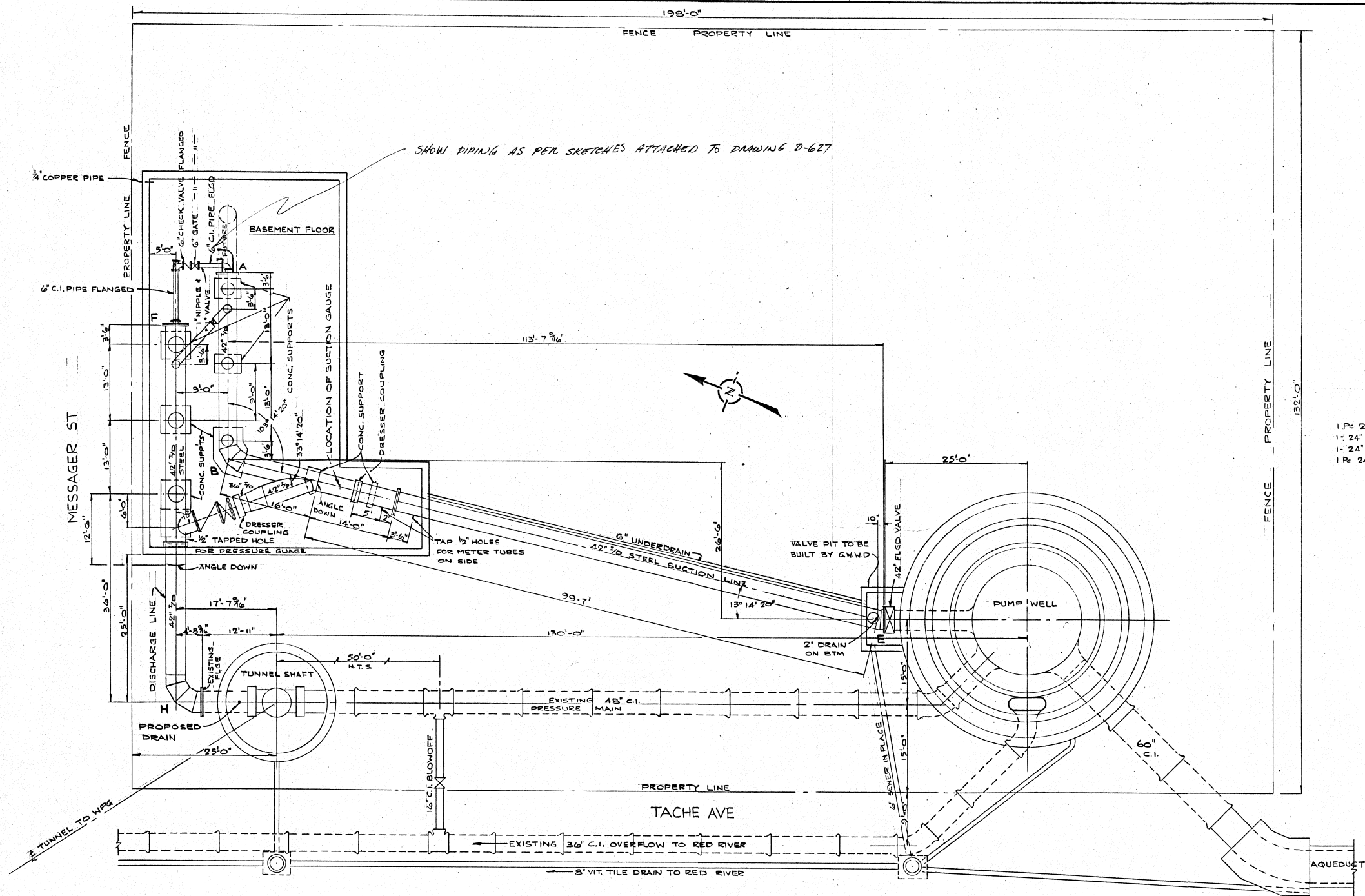
CONTRACT N° 56

D439

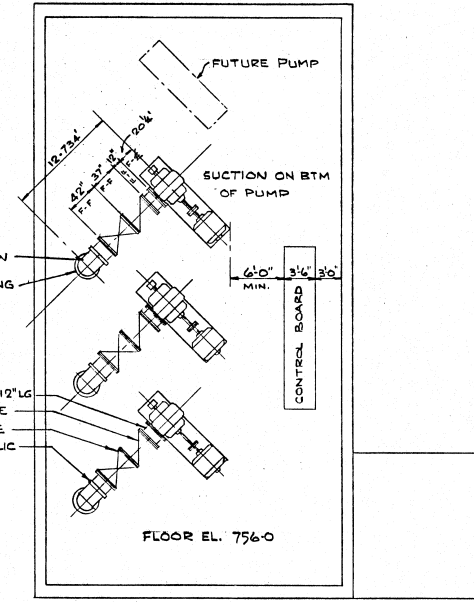
DRAWN BY
 TRACED BY
 CHECKED BY
 APPROVED
 Deep 8" Drain pipe "encased in concrete" Nov 19, 17 1914.
 Stationing added Dec 10-1114
 High water elevations added Dec 10-1114
 Drain pipe placed as constructed Dec 10-1114

(Sgd) James H. Switzer
 CONSULTING ENGINEER
 J. H. Switzer
 CHIEF ENGINEER

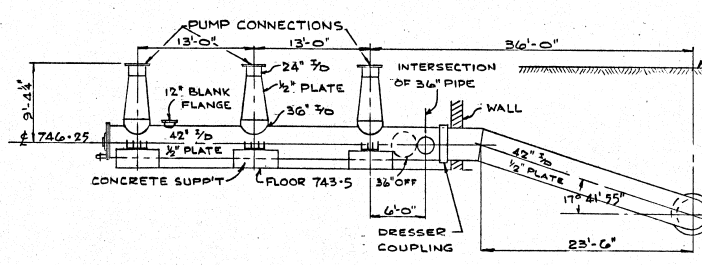
GREATER WINNIPEG WATER DISTRICT
 RED RIVER TUNNEL
 GENERAL LAYOUT PIPING & WELL AT EAST SH
 Dec 12-1917
 Scale 1" = 10'



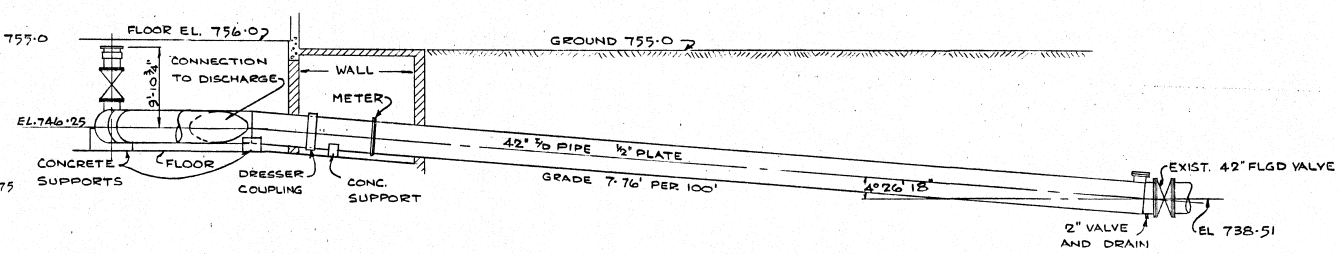
SHOW PIPING AS PER SKETCHES ATTACHED TO DRAWING D-627



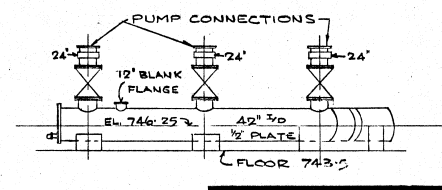
PUMP ROOM FLOOR



DISCHARGE PIPING F-H



SUCTION PIPING B-E



SUCTION LINE A-B

The City of Winnipeg
Waterworks, Waste and Disposal Division

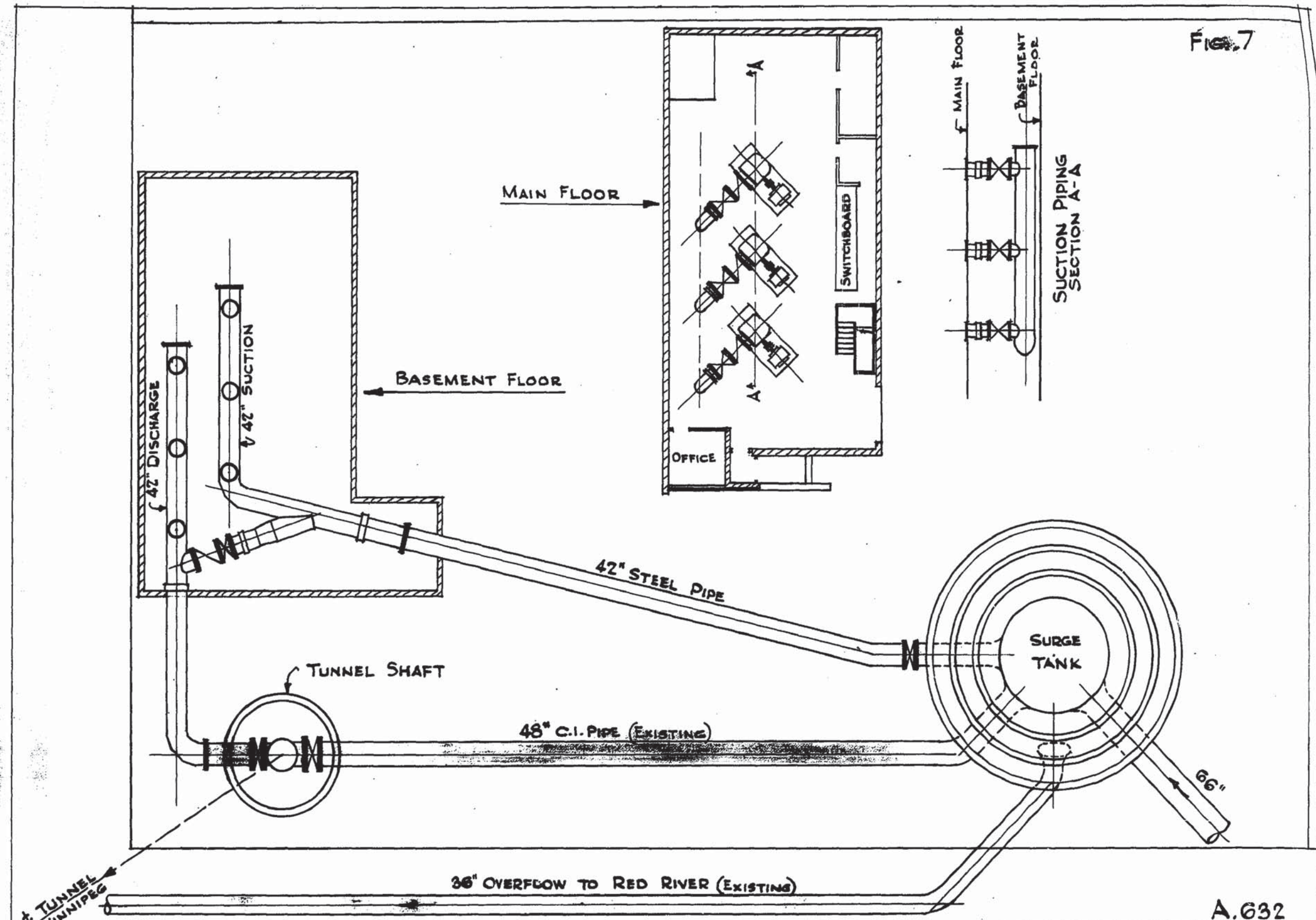
DWG. NO. CHANGED FROM 870

TACHE BOOSTER PUMPING STATION
GENERAL PIPING LAYOUT

FOR ORIGINAL, SEE DWG. OF SAME NUMBER

DESIGNED BY A.H.	DRAWN BY A.H.	SCALE N.T.S.
CHECKED BY [Signature]	DATE FEB. 1976	DRAWING NO. D-610
APPROVED BY		

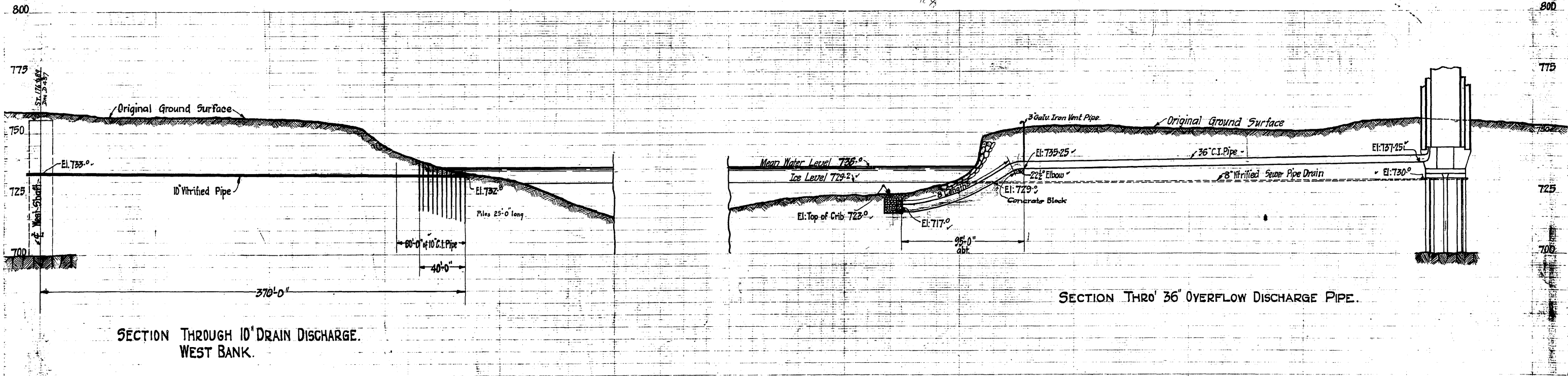
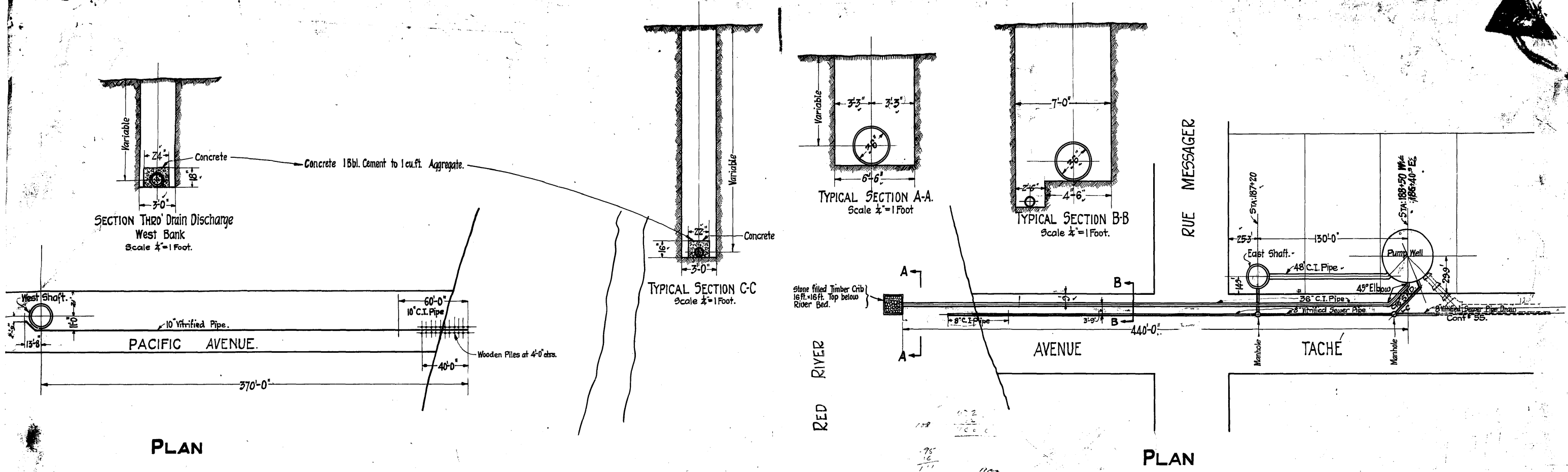
FIG. 7



A.632
 GREATER WINNIPEG WATER DISTRICT
 BOOSTER PUMPING STATION - ST. BON.
 PIPING LAYOUT

SCALE 20' = 1"
 MAY 1951

J. S. ...
 GENERAL MANAGER



Drawn By: *[Signature]*
 Traced By: *[Signature]*
 Checked By: *[Signature]*
 Approved: *[Signature]*

[Signature]
 Chairman of Administration Board.

[Signature]
 Chairman of Commission.

Approved for Harbor Commissioners of
 Winnipeg and St. Boniface, FOR CRIB & OVERFLOW
 PIPE ON EAST BANK OF RED RIVER ONLY.

[Signature]
 Date: Nov 14 1918

[Signature]
 Consulting Engineer.

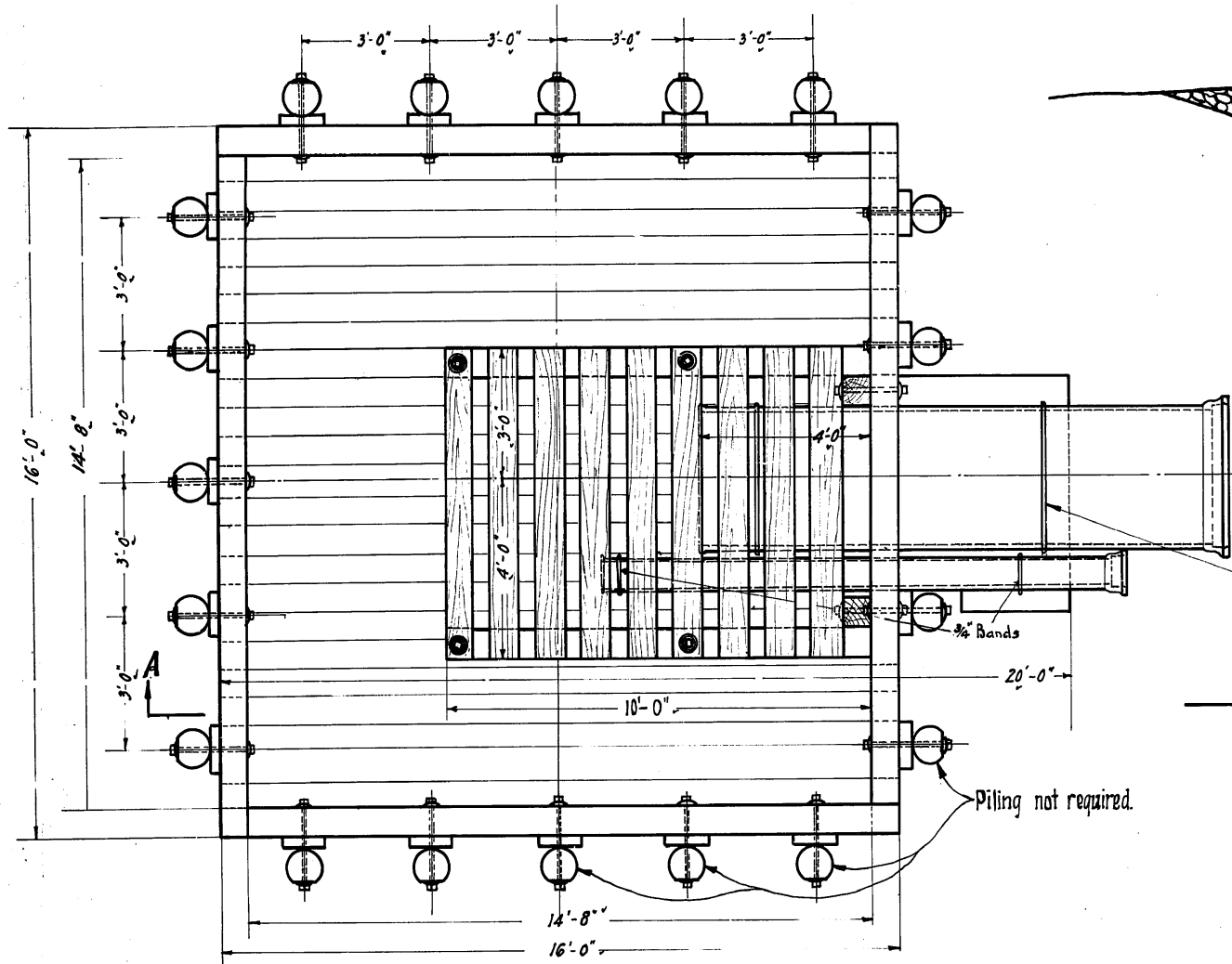
[Signature]
 Chief Engineer.

CONTRACT #56 D464

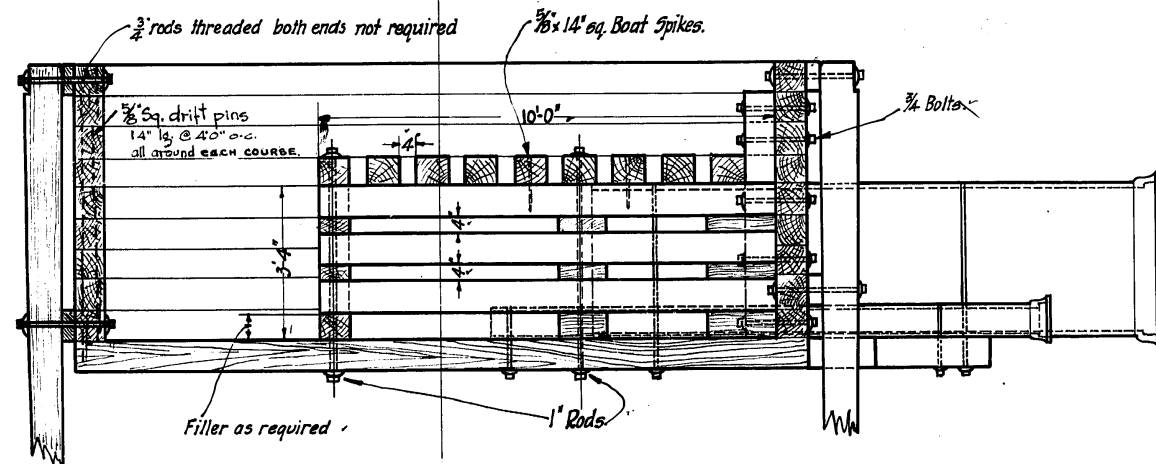
GREATER WINNIPEG WATER DISTRICT
RED RIVER TUNNEL
PUMP WELL OVERFLOW DISCHARGE

Date: _____

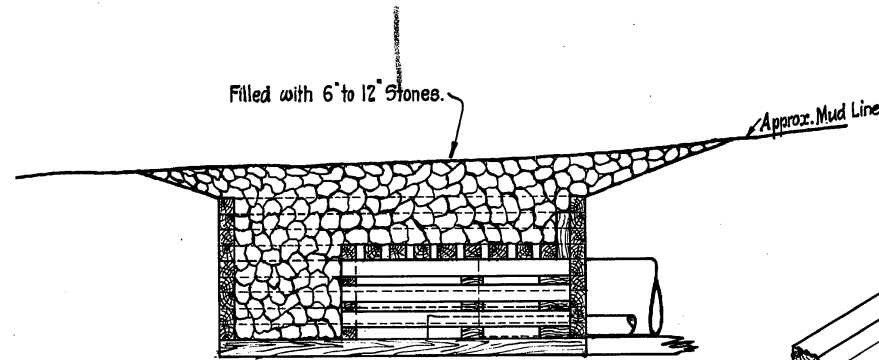
Scale: Vert. 1" = 20 ft. except noted
 Hor. 1" = 40 ft.



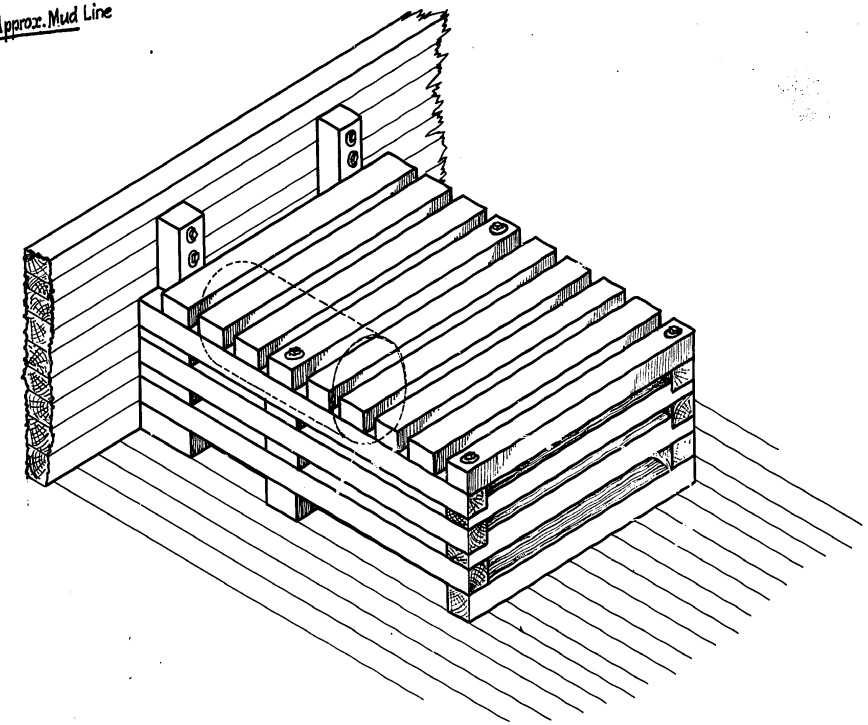
PLAN



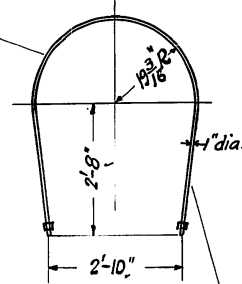
SECTION A-A.



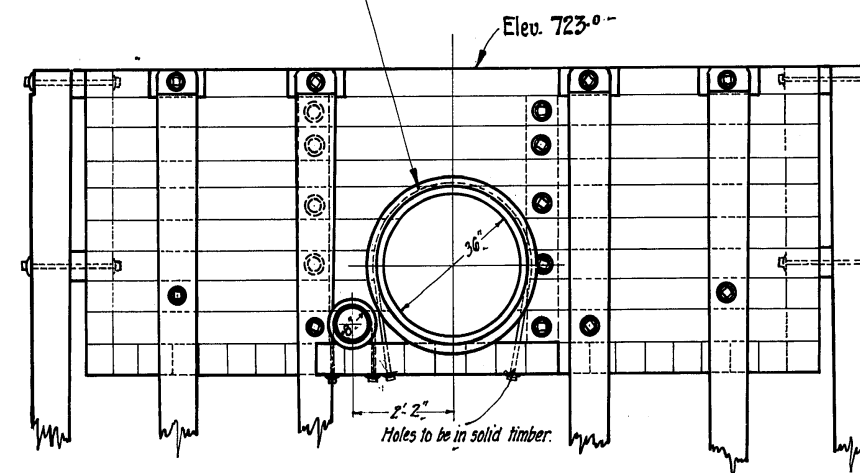
SECTION THRO' CRIB.



ISOMETRIC PROJECTION OF INNER CRIB.



PIPE BAND



END ELEVATION

- Note: Timber to be of 8'-6" sawn Fir.
 Bolts and Nuts to be of Wrought Iron.
 All Drift Bolts to be 5/8" square, 14" long to be driven in 5/8" dia. holes spaced at 4'-0" c'trs approximately.
 All Cast Iron Pipe to be Class "B".
 Crib filled with 6" to 12" Stones.

NOTE: This drawing re-issued for use on overflow discharge crib, Red River Tunnel Crossing, Second Branch Aqueduct.

CONTRACT #56

D463.

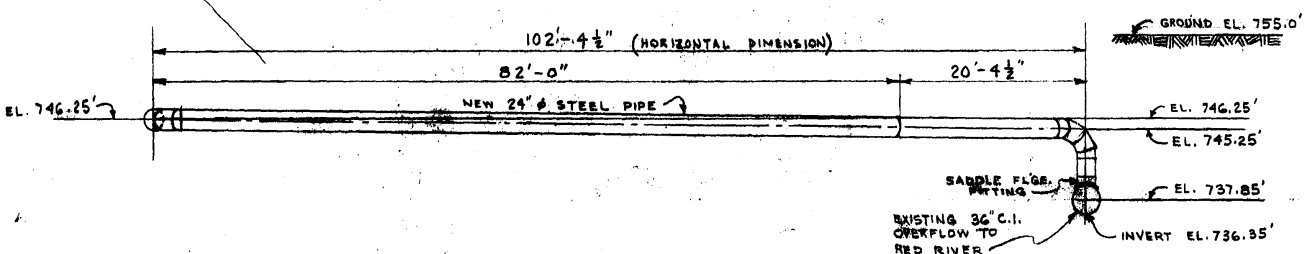
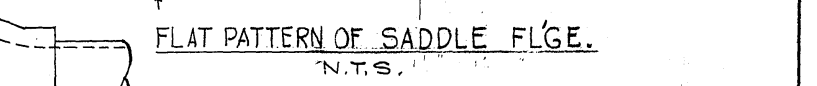
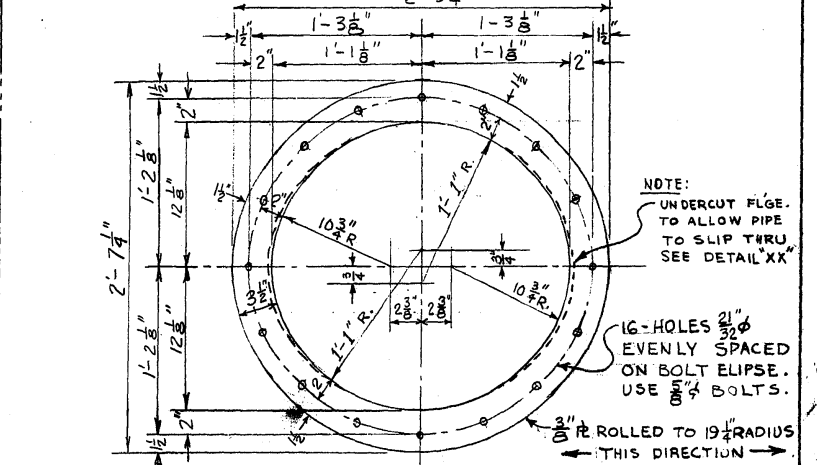
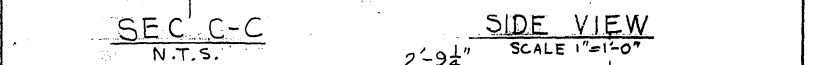
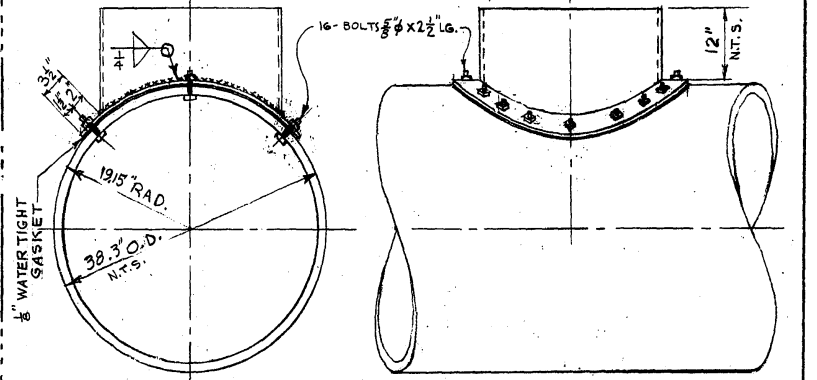
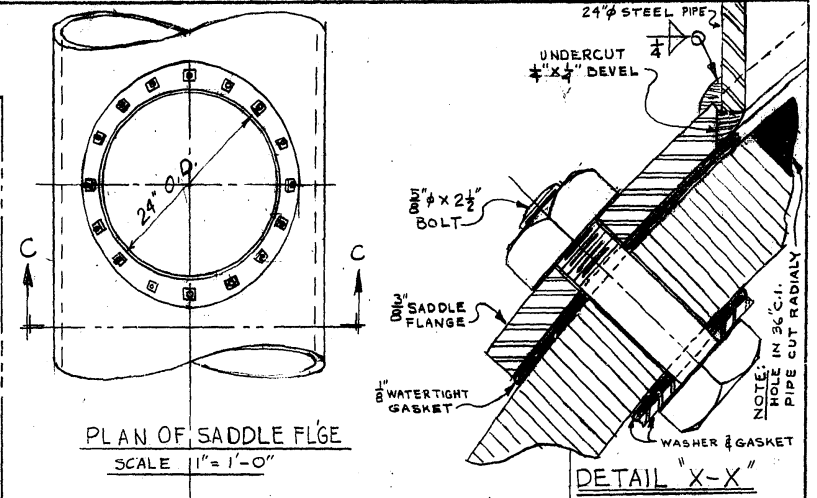
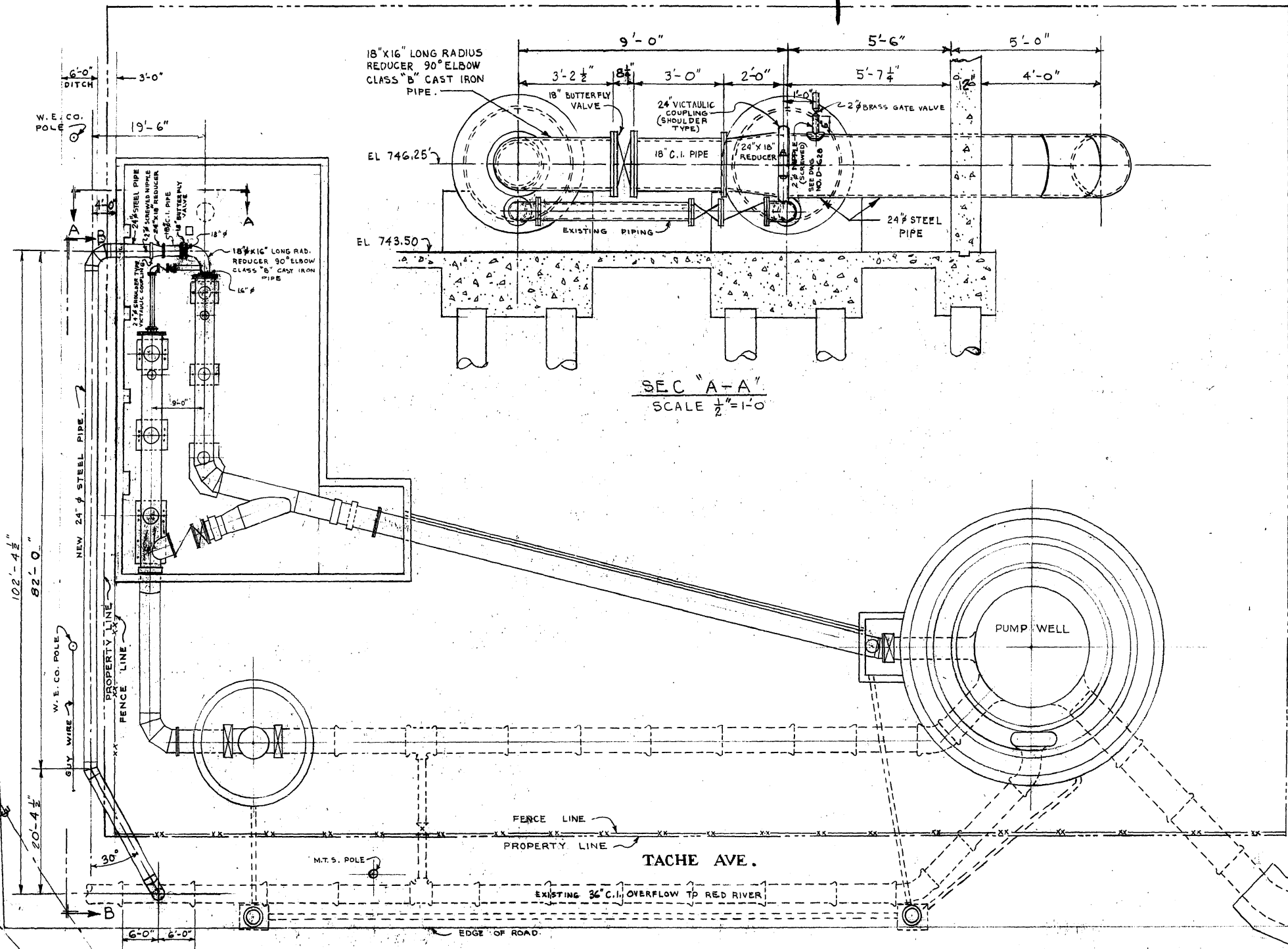
Drawn By: *[Signature]*
 Checked By: *[Signature]*
 Approved By: *[Signature]*

DEC. 8/88: Note re drift pins added. BCS.

(Sgd.) James H. Ewertz
 Consulting Engineer.
Wechase
 Chief Engineer.

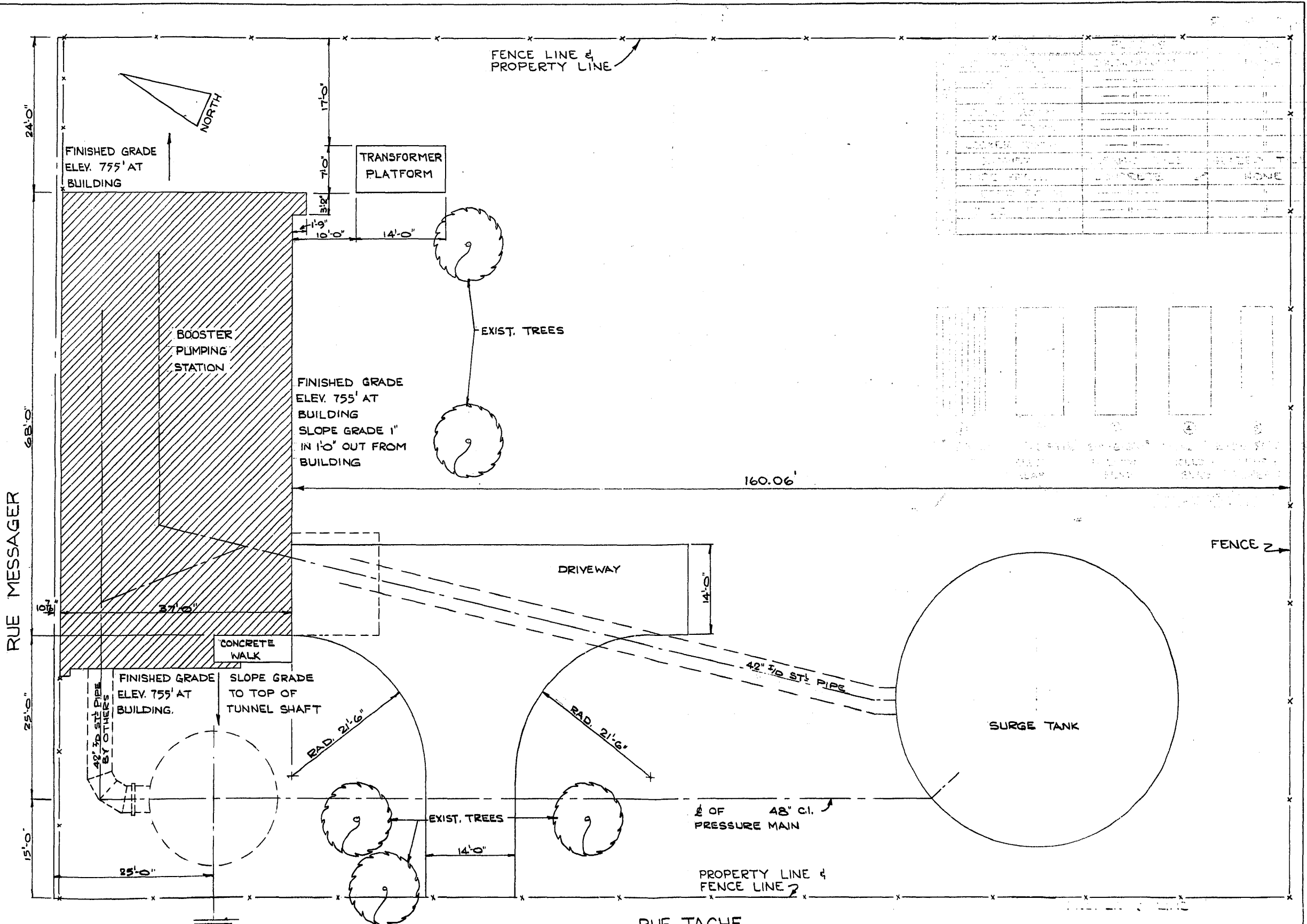
GREATER WINNIPEG WATER DISTRICT.
 DETAILS OF TIMBER CRIB
 AROUND DISCHARGE FROM PUMP WELL
 February 8th 1918. Scale 1/2" = 1 foot.

MESSAGE



SEC 'B-B'

GREATER WINNIPEG WATER DISTRICT		
DRAWN BY IB	DATE DEC 1955	TITLE OVERFLOW PIPING AT BOOSTER PUMPING STATION - ST. BONFACE
CHECKED BY CCS	APPROVED BY <i>[Signature]</i>	SCALE 1" = 1'-0" AND AS NOTED
GENERAL MANAGER		DWG NO. D-627



NO.	DESCRIPTION	DATE	BY
1	DESIGNED		
2	CHECKED		
3	APPROVED		
4	SCALE		

NO.	DESCRIPTION	DATE	BY
1	DESIGNED		
2	CHECKED		
3	APPROVED		
4	SCALE		

EXISTING M.H.
ELEV. BOTTOM OF
M.H. 729'-6"

MICROFILMED mar77

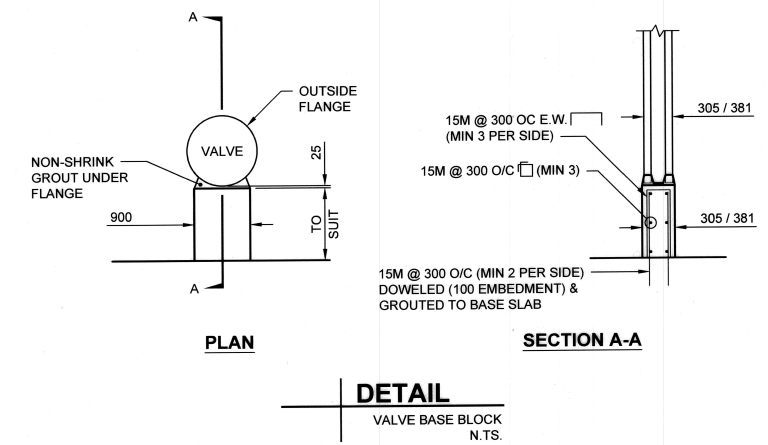
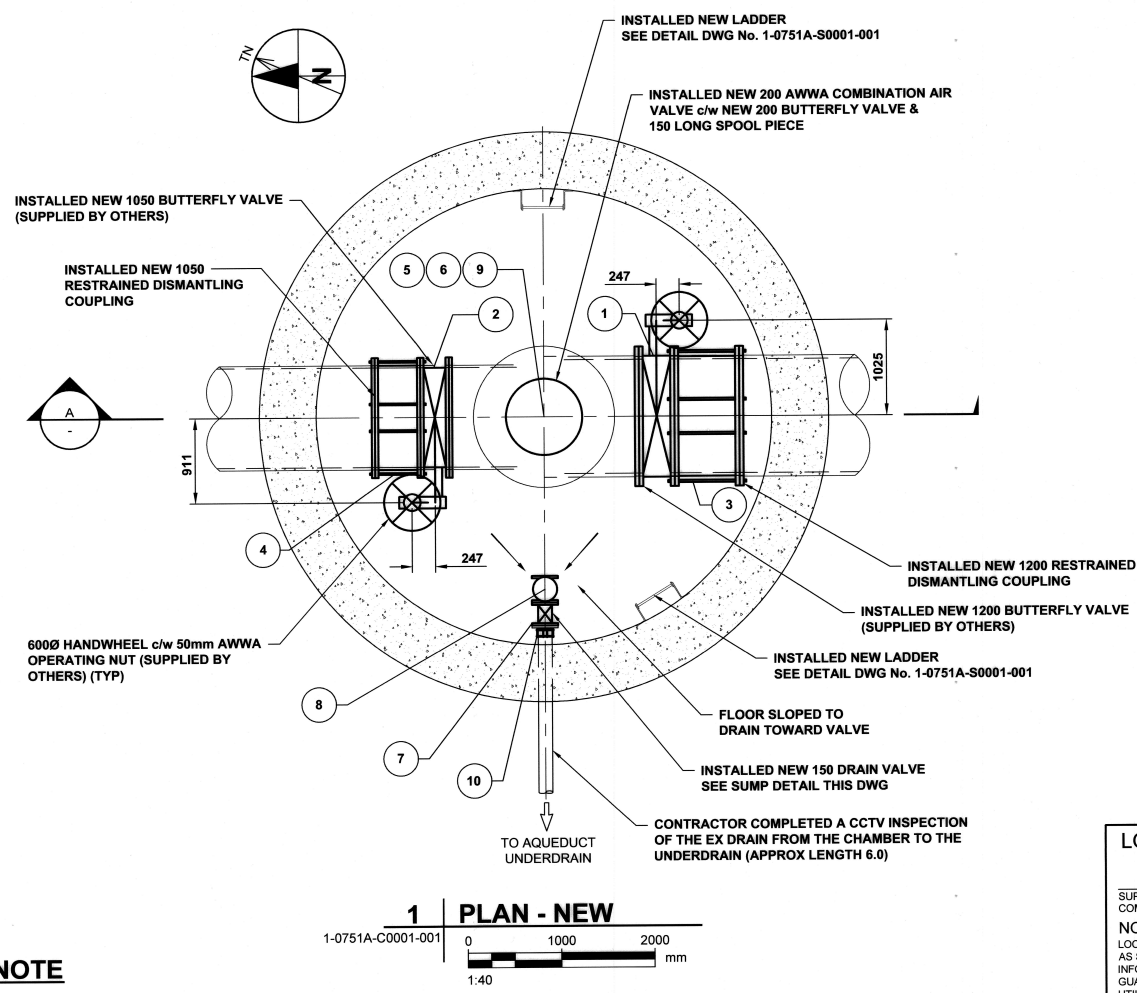
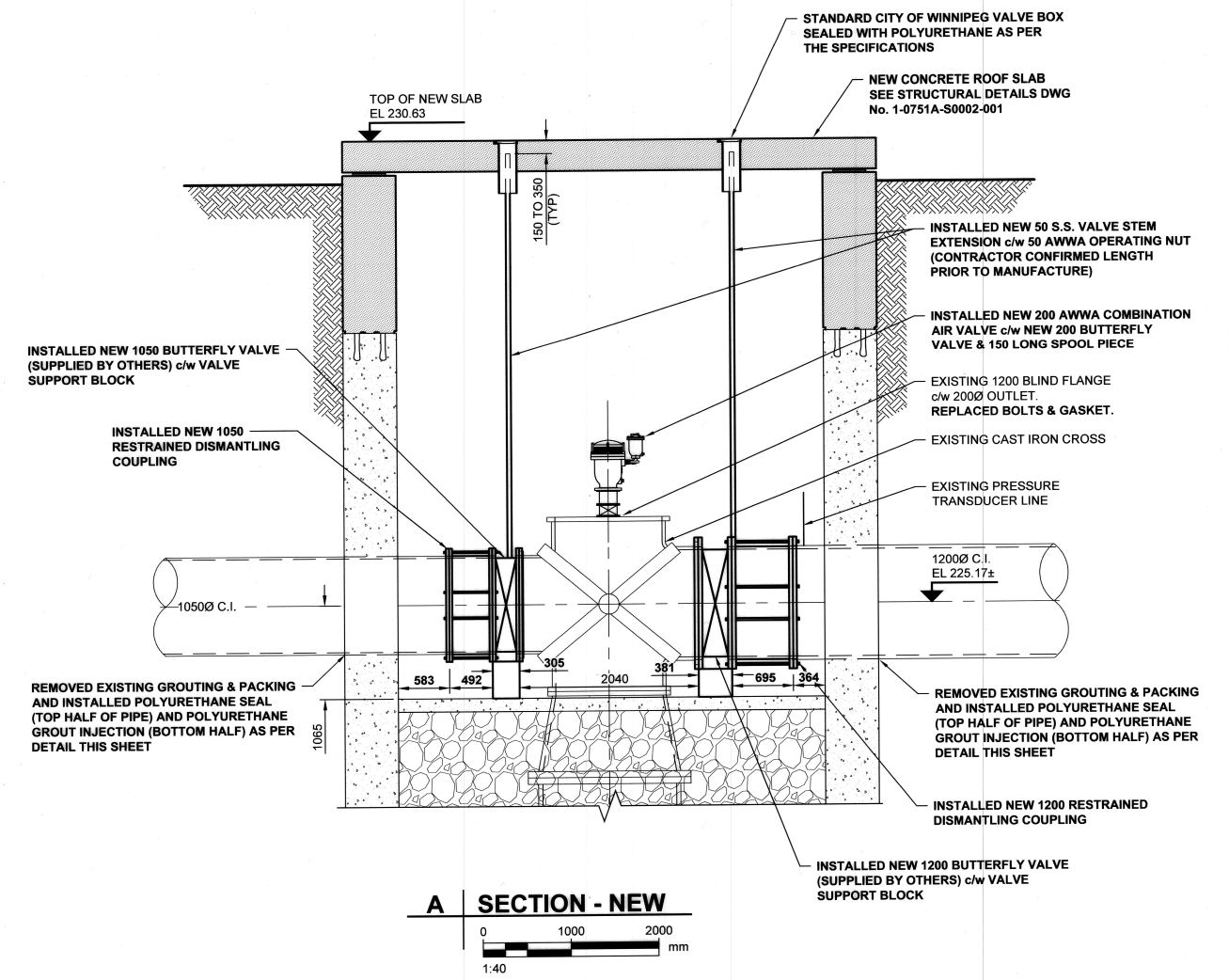
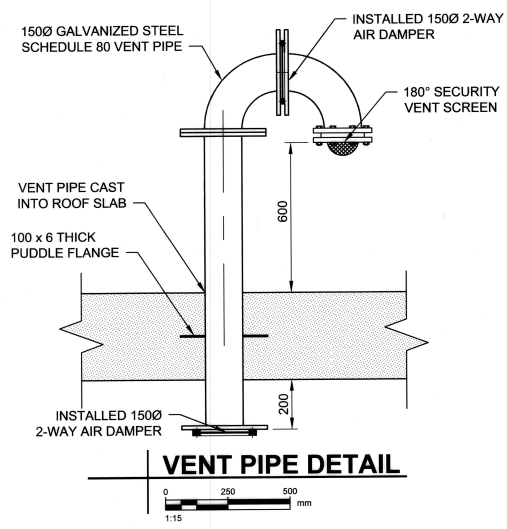
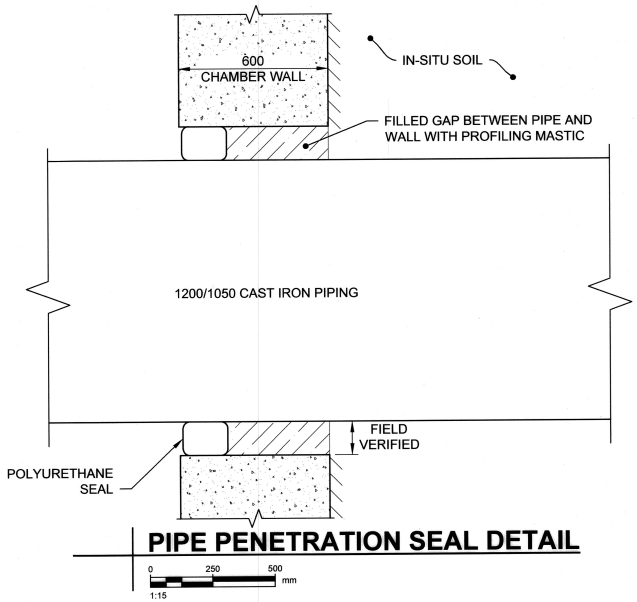
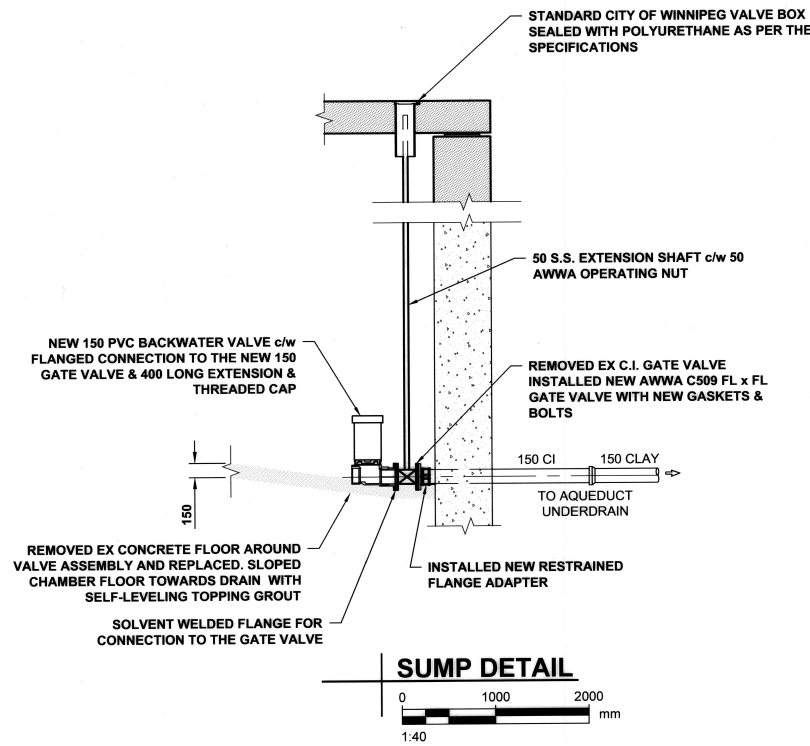
The City Of Winnipeg		Branch Operations (Waterworks)	
Waterworks, Waste & Disposal Division			
Designed By:	Drawn By:	Scale:	
	X	1" = 10'-0"	
Checked By:	Date:	Drawing No.	
	FEB 3/76	C-518	
Approved:			

TACHE BOOSTER PUMPING STATION PLOT PLAN

D SIZE 22" x 34" (559mm x 864mm)

PLOT: 9/19/2019 1:58:43 PM

AECOM REVIEW DRFT CHK 4/8
AECOM FILE NAME: 60506849-SHT-30-0000-C-3002.dwg Saved By: demouidenw



- CONSTRUCTION NOTES:**
- SANDBLASTED & PAINTED ALL EXPOSED STEEL SURFACES.
 - DISCONNECTED THE EXISTING ELECTRIC ACTUATOR WIRING & COILED NEATLY WITHIN THE CHAMBER. THE OWNER DISCONNECTED POWER TO THE VALVE ACTUATOR WITHIN THE STATION PRIOR TO CONSTRUCTION.
 - CONTRACTOR SUPPLIED NEW BOLTING HARDWARE & GASKETS FOR ALL DISASSEMBLED FLANGE CONNECTIONS.

ENGINEERS GEOSCIENTISTS MANITOBA
Certificate of Authorization
AECOM Canada Ltd.
No. 4671 Date: 2/27/19

RECORD DRAWING

CONSTRUCTION COMPLETION DATE: JUNE 2018

BID OPPORTUNITY NO. 805-2016

LOCATION APPROVED
UNDERGROUND STRUCTURES

NO.	REVISIONS	DATE	BY
2	ISSUED FOR RECORD	19/05/03	Wjd
1	ISSUED FOR ADDENDUM 1	16/10/31	KLC
0	ISSUED FOR CONSTRUCTION	16/10/13	KLC
NO.	REVISIONS	YY/MM/DD	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.

AECOM

DESIGNED BY	ADB	CHECKED BY	[Signature]
DRAWN BY	ADL	APPROVED BY	[Signature]
HOR. SCALE	AS NOTED	RELEASED FOR CONSTRUCTION	[Signature]
VERT. SCALE	N/A	DATE	

PROFESSIONAL'S SEAL
PROVINCE OF MANITOBA
BRAUN
REGISTERED PROFESSIONAL ENGINEER
CONSULTANT DRAWING NO.
60506849-SHT-30-0000-C-3002

THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT

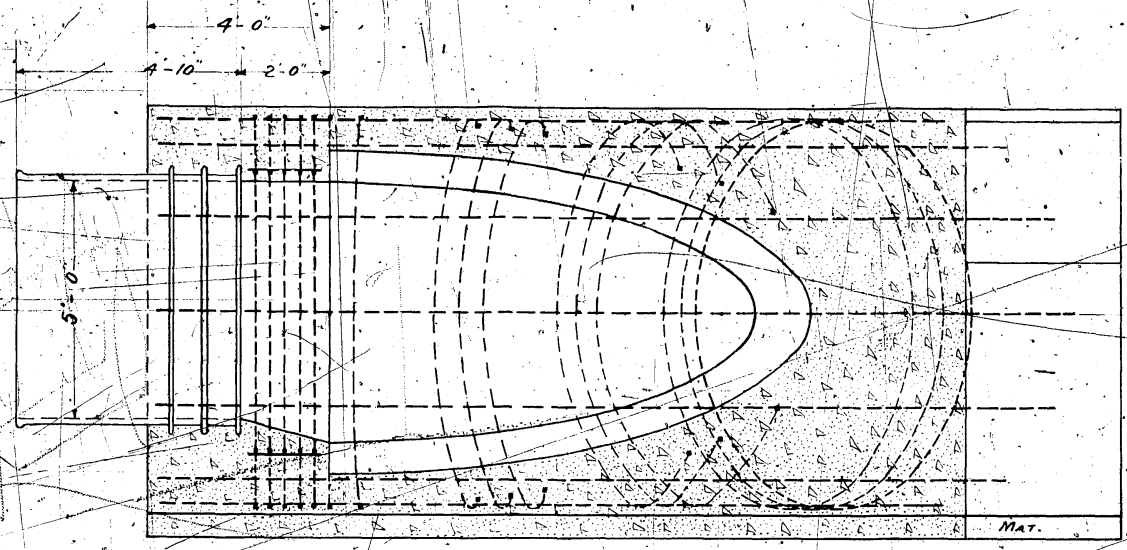
BRANCH I AQUEDUCT
EAST TUNNEL SHAFT UPGRADES

PROPOSED PIPING MODIFICATIONS
PLANS, SECTIONS & DETAILS

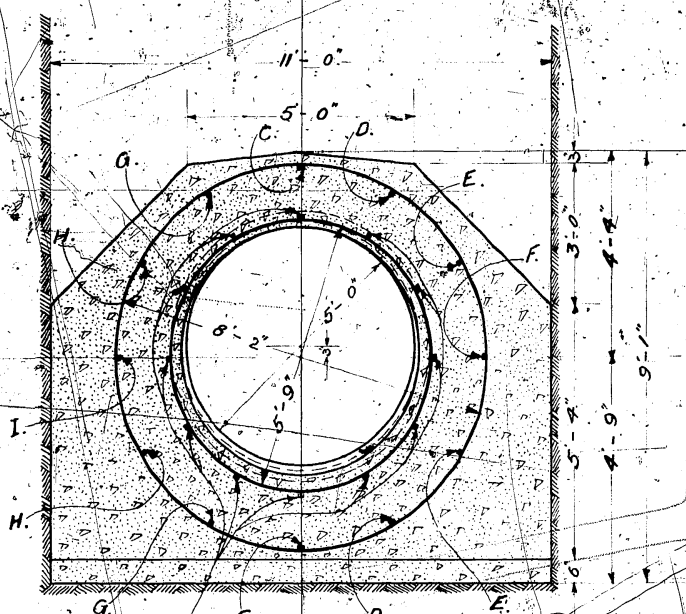
SHEET 4 OF 8
CITY DRAWING NUMBER
1-0751A-C0003-001 2

NOTE
SEE DRAWING No. 1-0751A-D0001-001 FOR A LIST OF PROJECT DRAWINGS

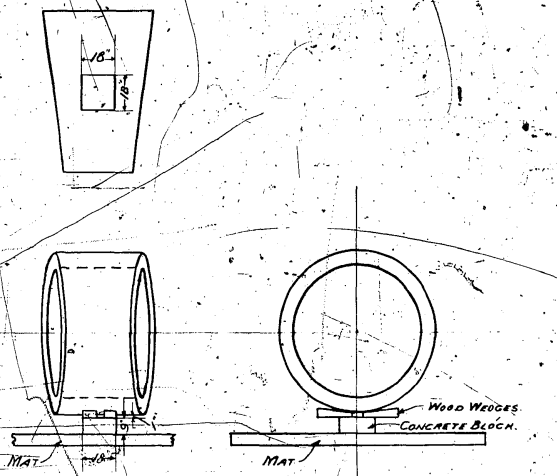
METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES



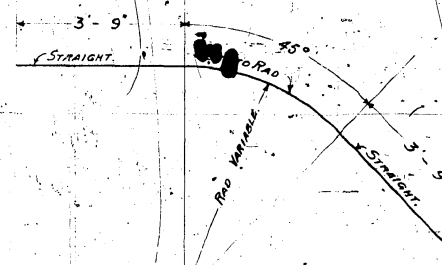
SECTION A-A.



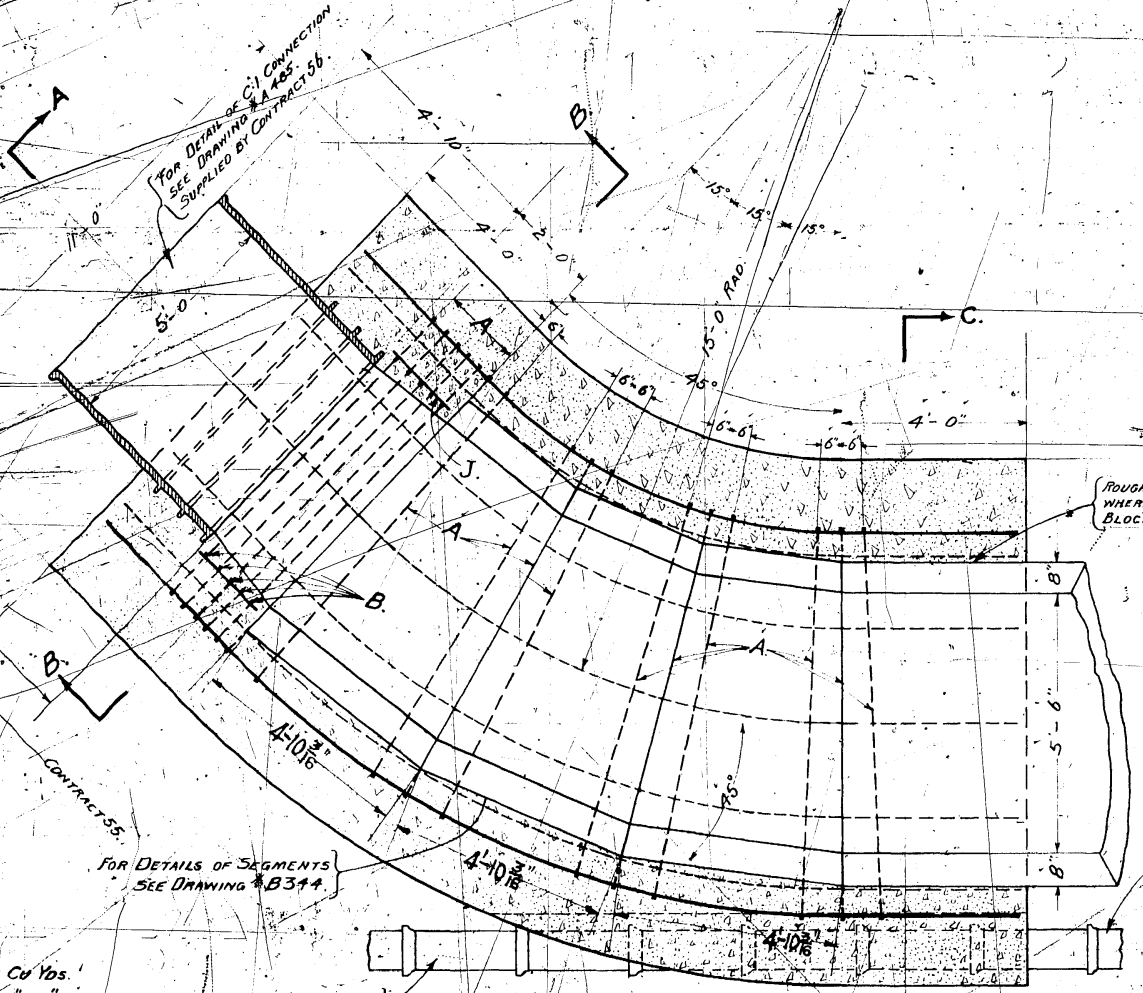
SECTION B-B.



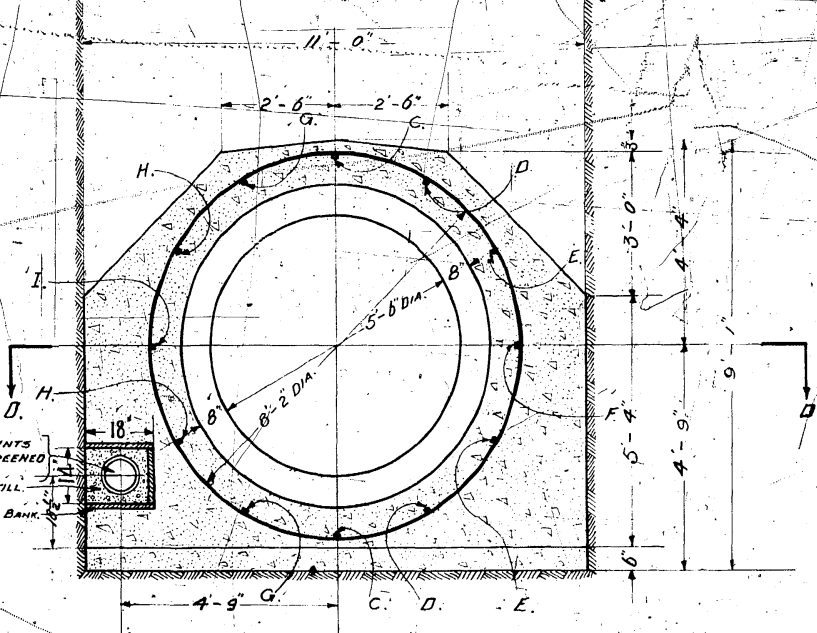
METHOD OF SUPPORTING SEGMENTS FOR CONCRETING.
SCALE 1/4" = 1 FT.



DETAIL OF BENT BARS C TO I.



SECTION D-D.



SECTION C-C.

BILL OF REINFORCING STEEL.				
LETTER	NO.	SIZE	LENGTH	DESCRIPTION
A.	16	5/8"	27'-6"	BENT TO 8'-2" DIA.
B.	5	"	20'-0"	5'-9"
C.	2	"	19'-3"	15'-0" RAD.
D.	2	"	17'-9"	13'-0"
E.	2	"	16'-6"	11'-6"
F.	1	"	16'-3"	11'-0"
G.	2	"	20'-10"	17'-0"
H.	2	"	22'-0"	18'-6"
I.	1	"	22'-6"	19'-0"
J.	12	"	1'-9"	STRAIGHT.

CONCRETE IN ELBOW = 35.80 Cu Yds.
 " MAT = 4.00 " "
 " BLOCKS = 0.20 " "
 TOTAL = 40.00 " "
 STEEL = 1052.5 LBS.

FOR DETAILS OF SEGMENTS
 SEE DRAWING #B344.

TO CONNECT TO MANHOLE ON
 CONTRACT 56 SEE DRG D439

ROUGHEN OUTSIDE OF PIPE
 WHERE IT ENTERS ELBOW
 BLOCK.

8 VITRIFIED PIPE JOINTS
 SURROUNDED WITH SCREENED
 GRAVEL BACKFILL.
 WOOD BOX OPEN TOWARDS BANK.

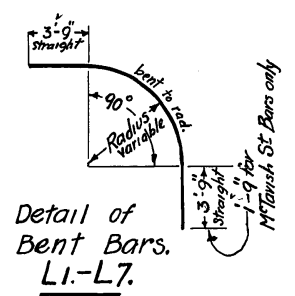
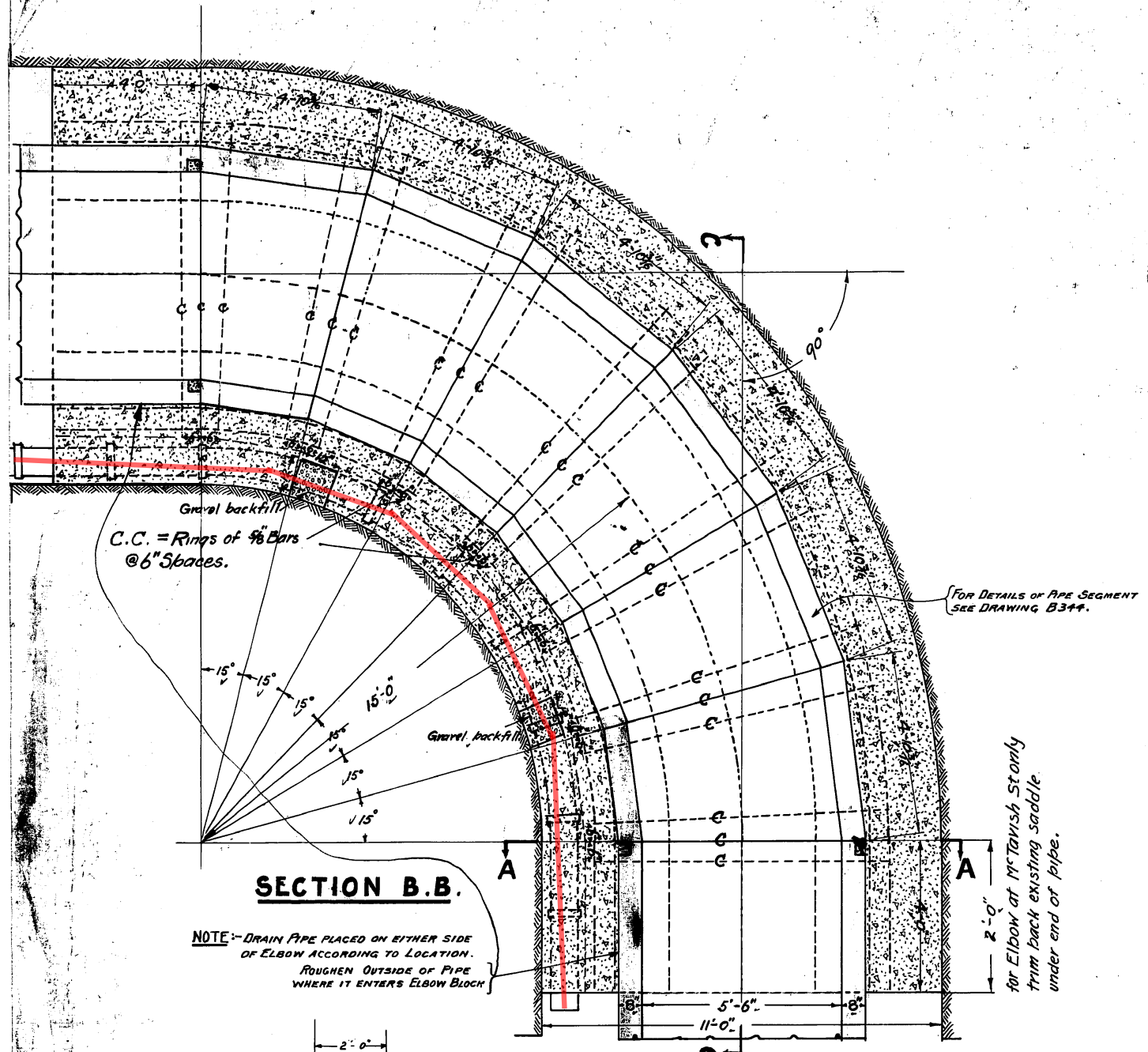
DRAWN BY: R.S.
 TRACED BY: R.S.
 CHECKED BY: [Signature]
 APPROVED: [Signature]

W. L. Chace
 CHIEF ENGINEER

GREATER WINNIPEG WATER DISTRICT.
 5'-6" PRESSURE PIPE LINE 45° ELBOW.
 CONNECTION TO PUMP WELL ON CONTRA

CONTRACT #55.

D500.



Bill of Reinforcing Steel.

Letter	No	Size	Length	Description
C	21	5/8" Sq	27'-6"	bent to ring 8'-2" dia.
L1	1		24'-9"	" " radius 11'-0" Straight at
L2	2		25'-7"	" " " 11'-6" ends.
L3	2		27'-11"	" " " 13'-0"
L4	2		31'-1"	" " " 15'-0"
L5	2		34'-3"	" " " 17'-0"
L6	2		36'-7"	" " " 18'-6"
L7	1		37'-4"	" " " 19'-0"

FOR McTAVISH ST ELBOW CUT 2'-0" OFF STRAIGHT PART OF EACH BAR.

QUANTITIES OF MATERIAL.

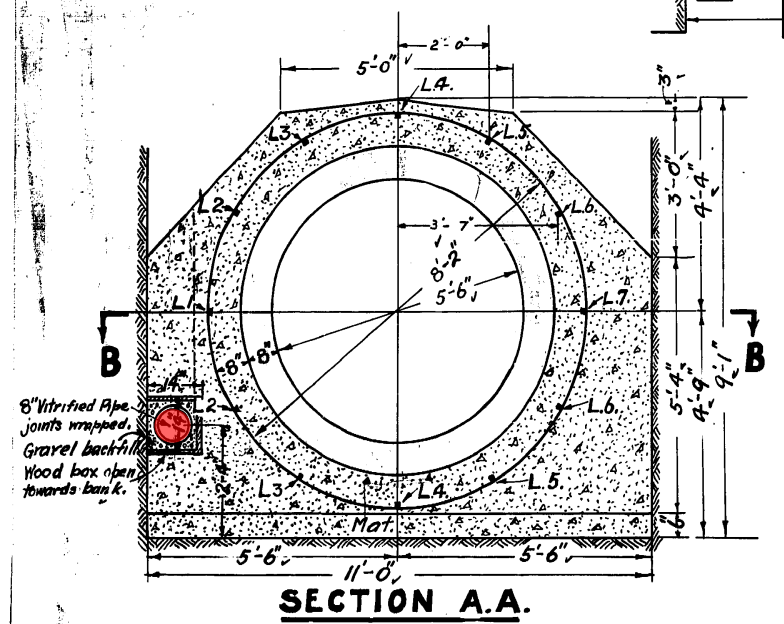
	STANDARD ELBOW.		McTAVISH ST ELBOW.
CONCRETE.	58.75 Cu Yds.	CONCRETE.	55.0 Cu Yds.
STEEL.	1264 LBS.	STEEL.	1230 LBS.
LUMBER.	112 F.B.M.	LUMBER.	100 F.B.M.

SECTION B.B.

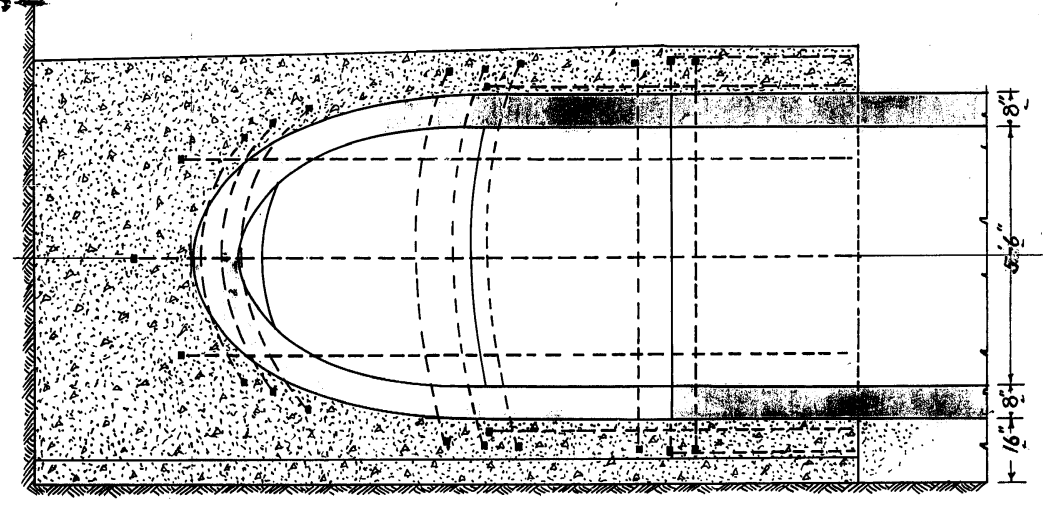
NOTE - DRAIN PIPE PLACED ON EITHER SIDE OF ELBOW ACCORDING TO LOCATION. ROUGHEN OUTSIDE OF PIPE WHERE IT ENTERS ELBOW BLOCK

2'-0" for Elbow at McTAVISH ST only trim back existing saddle under end of pipe.

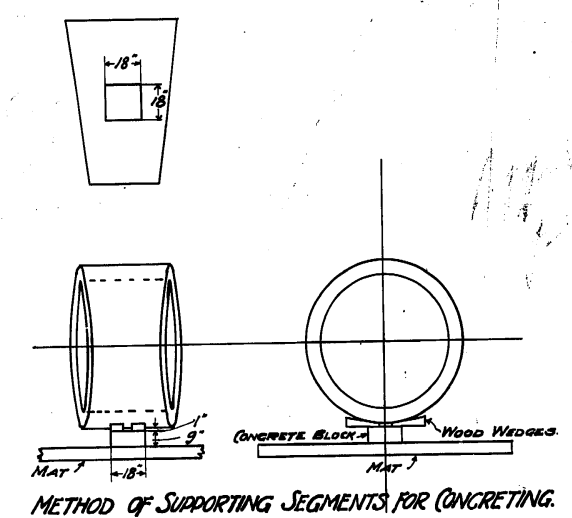
Detail of Bent Bars L1-L7.



SECTION A.A.



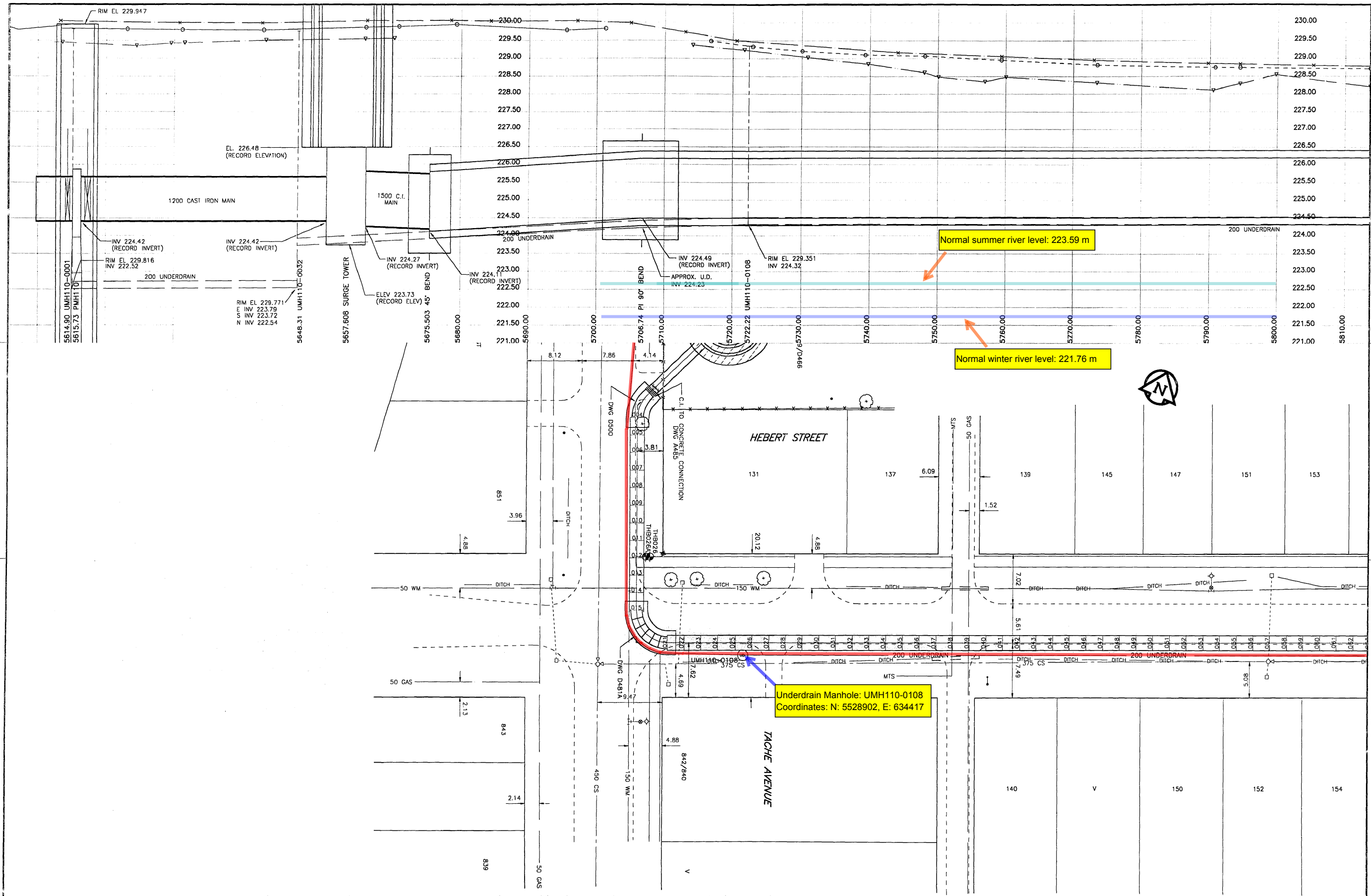
SECTION C.C.



METHOD OF SUPPORTING SEGMENTS FOR CONCRETING.

CONTRACT # 55.

W. G. Chan



150 mm WM	WATERMAIN	300 mm LDS	LAND DRAINAGE SEWER	HYDRO	100	AQUEDUCT JOINT	AQUEDUCT PIPE
⊕	HYDRANT	250 mm WWS	WASTE WATER SEWER	COMMUNICATION	⊕	UNDERDRAIN MANHOLE	UNDERDRAIN
⊙	VALVE		MANHOLE	TRAFFIC SIGNALS	⊕	UNDERDRAIN RISER	GROUNDLINE
⊖	REDUCER		CATCH BASIN	PEDESTAL	⊕	UNDERDRAIN WELL	CENTERLINE
⊕	COUPLING		CURB INLET	SIGNAL CONTROLLER	⊕	TESTHOLE	N/W GUTTER
⊕	WM FITTINGS		CULVERT	GAS	⊕	PEIZOMETER	S/E GUTTER
⊕	CURB STOP		DITCH	STEAM HEAT	⊕		N/W DITCH
⊕	EDGE OF PAVEMENT		LAMP STANDARD	FENCE	⊕		S/E DITCH
⊕	RAILWAY TRACK		TRAFFIC SIGNAL	TREE	⊕		N/W PROPERTY LINE
⊕	GEODETIC BENCHMARK		WOOD POLE	BUILDING	⊕		S/E PROPERTY LINE
⊕	SURVEY BAR		POLE ANCHOR	SUBSURFACE STRUCTURE	⊕		
⊕	EXISTING	⊕	EXISTING	⊕	⊕	EXISTING	⊕
⊕	LEGEND - PLAN	⊕	LEGEND - PLAN	⊕	⊕	LEGEND - PLAN	⊕
⊕		⊕		⊕	⊕		⊕
⊕		⊕		⊕	⊕		⊕

NO.	REVISIONS	DATE	BY
DATA SOURCES			
Aquaduct Joints: Interpreted From Manholes Located in 1994			
UMA Total Station Survey and 1995 Internal Inspections			
Unless Otherwise Noted			
Surface Features: UMA Total Station Survey (1994)			
Legal Right of Way M11 to M12: City of Winnipeg (1994)			
Legal Right of Way M12 to M17: Pollock & Wright (1995)			
Utilities: Compiled from Information Obtained from			
City of Winnipeg Underground Structures (1994)			
METRIC			
WHOLE NUMBERS INDICATE MILLIMETRES			
DECIMALIZED NUMBERS INDICATE METRES			

UMA
UMA Engineering Ltd.
Engineers and Planners

CGSS
CHYM GORE & STORRE LIMITED

DESIGNED BY: BC
CHECKED BY: CCM

DRAWN BY: BC/MAG
APPROVED BY: CCM

HOR. SCALE: 1:250
VERTICAL: 1:50

DATE: _____

ENGINEER'S SEAL

PROF. REG. NO. 99
C. C. MACEY
REGISTERED ENGINEER

CONSULTANT DRAWING NO. 26
41-02-0265-136-01

THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

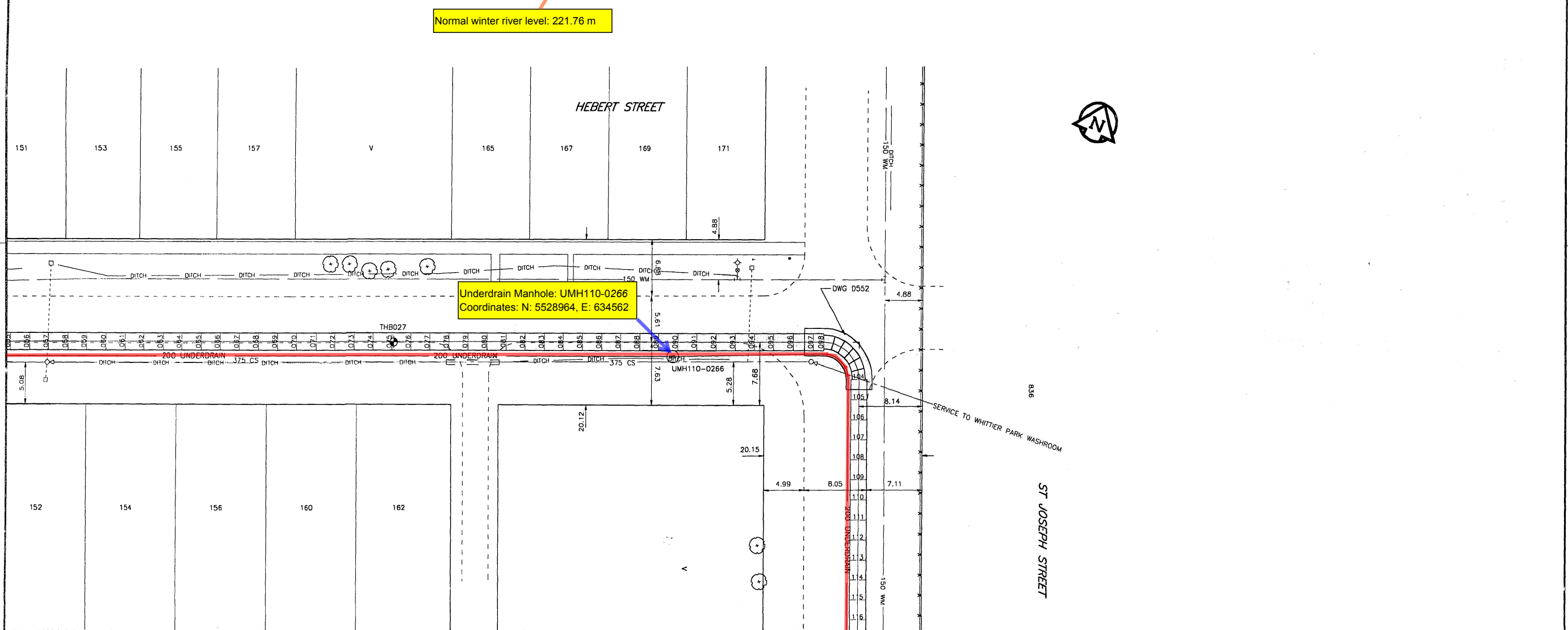
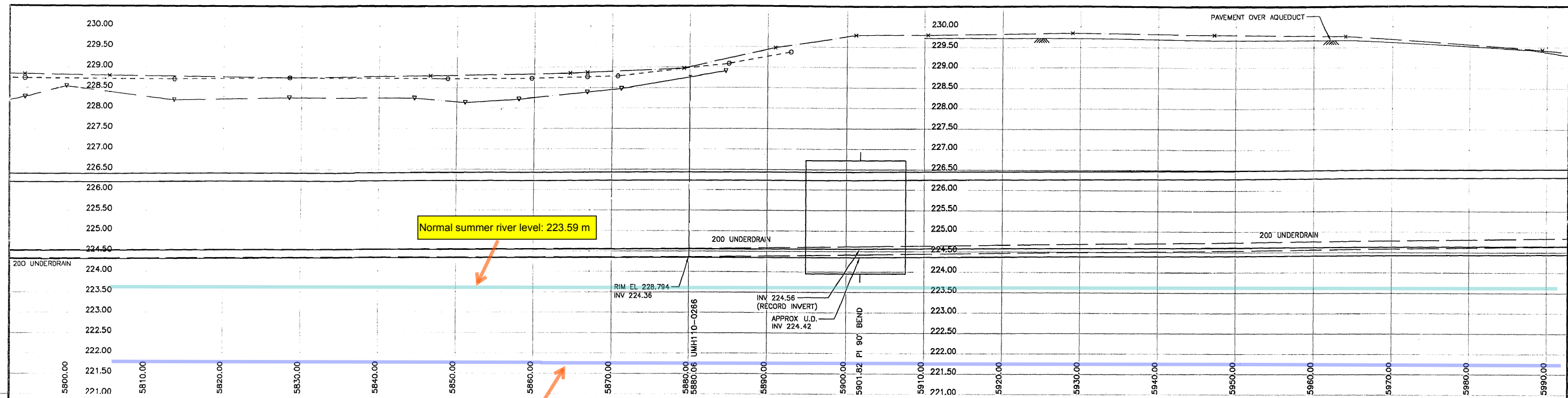
**Plan and Profile of
Branch I Aqueduct**

From Joint J110-003 To Joint J110-062
From Mile 3.54 To Mile 3.63

SHEET 26 OF 214
CITY DRAWING NUMBER
D-6304

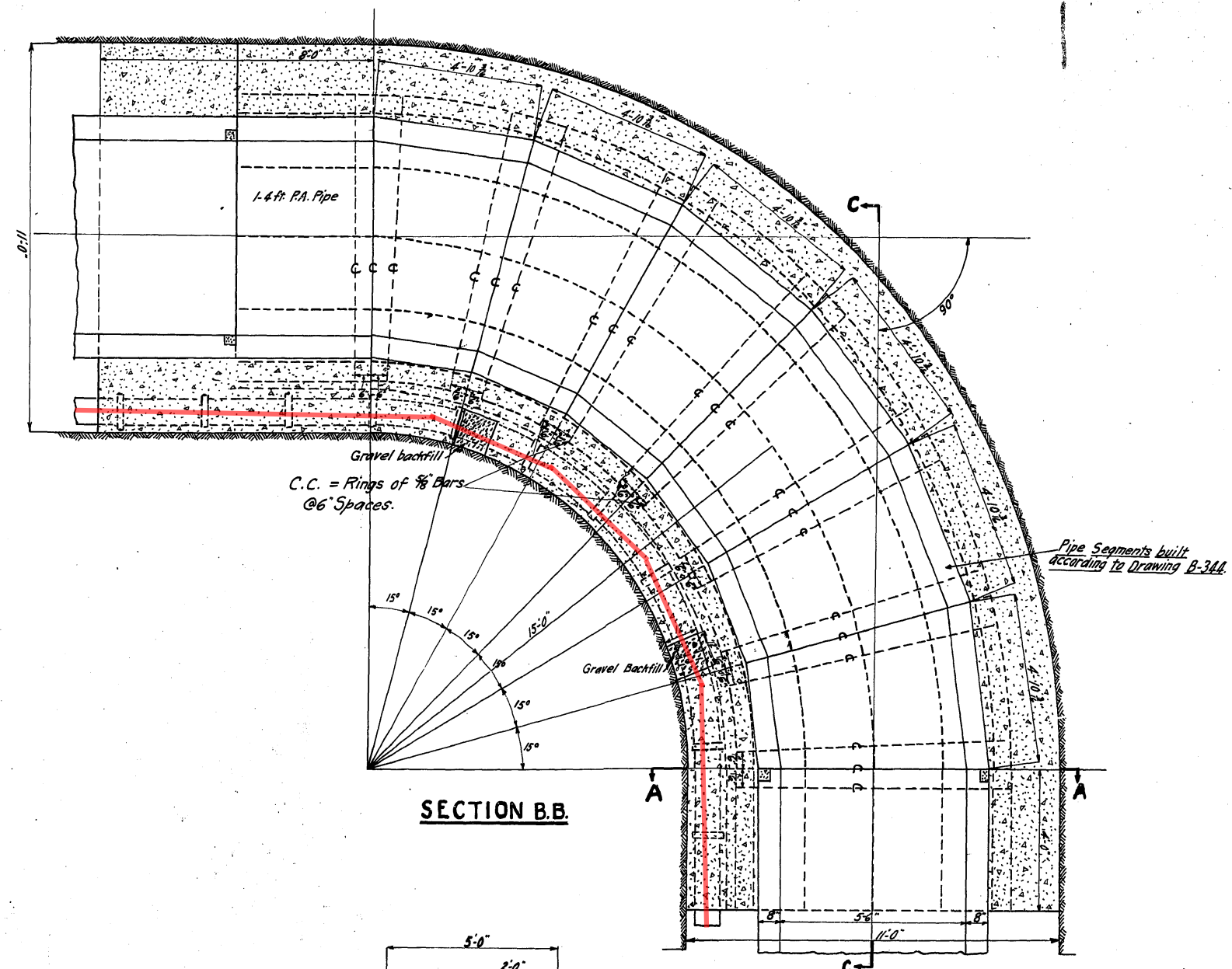
REV

D-6304.dwg

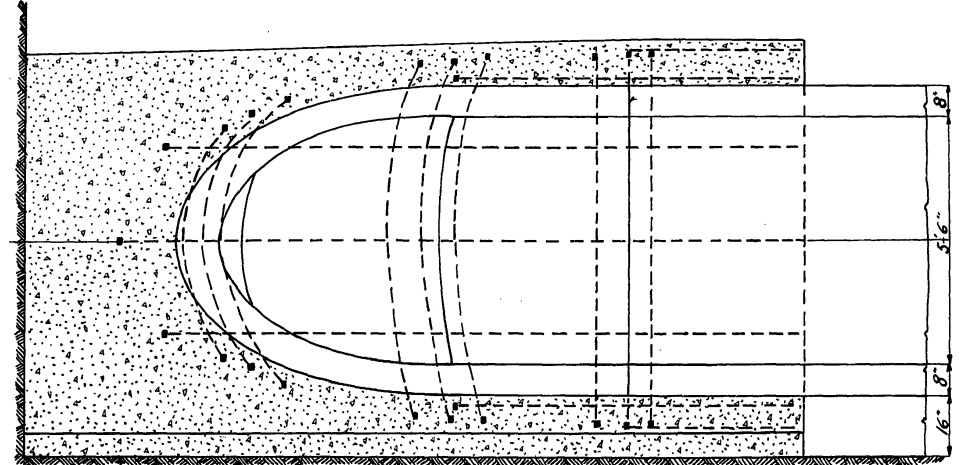
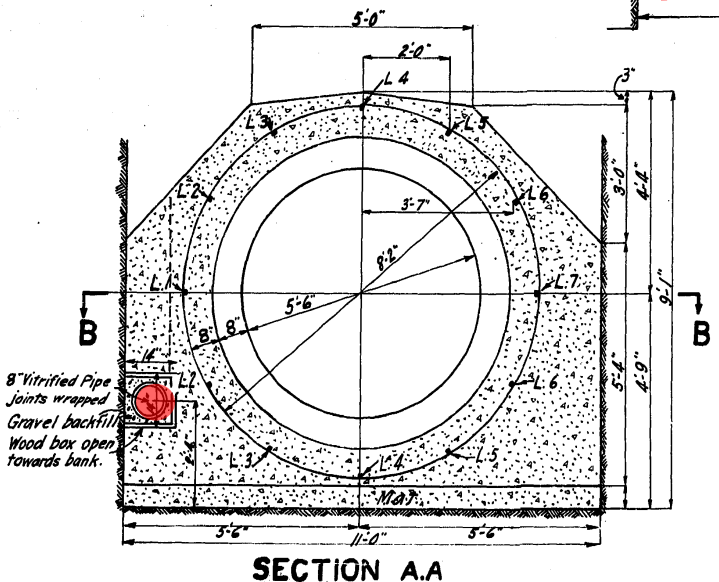
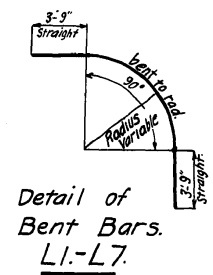


150 mm WM	WATERMAIN	300 mm LDS	LAND DRAINAGE SEWER	HYDRO	AQUEDUCT JOINT	AQUEDUCT PIPE	NO. REVISIONS	DATE	BY
⊕	HYDRANT	250 mm WWS	WASTE WATER SEWER	COMMUNICATION	UNDERDRAIN MANHOLE	UNDERDRAIN	UMA UMA Engineering Ltd. Engineers and Planners		
⊙	VALVE	○	MANHOLE	TRAFFIC SIGNALS	UNDERDRAIN RISER	GROUNDLINE	CGSS CHYM GORE & STORRE LIMITED		
⊖	REDUCER	□	CATCH BASIN	PEDESTAL	UNDERDRAIN WELL	CENTERLINE	ENGINEER'S SEAL REGISTERED PROFESSIONAL ENGINEER C. G. MAJEWY REG. NO. 9900 1990 DEC 99		
⊕	COUPLING	△	CURB INLET	SIGNAL CONTROLLER	TESTHOLE	N/W GUTTER	THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT		
⊕	WM FITTINGS	⊕	CULVERT	GAS	PEIZOMETER	S/E GUTTER	Plan and Profile of Branch I Aqueduct		
⊕	CURB STOP	⊕	DITCH	STEAM HEAT		N/W DITCH	SHEET 27 OF 214		
⊕	EDGE OF PAVEMENT	⊕	LAMP STANDARD	FENCE		S/E DITCH	CITY DRAWING NUMBER		
⊕	RAILWAY TRACK	⊕	TRAFFIC SIGNAL	TREE		N/W PROPERTY LINE	From Joint J110-055 To Joint J110-116		
⊕	GEODETIC BENCHMARK	⊕	WOOD POLE	BUILDING		S/E PROPERTY LINE	From Mile 3.62 To Mile 3.71		
⊕	SURVEY BAR	⊕	POLE ANCHOR	SUBSURFACE STRUCTURE			D-6305		
⊕	EXISTING	⊕	EXISTING	EXISTING	EXISTING	EXISTING	CONSULTANT DRAWING NO. 27 41-02-D265-136-01		
⊕	LEGEND - PLAN	⊕	LEGEND - PLAN	LEGEND - PLAN	LEGEND - PLAN	LEGEND - PROFILE	H.R. SCALE: 1:250 VERTICAL: 1:50		

D-6305.dwg



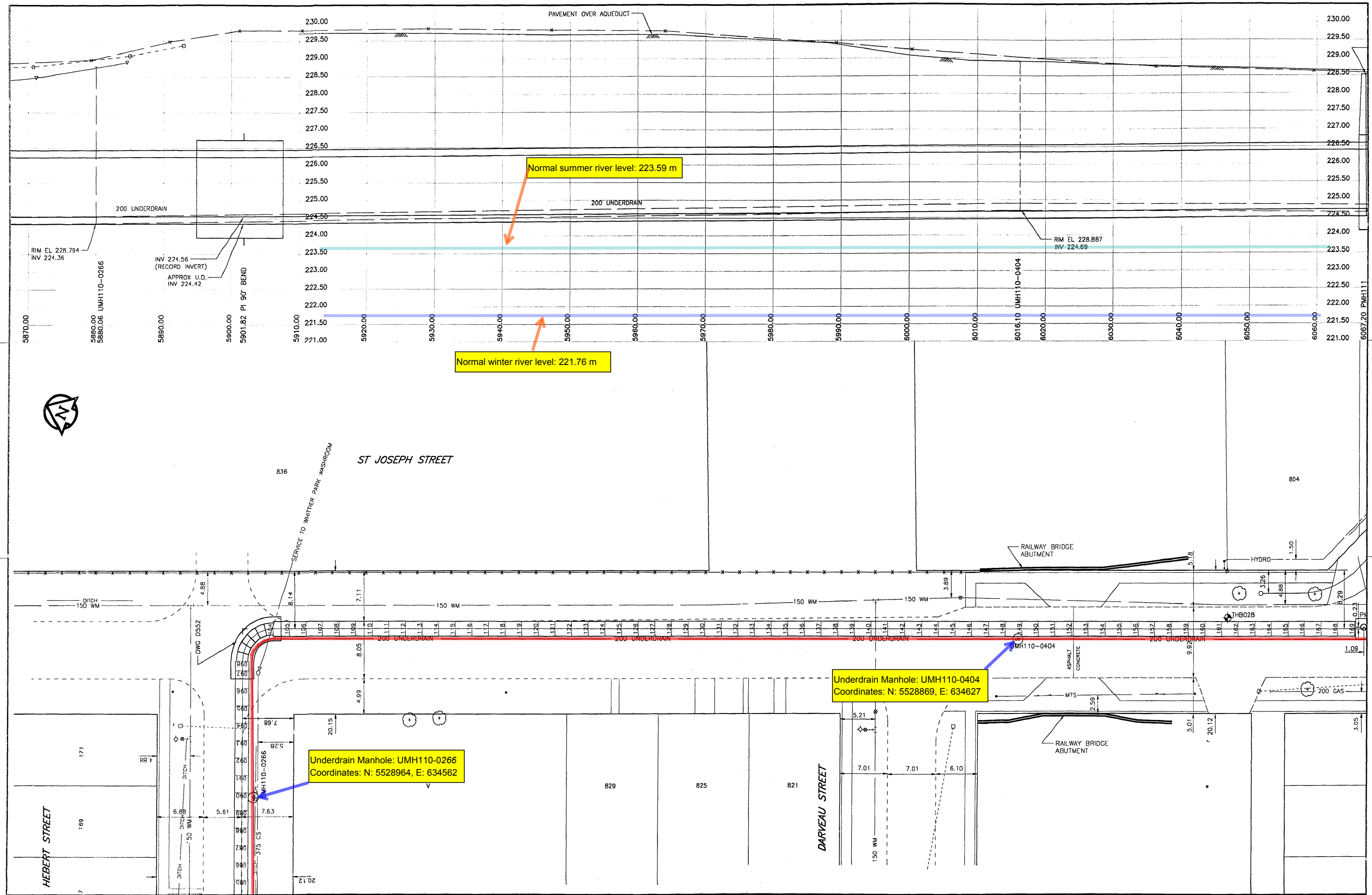
Bill of Reinforcing Steel				
Letter	No.	Size	Length	Description
C	21	3/8" Sq.	27'-6"	Bent to ring 8'-2" dia.
L.1	1		24'-9"	" " radius 11'-0" Straight at
L.2	2		25'-7"	" " " 11'-6" ends
L.3	2		27'-11"	" " " 13'-0"
L.4	2		31'-1"	" " " 15'-0"
L.5	2		34'-3"	" " " 17'-0"
L.6	2		36'-7"	" " " 18'-6"
L.7	1		37'-4"	" " " 19'-0"



Drawn by *[Signature]*
 Checked by *[Signature]*
 Approved by *[Signature]*

Chief Engineer
 Chairman of Committees

CONTRACT #55 D-552
 GREATER WINNIPEG WATER DISTRICT
 90° ELBOW STA. 194+32.0 TO STA. 194+67.7
 AS CONSTRUCTED
 28th Oct. 1912
 Scale 1/2 in. = 1 ft.



150 mm WM	WATERMAIN	300 mm LDS	LAND DRAINAGE SEWER	HYDRO	190	AQUEDUCT JOINT	AQUEDUCT PIPE
⊕	HYDRANT	250 mm WWS	WASTE WATER SEWER	COMMUNICATION	⊕	UNDERDRAIN MANHOLE	UNDERDRAIN
⊕	VALVE	○	MANHOLE	TRAFFIC SIGNALS	⊕	UNDERDRAIN RISER	GROUNDLINE
⊕	REDUCER	○	CATCH BASIN	PEDESTAL	⊕	UNDERDRAIN WELL	CENTERLINE
⊕	COUPLING	△	CURB INLET	SIGNAL CONTROLLER	⊕	TESTHOLE	N/W GUTTER
⊕	WM FITTINGS	⊕	CULVERT	GAS	⊕	PEIZOMETER	S/E GUTTER
⊕	CURB STOP	---	DITCH	STEAM HEAT	⊕		N/W DITCH
⊕	EDGE OF PAVEMENT	---	LAMP STANDARD	FENCE	⊕		S/E DITCH
⊕	RAILWAY TRACK	---	TRAFFIC SIGNAL	TREE	⊕		N/W PROPERTY LINE
⊕	GEODETIC BENCHMARK	---	WOOD POLE	BUILDING	⊕		S/E PROPERTY LINE
⊕	SURVEY BAR	---	POLE ANCHOR	SUBSURFACE STRUCTURE	⊕		
⊕	EXISTING	---	EXISTING	EXISTING	⊕		

NO.	REVISIONS	DATE	BY

DATA SOURCES
 Aqueduct Joints: Interpreted From Manholes Located in 1994
 UMA Total Station Survey and 1995 Internal Inspections
 Unless Otherwise Noted
 Surface Features: UMA Total Station Survey (1994)
 Legal Right of Way M11 to M12: City of Wpg LBS (1994)
 Legal Right of Way M12 to M17: Pollock & Wright (1995)
 Utilities: Compiled from Information Obtained From
 City of Winnipeg Underground Structures (1994)

METRIC
 WHOLE NUMBERS INDICATE MILLIMETRES
 DECIMALIZED NUMBERS INDICATE METRES

UMA
 UMA Engineering Ltd.
 Engineers and Planners

CSS
 CH2M GORE & STORRE LIMITED

DESIGNED BY: BC
 CHECKED BY: CCM

DRAWN BY: BC/MAG
 APPROVED BY: [Signature]

HOR. SCALE: 1:250
 VERTICAL: 1:50

RELEASED FOR CONSTRUCTION
 DATE: _____

ENGINEER'S SEAL
 PROFESSIONAL REGISTERED ENGINEER
 C.C. MACEY
 CONSULTANT DRAWING NO. 28
 41-02-0265-136-01

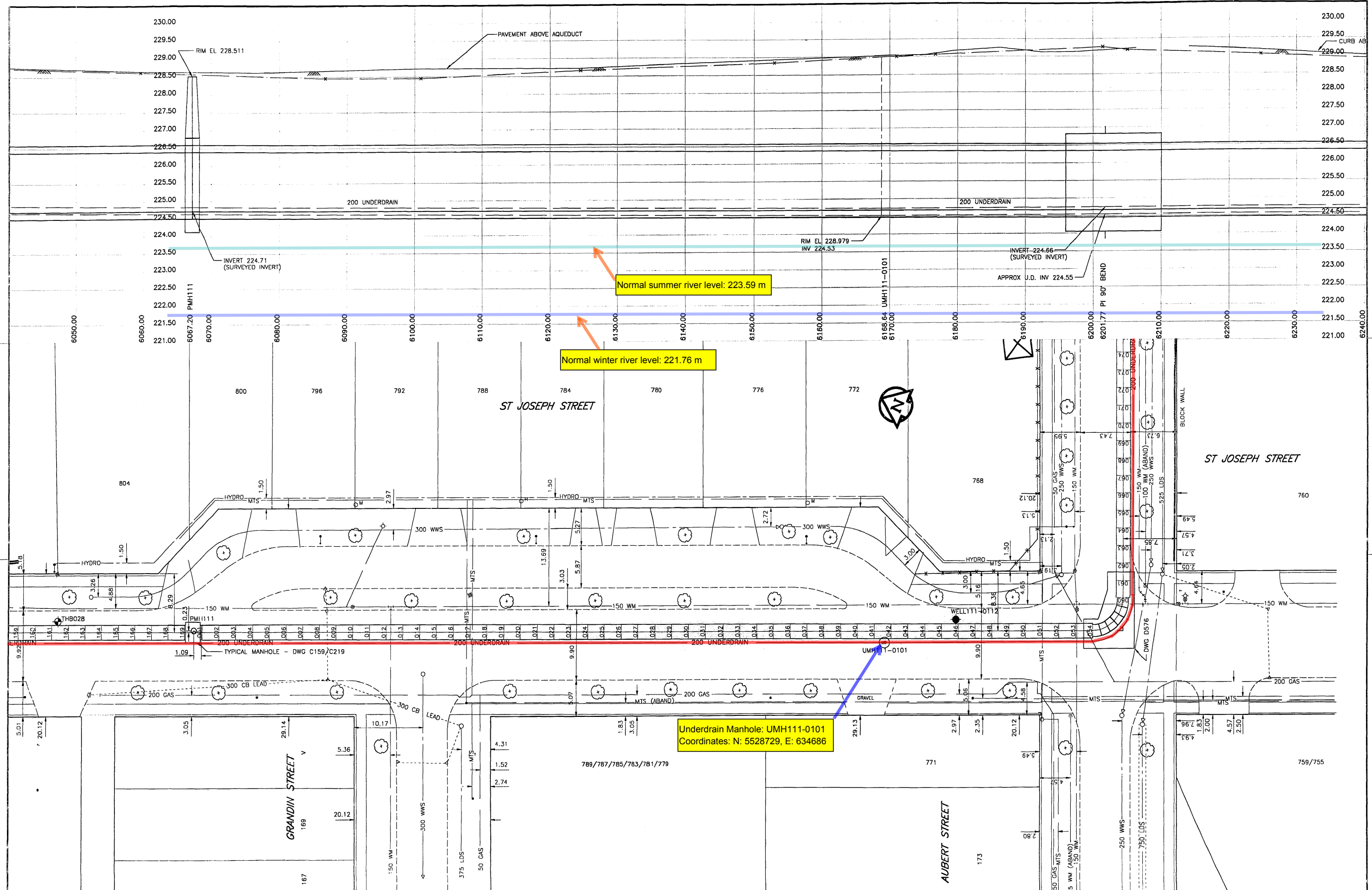
THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT

Plan and Profile of
 Branch I Aqueduct

From Joint J110-085 To Joint J110-169
 From Mile 3.66 To Mile 3.79

SHEET 28 OF 214
 CITY DRAWING NUMBER
D-6306 REV

D-6306.dwg



Normal summer river level: 223.59 m

Normal winter river level: 221.76 m

Underdrain Manhole: UMH111-0101
Coordinates: N: 5528729, E: 634686

150 mm WM	300 mm LGS	LAND DRAINAGE SEWER	HYDRO	AQUEDUCT JOINT	AQUEDUCT PIPE
WATERMAIN	WASTE WATER SEWER	MANHOLE	COMMUNICATION	UNDERDRAIN MANHOLE	UNDERDRAIN
VALVE	MANHOLE	TRAFFIC SIGNALS	TRAFFIC SIGNALS	UNDERDRAIN RISER	GROUNDLINE
REDUCER	CATCH BASIN	PEDESTAL	PEDESTAL	UNDERDRAIN WELL	CENTERLINE
COUPLING	CURB INLET	SIGNAL CONTROLLER	SIGNAL CONTROLLER	TESTHOLE	N/W GUTTER
WM FITTINGS	CULVERT	GAS	GAS	PEIZOMETER	S/E GUTTER
CURB STOP	DITCH	STEAM HEAT	STEAM HEAT		N/W DITCH
EDGE OF PAVEMENT	LAMP STANDARD	FENCE	FENCE		S/E DITCH
RAILWAY TRACK	TRAFFIC SIGNAL	TREE	TREE		N/W PROPERTY LINE
GEODETIC BENCHMARK	WOOD POLE	BUILDING	BUILDING		S/E PROPERTY LINE
SURVEY BAR	POLE ANCHOR	SUBSURFACE STRUCTURE	SUBSURFACE STRUCTURE		
EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PROFILE

NO.	REVISIONS	DATE	BY

DATA SOURCES
 Aqueduct Joints: Interpreted From Manholes Located in 1994
 UMA Total Station Survey and 1995 Internal Inspections
 Unless Otherwise Noted
 Surface Features: UMA Total Station Survey (1994)
 Legal Right of Way M11 to M12: City of Wpg LBS (1994)
 Legal Right of Way M12 to M17: Pollock & Wright (1995)
 Utilities: Compiled from Information Obtained From
 City of Winnipeg Underground Structures (1994)

METRIC
 WHOLE NUMBERS INDICATE MILLIMETRES
 DECIMALIZED NUMBERS INDICATE METRES

UMA Engineering Ltd.
 Engineers and Planners

CASS
 CHAM GORE & STORRE LIMITED

DESIGNED BY: BC
 CHECKED BY: CCM

DRAWN BY: BC/MAG
 APPROVED BY: CCM

HOR. SCALE: 1:250
 VERTICAL: 1:50

RELEASED FOR CONSTRUCTION
 DATE:

ENGINEER'S SEAL
 PROVINCE OF MANITOBA
 REGISTERED ENGINEER
 C. C. MACEY
 CONSULTANT DRAWING NO. 29
 41-02-D265-136-01

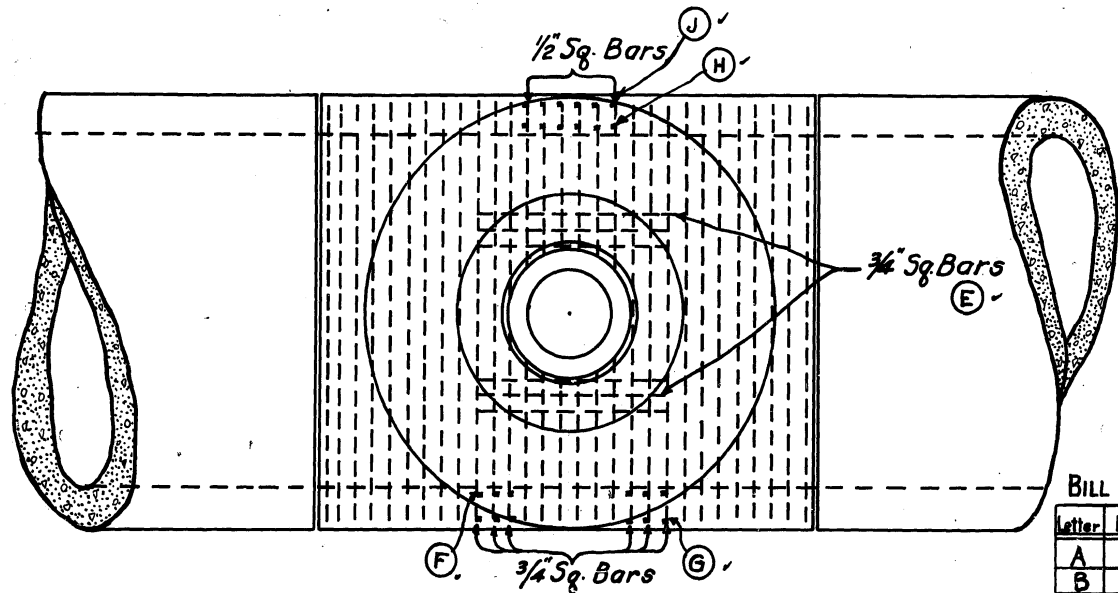
THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT

Plan and Profile of
 Branch I Aqueduct

From Joint J110-159 To Joint J111-074
 From Mile 3.77 To Mile 3.90

SHEET 29 OF 214
 CITY DRAWING NUMBER
D-6307 REV

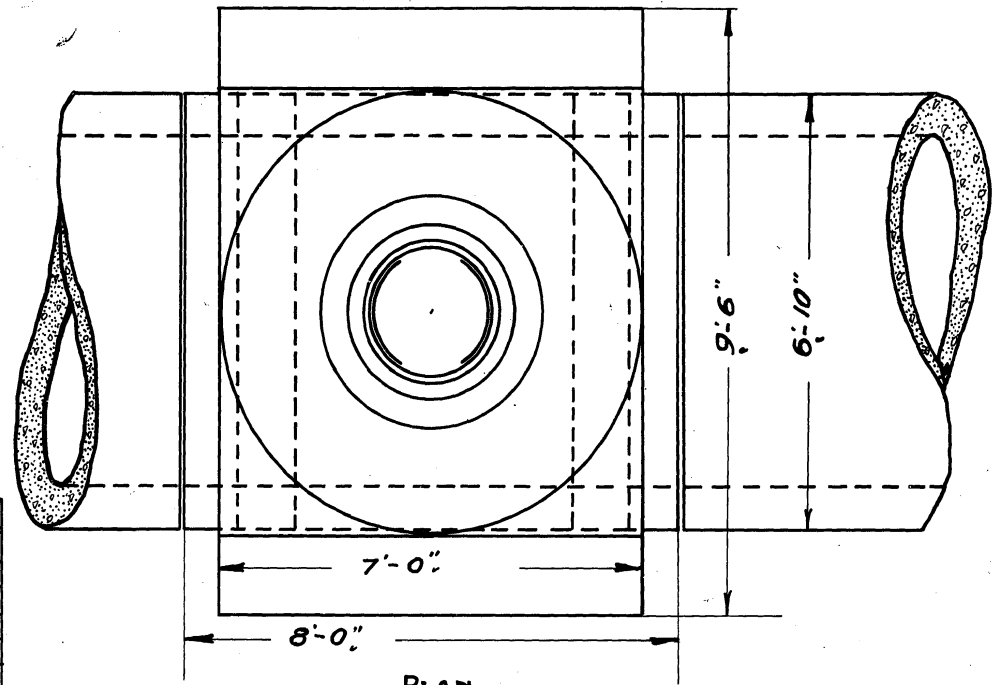
AutoCAD Release 14



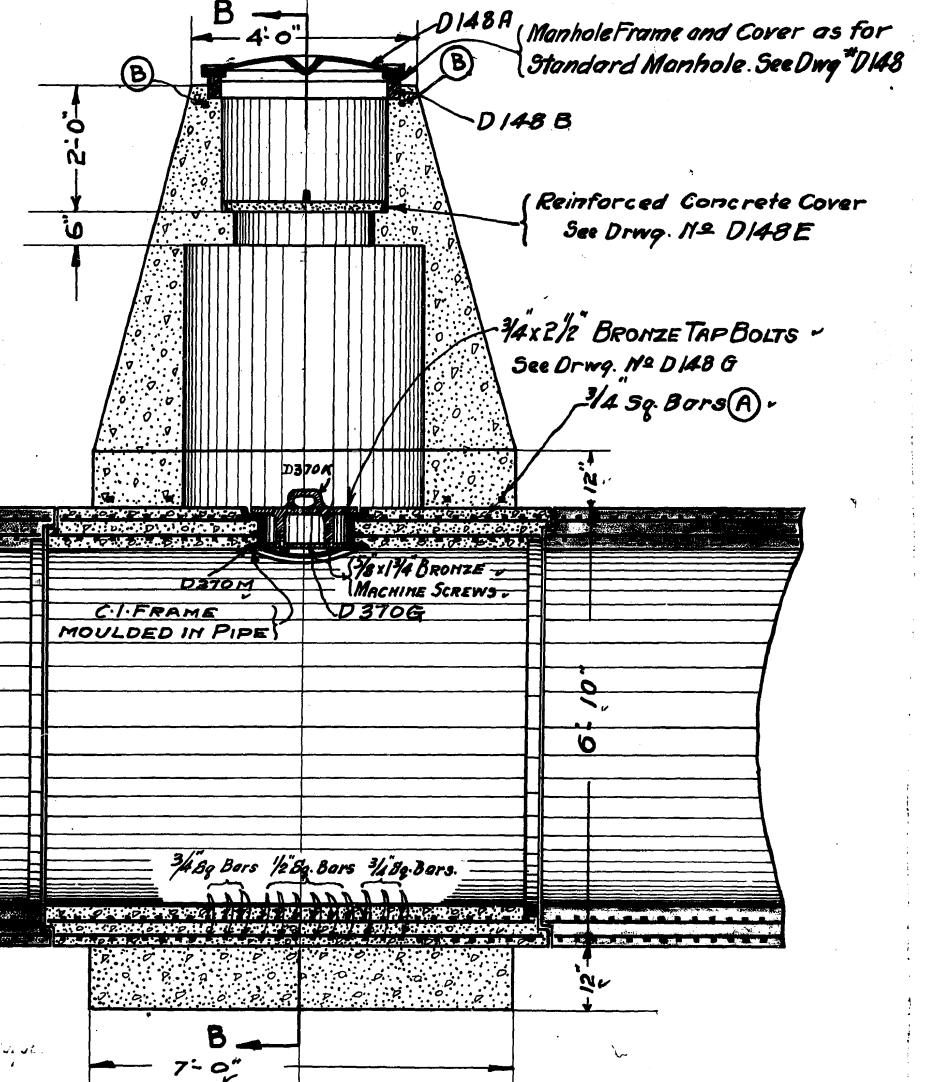
ARRANGEMENT OF REINFORCING STEEL AROUND MANHOLE

BILL OF STEEL FOR ONE MANHOLE

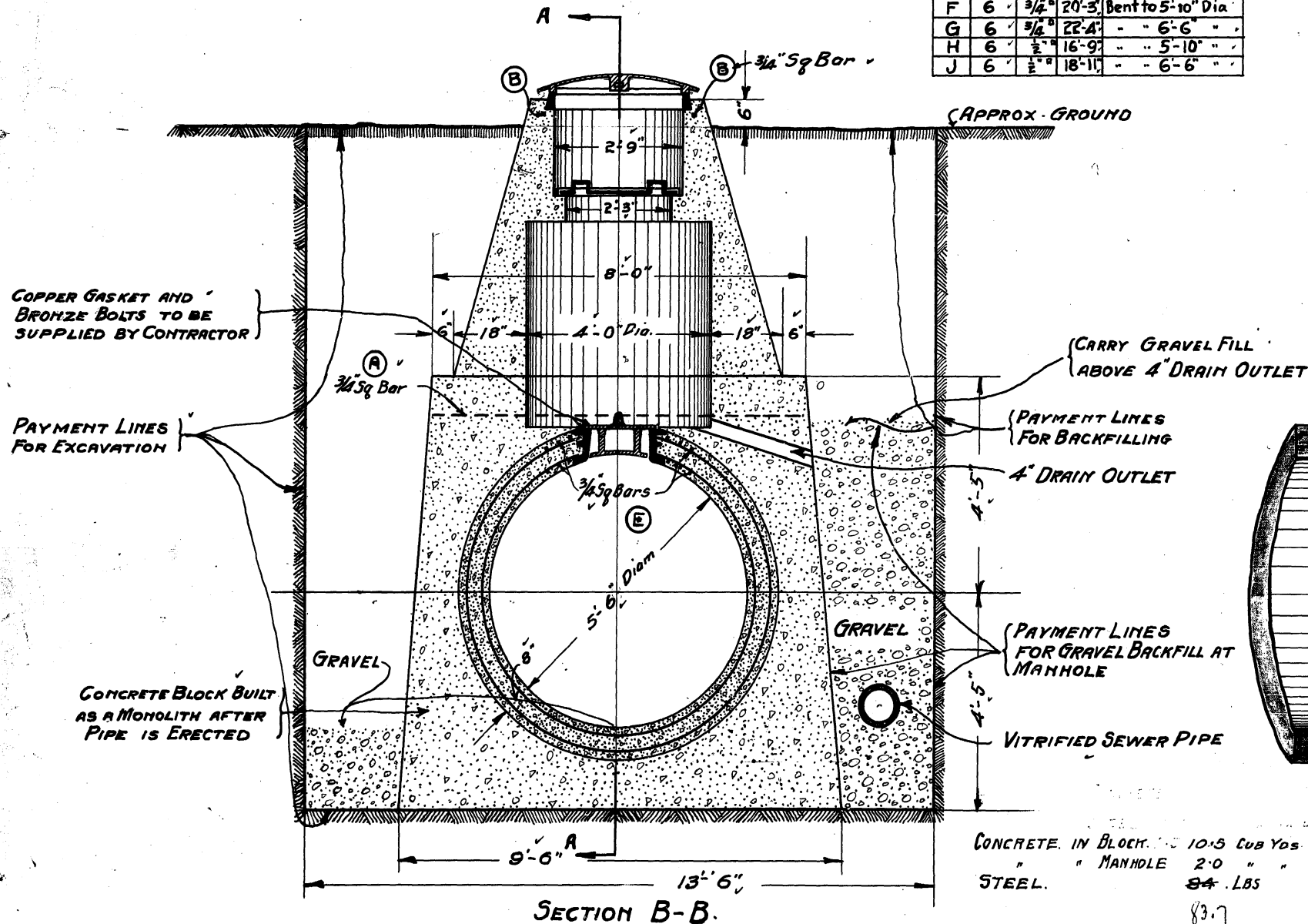
Letter	Pcs	Size	Length	Description
A	4	3/4"	8'-0"	Straight
B	1	3/4"	11'-9"	Bent to 3'-1" Dia.
C				
D				
E	12	3/4"	3'-3"	Straight
F	6	3/4"	20'-3"	Bent to 5'-10" Dia.
G	6	3/4"	22'-4"	" " 6'-6" "
H	6	3/4"	16'-9"	" " 5'-10" "
J	6	3/4"	18'-11"	" " 6'-6" "



PLAN



SECTION A-A

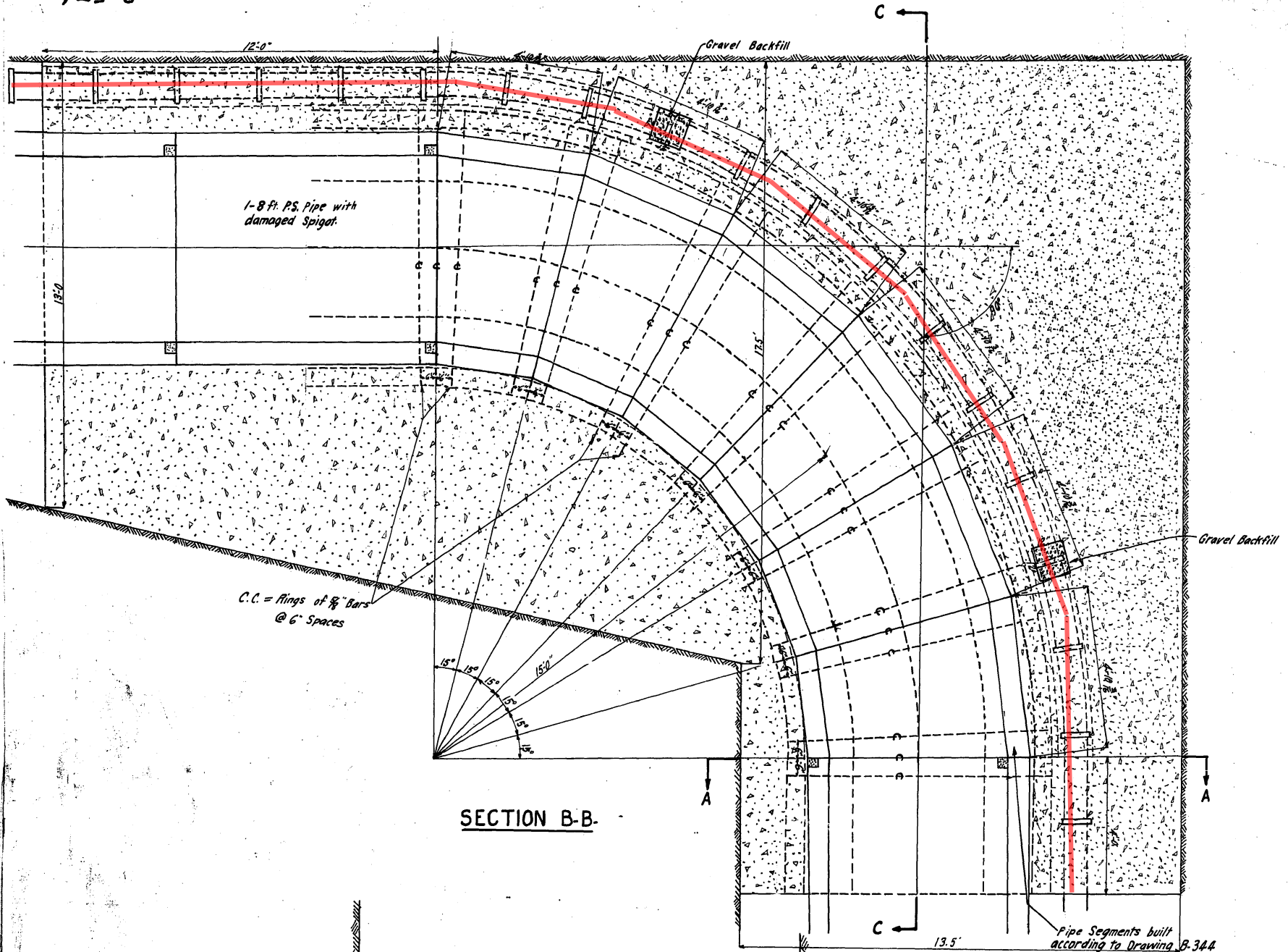


SECTION B-B.

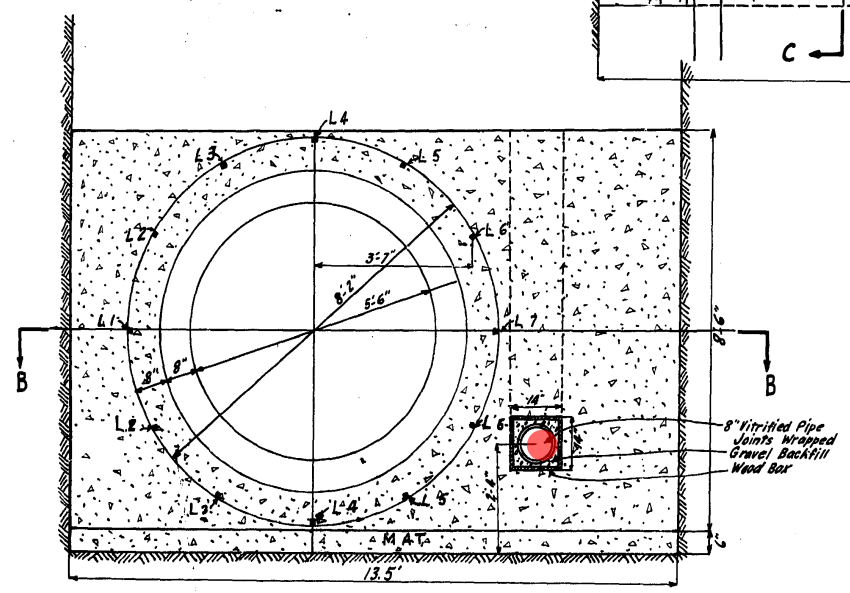
CONCRETE IN BLOCK 10.5 CUB YDS
 " " MANHOLE 2.0 " "
 STEEL 84 LBS

83.7

SEE C159 FOR STANDARD MANHOLE.

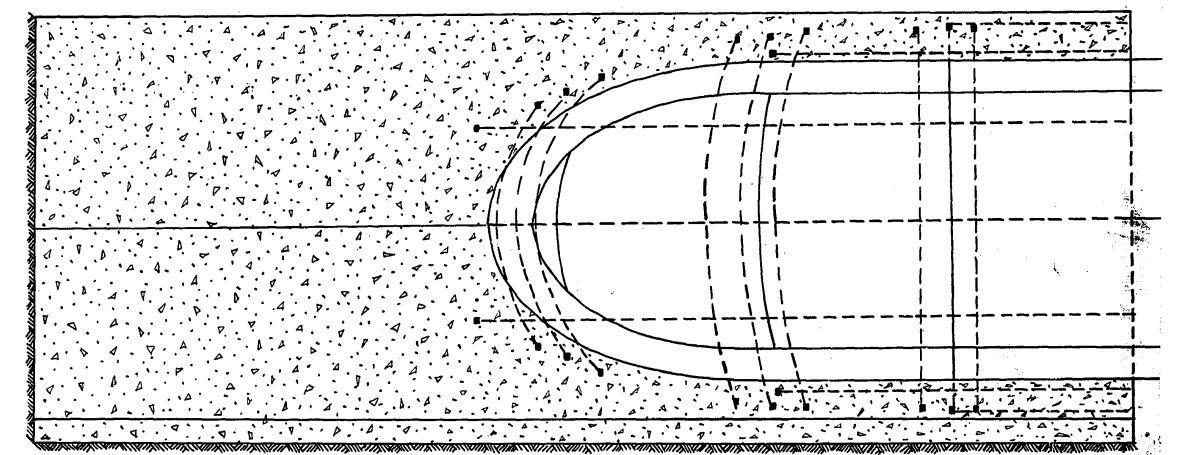


SECTION B-B

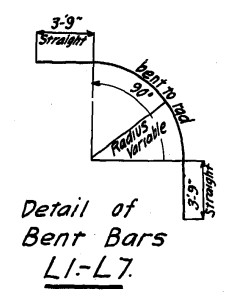


SECTION A-A

Bill of Reinforcing Steel				
Letter	N ^o	Size	Length	Description
C	21	3/8 sq.	27'-6"	Bent to ring 8'-2" dia.
L.1	1		24'-9"	" " radius 11'-0" Straight at
L.2	2		25'-7"	" " " 11'-6" ends.
L.3	2		27'-11"	" " " 13'-0"
L.4	2		31'-1"	" " " 15'-0"
L.5	2		34'-3"	" " " 17'-0"
L.6	2		36'-7"	" " " 18'-6"
L.7	1		37'-4"	" " " 19'-0"



SECTION C.C.



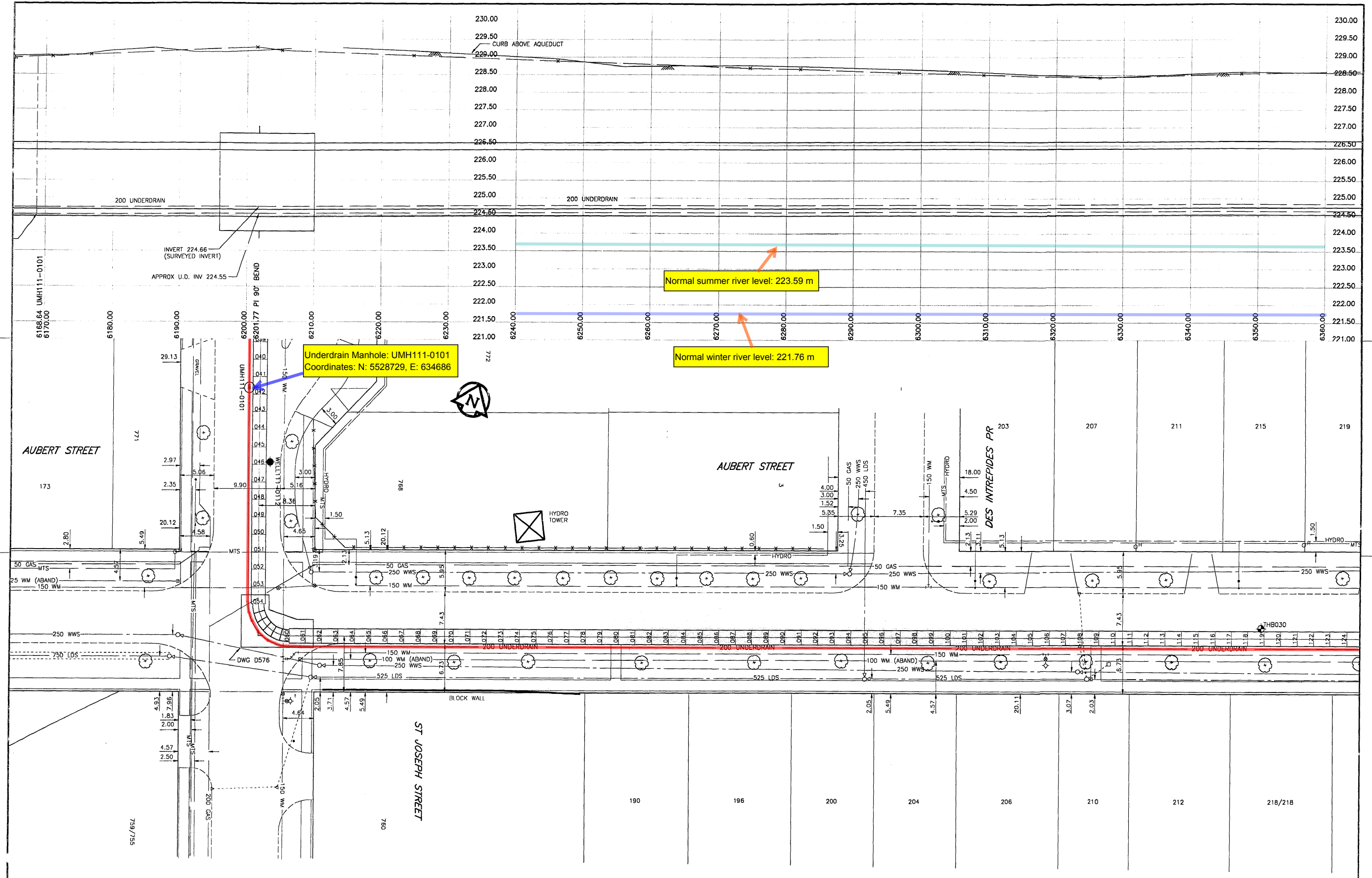
Detail of Bent Bars L1-L7

Drawn By D-ARI
 Traced By [Signature]
 Checked By _____
 Approved _____

CHIEF ENGINEER

CONTRACT #55
 GREATER WINNIPEG WATER DISTRICT
 90° ELBOW STA. 204+18.6 TO STA. 204+58.3
 AS CONSTRUCTED

D. 576



150 mm WM	WATERMAIN	300 mm LDS	LAND DRAINAGE SEWER	HYDRO	AQUEDUCT JOINT	AQUEDUCT PIPE
⊕	HYDRANT	250 mm WWS	WASTE WATER SEWER	COMMUNICATION	UNDERDRAIN MANHOLE	UNDERDRAIN
⊗	VALVE	○	MANHOLE	TRAFFIC SIGNALS	UNDERDRAIN RISER	GROUNDLINE
⊘	REDUCER	○	CATCH BASIN	PEDESTAL	UNDERDRAIN WELL	CENTERLINE
⊙	COUPLING	△	CURB INLET	SIGNAL CONTROLLER	TESTHOLE	N/W GUTTER
⊕	WM FITTINGS	⊘	CULVERT	GAS	PEIZOMETER	S/E GUTTER
⊕	CURB STOP	---	DITCH	STEAM HEAT		N/W DITCH
⊕	EDGE OF PAVEMENT	---	LAMP STANDARD	FENCE		S/E DITCH
⊕	RAILWAY TRACK	---	TRAFFIC SIGNAL	TREE		N/W PROPERTY LINE
⊕	GEODETIC BENCHMARK	---	WOOD POLE	BUILDING		S/E PROPERTY LINE
⊕	SURVEY BAR	---	POLE ANCHOR	SUBSURFACE STRUCTURE		
⊕	EXISTING	---	LEGEND - PLAN	EXISTING	LEGEND - PLAN	EXISTING
---	LEGEND - PLAN	---	LEGEND - PLAN	---	LEGEND - PROFILE	---

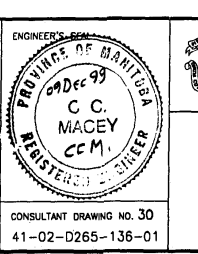
NO.	REVISIONS	DATE	BY
DATA SOURCES			
Aqueduct Joint: Interpreted From Manholes Located in 1994			
UMA Total Station Survey and 1995 Internal Inspections Unless Otherwise Noted			
Surface Features: UMA Total Station Survey (1994)			
Legal Right of Way M11 to M12: City of Wpg LBS (1994)			
Legal Right of Way M12 to M17: Pollock & Wright (1995)			
Utilities: Compiled from Information Obtained From City of Winnipeg Underground Structures (1994)			
METRIC			
WHOLE NUMBERS INDICATE MILLIMETRES			
DECIMALIZED NUMBERS INDICATE METRES			

UMA
UMA Engineering Ltd.
Engineers and Planners

CSS
CHAM GORE & STORRE LIMITED

DESIGNED BY: BC
DRAWN BY: BC/MAG
HR. SCALE: 1:250
VERTICAL: 1:50

CHECKED BY: CCM
APPROVED BY: CCM
RELEASED FOR CONSTRUCTION



THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

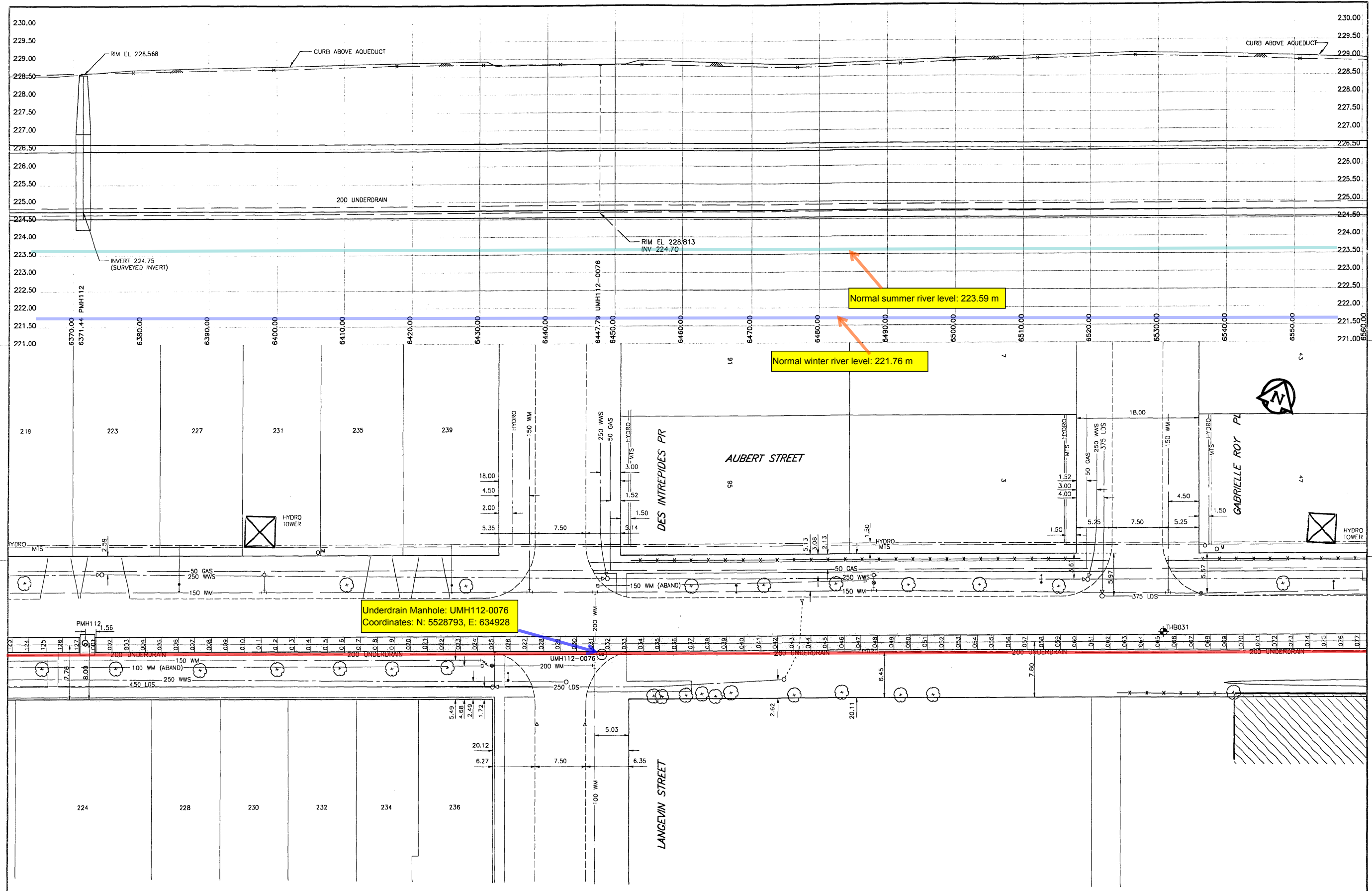
Plan and Profile of
Branch I Aqueduct

From Joint J111-039 To Joint J111-124
From Mile 3.85 To Mile 3.97

SHEET 30 OF 214
CITY DRAWING NUMBER
D-6308 REV

CONSULTANT DRAWING NO. 30
41-02-D265-136-01

D-6308.dwg



Underdrain Manhole: UMH112-0076
Coordinates: N: 5528793, E: 634928

Normal summer river level: 223.59 m

Normal winter river level: 221.76 m

150 mm WM	WATERMAIN	300 mm LOS	LAND DRAINAGE SEWER	HYDRO	100	AQUEDUCT JOINT	AQUEDUCT PIPE
⊕	HYDRANT	250 mm WWS	WASTE WATER SEWER	COMMUNICATION	---	UNDERDRAIN MANHOLE	UNDERDRAIN
⊙	VALVE	○	MANHOLE	TRAFFIC SIGNALS	⊕	UNDERDRAIN RISER	GROUNDLINE
⊖	REDUCER	△	CATCH BASIN	PEDESTAL	⊕	UNDERDRAIN WELL	CENTERLINE
⊕	COUPLING	□	CURB INLET	SIGNAL CONTROLLER	⊕	TESTHOLE	N/W GUTTER
⊕	WM FITTINGS	⊕	CULVERT	GAS	⊕	PEIZOMETER	S/E GUTTER
⊕	CURB STOP	---	DITCH	STEAM HEAT	⊕		N/W DITCH
⊕	EDGE OF PAVEMENT	---	LAMP STANDARD	FENCE	⊕		S/E DITCH
⊕	RAILWAY TRACK	---	TRAFFIC SIGNAL	TREE	⊕		N/W PROPERTY LINE
⊕	GEODETIC BENCHMARK	---	WOOD POLE	BUILDING	⊕		S/E PROPERTY LINE
⊕	SURVEY BAR	---	POLE ANCHOR	SUBSURFACE STRUCTURE	⊕		
---	EXISTING	---	EXISTING	---	---	---	---
---	LEGEND - PLAN	---	LEGEND - PLAN	---	---	---	---

NO.	REVISIONS	DATE	BY
DATA SOURCES Aqueduct Joints: Integrated From Manholes Located in 1994 UMA Total Station Survey and 1995 Internal Inspections Unless Otherwise Noted Surface Features: UMA Total Station Survey (1994) Legal Right of Way M11 to M12: City of Wpg LBS (1994) Legal Right of Way M12 to M17: Pollock & Wright (1995) Utilities: Compiled from Information Obtained From City of Winnipeg Underground Structures (1994)			
METRIC WHOLE NUMBERS INDICATE MILLIMETRES DECIMALIZED NUMBERS INDICATE METRES			

UMA
UMA Engineering Ltd.
Engineers and Planners

CGSS
CH2M GORE & STORRE LIMITED

DESIGNED BY: BC
DRAWN BY: BC/MAG
HOR. SCALE: 1:250
VERTICAL: 1:50
DATE:

CHECKED BY: CCM
APPROVED BY: CCM
RELEASED FOR CONSTRUCTION: []
DATE:

ENGINEER'S SEAL

PROVINCE OF MANITOBA
99 Dec 99
C. C. MACEY
REGISTERED ENGINEER

CONSULTANT DRAWING NO. 31
41-02-D265-136-01

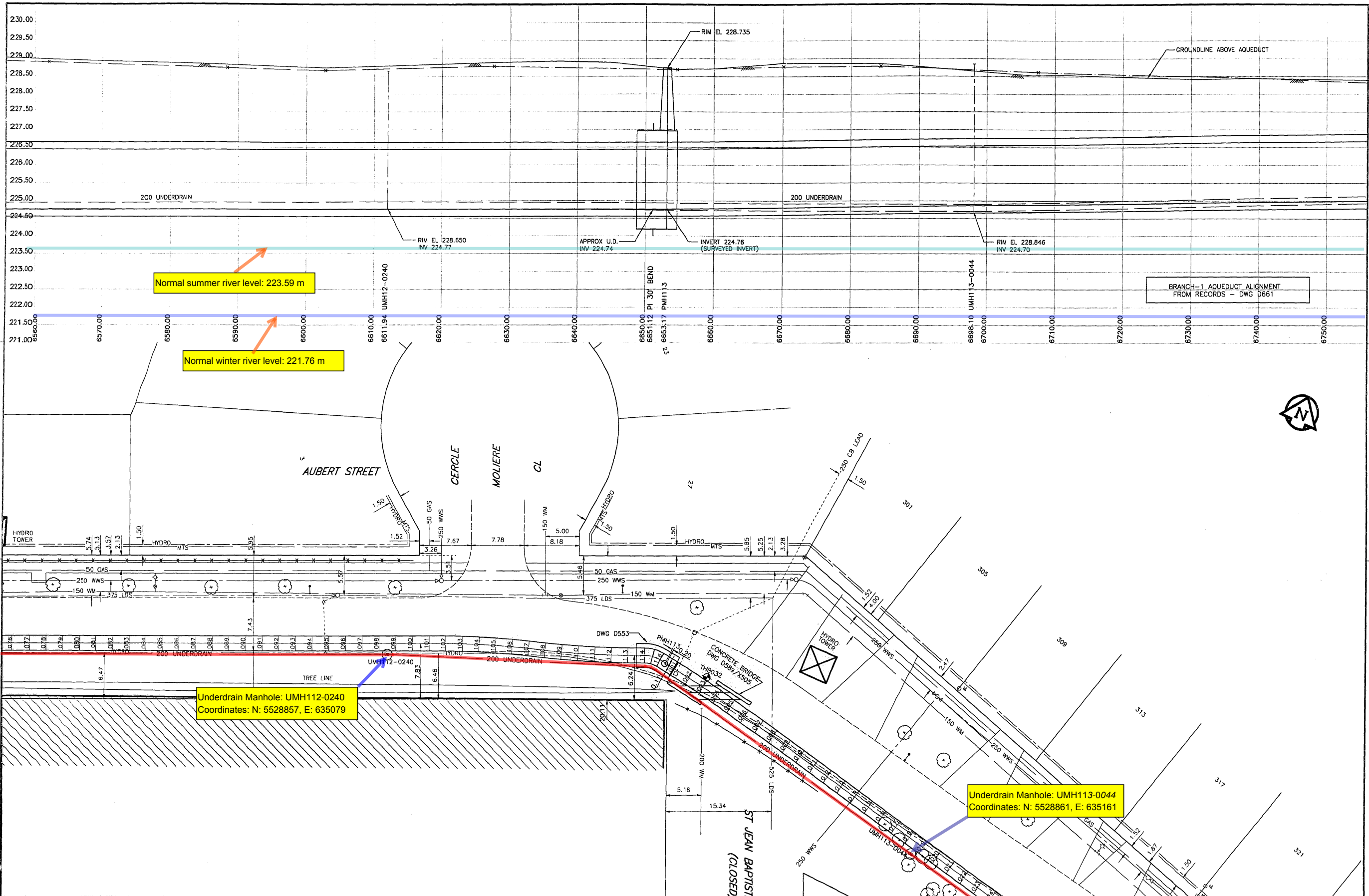
THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

Plan and Profile of
Branch I Aqueduct

From Joint J111-123 To Joint J112-077
From Mile 3.97 To Mile 4.09

SHEET 31 OF 214
CITY DRAWING NUMBER
D-6309 REV

D-6309.dwg



150 mm WM	WATERMAIN	300 mm LDS	LAND DRAINAGE SEWER	HYDRO	190	AQUEDUCT JOINT	AQUEDUCT PIPE
HYDRANT	HYDRANT	250 mm WWS	WASTE WATER SEWER	COMMUNICATION	UNDERDRAIN MANHOLE	UNDERDRAIN	UNDERDRAIN
VALVE	VALVE	MANHOLE	MANHOLE	TRAFFIC SIGNALS	UNDERDRAIN RISER	GROUNDLINE	GROUNDLINE
REDUCER	REDUCER	CATCH BASIN	CATCH BASIN	PEDESTAL	UNDERDRAIN WELL	CENTERLINE	CENTERLINE
COUPLING	COUPLING	CURB INLET	CURB INLET	SIGNAL CONTROLLER	TESTHOLE	N/W GUTTER	N/W GUTTER
WM FITTINGS	WM FITTINGS	CULVERT	CULVERT	GAS	PEIZOMETER	S/E GUTTER	S/E GUTTER
CURB STOP	CURB STOP	DITCH	DITCH	STEAM HEAT		N/W DITCH	N/W DITCH
EDGE OF PAVEMENT	LAMP STANDARD	FENCE	FENCE	TREE		S/E DITCH	S/E DITCH
RAILWAY TRACK	TRAFFIC SIGNAL	BUILDING	BUILDING	SUBSURFACE STRUCTURE		N/W PROPERTY LINE	N/W PROPERTY LINE
GEODETIC BENCHMARK	WOOD POLE					S/E PROPERTY LINE	S/E PROPERTY LINE
SURVEY BAR	POLE ANCHOR						
EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PROFILE

NO.	REVISIONS	DATE	BY

DATA SOURCES
 Aqueduct Joints: Interpreted From Manholes Located in 1994
 UMA Total Station Survey and 1995 Internal Inspections
 Unless Otherwise Noted
 Surface Features: UMA Total Station Survey (1994)
 Legal Right of Way M11 to M12: City of Wpg LBS (1994)
 Legal Right of Way M12 to M17: Pollock & Wright (1995)
 Utilities: Compiled from information Obtained From
 City of Winnipeg Underground Structures (1994)

METRIC
 WHOLE NUMBERS INDICATE MILLIMETRES
 DECIMALIZED NUMBERS INDICATE METRES

UMA
 UMA Engineering Ltd.
 Engineers and Planners

CSS
 CH2M GORE & STORRE LIMITED

ENGINEER'S SEAL
 PROVINCE OF MANITOBA
 REGISTERED ENGINEER
 C. C. MACEY
 09 Dec 97

DESIGNED BY: BC
 CHECKED BY: CCM

DRAWN BY: BC/MAG
 APPROVED BY: CCM

HOR. SCALE: 1:250
 VERTICAL: 1:50

RELEASED FOR CONSTRUCTION

DATE

CONSULTANT DRAWING NO. 32
 41-02-D265-136-01

THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT

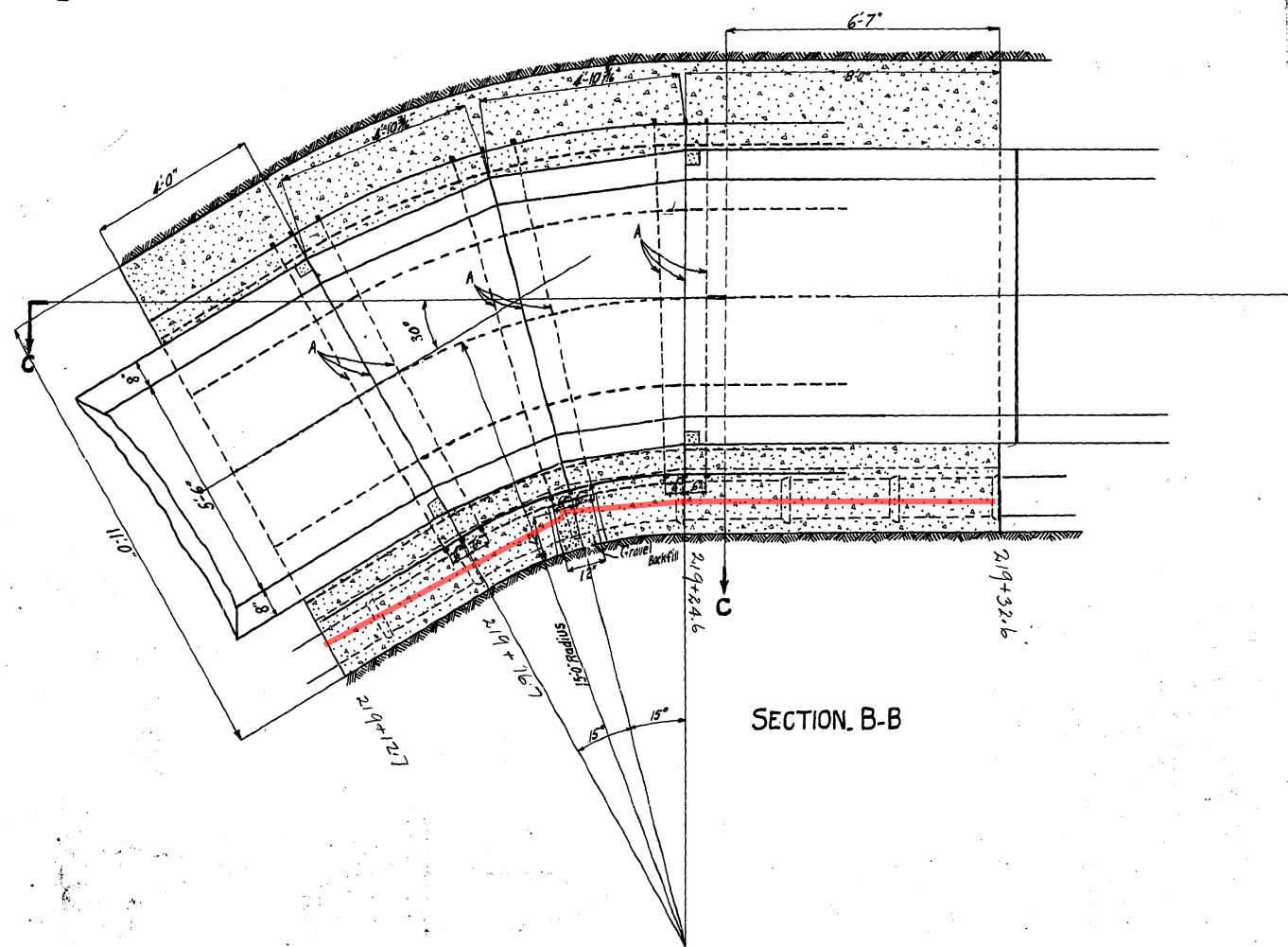
**Plan and Profile of
 Branch I Aqueduct**

From Joint J112-076 To Joint J113-024
 From Mile 4.09 To Mile 4.19

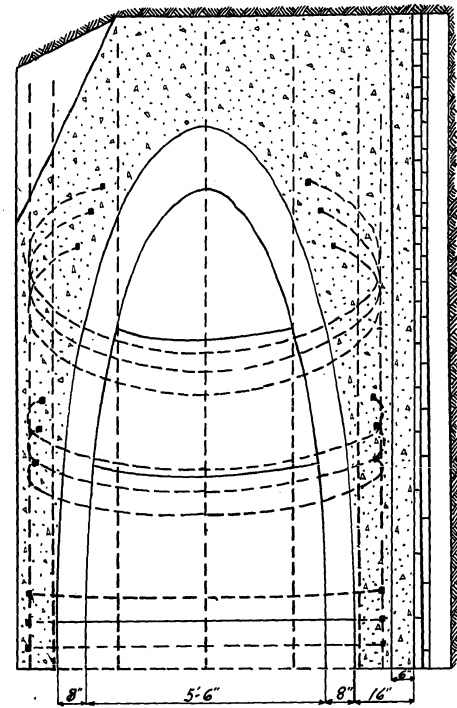
SHEET 32 OF 214
 CITY DRAWING NUMBER
D-6310 REV

AutoCAD Release 14

D-6310.dwg



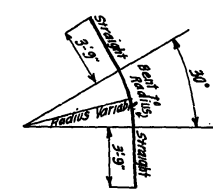
SECTION B-B



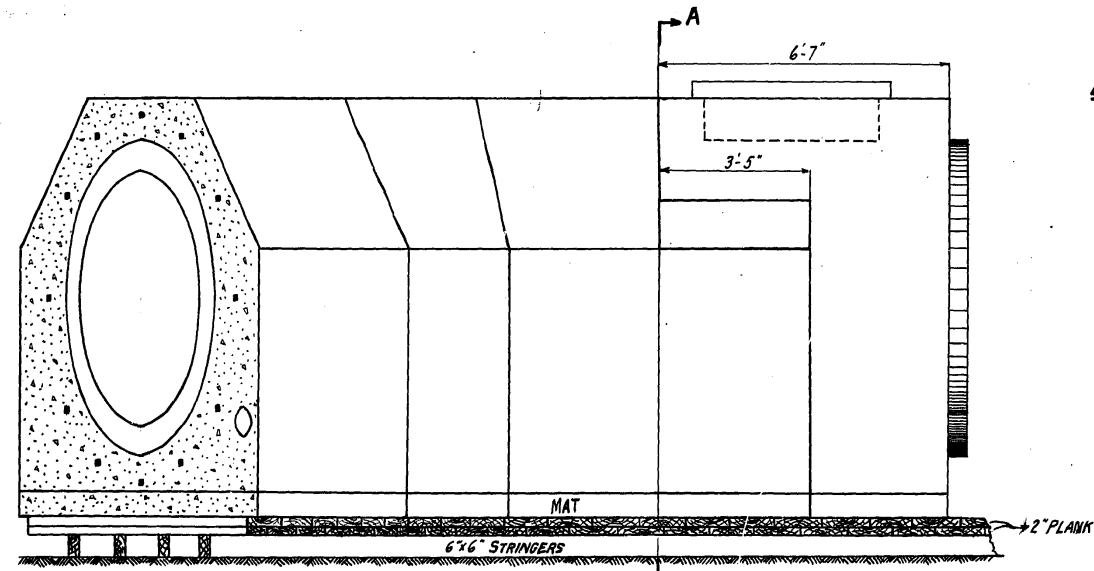
SECTION C-C

BILL OF REINFORCING STEEL IN 30° ELBOW.

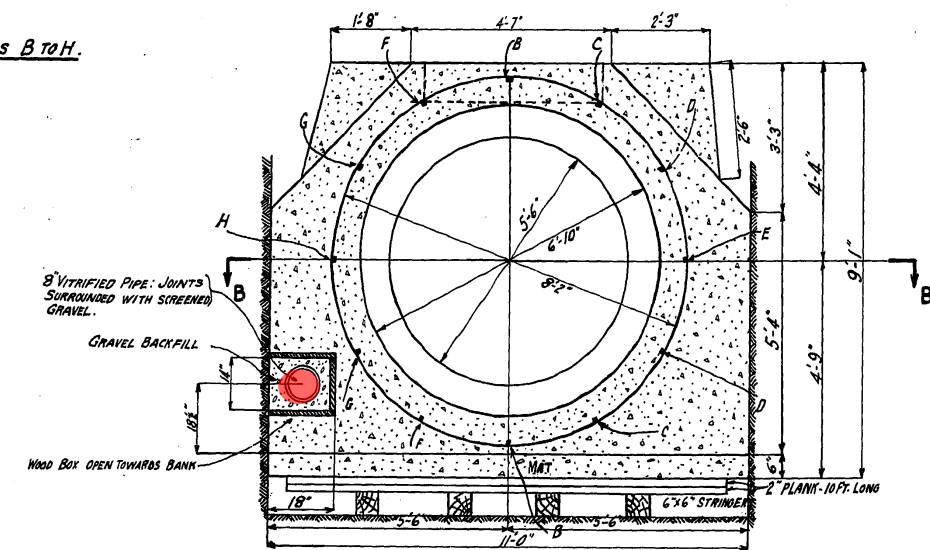
Letter	Nr.	Size	Length	Description
A	9	5/8"	27'-6"	Bent to 8'-2" Dia.
B	2	"	15'-4"	" - 15'-0" RAD
C	2	"	16'-5"	" - 17'-0" "
D	2	"	17'-2"	" - 18'-6" "
E	1	"	17'-6"	" - 19'-0" "
F	2	"	14'-4"	" - 13'-0" "
G	2	"	13'-6"	" - 11'-6" "
H	1	"	13'-3"	" - 11'-0" "



DETAIL OF BENT BARS B TO H.



SIDE ELEVATION OF COMBINED MONOLITHS ON INSIDE OF ANGLE.



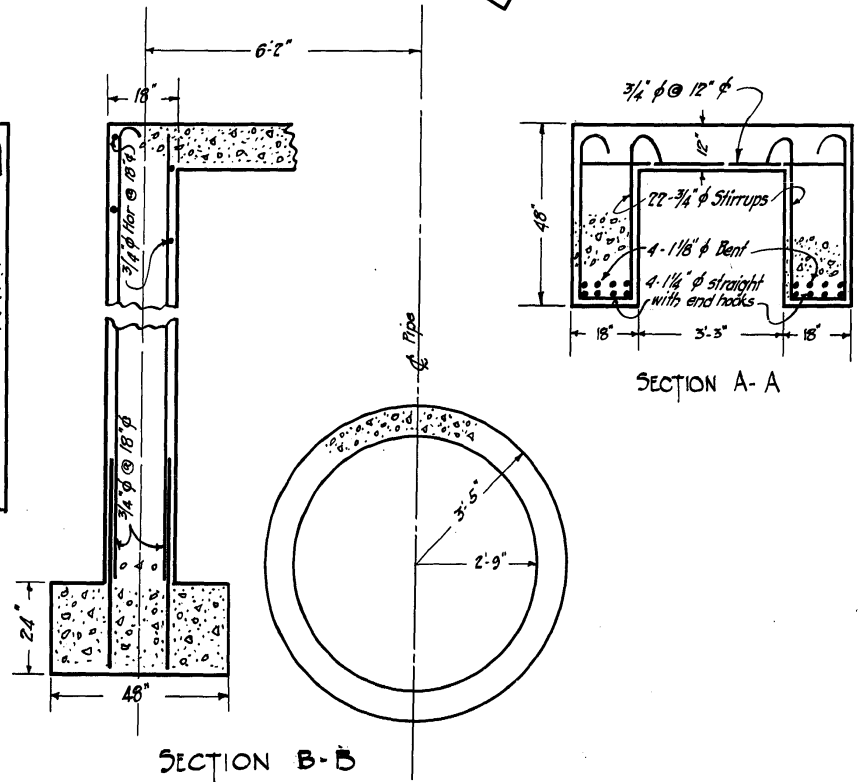
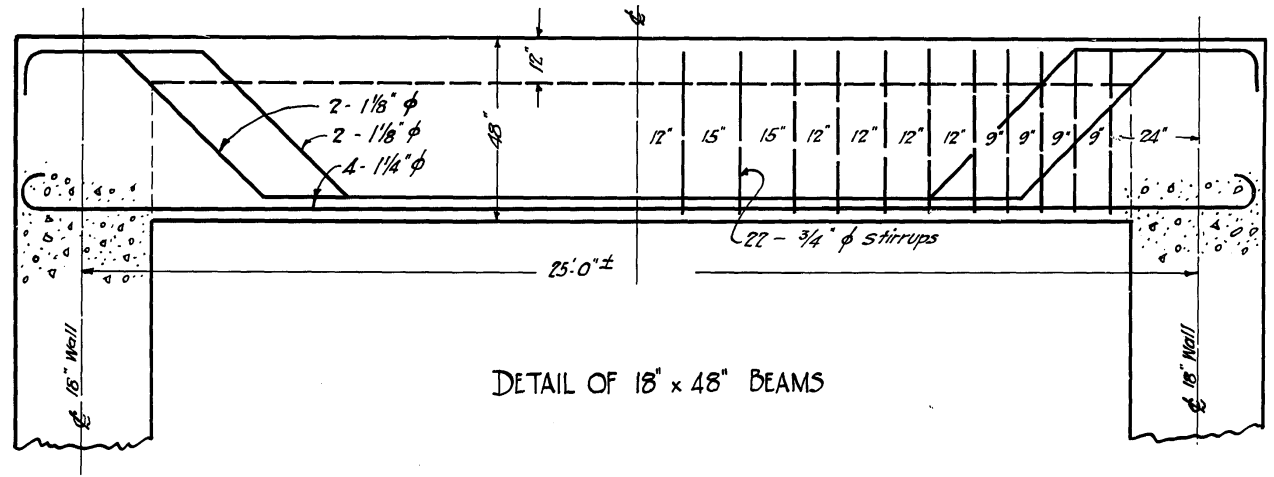
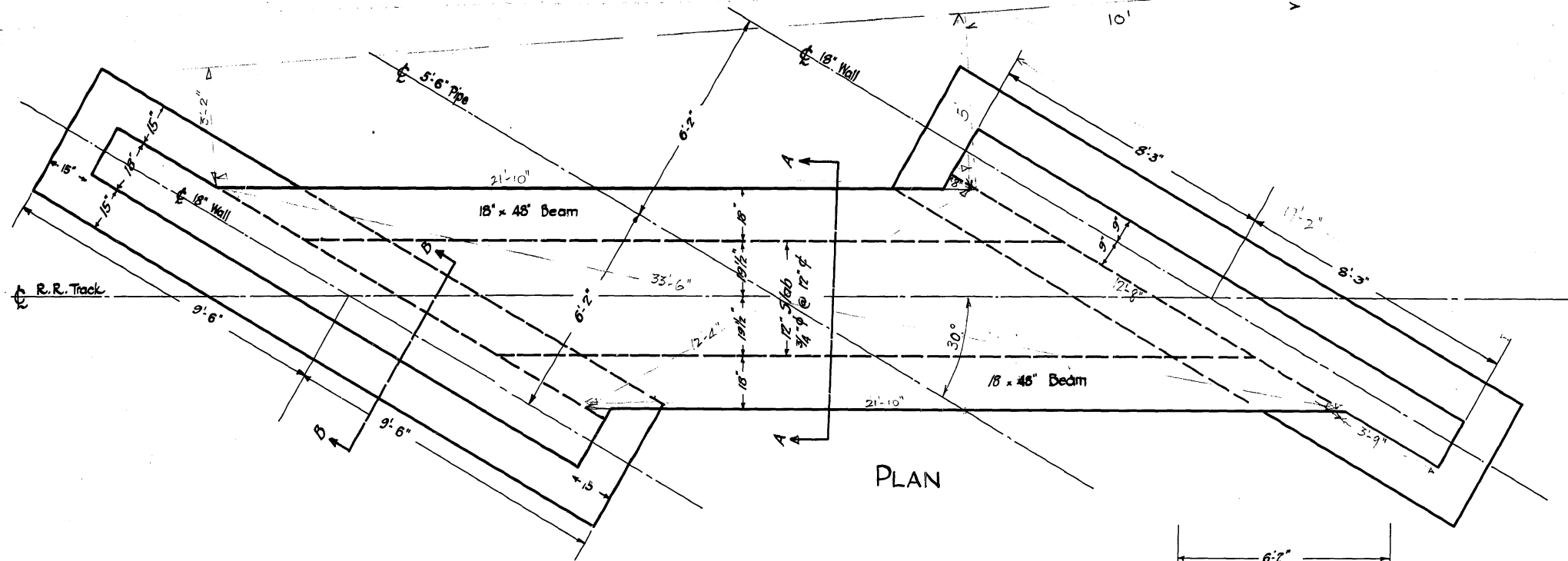
SECTION A-A

Drawn By RAJ + 0493
 Traced By RAJ
 Checked By _____
 Approved _____

CHIEF ENGINEER

CHAIRMAN OF COMMISSIONERS

CONTRACT # 55
GREATER WINNIPEG WATER DISTRICT
COMBINED 30° ELBOW & MANHOLE STA. 219+12.7
TO 219+34.8 - AS CONSTRUCTED
 5th NOV 1919

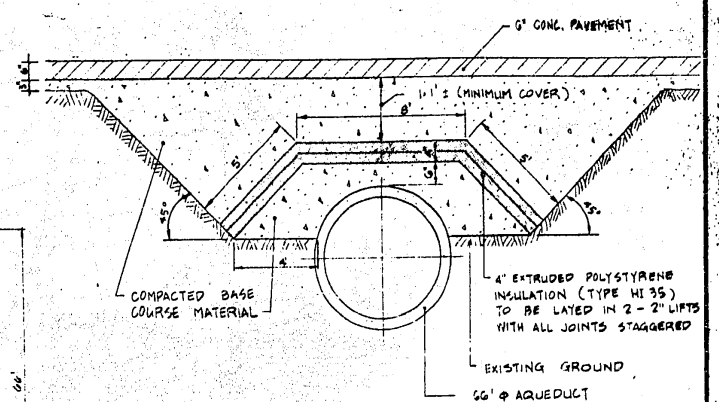
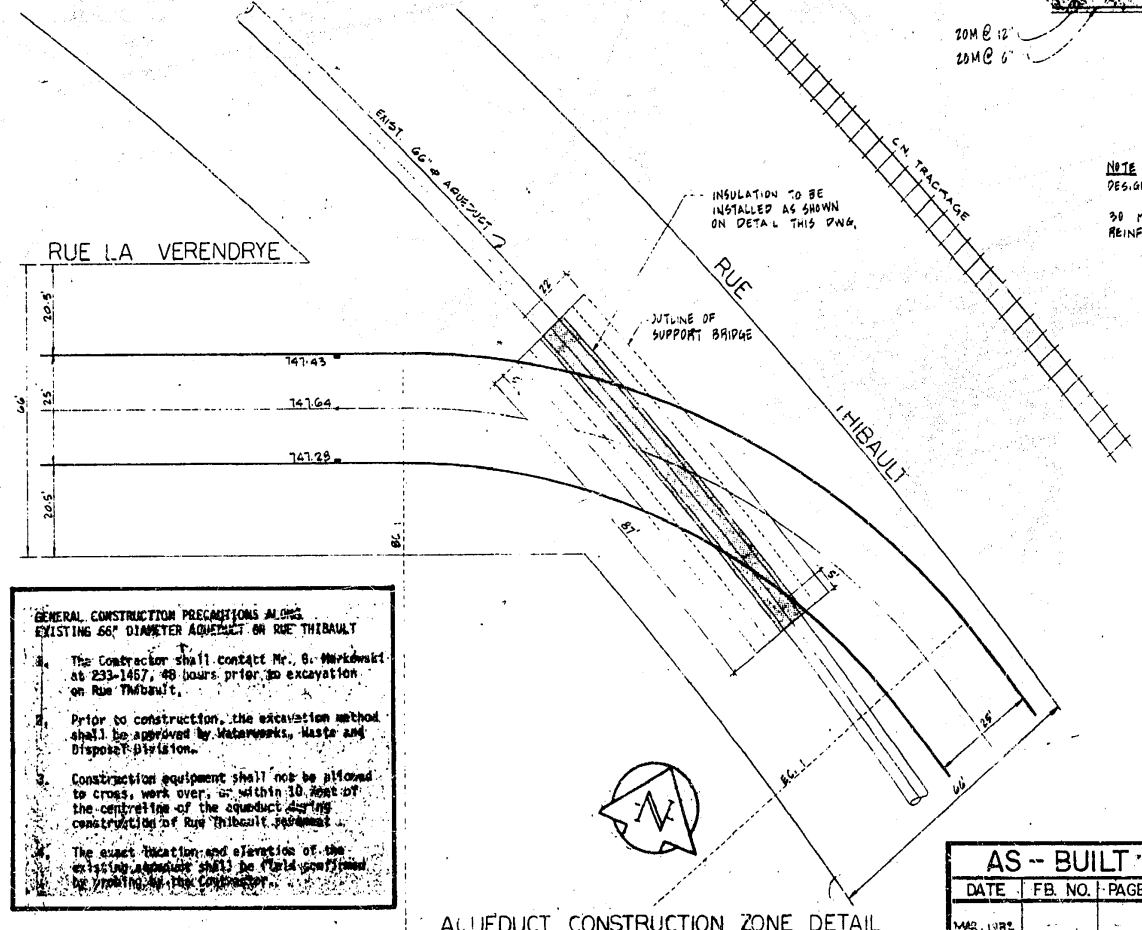
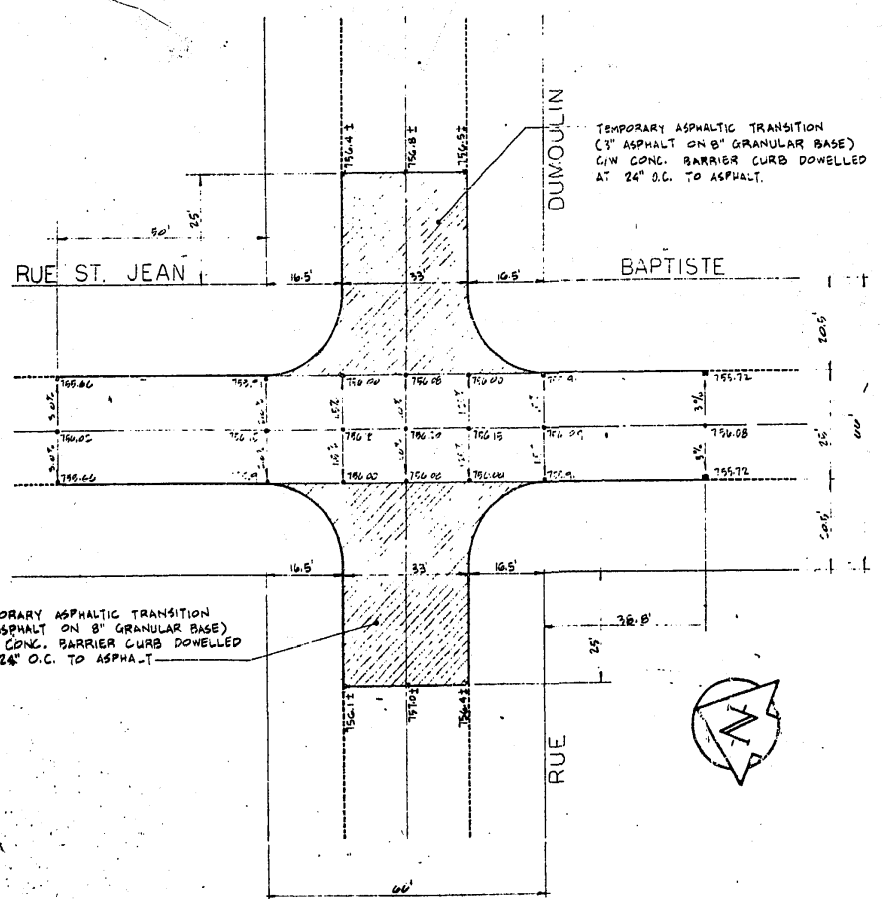
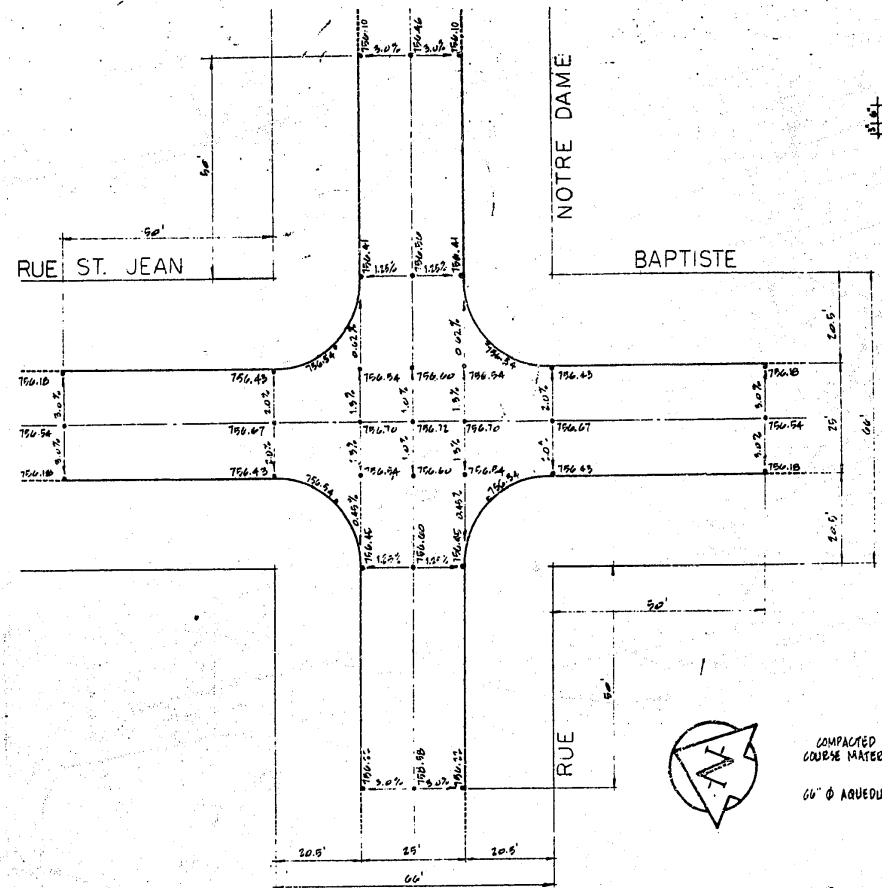
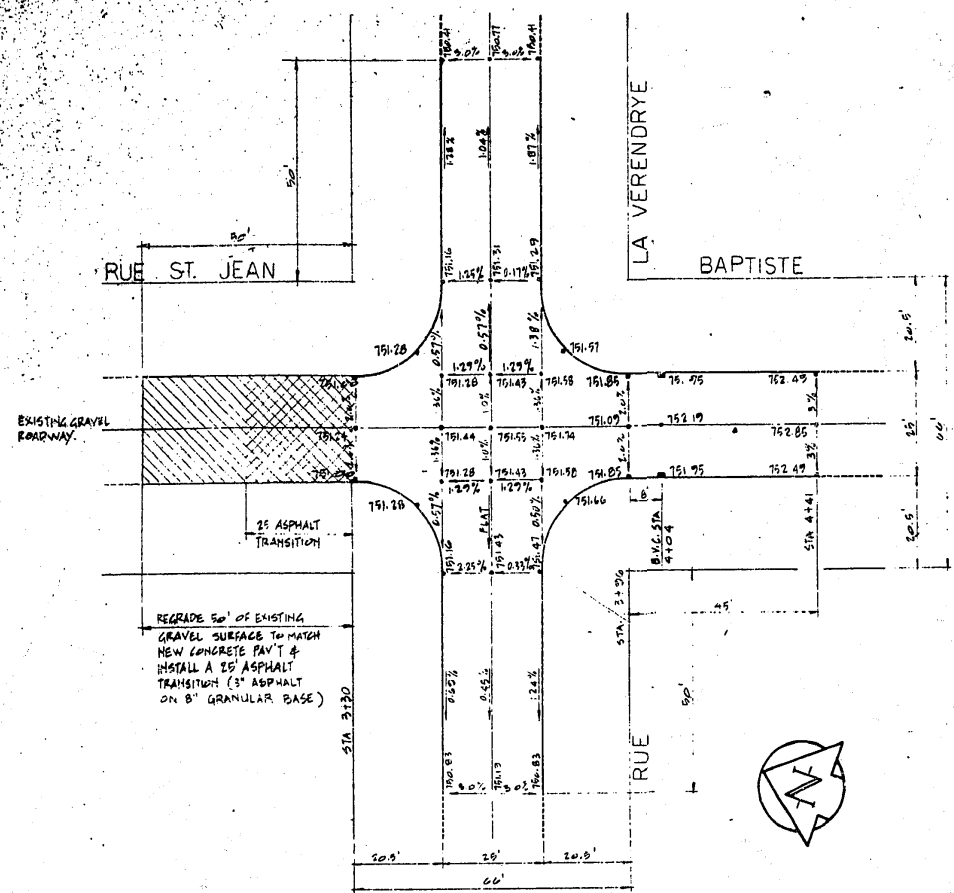


N.B. It is provided under the permission given for this Crossing that all work be done under the inspection of the G.W.W.D. and that any changes found necessary during construction to insure the safety of the Aqueduct will be carried out by the Martin Paper Products Co. Ltd.

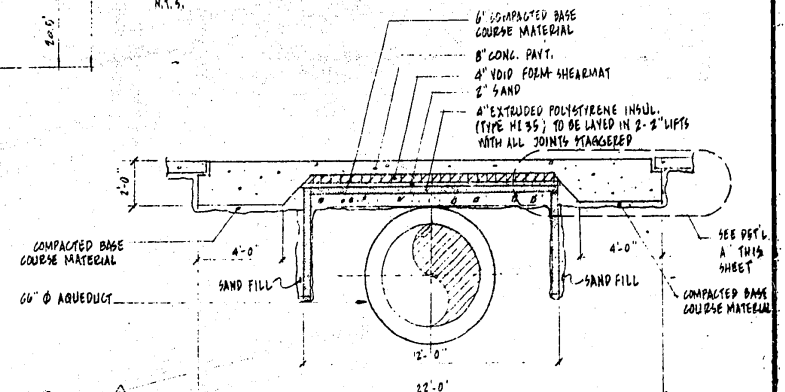
SEE DWG: D-6310

GREATER WINNIPEG WATER DISTRICT.
 CONCRETE BRIDGE FOR C.N.R. SPUR TO
 MARTIN PAPER PRODUCTS LTD., AUBERT & THIBAUT STS.
 ST. BONIFACE, MAN. OVER
 GREATER WINNIPEG WATER DISTRICT 5'-6" CONCRETE PIPE
 AS DESIGNED BY W.S. LEA, C.E., AND APPROVED BY THE COMMISSIONERS OF THE G.W.W.D.
 SEPT. 6th 1929

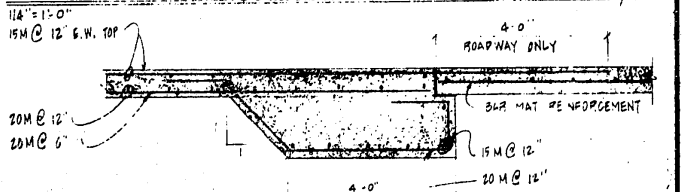
SCALE 1/2" = 1 FT.



AQUEDUCT INSULATION DETAIL AT PUBLIC LANE



AQUEDUCT INSULATION DETAIL UNDER RUE THIBAUT



DETAIL "A"

NOTE
 DESIGN LOADS - H20 RASHO 10000 LB WHEEL LOAD
 IMPACT FACTOR = 1.2
 30 MPA CONCRETE
 REINF. STEEL CSA G30.12 M 1977 G 400

Paul Howarth
 DISTRICT 5 - WORKS & OPERATIONS DEPT.

GENERAL CONSTRUCTION PRECAUTIONS ALONG EXISTING 66" DIAMETER AQUEDUCT ON RUE THIBAUT

- The Contractor shall contact Mr. G. Markwald at 233-1457, 48 hours prior to excavation on Rue Thibault.
- Prior to construction, the excavation method shall be approved by Waterworks, Waste and Disposal Division.
- Construction equipment shall not be allowed to cross, work over, or within 30 feet of the centerline of the aqueduct during construction of Rue Thibault pavement.
- The exact location and elevation of the existing aqueduct shall be field verified by the Contractor.

3	SUPPORT BRIDGE OUTLINED	DEC. 1979 RAS
2	AQUEDUCT INSULATION DETAIL UNDER RUE THIBAUT ADDED	DEC. 1979 RAS
1	REHAIR GRADES AT INTERSECTION OF ST. JEAN BAPTISTE AND LA VERENDRYE	AUG. 1979 RAS
0	ISSUED FOR APPROVAL	JUNE 1979 RAS
	NO DESCRIPTION	DATE BY

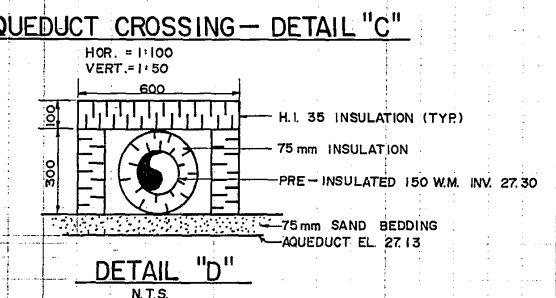
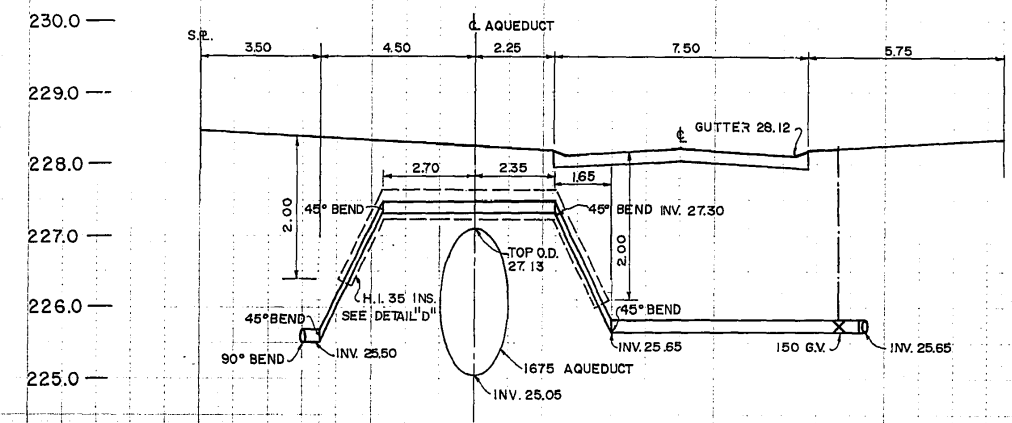
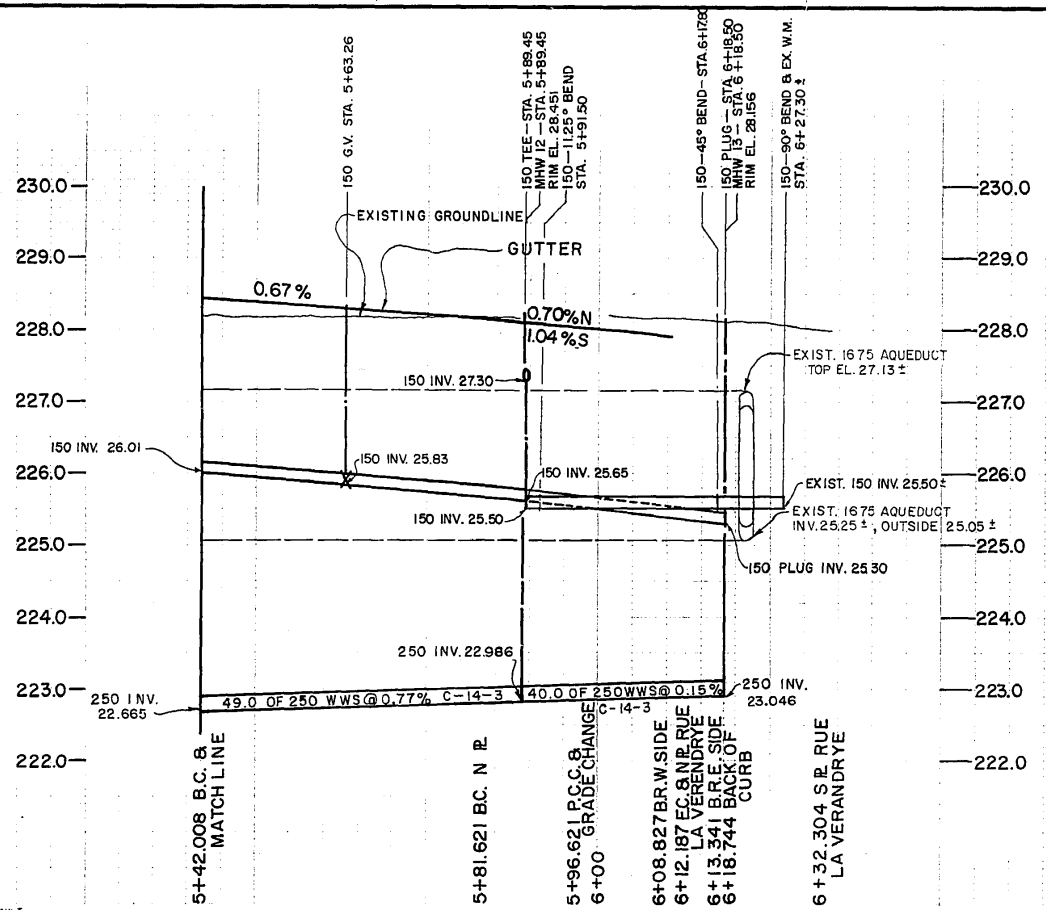
CITY OF WINNIPEG
 WORKS AND OPERATIONS DEPARTMENT
 OPERATIONS DIVISION - DISTRICT 5

W. L. WARDROP & ASSOCIATES LTD.
 ENGINEERING CONSULTANTS
 WINNIPEG - THUNDER BAY - REGINA - BARRIE - EDMONTON

ST. BONIFACE
 NEIGHBOURHOOD IMPROVEMENT PROGRAM - PHASE III
 INTERSECTION DETAILS, AQUEDUCT INSULATION DETAIL & AQUEDUCT CONSTRUCTION ZONE DETAIL.

AS - BUILT
 DATE FEB. NO. PAGE

DESIGNED BY: R.A.B.
 DRAWN BY: MEK & TM
 CHECKED BY: R.A.B.
 APPROVED BY: [Signature]
 SCALE: 1" = 20'
 DATE: JUNE 1979
 DRAWING NO.: 780001-06-06-33



NOTE: CHAINAGE IS ALONG C. OF STREET

- GENERAL CONSTRUCTION PRECAUTIONS ALONG EXISTING 1675 DIAMETER AQUEDUCT
- The Contractor shall contact Mr. F. Mullin at 237-4203, 48 hours prior to excavation near the aqueduct.
 - Prior to construction, the excavation method shall be approved by Waterworks, Waste and Disposal Division.
 - Construction equipment shall not be allowed to cross, work over, or within 3 metres of the centreline of the aqueduct during construction except at the intersections of Rue Robert at Rue St. Joseph, Rue Robert at Rue Langevin, Rue Thibault at Rue La Verendrye or as shown on the construction drawings.
 - The exact location and elevation of the existing aqueduct shall be field confirmed by probing by the Contractor.

SEWER CONNECTION DATA

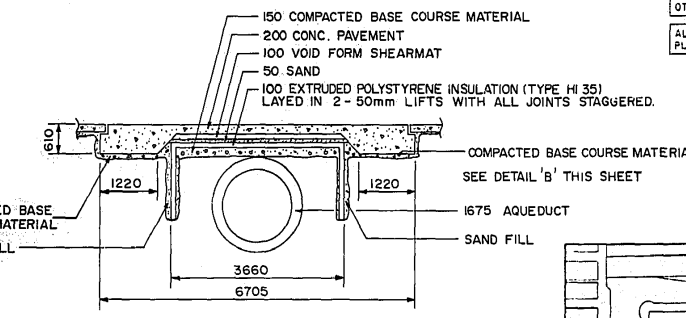
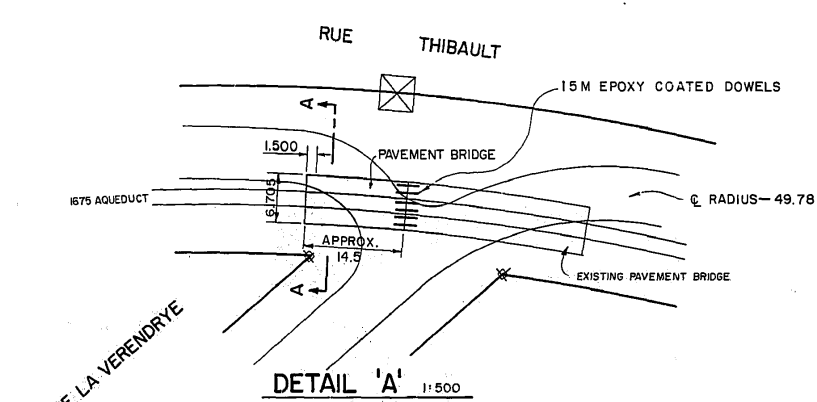
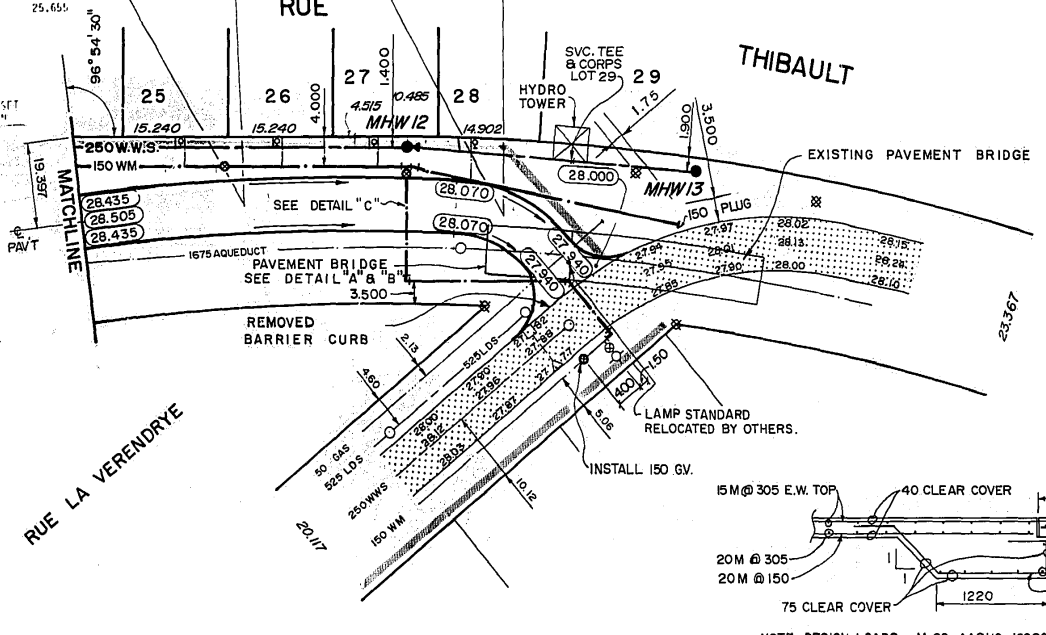
REF.	JUNC. LOC.	PL. LOC.	O/S FROM MAIN	INV.	R. PL.
MHW12 Sta. 5+89.45					
SVC Lot 25	33.0 m W	33.9 m W	2.4 m N	25.880	
SVC Lot 26	19.7 m W	19.7 m W	2.3 m N	25.760	
SVC Lot 27	5.5 m W	5.5 m W	2.0 m N	25.700	
SVC Lot 28	0.0 m E	7.5 m E	1.5 m N	25.655	
SVC Lot 29	24.5 m E				

CURVE DATA

Δ	R	ST	LC
9° 31' 25"	328.549	27.370	54.613
47° 28' 45"	18.785	8.261	15.566

WATER CONNECTION DATA

REF.	COMP. LOC.	STOP LOC.	STOP OFFSET FROM MAIN
Hyd. P 5+37.3			
SVC Lot 24	24.8 m E	24.8 m E	4.0 m N
SVC Lot 26	39.0 m E	39.0 m E	4.0 m N
SVC Lot 27	53.0 m E	53.0 m E	4.0 m N
SVC Lot 28	66.5 m E	66.5 m E	4.0 m N
SVC Lot 29			



- ALL 7.500 m WIDE PAVEMENT 150 REINFORCED CONCRETE WITH LIP CURB.
- MODIFIED LIP CURB ON ALL RADI 6000 AND LESS.
- PIPE CLASSES SHOWN FOR WWS AND LDS ARE FOR CONCRETE PIPE UNLESS OTHERWISE SHOWN.
- ALL PIPES 375 AND SMALLER ARE AUGERED AT ALL PROPOSED AND EXISTING PAVEMENT CROSSINGS.
- ALL CORNER RADI 7.500 m UNLESS OTHERWISE SHOWN.
- ALL SIDEWALK CROSSINGS HAVE PARALLELIC SIDEWALK RAMPS.

NOTE: DESIGN LOADS - M 20 AASHO 16000 LB WHEEL LOAD. IMPACT FACTOR = 1.2
30 MPa CONCRETE
REINFORCING STEEL CSA G 30.12 M 1977 G 400

DETAIL 'B' N.T.S.
FIELD BOOK NO: 1987-686,687,688

REVISED AS CONSTRUCTED
DA, E 04/03/90, DRN BY V.R. CHECKED BY J.K.

EXISTING	LEGEND-PLAN	PROPOSED	EXISTING	LEGEND-PLAN	PROPOSED	EXISTING	LEGEND-PROFILE	PROPOSED
150 mm W.M.	WATERMAIN	150 mm W.M.	HYDRO M.T.S.	CONCRETE	ASPHALT	PROPERTY LINE	SURVEY BAR	29.75
300 mm L.D.S.	LAND DRAINAGE SEWER	300 mm L.D.S.	WASTE WATER SEWER	MANHOLE	CATCH BASIN	CURB INLET	JUNCTIONS	
250 mm W.W.S.	WASTE WATER SEWER	250 mm W.W.S.	SIDEWALK	ELEVATION				

LOCATION APPROVED UNDERGROUND STRUCTURES

NO.	REVISIONS	DATE	BY
6	GENERAL REVISIONS	27/03/89	ED
5	LOT'S CHANGE - RE LATEST LOTS	8/05/88	KJ
4	ADD. DIMS. & ANGLE (P. 213)	02/01/88	KEW
3	REVISED LOTS ON BLOCK BOUNDARY	3/04/88	ED
2	REVISED W.W. CROSSING DETAIL	04/23/88	G.D.
1	REVISED WWS IN PROFILE	25/07/87	KE

SG SOLMUNDSON ENGINEERING GROUP

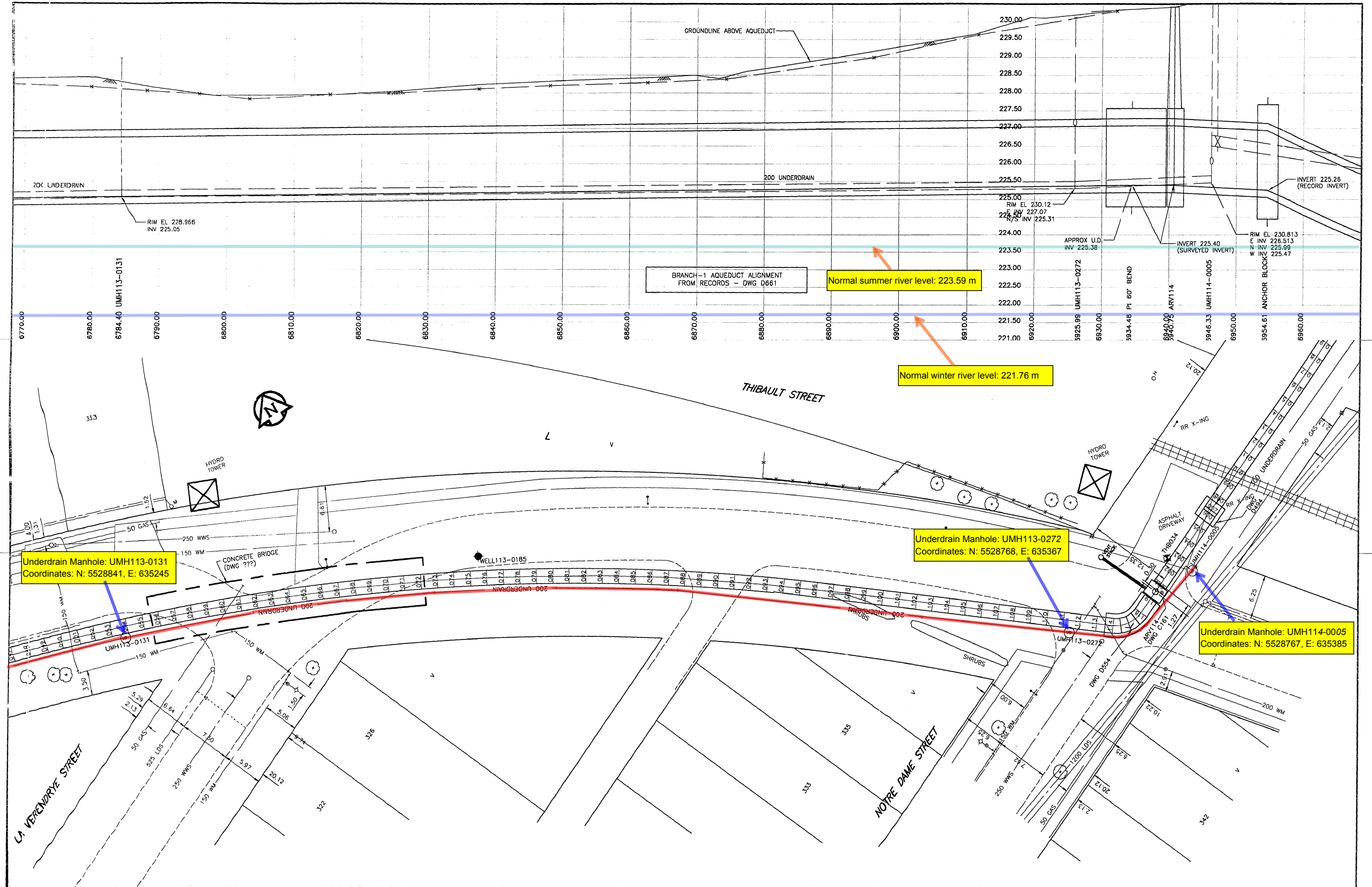
DESIGNED BY DB BWS
CHECKED BY I McK
DRAWN BY MF
APPROVED BY
HOR. SCALE 1:500
VERTICAL 1:50
DATE APRIL, 1987

ENGINEER
MCKINNON
REGISTERED ENGINEER
CONSULTANT DRAWING NO. 047-005-01 06

THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
DISTRICT 5

RUE THIBAUT
STA. 5+42.008 TO RUE LA VERENDRYE
UNDERGROUND SERVICES & PAVING

6
H.F.1403



151 mm WM	WATERMAIN	300 mm LBS	LAND DRAINAGE SEWER	HYDRO	190	AQUEDUCT JOINT	AQUEDUCT PIPE
HYDRANT	250 mm WWS	WASTE WATER SEWER	COMMUNICATION	UNDERDRAIN MANHOLE	UNDERDRAIN RISER	UNDERDRAIN	GROUNDLINE
VALVE	MANHOLE	CATCH BASIN	TRAFFIC SIGNALS	UNDERDRAIN WELL	TESTHOLE	CENTERLINE	N/W GUTTER
REDUCER	CULVERT	CURB INLET	PEDESTAL	PEIZOMETER	STEAM HEAT	S/E GUTTER	N/W DITCH
COUPLING	DITCH	LAMP STANDARD	SIGNAL CONTROLLER	TRAFFIC SIGNAL	FENCE	S/E DITCH	N/W PROPERTY LINE
WM FITTINGS	WELL	TRAFFIC SIGNAL	GAS	PEDESTAL	TREE	S/E PROPERTY LINE	
CURB STOP	WELL	WOOD POLE	STEAM HEAT	PEDESTAL	BUILDING		
EDGE OF PAVEMENT	WELL	POLE ANCHOR	TRAFFIC SIGNAL	PEDESTAL	SUBSURFACE STRUCTURE		
RAILWAY TRACK	WELL		WOOD POLE	PEDESTAL			
GEODETIC BENCHMARK	WELL		POLE ANCHOR	PEDESTAL			
SURVEY BAR	WELL			PEDESTAL			
EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PROFILE

NO.	REVISIONS	DATE	BY
DATA SOURCES			
Aqueduct Joints: Interpreted From Manholes Located in 1994			
UMA Total Station Survey and 1995 Internal Inspections			
Unless Otherwise Noted			
Surface Features: UMA Total Station Survey (1994)			
Legal Right of Way M11 to M12: City of Wpg LBS (1994)			
Legal Right of Way M12 to M17: Pollock & Wright (1995)			
Utilities: Compiled From Information Obtained From			
City of Winnipeg Underground Structures (1994)			
METRIC			
WHOLE NUMBERS INDICATE MILLIMETRES			
DECIMALIZED NUMBERS INDICATE METRES			

UMA UMA Engineering Ltd. Engineers and Planners		CGSS CHAM GORE & STORRIE LIMITED	
DESIGNED BY	BC	CHECKED BY	CCM
DRAWN BY	BC/MAG	APPROVED BY	CCM
HOR. SCALE:	1:250	RELEASED FOR CONSTRUCTION	
VERTICAL:	1:50		
DATE		DATE	



THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

**Plan and Profile of
Branch 1 Aqueduct**

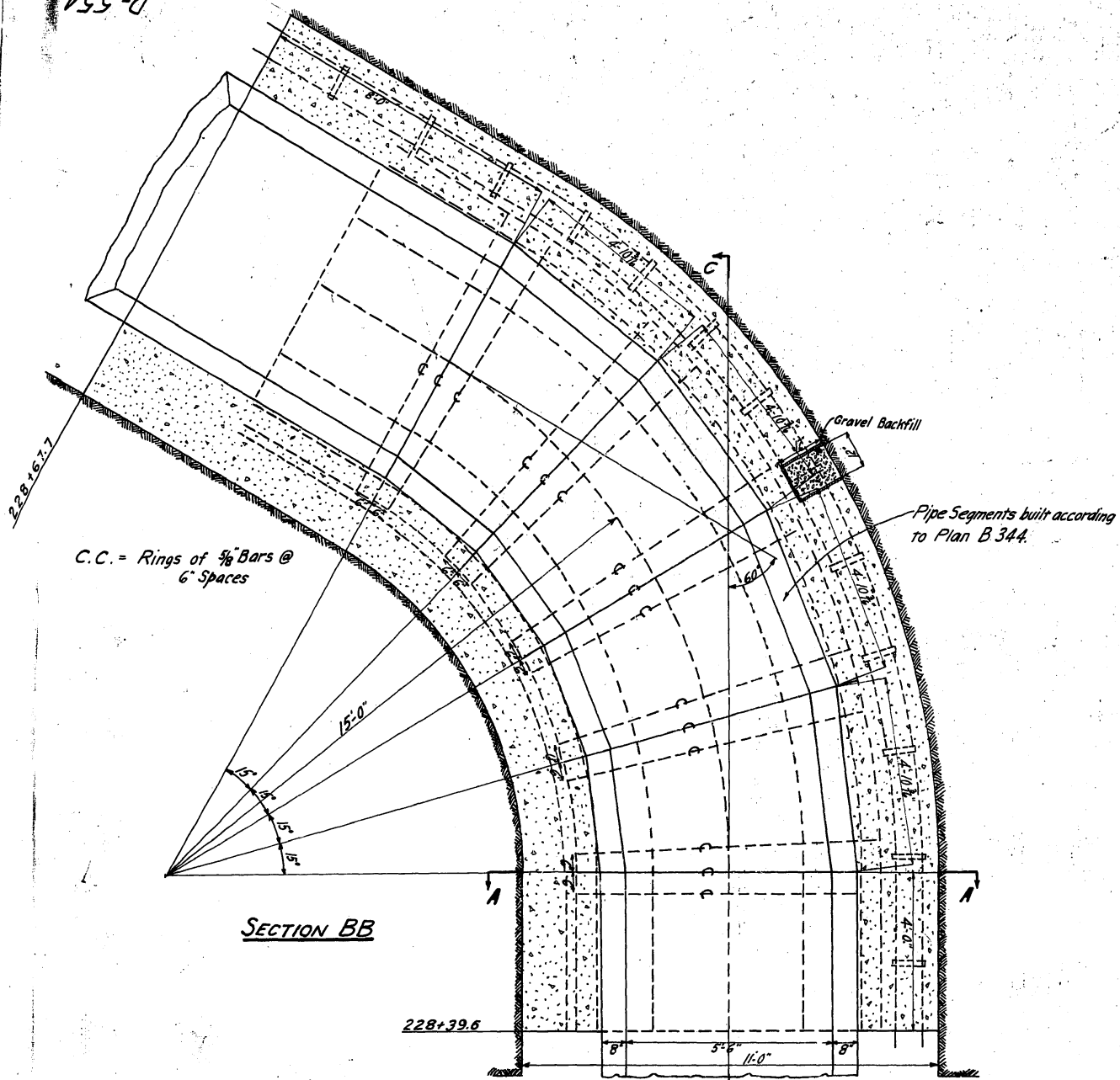
From Joint J113-047 To Joint J114-019
From Mile 4.22 To Mile 4.36

SHEET 34 OF 214
CITY DRAWING NUMBER
D-6312 REV

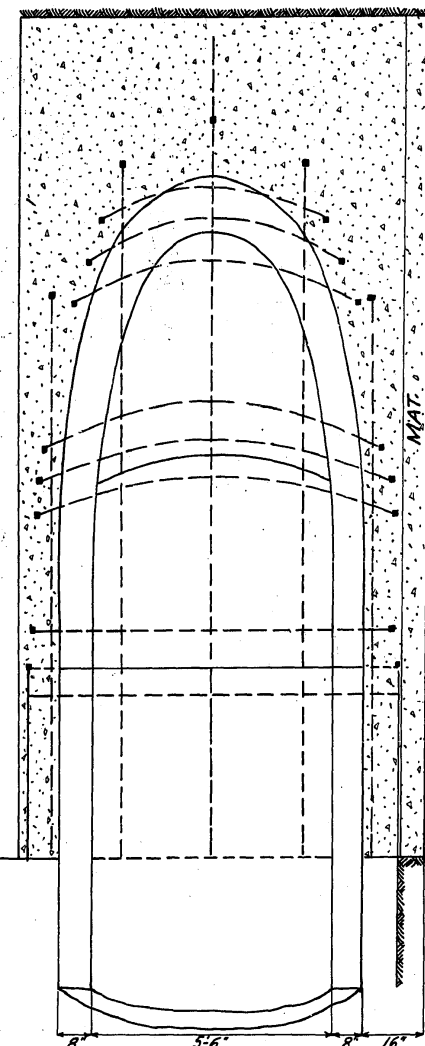
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41-02-D265-136-01

D-6312.dwg

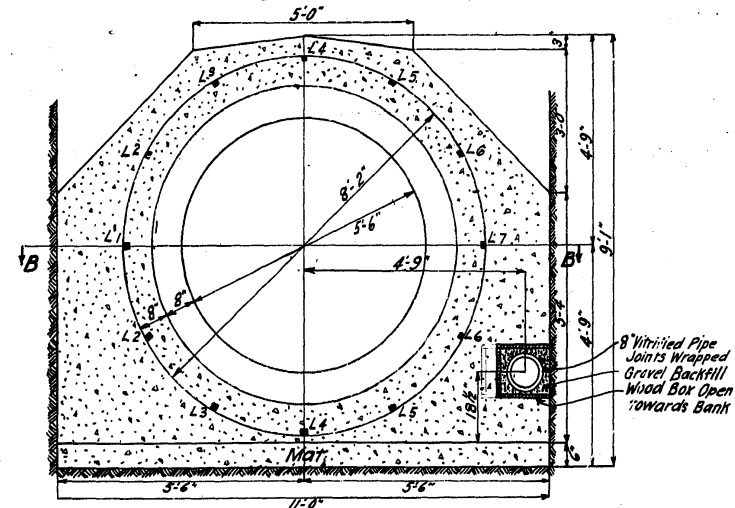
D-554



SECTION BB

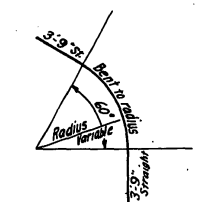


SECTION CC



SECTION AA

Letter	No.	Size	Length	Description
C	15	3/8"	27'-6"	Bent to rings 8'-2" dia.
L1	1	"	19'-0"	" - radius 11'-0"
L2	2	"	19'-6"	" - " - 11'-6"
L3	2	"	21'-2"	" - " - 13'-0"
L4	2	"	23'-3"	" - " - 15'-0"
L5	2	"	25'-4"	" - " - 17'-0"
L6	2	"	26'-10"	" - " - 18'-6"
L7	1	"	27'-6"	" - " - 19'-0"



Detail of Bent Bars L1-L7

Drawn By R.D. 482
 Traced By [Signature]
 Checked By [Signature]
 Approved [Signature]

CHIEF ENGINEER

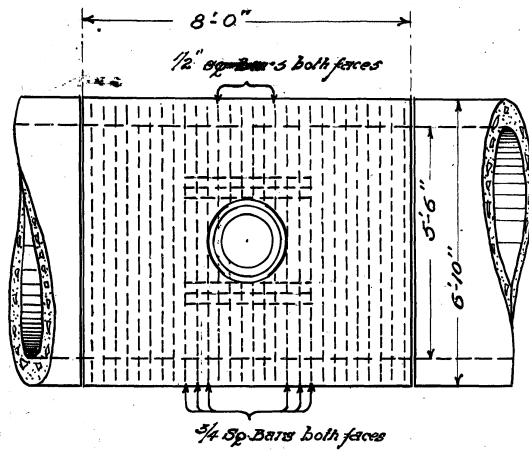
CHAIRMAN OF COMMISSIONERS

CONTRACT # 55 D-554
 GREATER WINNIPEG WATER DISTRICT
 60° ELBOW STA. 228+39.6 TO STA. 228+67.7
 AS CONSTRUCTED

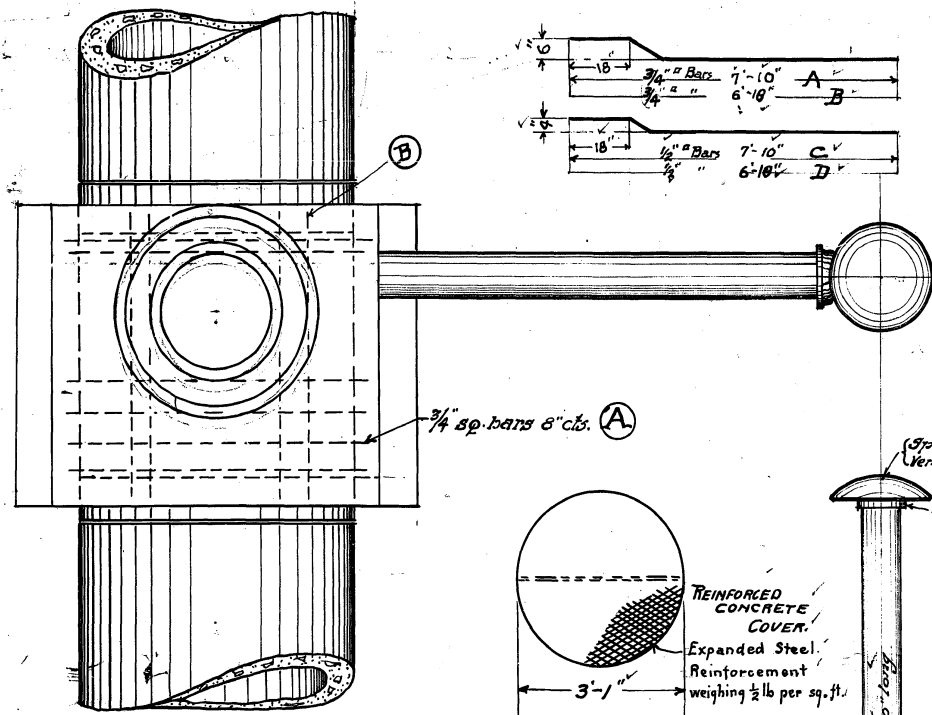
13th Nov 1919

Scale 1/2 in. = 1 ft.

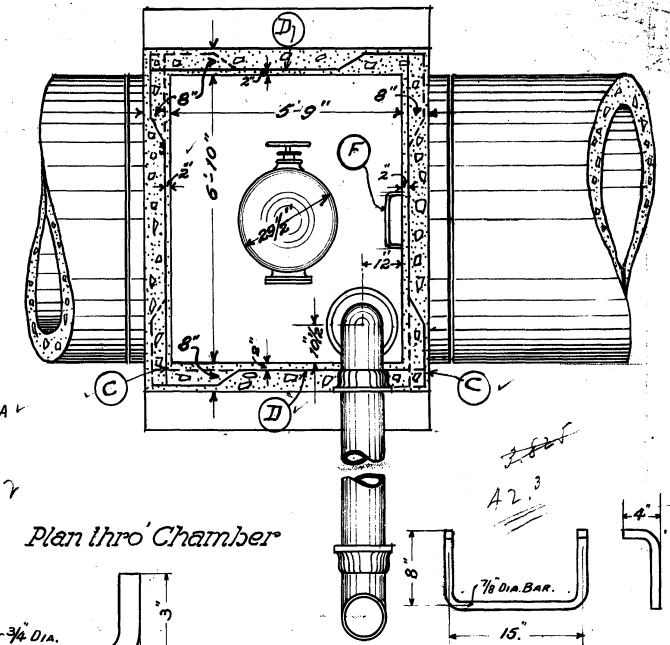
191-3



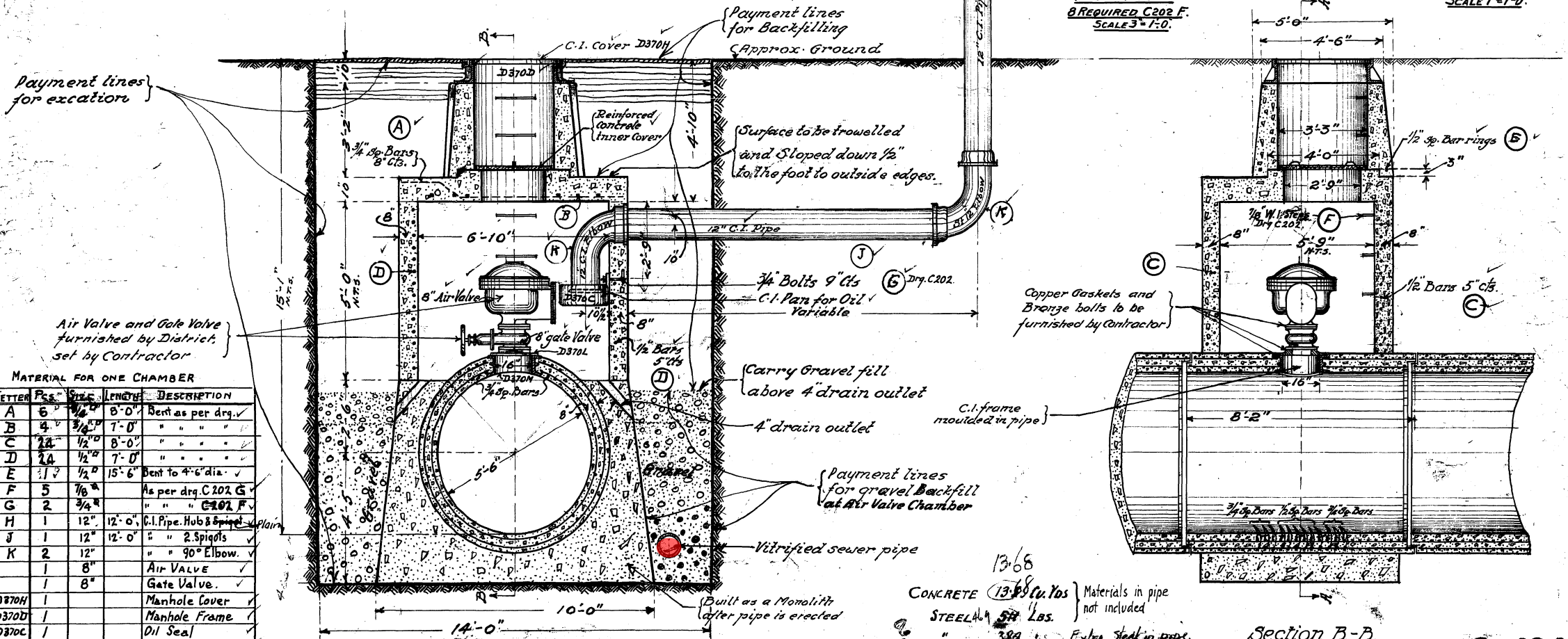
Plan of pipe showing Reinforcing Steel



Roof plan



Plan thro' Chamber



Section A-A

Section B-B

MATERIAL FOR ONE CHAMBER

LETTER	QTY	SIZE	LENGTH	DESCRIPTION
A	6	1/2"	8'-0"	Bent as per drg. ✓
B	4	3/4"	7'-0"	" " " " ✓
C	24	1/2"	8'-0"	" " " " ✓
D	24	1/2"	7'-0"	" " " " ✓
E	1	1/2"	15'-6"	Bent to 4'-6" dia. ✓
F	5	1/8"		As per drg. C202 G ✓
G	2	3/4"		" " " " C202 F ✓
H	1	12"	12'-0"	C.I. Pipe, Hub & Spigot ✓
J	1	12"	12'-0"	" " 2 Spigots ✓
K	2	12"		" " 90° Elbow ✓
	1	8"		Air Valve ✓
	1	8"		Gate Valve ✓
D370H	1			Manhole Cover ✓
D370D	1			Manhole Frame ✓
D370C	1			Oil Seal ✓
D370L	1			Manhole Cover ✓
D370	1			Ventilator Cap Comp. ✓

CONCRETE 13.68 Cu. Yds } Materials in pipe
 STEEL 4.57 LBS. } not included
 " 3.89 " Extra Steel in pipe

CONTRACT No 55

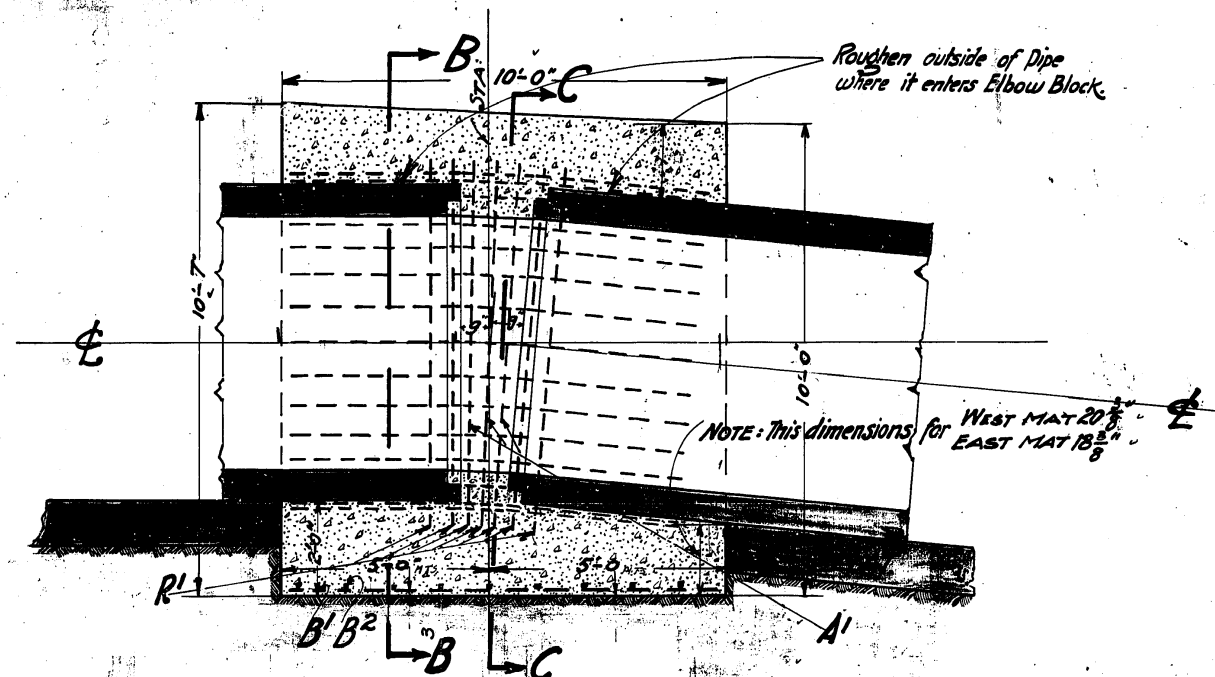
C-161

DRAWN BY *JMB*
 TRACED BY *A.P.B.*
 CHECKED BY *M.S.*

Bill of Material & Reinforcing details added May 7, 1917 ✓
 May 11, 1917 - "Spigot" changed to "Flange" for Pipe "H" ✓
 Concrete & steel quantities added Feb. 2, 1918

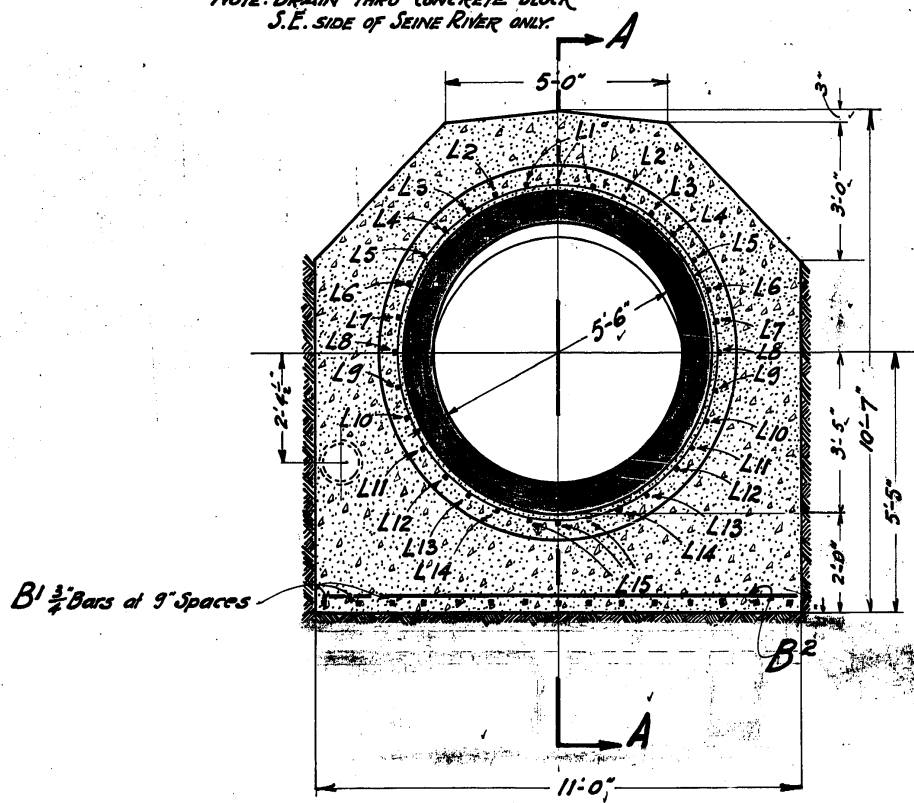
James McFuerles
 CONSULTING ENGINEER
W. Schae
 CHIEF ENGINEER

GREATER WINNIPEG WATER DISTRICT
TYPICAL DETAIL OF AIR VALVE CONNECTIONS
AND CHAMBER FOR 5'-6" PRESSURE PIPE
 JULY 27th 1916
 Scale 3/4" = 1'-0"

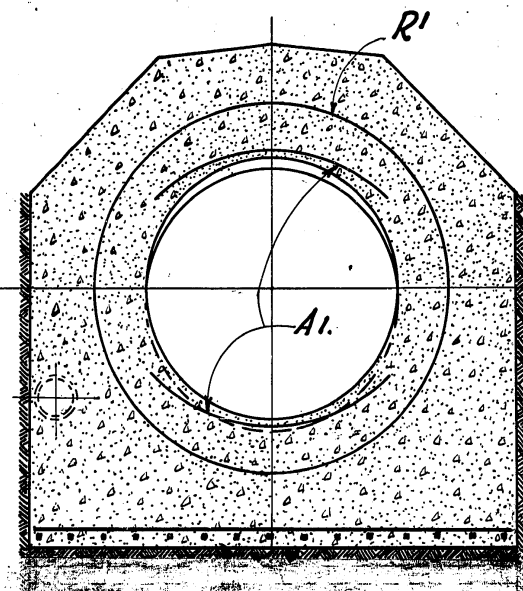


SECTION A-A.

NOTE: DRAIN THRU CONCRETE BLOCK S.E. SIDE OF SEINE RIVER ONLY.



SECTION B-B.



SECTION C-C.

2'	3'-10"	3'-10"	2'
	1'-9"	L 1	
	1'-8 1/2"	L 2	
	1'-8"	L 3	
	1'-7"	L 4	
	1'-6 1/2"	L 5	
	1'-5 1/2"	L 6	
	1'-5"	L 7	
	1'-4"	L 8	
	1'-3 1/2"	L 9	
	1'-2 1/2"	L 10	
	1'-2"	L 11	
	1'-1 1/2"	L 12	
	1'-0 1/2"	L 13	
	1'-0"	L 14	
	0'-11 1/2"	L 15	

NOTE: Bill for Elbow Block only.

BILL OF REINFORCING STEEL.				
LETTER	Nº	SIZE	LENGTH	DESCRIPTION.
L 1	3	3/8"	9'-5"	BENT AS PER DETAIL.
L 2	2	"	9'-4 1/2"	" " " "
L 3	2	"	9'-4"	" " " "
L 4	2	"	9'-3"	" " " "
L 5	2	"	9'-2 1/2"	" " " "
L 6	2	"	9'-1 1/2"	" " " "
L 7	2	"	9'-1"	" " " "
L 8	2	"	9'-0"	" " " "
L 9	2	"	8'-11 1/2"	" " " "
L 10	2	"	8'-10 1/2"	" " " "
L 11	2	"	8'-10"	" " " "
L 12	2	"	8'-9 1/2"	" " " "
L 13	2	"	8'-8 1/2"	" " " "
L 14	2	"	8'-8"	" " " "
L 15	3	"	8'-7 1/2"	" " " "
A 1	6	"	8'-9"	CURVE 3'-9" RADIUS.
R 1	7	"	26'-8"	RINGS 8'-0" DIAM.
B 1	15	3/4"	9'-6"	STRAIGHT.
B 2	9	1"	10'-8"	"

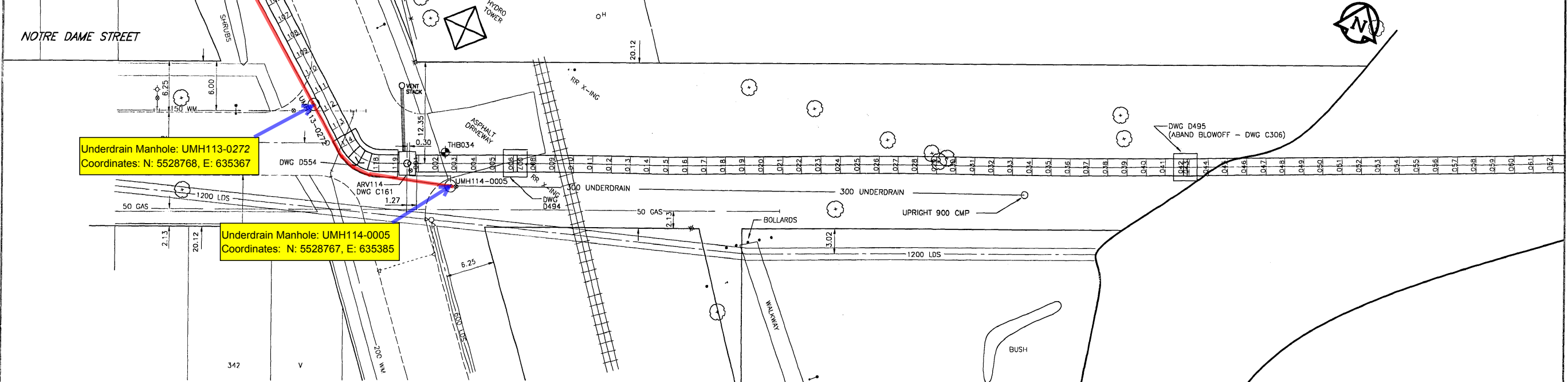
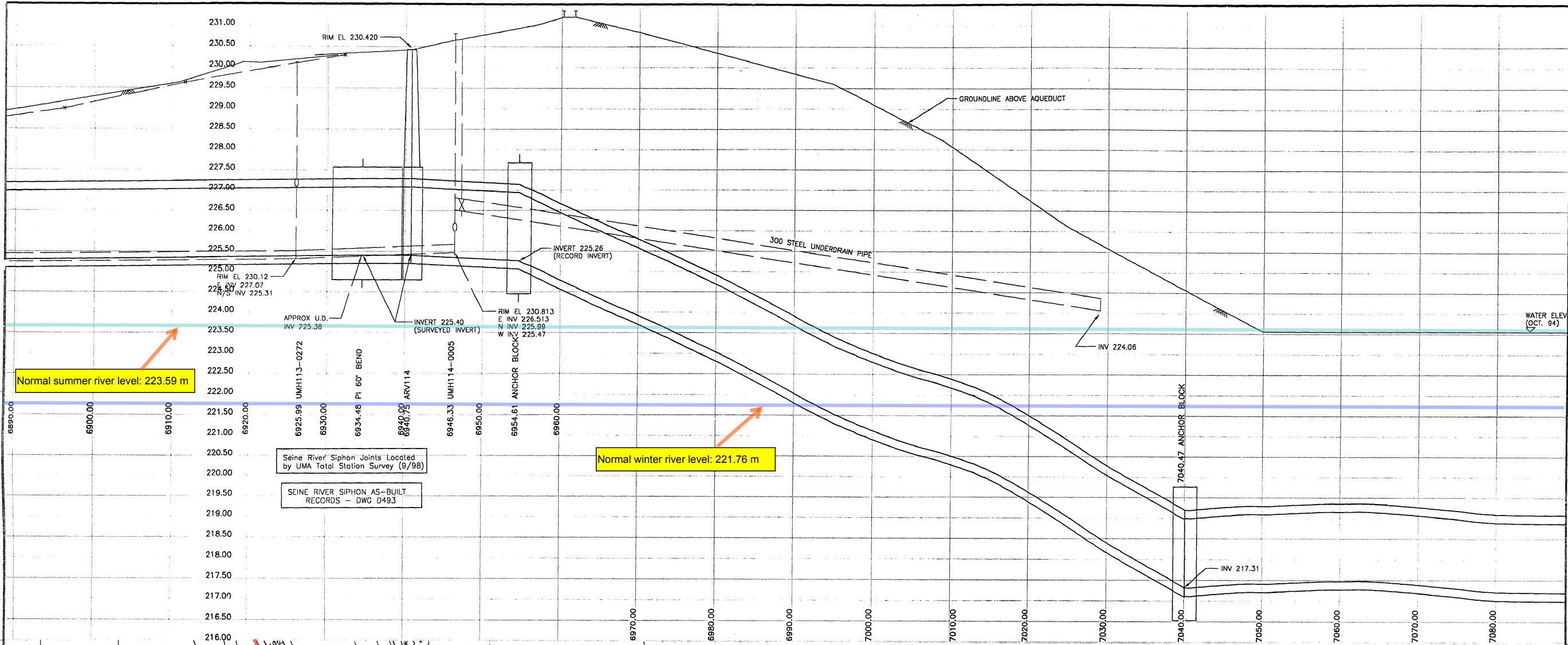
CONCRETE = 25 CU YDS.
STEEL = 1300 LBS.

Drawn By *A.P.*
Checked *JH*
Reviewed *JH*
Approved *JH*

NOTE: ROUNDING OF PIPE IN BLOCK, ADDED - 4/7/18, P.C.S.

W. Schae
CHIEF ENGINEER

CONTRACT 55 D.494.
GREATER WINNIDEG WATER DISTRICT
5'-6" PRESSURE PIPE
SPECIAL ELBOWS FOR SEINE RIVER CROSSING
MAY 18TH 1918
SCALE 3/4" = 1' FOOT



150 mm WM	WATERMAIN	300 mm LDS	LAND DRAINAGE SEWER	HYDRO	AQUEDUCT JOINT	AQUEDUCT PIPE	
HYDRANT	HYDRANT	250 mm WWS	WASTE WATER SEWER	COMMUNICATION	UNDERDRAIN MANHOLE	UNDERDRAIN	
VALVE	VALVE	MANHOLE	MANHOLE	TRAFFIC SIGNALS	UNDERDRAIN RISER	GROUNDLINE	
REDUCER	REDUCER	CATCH BASIN	CATCH BASIN	PEDESTAL	UNDERDRAIN WELL	CENTERLINE	
COUPLING	COUPLING	CURB INLET	CURB INLET	SIGNAL CONTROLLER	TESTHOLE	N/W GUTTER	
WM FITTINGS	WM FITTINGS	CULVERT	CULVERT	GAS	PEIZOMETER	S/E GUTTER	
CURB STOP	CURB STOP	DITCH	DITCH	STEAM HEAT		N/W DITCH	
EDGE OF PAVEMENT	EDGE OF PAVEMENT	LAMP STANDARD	LAMP STANDARD	FENCE		S/E DITCH	
RAILWAY TRACK	RAILWAY TRACK	TRAFFIC SIGNAL	TRAFFIC SIGNAL	TREE		N/W PROPERTY LINE	
GEODETIC BENCHMARK	GEODETIC BENCHMARK	WOOD POLE	WOOD POLE	BUILDING		S/E PROPERTY LINE	
SURVEY BAR	SURVEY BAR	POLE ANCHOR	POLE ANCHOR	SUBSURFACE STRUCTURE			
EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PROFILE

NO. REVISIONS DATE BY

DATA SOURCES
 Aqueduct Joints: Interpreted from Manholes Located in 1994
 UMA Total Station Survey and 1995 Internal Inspections
 Unless Otherwise Noted
 Surface Features: UMA Total Station Survey (1994)
 Legal Right of Way M11 to M112: City of Wpg LBS (1994)
 Legal Right of Way M12 to M117: Pollock & Wright (1995)
 Utilities: Compiled from Information Obtained From
 City of Winnipeg Underground Structures (1994)

METRIC
 WHOLE NUMBERS INDICATE MILLIMETRES
 DECIMALIZED NUMBERS INDICATE METRES

UMA Engineering Ltd.
 Engineers and Planners

CASS
 CHAM GORE & STORRE LIMITED

DESIGNED BY: BC
 CHECKED BY: CCM

DRAWN BY: BC/MAG
 APPROVED BY: CCM

HOR. SCALE: 1:250
 VERTICAL: 1:50

RELEASED FOR CONSTRUCTION

DATE: _____

ENGINEER'S SEAL

PROVINCE OF MANITOBA
 1998
 C. C. MACEY
 REGISTERED ENGINEER

CONSULTANT DRAWING NO. 35
 41-02-D265-136-01

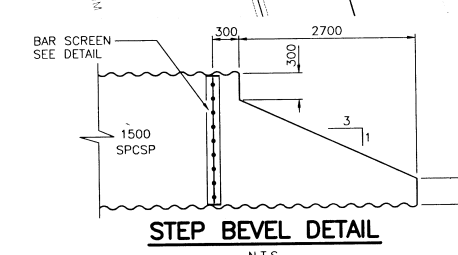
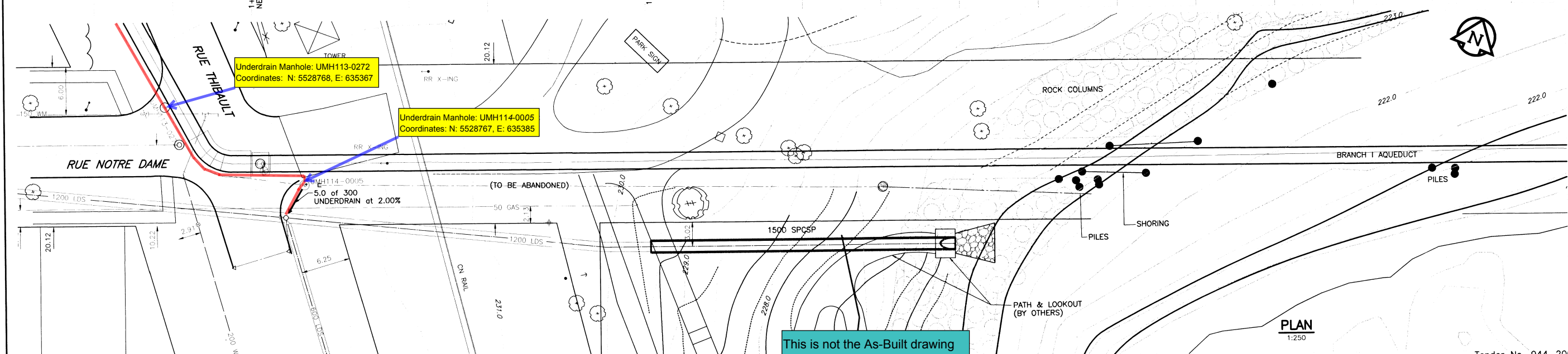
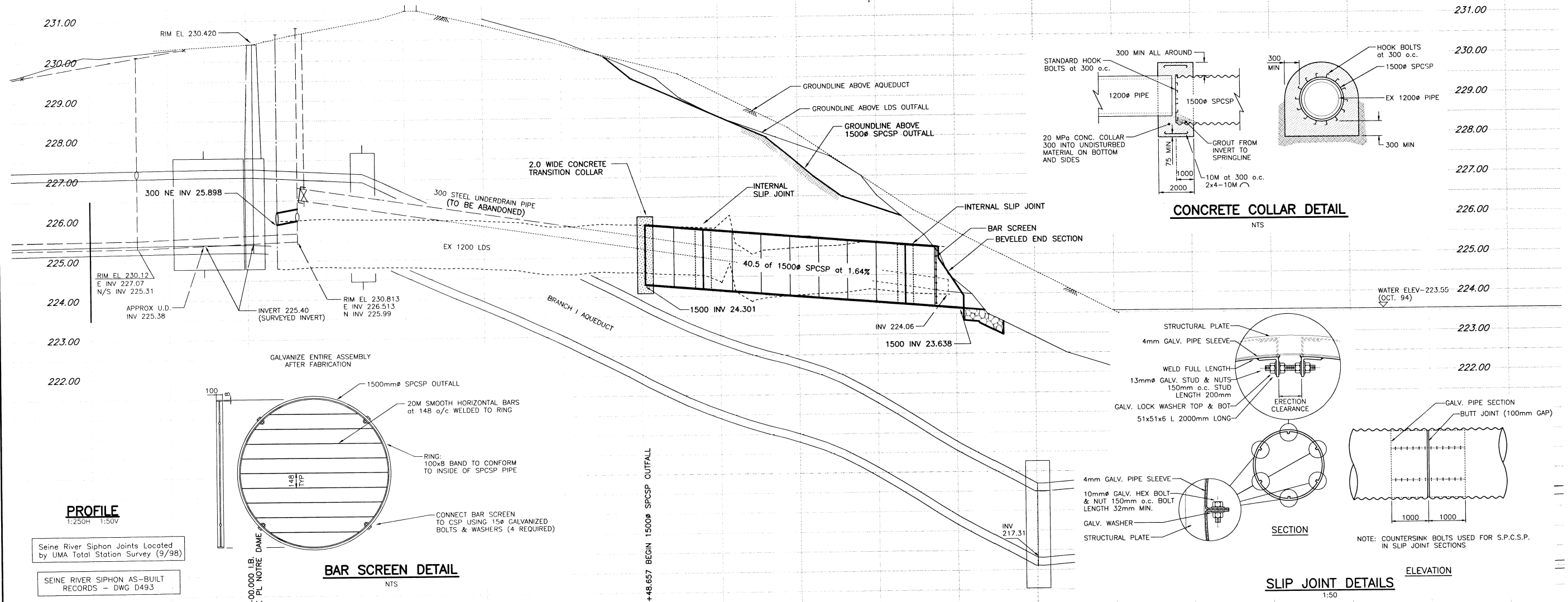
THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT

**Plan and Profile of
 Branch I Aqueduct**

From Joint J113-106 To Joint J114-062
 From Mile 4.31 To Mile 4.42

SHEET 35 OF 214
 CITY DRAWING NUMBER
D-6313 REV

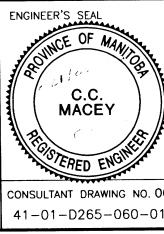
D-6313.dwg



METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

NO.	REVISIONS	DATE	BY

UMA UMA Engineering Ltd. Engineers and Planners	CGSS CH2M GORE & STORIE LIMITED
DESIGNED BY: CCM	CHECKED BY: [Signature]
DRAWN BY: LJV	APPROVED BY: [Signature]
HOR. SCALE: AS NOTED	RELEASED FOR CONSTRUCTION: [Signature]
VERTICAL: NA	DATE: [Date]

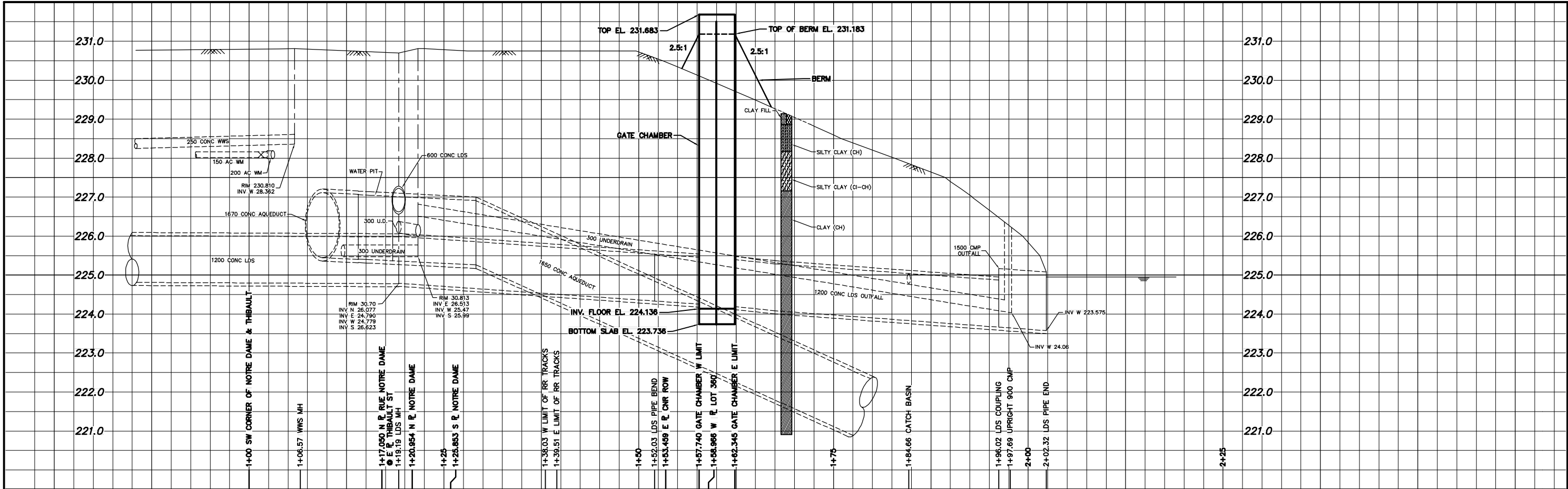


THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

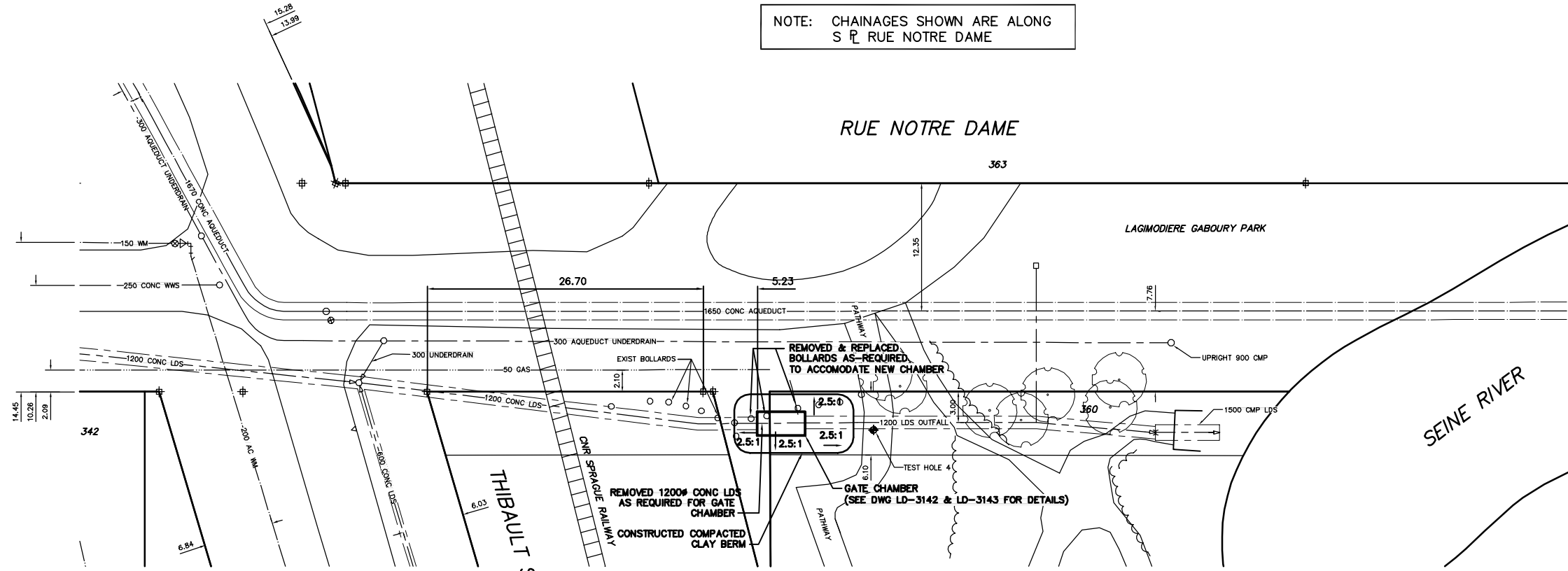
SHOAL LAKE AQUEDUCT REHABILITATION
SEINE RIVER SLOPE STABILIZATION
RIVERBANK STABILIZATION CONTRACT
OUTFALL REPLACEMENT

CONSULTANT DRAWING NO. 06
41-01-0265-060-01

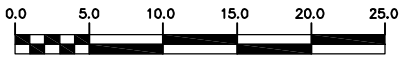
SHEET 6 OF 6
CITY DRAWING NUMBER
REV
D-7081



NOTE: CHAINAGES SHOWN ARE ALONG S R RUE NOTRE DAME



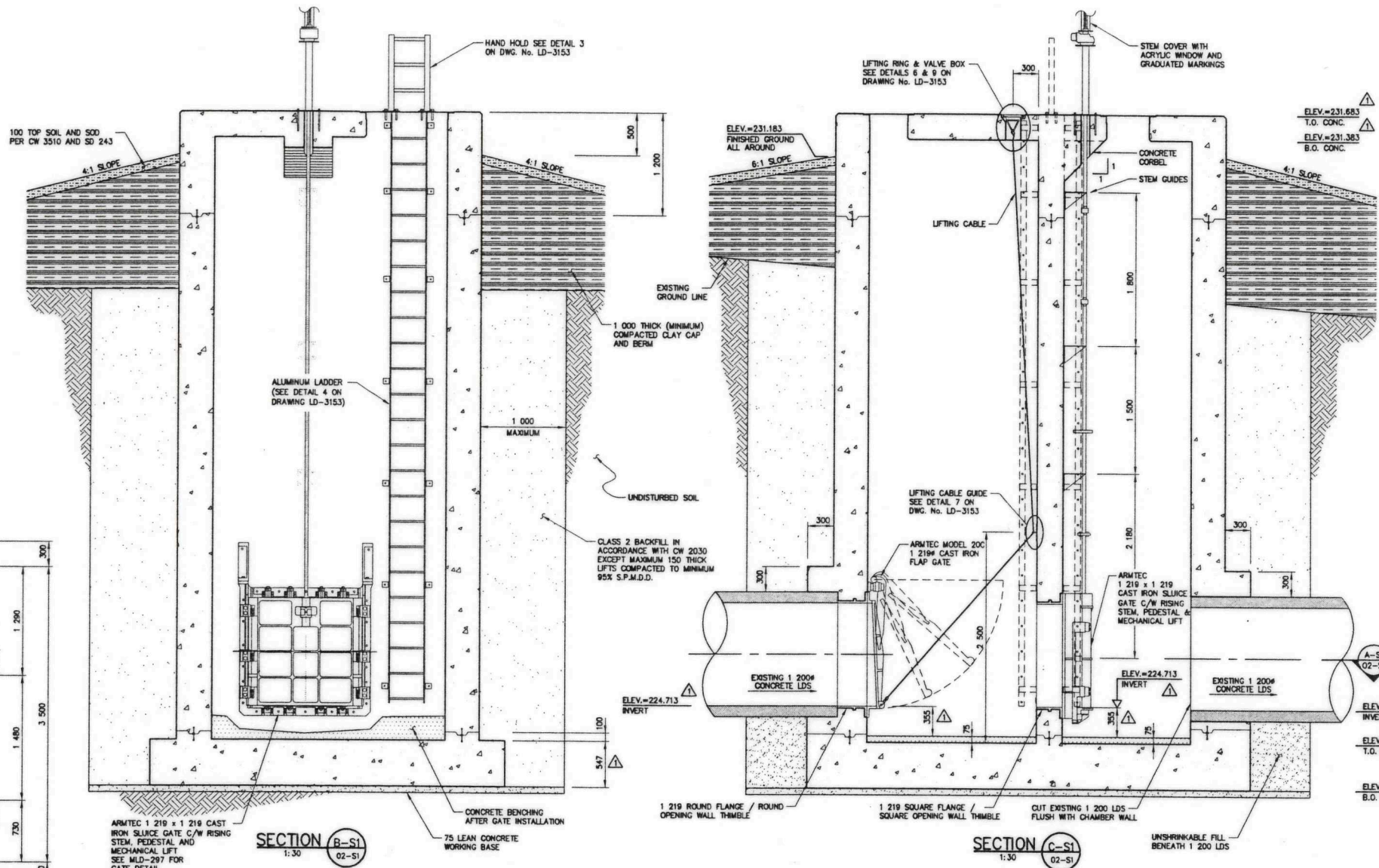
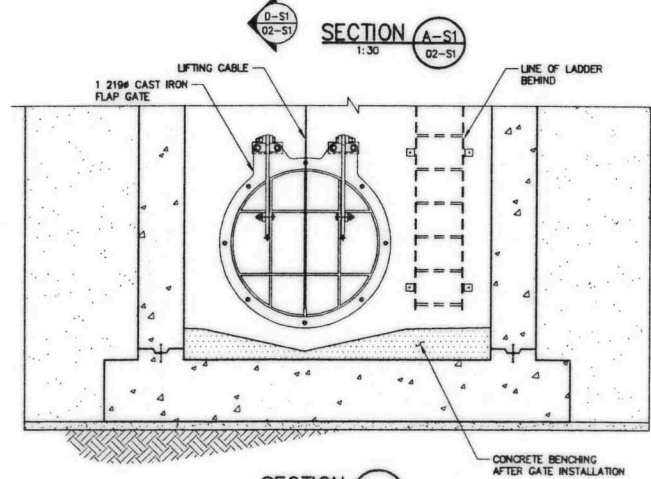
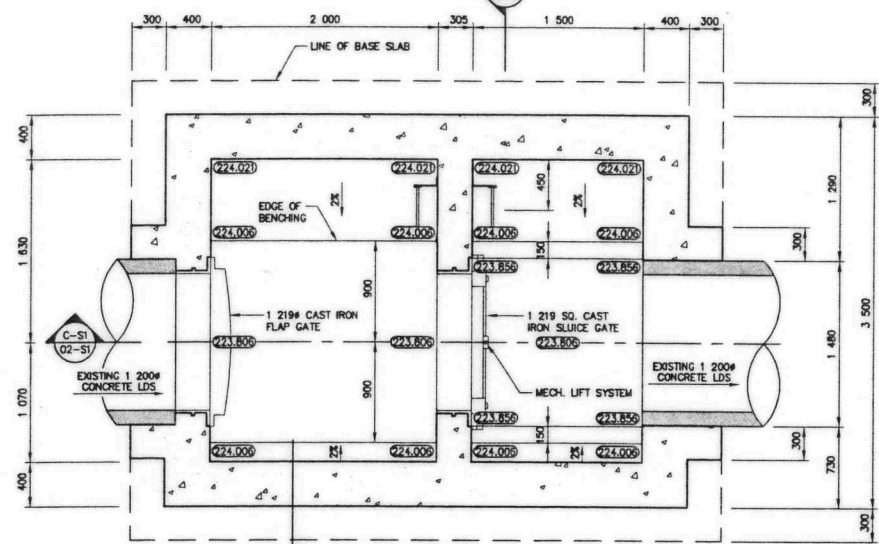
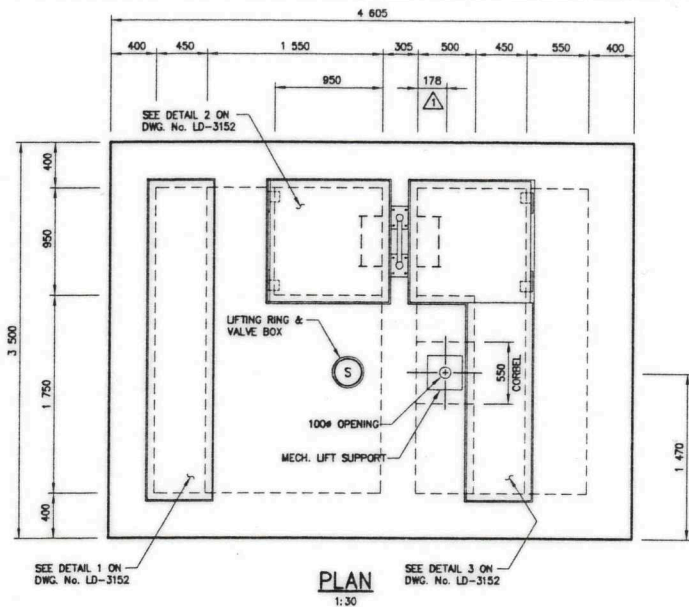
METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES



CONTRACTOR: GATEWAY INDUSTRIES
PROJECT COMPLETION DATE: 2006 09 19

RECORD DRAWING
WATER AND WASTE DEPARTMENT

200 WM	WATERMAIN	200 WM	SL , HYDRO	150 WM	WATERMAIN	150 WM	LOCATION APPROVED	B.M. ELEV.	FIELD BOOK #:	CITY OF WINNIPEG WATER AND WASTE ENGINEERING DIVISION	ENGINEER'S SEAL ORIGINAL MYLAR SIGNED BY K.R. ZUREK 07/02/12	THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT 2005 OUTFALL GATE CHAMBER UPGRADES RUE NOTRE DAME LDS OUTFALL GATE CHAMBER SITE PLAN (LOCATED IN GABOURY PARK)	SHEET 4 OF 16 CITY DRAWING NUMBER LD-3141	
⊕	HYDRANT	+	TRAFFIC SIGNALS	---	HYDRANT	---	POSTED TO LBS	DATE	DESIGNED BY DS					CHECKED BY TW
⊙	VALVE	⊕	GAS	---X---	VALVE	---			DRAWN BY MJK/CJH					APPROVED BY KZ
525 LDS	LAND DRAINAGE SEWER	525 LDS	50 GAS	---	GAS	---	DATE	1:250	1:50	HOR. SCALE	RELEASED FOR CONSTRUCTION	BID OPPORTUNITY: 490-2005	FILENAME : LD-3141.dwg	
375 WWS	WASTEWATER SEWER	375 WWS	---	250 WWS	WASTEWATER SEWER	250 WWS	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.	1.1)	2007 01 30	MKT	DATE	2005 08 12	PLOT DATE: 2007 01 31	
○	MANHOLE	●	FENCE	---	PROFILE	---	NO.	REVISIONS	DATE	BY	DATE	DATE		
□	CATCH BASIN	■	POLE - HYDRO, MTS	---	GROUND ABOVE PIPE	---								
▽	CURB INLET	▼	CURB STOP	---										
┌───┐	JUNCTIONS	┌───┐	GUY ANCHOR											
┌───┐	CULVERT	┌───┐	LIGHT STANDARD											
○	ANODE	○	TREE											
---	EXISTING	---	PROPOSED	---	EXISTING	---								
---	LEGEND-PLAN	---	PROPOSED	---	LEGEND-PROFILE	---								



GENERAL NOTES:

- DESIGN IS IN ACCORDANCE WITH THE NATIONAL BUILDING CODE OF CANADA 1995 EDITION PLUS 1998 MANITOBA AMENDMENTS. CONCRETE WALLS WERE DESIGNED IN ACCORDANCE WITH THE RECOMMENDATIONS CONTAINED IN A3130R FOR WATERTIGHT STRUCTURES.
- WATERSTOPS WERE PROVIDED AT ALL CONSTRUCTION JOINTS. CONSTRUCTION JOINT LOCATIONS WERE APPROVED BY THE CONTRACT ADMINISTRATOR.
- STRUCTURAL DRAWINGS DO NOT SHOW ALL MECHANICAL OPENINGS. REFER TO MECHANICAL DRAWINGS FOR ACTUAL LOCATIONS AND ELEVATIONS OF OPENINGS.
- DESIGN LOADS ARE AS NOTED BELOW:

FLOOR LIVE LOADS:	3.8 kPa
HATCHES	3.8 kPa
ALL OTHER AREAS	3.8 kPa
ROOF LOADS:	
SNOW LOAD	1.6 kPa PLUS APPLICABLE NBC MODIFICATIONS
WIND LOAD:	0.42 kPa
FOUNDATION WALL LOADS:	
LIVE LOAD	6.0 kPa ADDITIONAL CONSTRUCTION LOAD
LATERAL FORCE	$P = K (\gamma \times H + q)$
WHERE $K = 0.7$, $\gamma = 20 \text{ kN/m}^3$, $H = \text{HT. OF FILL (m)}$, $q = 6.0 \text{ kPa}$	
- DESIGN FLOOD LEVELS:

300 YEAR FLOOD:	231.220
FLOOD PROTECTION:	230.000

FOUNDATIONS:

- FOUNDATIONS DESIGNED IN ACCORDANCE WITH RECOMMENDATIONS CONTAINED IN THE JULY 20, 2005, GEOTECHNICAL INVESTIGATION BY KGS GROUP.

CAST-IN-PLACE CONCRETE:

- TO BE READ IN CONJUNCTION WITH CW 2160 AND AS AMENDED IN ACCORDANCE WITH THESE NOTES.
- CONCRETE WORKS ARE IN ACCORDANCE WITH THE LATEST EDITION OF CSA A23.1.
- CONCRETE MIX WAS IN ACCORDANCE WITH PERFORMANCE CONCRETE, AND HAD THE FOLLOWING PROPERTIES:
 - CLASS OF EXPOSURE: S-1
 - MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS: 35MPa
 - MAXIMUM SLUMP: 80mm \pm 20mm
 - AIR CONTENT: 5 - 8%
 - MAXIMUM WATER/CEMENT RATIO: 0.40
- CONCRETE COVER 50mm.
- ALL EXTERIOR CORNERS CHAMFERED 20mm.

REINFORCING STEEL:

- TO BE READ IN CONJUNCTION WITH CW 2160 AND AS AMENDED IN ACCORDANCE WITH THESE NOTES.
- ALL REINFORCING STEEL CONFORMED TO CSA G30.18M, GRADE 400.
- CONCRETE REINFORCING WORK PERFORMED IN ACCORDANCE WITH CSA A23.1.

STRUCTURAL STEEL:

- ALL STRUCTURAL STEEL SHAPES AND PLATES ARE IN ACCORDANCE WITH CSA C40.21-M, GRADE 300K, EXCEPT W. HP AND HSS SECTIONS WHICH ARE GRADE 350W CLASS C.
- ALL GALVANIZING COMPLIED WITH THE LATEST EDITION OF CSA C164, WITH MINIMUM ZINC COATING OF 800g/m².
- ALL BOLTS CONFORMED TO ASTM A316 STAINLESS STEEL.

OTHER NOTES:

- LOCATION AND SEWER DETAILS ARE SHOWN ON DRAWING No. LD-3141.
- ALL ALUMINUM IN CONTACT WITH CONCRETE ARE PAINTED WITH BITUMINOUS ISOLATION COATING AT THE ALUMINUM / CONCRETE INTERFACE.

METRIC

WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

May 25, 2007 - 8:53am
 P:\41479-02\1179_000\Drawings\DWG\CONCRETE\2005 Outfall Gate Chamber Upgrade\Drawings\CONCRETE\2005 Outfall Gate Chamber Upgrade\LD-3142.DWG - LD-3142.dwg - Metric - Concrete
 S1 Conv. & S2 Read.dwg - Metric - Concrete

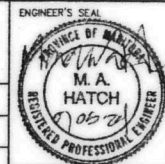
APEGM
Certificate of Authorization
ND LEA Engineers & Planners Inc.
No. 2728 Expiry: April 30, 2006

NOTE:
These design documents are prepared solely for the use by the party with whom the design professional has entered into a contract and there are no representations of any kind made by the design professional to any party with whom the design professional has not entered into a contract.

A = DETAIL/SECTION No.
B = DRAWING WHERE SHOWN
C = DRAWING WHERE TAKEN

AS CONSTRUCTED

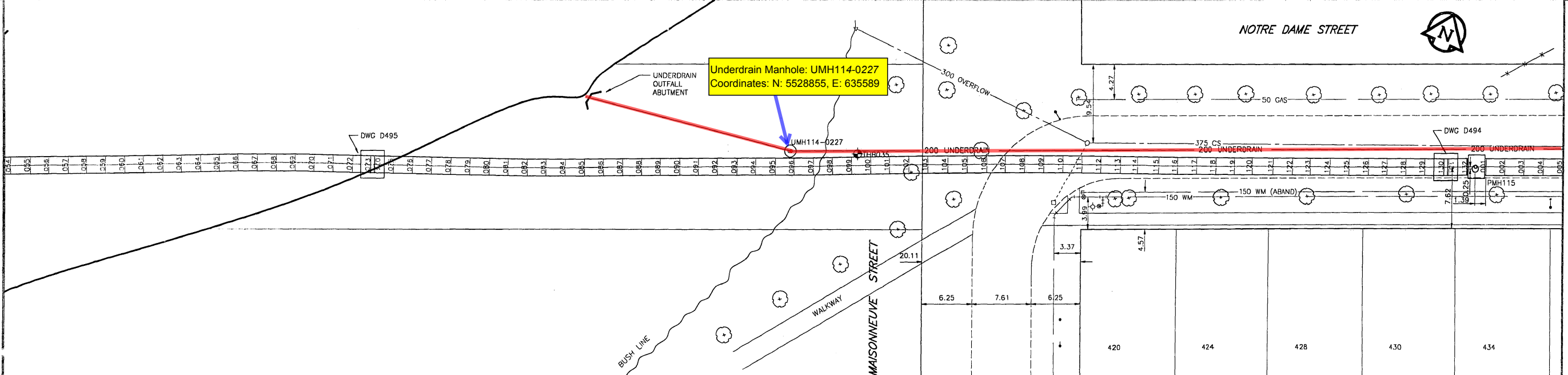
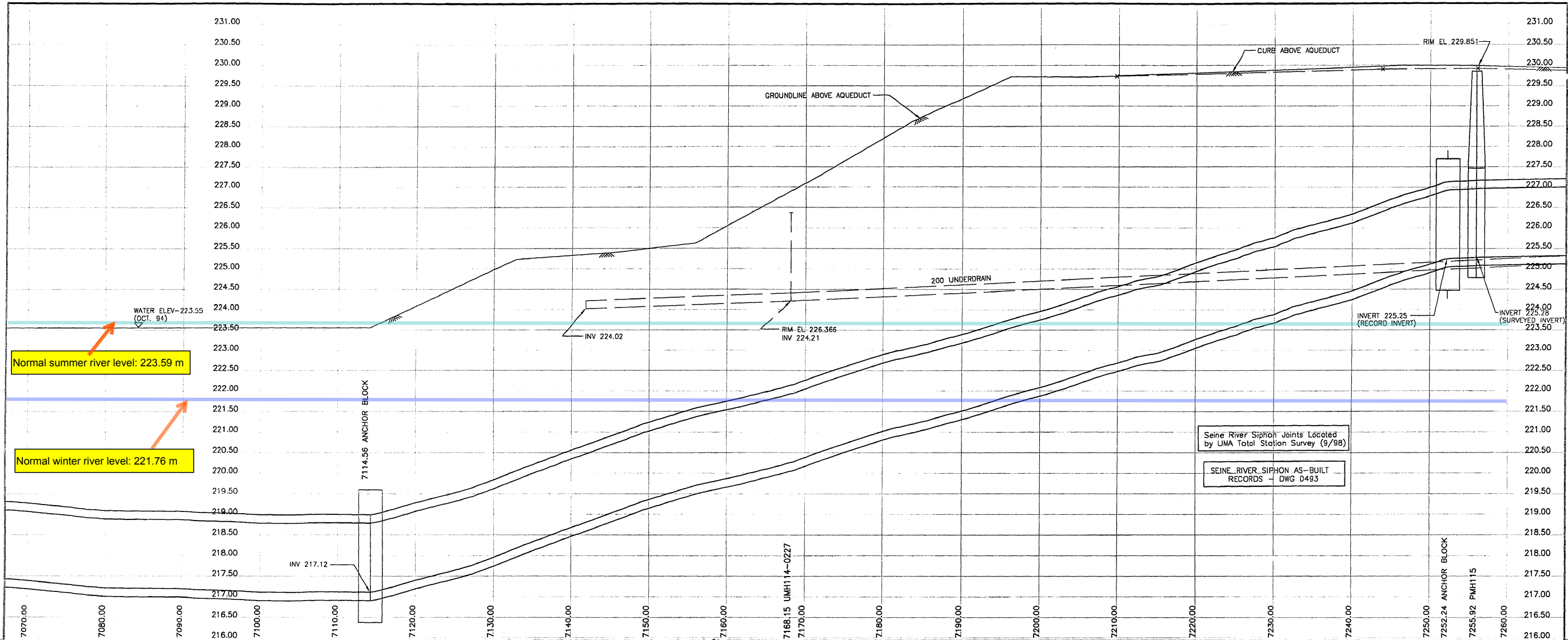
ND LEA Engineers & Planners Inc.			
Suite 111-93 Lombard Avenue Winnipeg, Manitoba R3B 3B1			
Phone (204) 943-3178 Facsimile (204) 943-4948			
DESIGNED BY	MH	CHECKED BY	JPL
DRAWN BY	CDP	APPROVED BY	-
HOR. SCALE	AS SHOWN	RELEASED FOR CONSTRUCTION	
NO. REVISIONS	DATE	BY	DATE
1	AS CONSTRUCTED	07 03 23	ELD
		DATE	05 06 07
		DATE	05 06 07



THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

2005 OUTFALL GATE CHAMBER UPGRADES
RUE NOTRE DAME
LDS OUTFALL GATE CHAMBER
CONCRETE DETAILS

CONSULTANT DRAWING NUMBER
41479-02-S1
SHEET 5 OF 16
CITY DRAWING NUMBER
LD-3142



EXISTING		LEGEND - PLAN		EXISTING		LEGEND - PLAN		EXISTING		LEGEND - PROFILE	
150 mm WM	WATERMAIN	300 mm LBS	LAND DRAINAGE SEWER	HYDRO	AQUEDUCT JOINT	100	AQUEDUCT PIPE	UNDERDRAIN	UNDERDRAIN	GROUNDLINE	CENTERLINE
HYDRANT	WASTE WATER SEWER	250 mm WWS	MANHOLE	COMMUNICATION	UNDERDRAIN MANHOLE	TRAFFIC SIGNALS	UNDERDRAIN RISER	UNDERDRAIN	UNDERDRAIN WELL	GROUNDLINE	N/W GUTTER
VALVE	MANHOLE		CATCH BASIN	TRAFFIC SIGNALS	UNDERDRAIN RISER	PEDESTAL	UNDERDRAIN WELL	UNDERDRAIN	TESTHOLE	GROUNDLINE	S/E GUTTER
REDUCER	MANHOLE		CULVERT	PEDESTAL	UNDERDRAIN WELL	SIGNAL CONTROLLER	TESTHOLE	UNDERDRAIN	PEIZOMETER	GROUNDLINE	N/W DITCH
COUPLING	MANHOLE		DITCH	SIGNAL CONTROLLER	TESTHOLE	GAS	PEIZOMETER	UNDERDRAIN		GROUNDLINE	S/E DITCH
WM FITTINGS	MANHOLE			STEAM HEAT				UNDERDRAIN		GROUNDLINE	N/W PROPERTY LINE
CURB STOP	MANHOLE			FENCE				UNDERDRAIN		GROUNDLINE	S/E PROPERTY LINE
EDGE OF PAVEMENT	MANHOLE			TREE				UNDERDRAIN		GROUNDLINE	
RAILWAY TRACK	MANHOLE			BUILDING				UNDERDRAIN		GROUNDLINE	
GEODETTIC BENCHMARK	MANHOLE			SUBSURFACE STRUCTURE				UNDERDRAIN		GROUNDLINE	
SURVEY BAR	MANHOLE							UNDERDRAIN		GROUNDLINE	
	MANHOLE							UNDERDRAIN		GROUNDLINE	

UMA
UMA Engineering Ltd.
Engineers and Planners

CASS
CHYM GORE & STORRE LIMITED

DESIGNED BY: BC
DRAWN BY: BC/MAG
HOR. SCALE: 1:250
VERTICAL: 1:50

ENGINEER'S SEAL
PROVINCE OF MANITOBA
C. C. MACEY
REGISTERED ENGINEER

THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

Plan and Profile of
Branch I Aqueduct

From Joint J114-054 To Joint J115-005
From Mile 4.41 To Mile 4.53

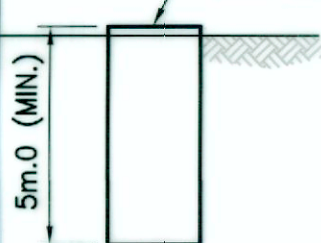
SHEET 36 OF 214
CITY DRAWING NUMBER
D-6314 REV

D-6314.dwg

COLUMN INSTALLATION PROCEDURE

SCALE: 1:250 METRIC

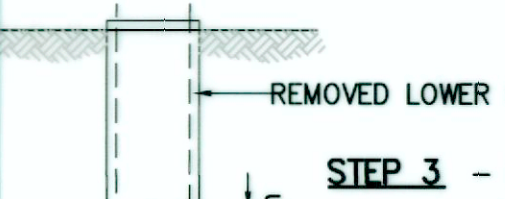
INSTALLED 3.05m DIA. UPPER SLEEVE



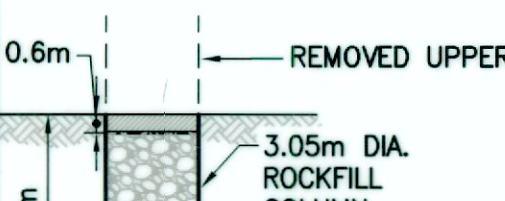
STEP 1 - INSTALLED 3.05m DIA. COLUMN SLEEVE (UPPER SLEEVE) SUBSEQUENT TO DRILLING TO 5.0m MIN. DEPTH



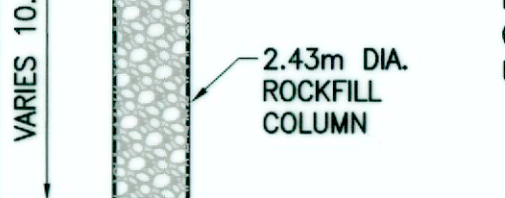
STEP 2 - INSTALLED 2.43m DIA. COLUMN SLEEVE (LOWER SLEEVE) SUBSEQUENT TO DRILLING TO 1.0m INTO TILL



STEP 3 - PLACED ROCKFILL IN LOWER SLEEVE TO 1.0m (MIN.) ABOVE BOTTOM OF UPPER SLEEVE AND REMOVED LOWER SLEEVE



STEP 4 - COMPLETED ROCKFILL PLACEMENT TO WITHIN 0.6m OF SURFACE AND REMOVED UPPER SLEEVE



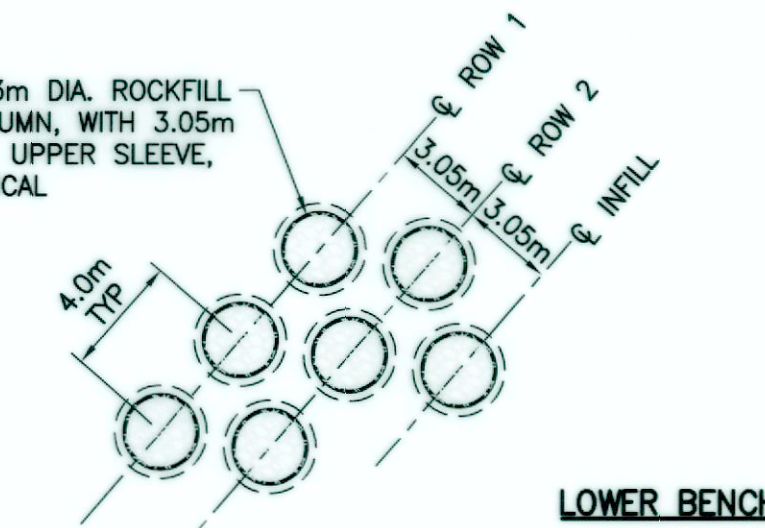
STEP 5 - COMPACTED ROCKFILL

STEP 6 - INSTALLED CLAY CAP

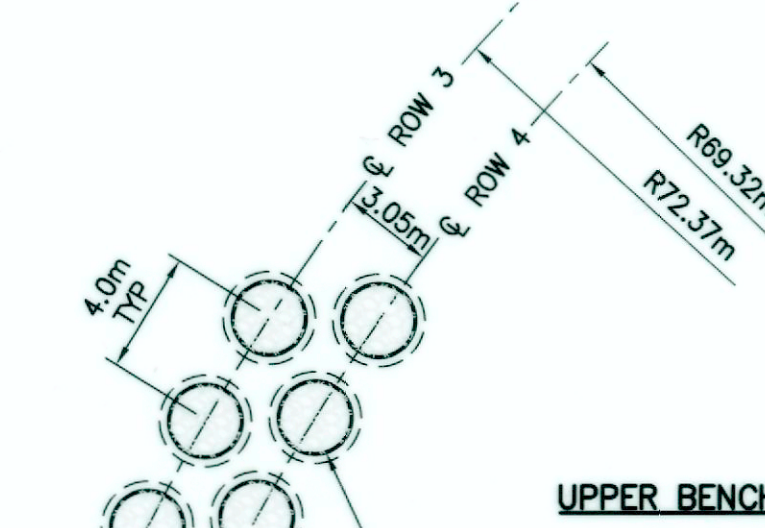
ROCKFILL COLUMN LAYOUT GEOMETRY

SCALE: 1:250 METRIC

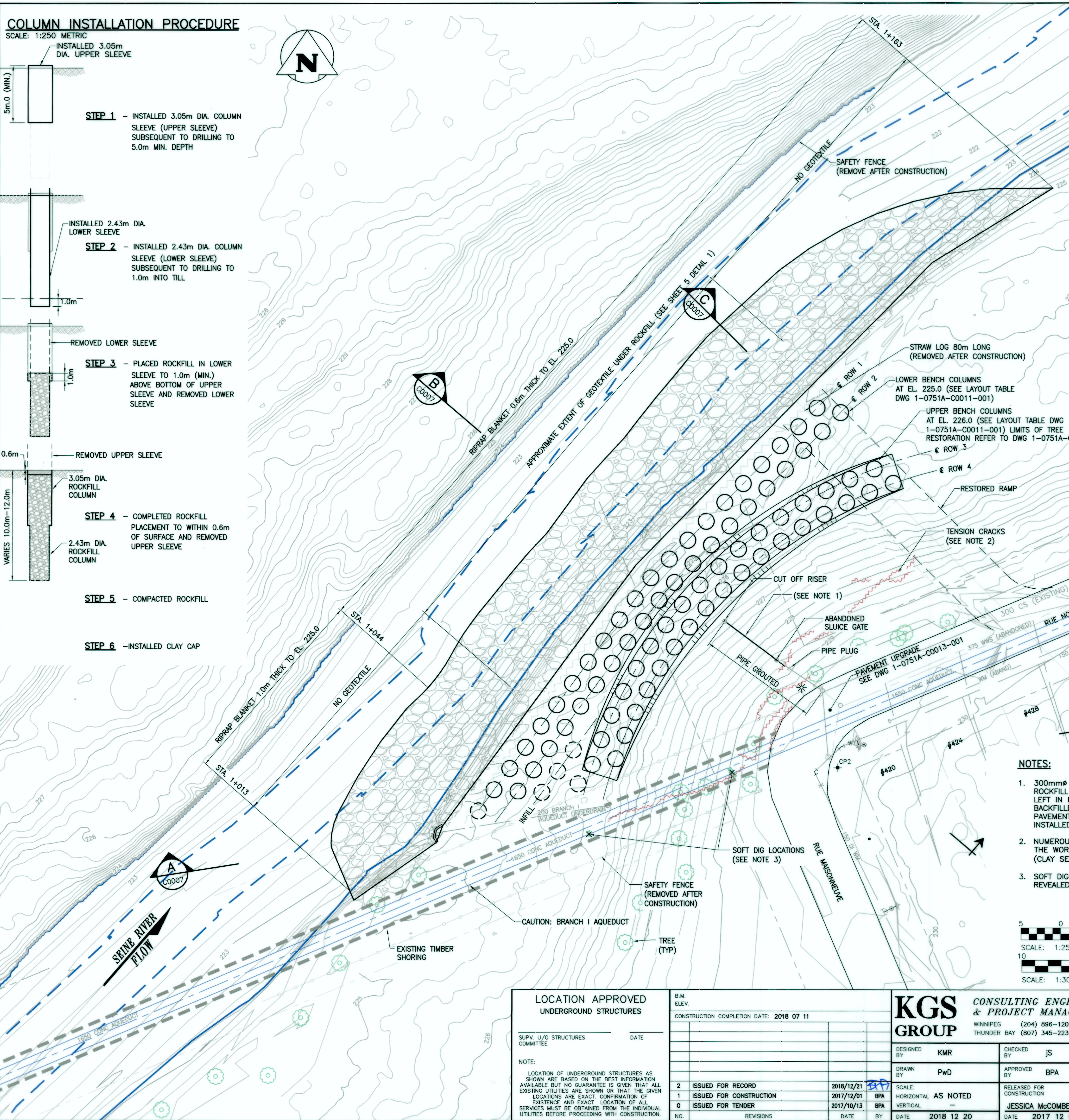
2.43m DIA. ROCKFILL COLUMN, WITH 3.05m DIA. UPPER SLEEVE, TYPICAL



LOWER BENCH



UPPER BENCH



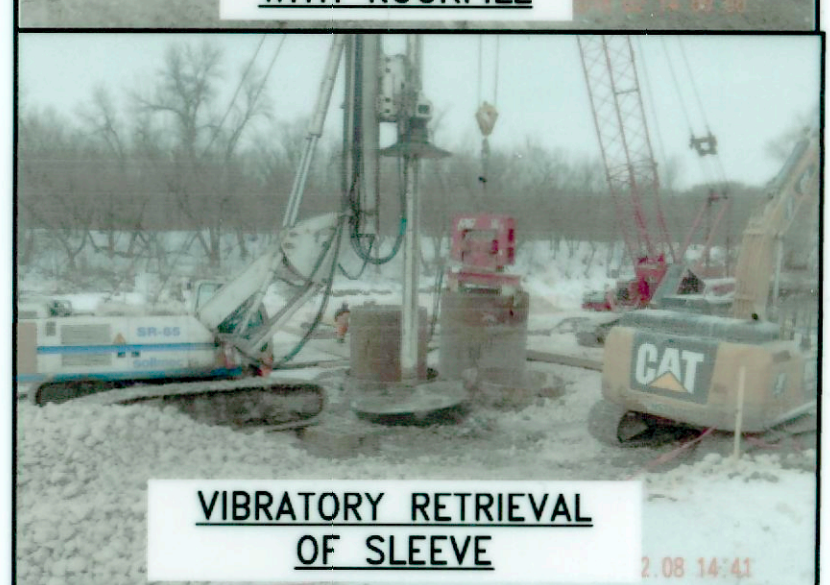
SLEEVE AUGERING 2018.02.09 16:22



LOWER SLEEVE INSTALLATION



FILLING SLEEVE WITH ROCKFILL



VIBRATORY RETRIEVAL OF SLEEVE 2 08 14:41



VIBRATORY LANCE

NOTES:

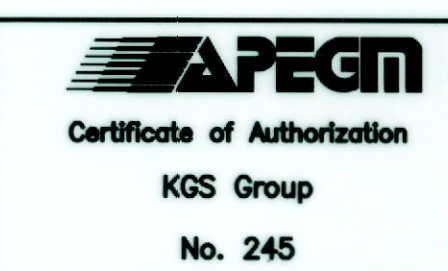
- 300mmØ OUTFALL PIPE REMOVED IN AREA OF ROCKFILL COLUMNS. REMAINING LENGTH OF PIPE LEFT IN PLACE BETWEEN SLUICE GATE AND VENT BACKFILLED WITH CEMENT BENTONITE AT TIME OF PAVEMENT WORK AND A 40mmØ VENT PIPE INSTALLED FOR THIS PURPOSE.
- NUMEROUS TENSION CRACKS OCCURRED DURING THE WORKS VARYING IN LENGTH AND WIDTH. (CLAY SEALED AFTER COMPLETION OF WORKS)
- SOFT DIG (BY KGS GROUP MARCH, 2018) REVEALED EXACT LOCATION OF AQUEDUCT.

RECORD DRAWING

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

WARNING

- NOTIFY THE GAS COMPANY OF THE PROPOSED LOCATION OF EXCAVATION.
- TAKE PRECAUTION TO AVOID DAMAGE TO GAS COMPANY INSTALLATIONS.
- SEE PROVINCIAL REGULATION 210/72 FOR DETAILS.



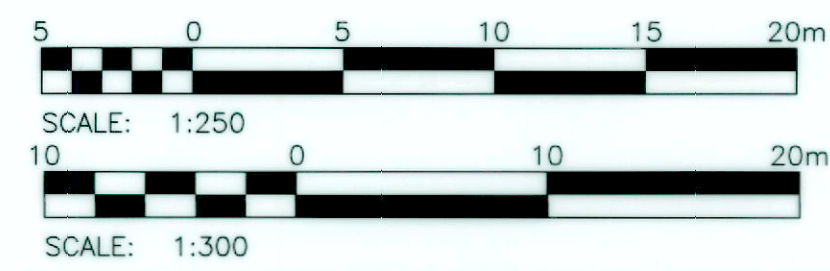
THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT
ENGINEERING DIVISION

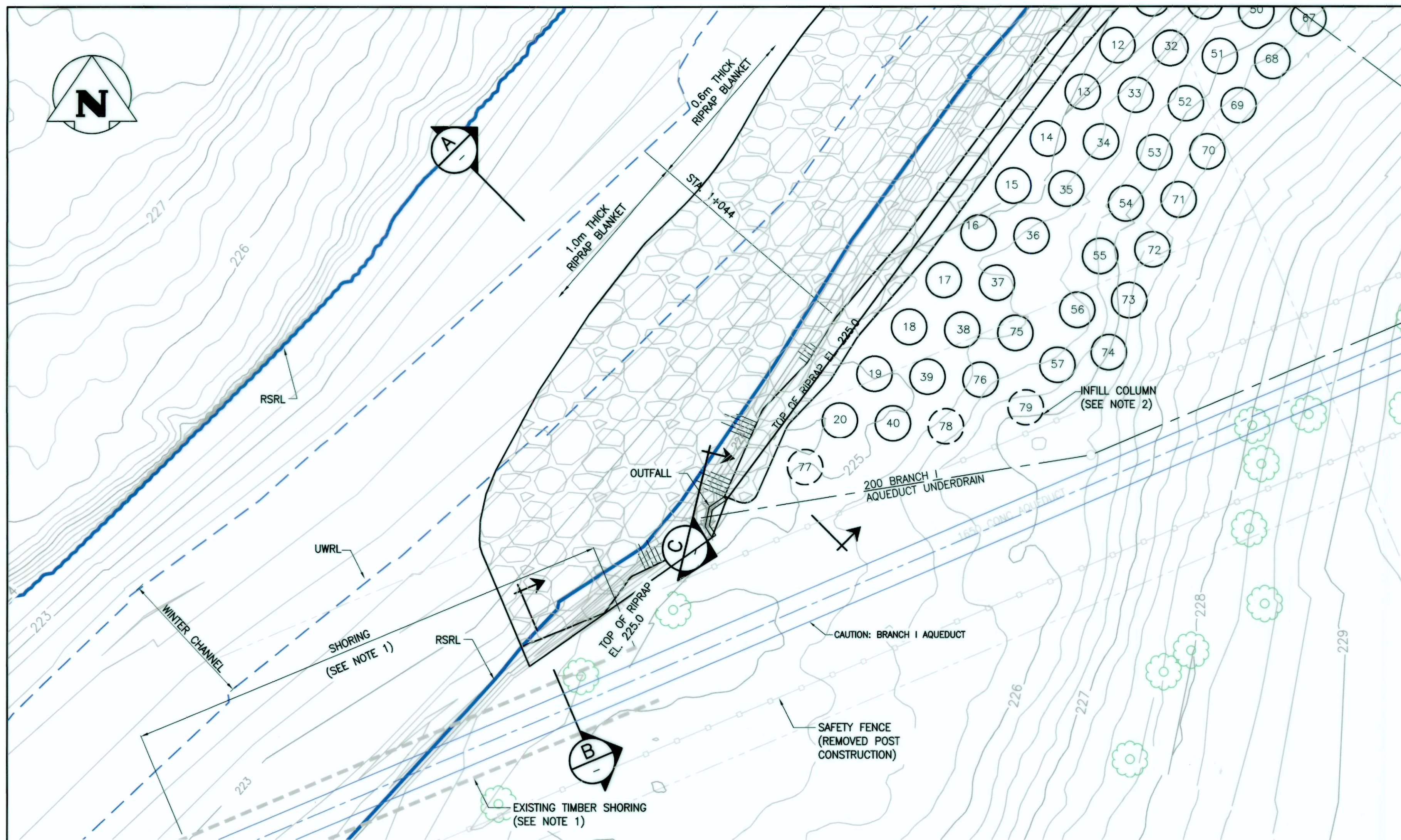
SEINE RIVERBANK STABILIZATION
AT THE BRANCH I AQUEDUCT

RIVERBANK STABILIZATION WORKS
FINAL ARRANGEMENT

SHEET 04 OF 12
CITY DRAWING NUMBER
1-0751A-C0006-001

<p>LOCATION APPROVED UNDERGROUND STRUCTURES</p> <p>SUPV. U/G STRUCTURES COMMITTEE DATE</p> <p>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.</p>		<p>B.M. ELEV.</p> <p>CONSTRUCTION COMPLETION DATE: 2018 07 11</p>	<p>KGS GROUP</p> <p>CONSULTING ENGINEERS & PROJECT MANAGERS</p> <p>WINNIPEG (204) 896-1209 THUNDER BAY (807) 345-2233</p>	<p>ENGINEER'S SEAL</p> <p>PROVINCE OF MANITOBA B.P. ARPIN Member 24582 REGISTERED PROFESSIONAL ENGINEER</p>
<p>2 ISSUED FOR RECORD 2018/12/21</p> <p>1 ISSUED FOR CONSTRUCTION 2017/12/01</p> <p>0 ISSUED FOR TENDER 2017/10/13</p>	<p>DESIGNED BY KMR</p> <p>CHECKED BY JS</p> <p>DRAWN BY PwD</p> <p>APPROVED BY BPA</p>	<p>SCALE: HORIZONTAL AS NOTED</p> <p>SCALE: VERTICAL -</p> <p>RELEASED FOR CONSTRUCTION</p> <p>JESSICA McCOMBE P.Eng.</p>	<p>CONSULTANT DRAWING NUMBER</p> <p>17-0107-008_G04</p>	<p>DATE 2018 12 20</p> <p>DATE 2017 12 05</p>

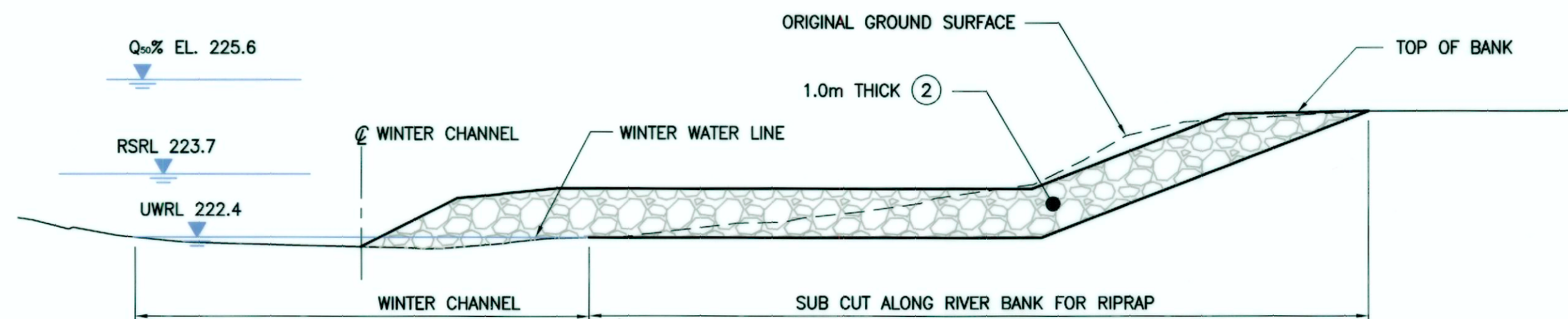




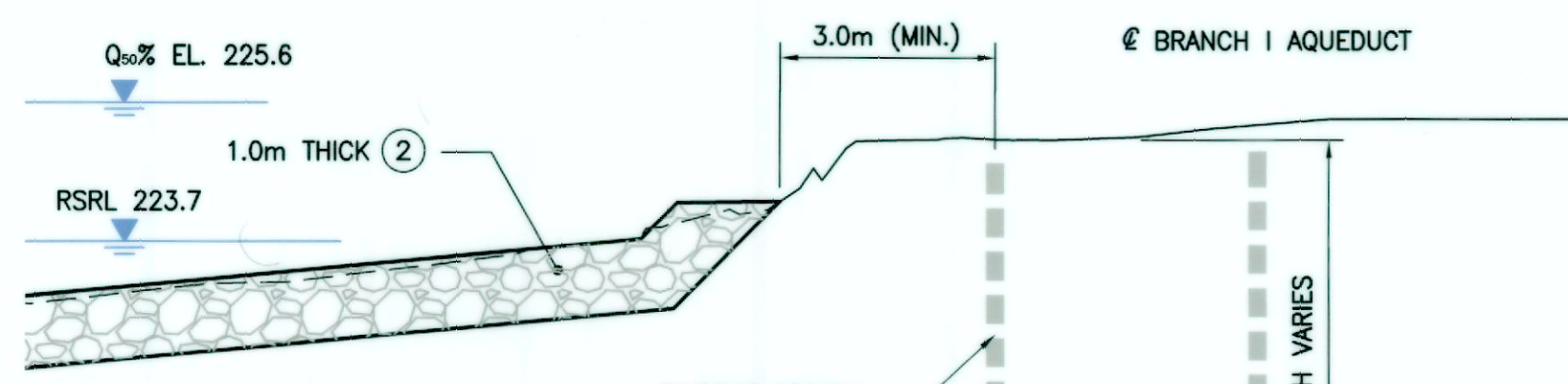
RIPRAP DETAIL PLAN
SCALE: 1:200 METRIC

- LEGEND:**
- ① ROCKFILL (RIVER BERM, ROCK COLUMNS)
 - ② RIPRAP (SHORELINE PROTECTION)
 - ③ CLAY (COLUMN CAP)
- UWRL = UNREGULATED WINTER RIVER LEVEL (EL. 222.4)
 RSRL = REGULATED SUMMER RIVER LEVEL (EL. 223.7)
 Q_{50%} = ORDINARY HIGH WATER MARK (EL. 225.6)

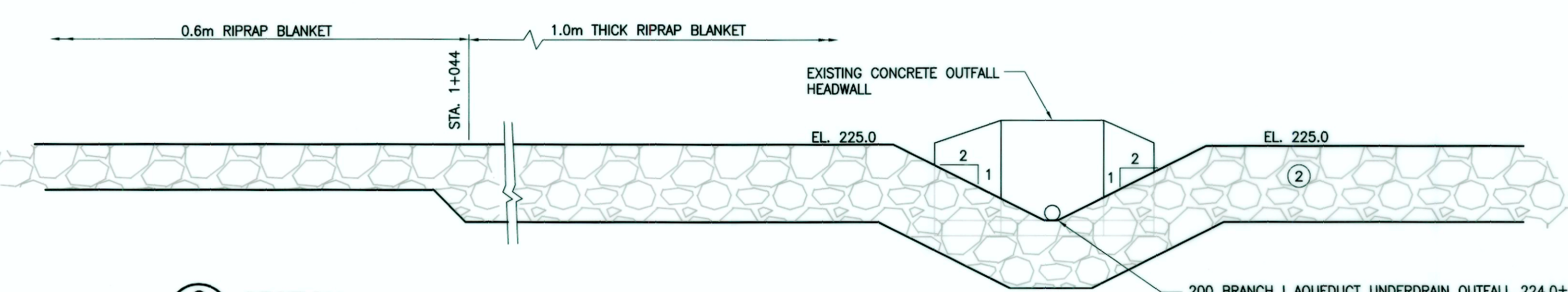
- NOTES:**
- CONTRACTOR LOCATED EXISTING TIMBER SHORING ON THE NORTH SIDE ONLY, FROM THE SEINE RIVER TO THE RUE NOTRE DAME/ RUE MAISONNEUVE INTERSECTION, PRIOR TO PROCEEDING WITH ANY WORK IN THE AREA.
 - DURING FINAL STAGE OF ROCKFILL COLUMN INSTALLATION CONTRACTOR VERIFIED THE SITE CONDITION ADJACENT TO THE BRANCH I AQUEDUCT UNDERDRAIN OUTFALL AND CONFIRMED ALL THE COLUMNS FIT AND APPROVED BY THE CONTRACT ADMINISTRATOR. A MINIMUM CLEARANCE OF 5.0m FROM CENTER LINE OF BRANCH I AQUEDUCT AND 1.0m FROM CENTER LINE OF 200 BRANCH I AQUEDUCT UNDERDRAIN OUTFALL MAINTAINED, AND CONFIRMED BY THE CONTRACT ADMINISTRATOR.



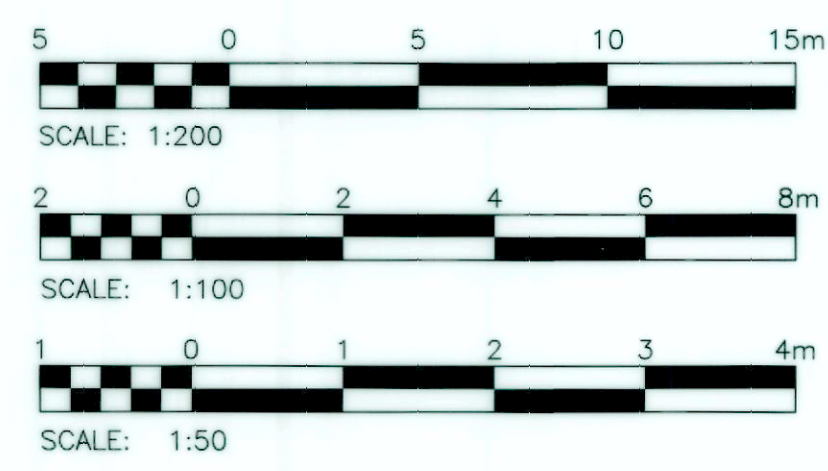
A SECTION (1m THICK SHORELINE PROTECTION)
SCALE: 1:100



B SECTION
SCALE: 1:50



C SECTION (OUTFALL SHORELINE PROTECTION)
SCALE: 1:50



RECORD DRAWING

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

- WARNING**
- NOTIFY THE GAS COMPANY OF THE PROPOSED LOCATION OF EXCAVATION.
 - TAKE PRECAUTION TO AVOID DAMAGE TO GAS COMPANY INSTALLATIONS.
 - SEE PROVINCIAL REGULATION 210/72 FOR DETAILS.



LOCATION APPROVED UNDERGROUND STRUCTURES		B.M. ELEV.
SUPV. U/G STRUCTURES COMMITTEE	DATE	CONSTRUCTION COMPLETION DATE: 2018 07 11
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	ISSUED FOR RECORD	2018/12/21
1	ISSUED FOR CONSTRUCTION	2017/12/01
0	ISSUED FOR TENDER	2017/10/13
NO.	REVISIONS	DATE BY

KGS GROUP CONSULTING ENGINEERS & PROJECT MANAGERS
 WINNIPEG (204) 896-1209
 THUNDER BAY (807) 345-2233

DESIGNED BY: KMR
 CHECKED BY: JS
 DRAWN BY: PwD
 APPROVED BY: BPA

SCALE: HORIZONTAL AS SHOWN
 VERTICAL -
 RELEASED FOR CONSTRUCTION BY: JESSICA McCOMBE P.Eng.
 DATE: 2018 12 20

ENGINEER'S SEAL
 PROVINCE OF MANITOBA
 B.P. ARPIN
 Member 24582
 REGISTERED PROFESSIONAL ENGINEER

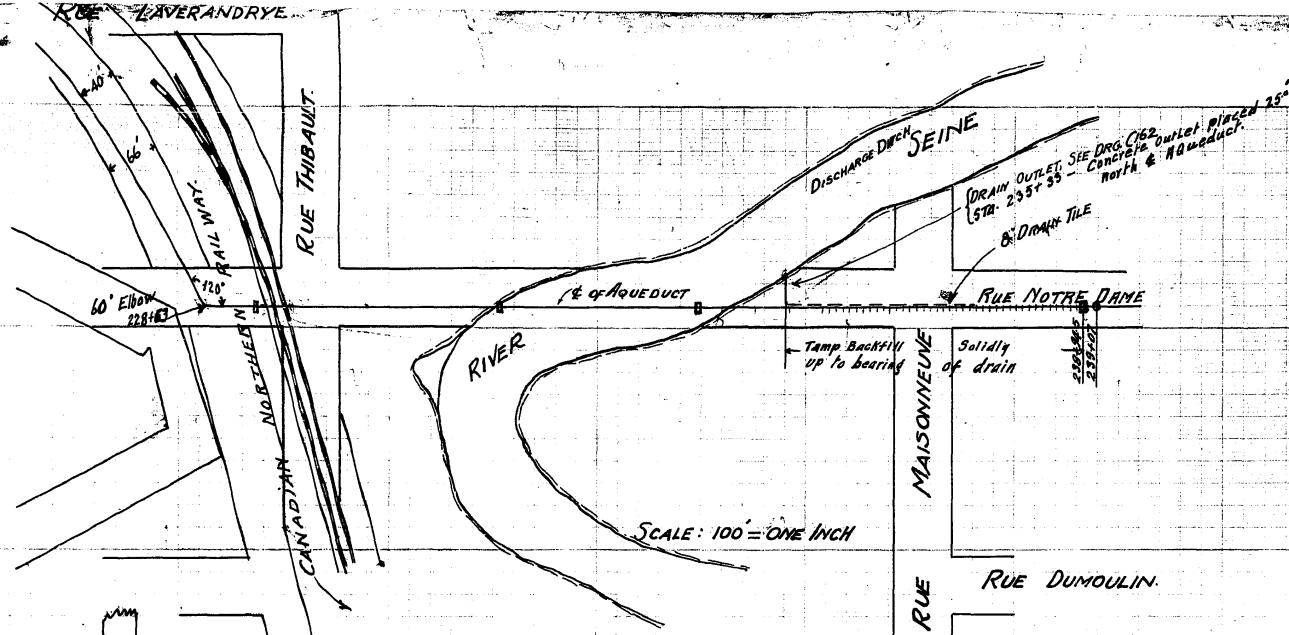
CONSULTANT DRAWING NUMBER: 17-0107-008_G06

THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT
 ENGINEERING DIVISION

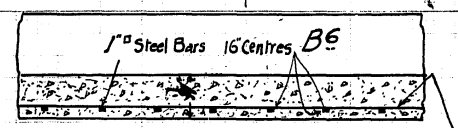
SEINE RIVERBANK STABILIZATION AT THE BRANCH I AQUEDUCT

RIVERBANK STABILIZATION WORKS PART PLANS AND DETAILS

SHEET 06 OF 12
 CITY DRAWING NUMBER: 1-0751A-C0008-001

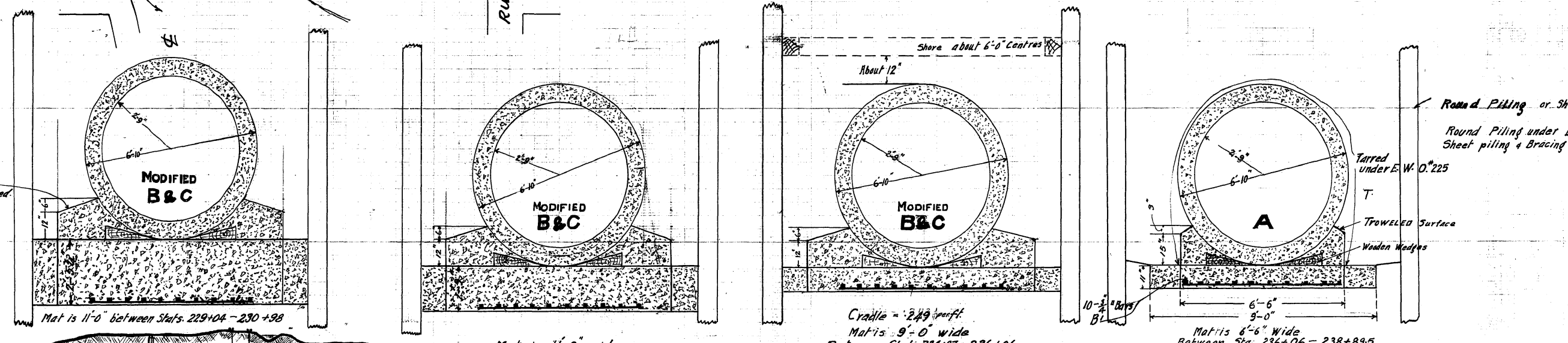


SCALE: 100 = ONE INCH

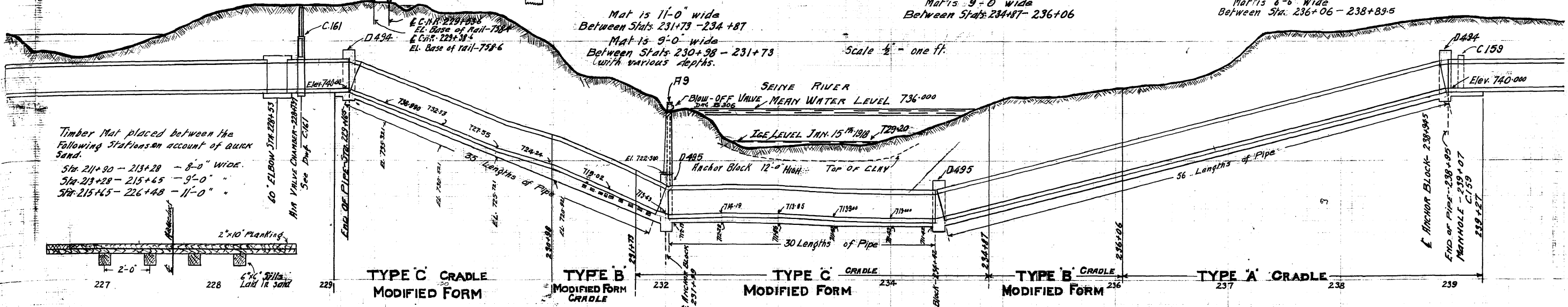


Longitudinal Section Showing Position of Steel in All Sections Below.

BILL OF STEEL.				
LETTER	NO	SIZE	LENGTH	DESCRIPTION
B ¹		3/4"	26'-0"	STRANDED MATS
B ²		3/4"	18'-0"	" " " " " "
B ³		3/4"	16'-0"	" " " " " "
B ⁴		3/4"	12'-0"	" " " " " "
B ⁵		3/4"	8'-0"	" " " " " "
B ⁶		1"	6'-0"	" " " " " "



Round Piling or Sheet Piling.
Round Piling under E.W.O. 226
Sheet piling & Bracing under 79



Timber Mat placed between the following Stations on account of quick sand.
Sta. 211+90 - 213+28 - 8'-0" wide.
Sta. 213+28 - 215+45 - 9'-0" "
Sta. 215+45 - 226+48 - 11'-0" "

Timber placed in mat between Sta's. 231+26 - 231+68 to prevent the earth pressure overturning the mat.

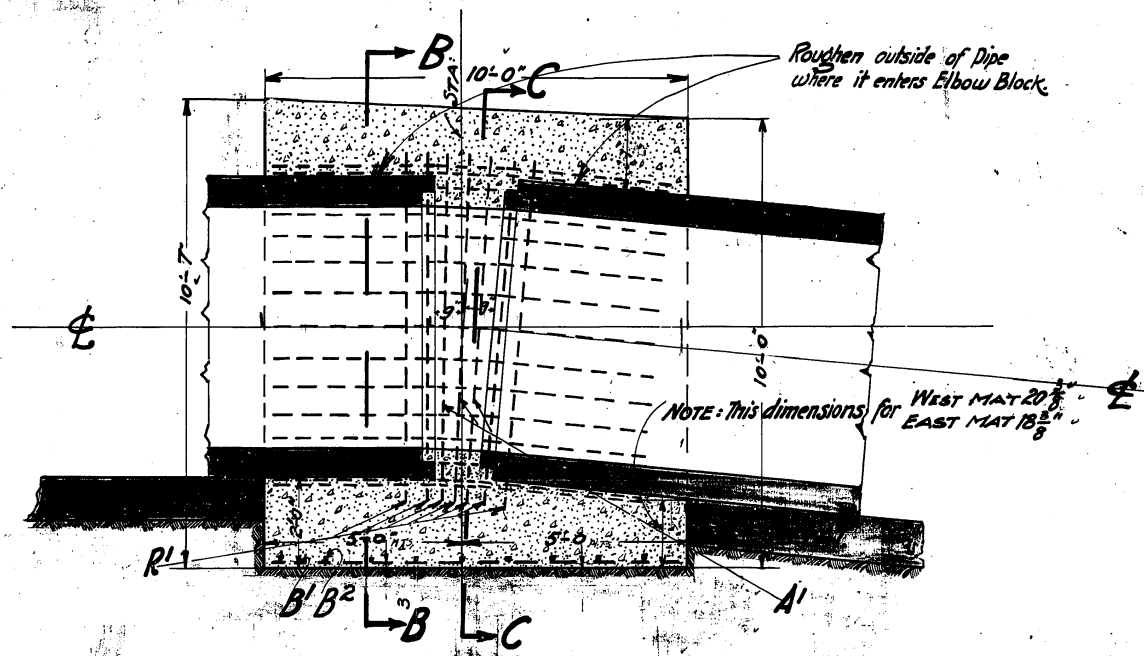
Scale: 40 ft = 1 inch; Horizontal
10 ft = 1 inch; Vertical

DRAWN BY D.N.S.
TRACED - D.N.S.
CHECKED -
APPROVED -

CHAIRMAN of ADMINISTRATION BOARD
CHAIRMAN of COMMISSIONERS
CLERK of the CORPORATION
CHIEF ENGINEER

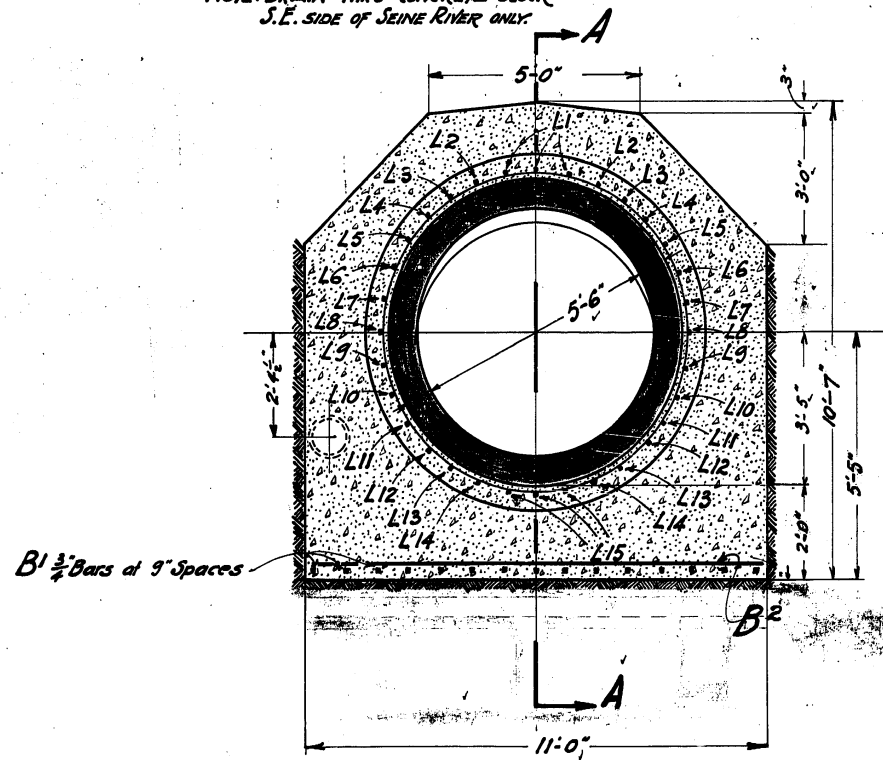
GREATER WINNIPEG WATER DISTRICT
PLAN PROFILE AND CROSS SECTION OF SEINE RIVER CROSSING
5'-6" PRESSURE PIPE TO BE CONSTRUCTED

D-493
DATE Dec. 17th 1918

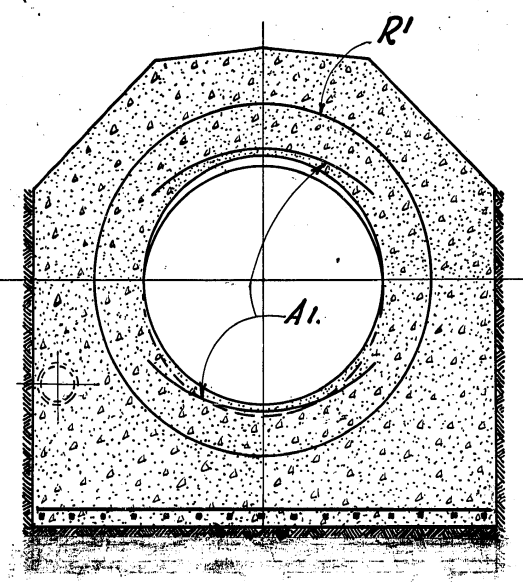


SECTION A-A.

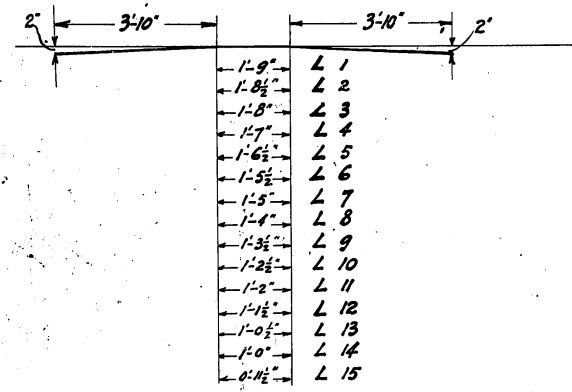
NOTE: DRAIN THRO' CONCRETE BLOCK S.E. SIDE OF SEINE RIVER ONLY.



SECTION B-B.



SECTION C-C.



NOTE: Bill for Elbow Block only.

BILL OF REINFORCING STEEL.				
LETTER	Nº	SIZE	LENGTH	DESCRIPTION.
L 1	3	3/8"	9'-5"	BENT AS PER DETAIL.
L 2	2	"	9'-4 1/2"	" " " "
L 3	2	"	9'-4"	" " " "
L 4	2	"	9'-3"	" " " "
L 5	2	"	9'-2 1/2"	" " " "
L 6	2	"	9'-1 1/2"	" " " "
L 7	2	"	9'-1"	" " " "
L 8	2	"	9'-0"	" " " "
L 9	2	"	8'-11 1/2"	" " " "
L 10	2	"	8'-10 1/2"	" " " "
L 11	2	"	8'-10"	" " " "
L 12	2	"	8'-9 1/2"	" " " "
L 13	2	"	8'-8 1/2"	" " " "
L 14	2	"	8'-8"	" " " "
L 15	3	"	8'-7 1/2"	" " " "
A 1	6	"	8'-9"	CURVE 3-9" RADIUS.
R 1	7	"	26'-8"	RINGS 8-0 DIAM.
B 1	15	3/4"	9'-6"	STRAIGHT.
B 2	9	1"	10'-8"	"

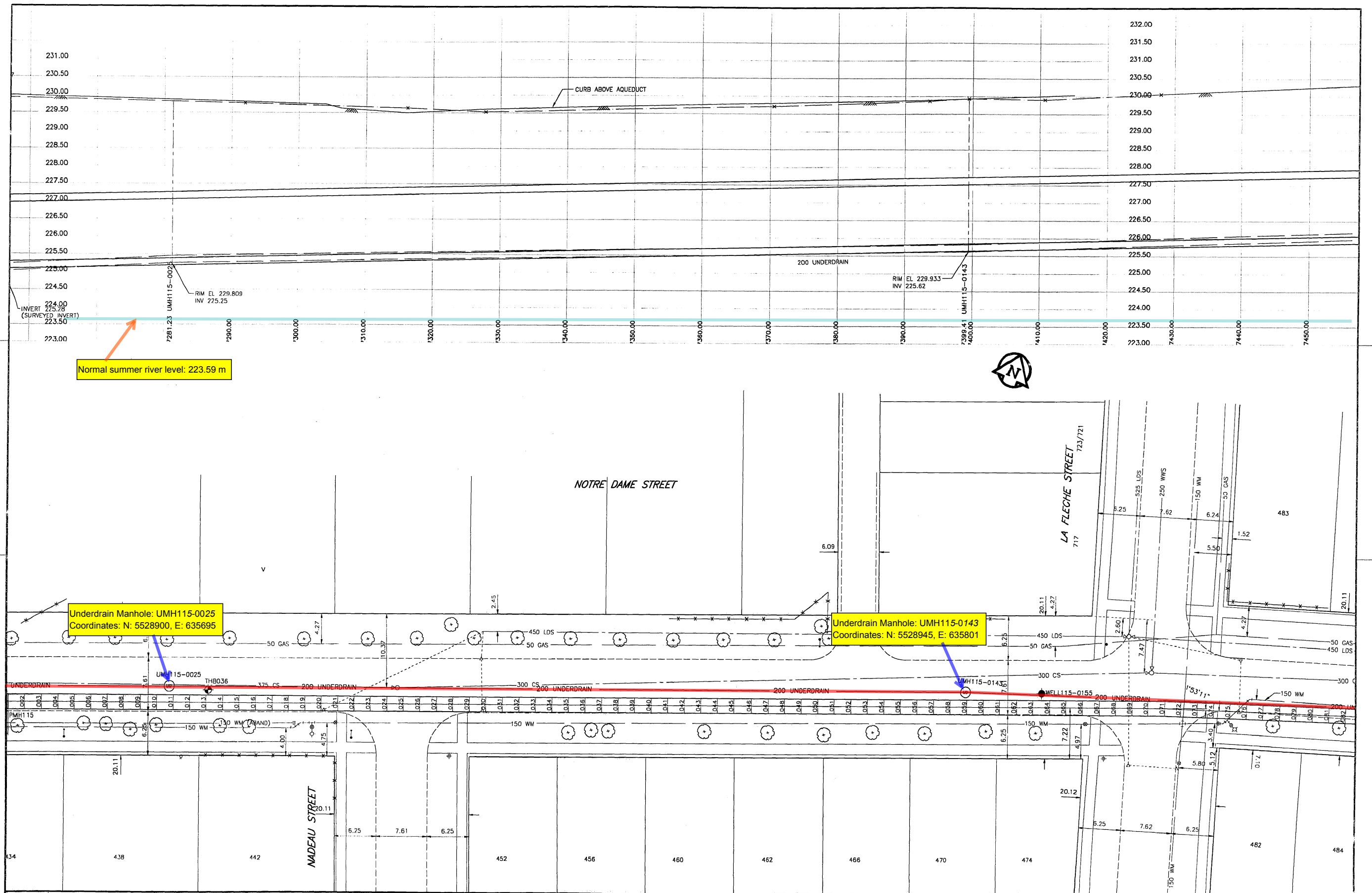
CONCRETE = 25 CU YDS.
STEEL = 1300 LBS.

Drawn By: J.H.
Checked: J.H.
Approved: J.H.

NOTE: REINFORCING OF PIPE IN BLOCK, ADDED - 4/7/18, P.C.S.

Lochner
CHIEF ENGINEER

CONTRACT 55 D.494.
GREATER WINNEPEG WATER DISTRICT.
5-6" PRESSURE PIPE
SPECIAL ELBOWS FOR SEINE RIVER CROSSING
MAY 18 1918
SCALE 1/4" = 1' PROX.



150 mm Ww	WATERMAIN	300 mm LDS	LAND DRAINAGE SEWER	HYDRO	AQUEDUCT JOINT	AQUEDUCT PIPE	
Hydrant	HYDRANT	250 mm WWS	WASTE WATER SEWER	COMMUNICATION	UNDERDRAIN MANHOLE	UNDERDRAIN	
Valve	VALVE	Manhole	MANHOLE	TRAFFIC SIGNALS	UNDERDRAIN RISER	GROUNDLINE	
Reducer	REDUCER	Catch Basin	CATCH BASIN	PEDESTAL	UNDERDRAIN WELL	CENTERLINE	
Coupling	COUPLING	Curb Inlet	CURB INLET	SIGNAL CONTROLLER	TESTHOLE	N/W GUTTER	
Wm Fittings	WM FITTINGS	Culvert	CULVERT	GAS	PEIZOMETER	S/E GUTTER	
Curb Stop	CURB STOP	Ditch	DITCH	STEAM HEAT		N/W DITCH	
Edge of Pavement	EDGE OF PAVEMENT	Lamp Standard	LAMP STANDARD	FENCE		S/E DITCH	
Railway Track	RAILWAY TRACK	Traffic Signal	TRAFFIC SIGNAL	TREE		N/W PROPERTY LINE	
Geodetic Benchmark	GEODETIC BENCHMARK	Wood Pole	WOOD POLE	BUILDING		S/E PROPERTY LINE	
Survey Bar	SURVEY BAR	Pole Anchor	POLE ANCHOR	SUBSURFACE STRUCTURE			
Existing	LEGEND - PLAN	Existing	LEGEND - PLAN	Existing	LEGEND - PLAN	Existing	LEGEND - PROFILE

NO.	REVISIONS	DATE	BY
	DATA SOURCES		
Aqueduct Joints: Interpreted From Manholes Located in 1994 UMA Total Station Survey and 1995 Internal Inspections Unless Otherwise Noted Surface Features: UMA Total Station Survey (1994) Legal Right of Way M11 to M17: Pollock & Wright (1995) Utilities: Compiled from Information Obtained From City of Winnipeg Underground Structures (1994)			
METRIC			
WHOLE NUMBERS INDICATE MILLIMETRES DECIMALIZED NUMBERS INDICATE METRES			

DESIGNED BY	BC	CHECKED BY	CCM
DRAWN BY	BC/MAG	APPROVED BY	CCM
HOR. SCALE:	1:250	RELEASED FOR CONSTRUCTION	
VERTICAL:	1:50	DATE	

ENGINEER'S SEAL

THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT

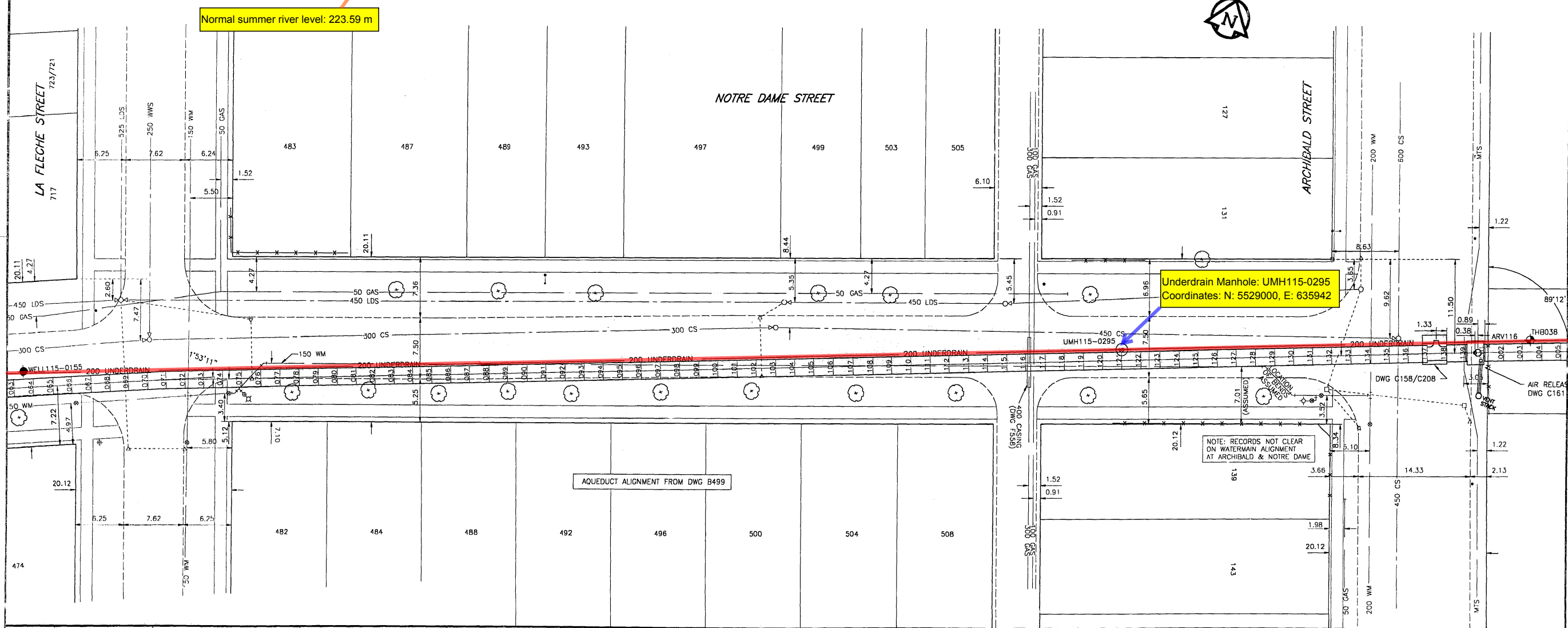
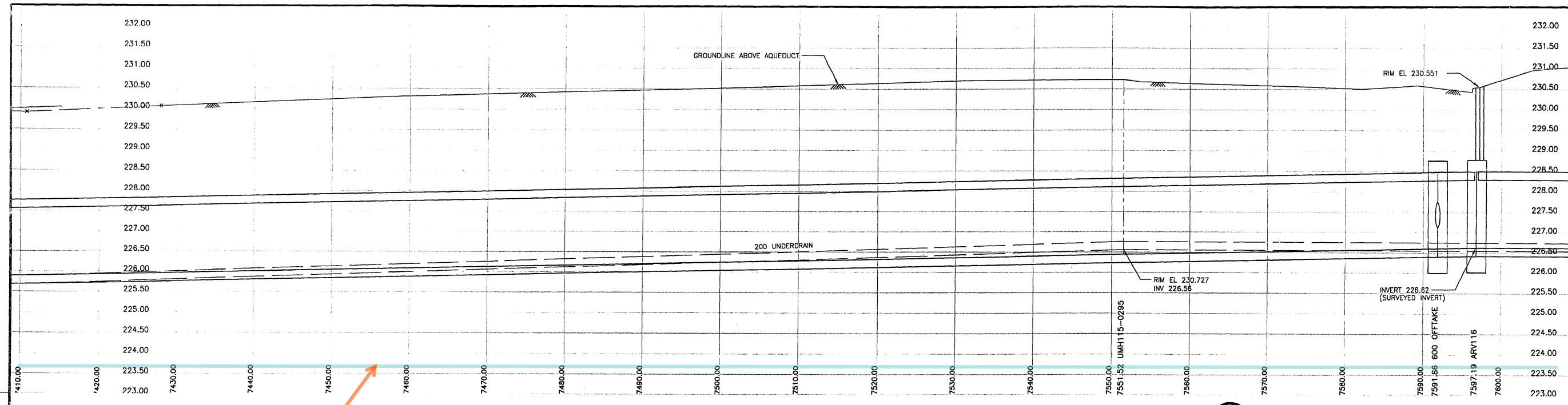
Plan and Profile of Branch I Aqueduct

From Joint J115-001 To Joint J115-082
 From Mile 4.53 To Mile 4.65

SHEET 37 OF 214
 CITY DRAWING NUMBER
D-6315 REV

CONSULTANT DRAWING NO. 37
 41-02-D265-136-01

D-6315.dwg
 AutoCAD Release 14



150 mm WM	WATERMAIN	300 mm LDS	LAND DRAINAGE SEWER	HYDRO	AQUEDUCT JOINT	AQUEDUCT PIPE
HYDRANT	WASTE WATER SEWER	MANHOLE	COMMUNICATION	UNDERDRAIN MANHOLE	UNDERDRAIN	
VALVE	MANHOLE	CATCH BASIN	TRAFFIC SIGNALS	UNDERDRAIN RISER	GROUNDLINE	
REDUCER	CATCH BASIN	CURB INLET	PEDESTAL	UNDERDRAIN WELL	CENTERLINE	
COUPLING	CULVERT	DITCH	SIGNAL CONTROLLER	TESTHOLE	N/W GUTTER	
WM FITTINGS	CULVERT	DITCH	GAS	PEIZOMETER	S/E GUTTER	
CURB STOP	DITCH	DITCH	STEAM HEAT		N/W DITCH	
EDGE OF PAVEMENT	LAMP STANDARD		FENCE		S/E DITCH	
RAILWAY TRACK	TRAFFIC SIGNAL		TREE		N/W PROPERTY LINE	
GEODETIC BENCHMARK	WOOD POLE		BUILDING		S/E PROPERTY LINE	
SURVEY BAR	POLE ANCHOR		SUBSURFACE STRUCTURE			
EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PLAN	EXISTING
	LEGEND - PLAN		LEGEND - PLAN		LEGEND - PROFILE	

NO. REVISIONS DATE BY

DATA SOURCES

Aqueduct Joints: Interpreted From Manholes Located in 1994
 UMA Total Station Survey and 1995 Internal Inspections
 Unless Otherwise Noted

Surface Features: UMA Total Station Survey (1994)
 Legal Right of Way M11 to M12: City of Wpg LBS (1994)
 Legal Right of Way M12 to M17: Pollock & Wright (1995)

Utilities: Compiled from Information Obtained From
 City of Winnipeg Underground Structures (1994)

METRIC
 WHOLE NUMBERS INDICATE MILLIMETRES
 DECIMALIZED NUMBERS INDICATE METRES

UMA Engineering Ltd.
 Engineers and Planners

CGSS
 CH2M HILL & STOREY LIMITED

DESIGNED BY: BC
 CHECKED BY: CCM

DRAWN BY: BC/MAG
 APPROVED BY: CCM

HOR. SCALE: 1:250
 VERTICAL: 1:50

RELEASED FOR CONSTRUCTION

DATE: _____

ENGINEER'S SEAL

PROVINCE OF MANITOBA
 REGISTERED ENGINEER
 C. C. MACEY
 09 Dec 99

CONSULTANT DRAWING NO. 38
 41-02-D265-136-01

THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT

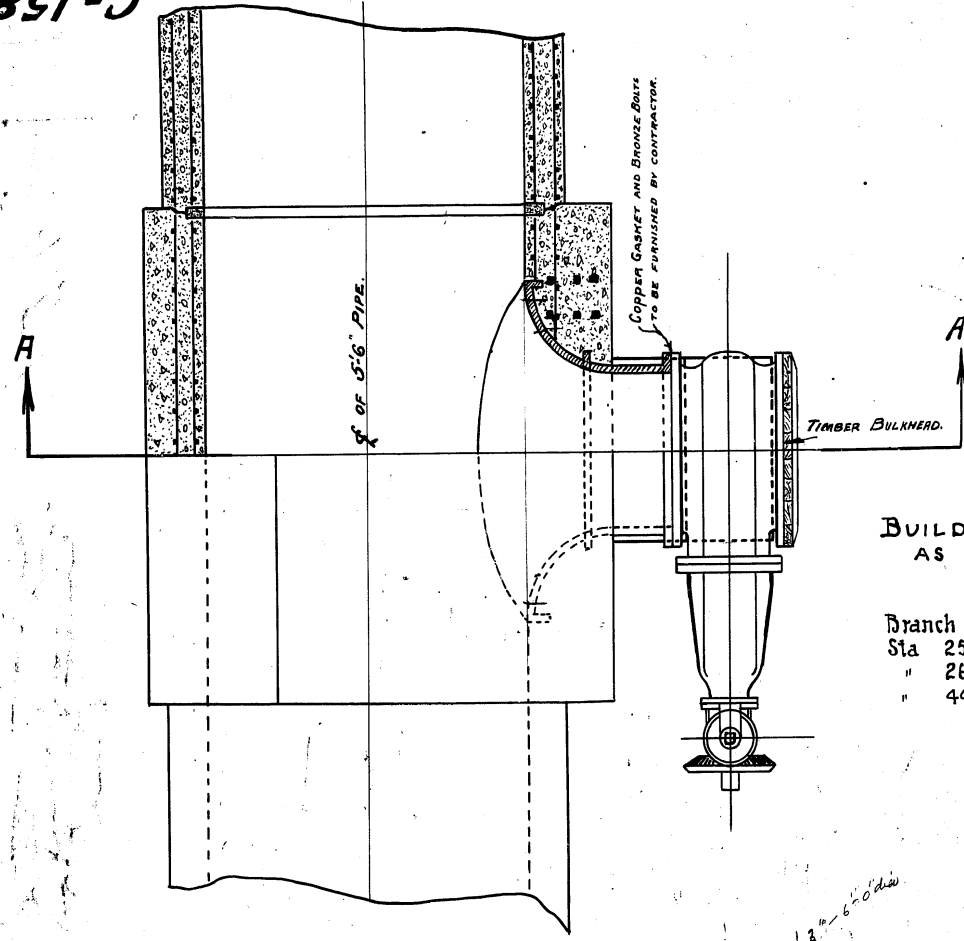
Plan and Profile of
 Branch I Aqueduct

From Joint J115-063 To Joint J116-005
 From Mile 4.62 To Mile 4.75

SHEET 38 OF 214
 CITY DRAWING NUMBER
D-6316 REV

D-6316.dwg

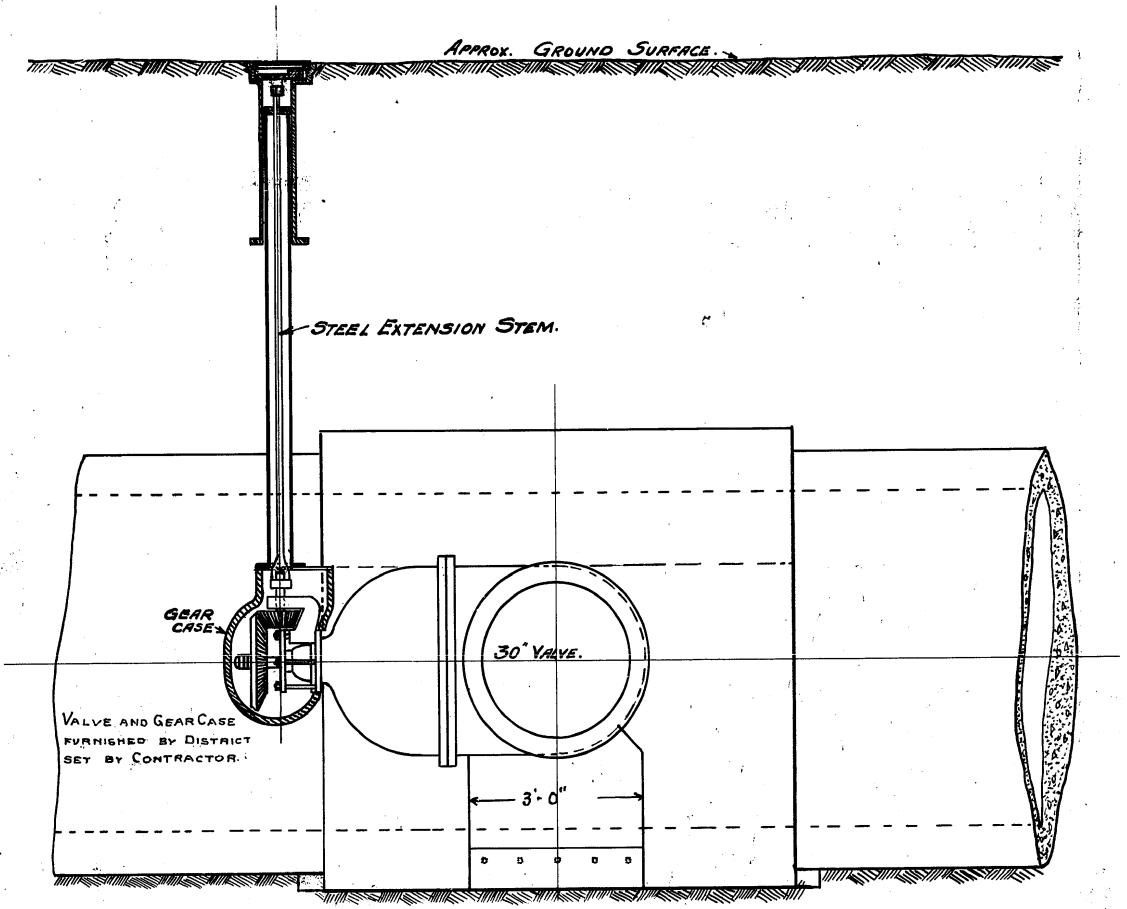
C-158



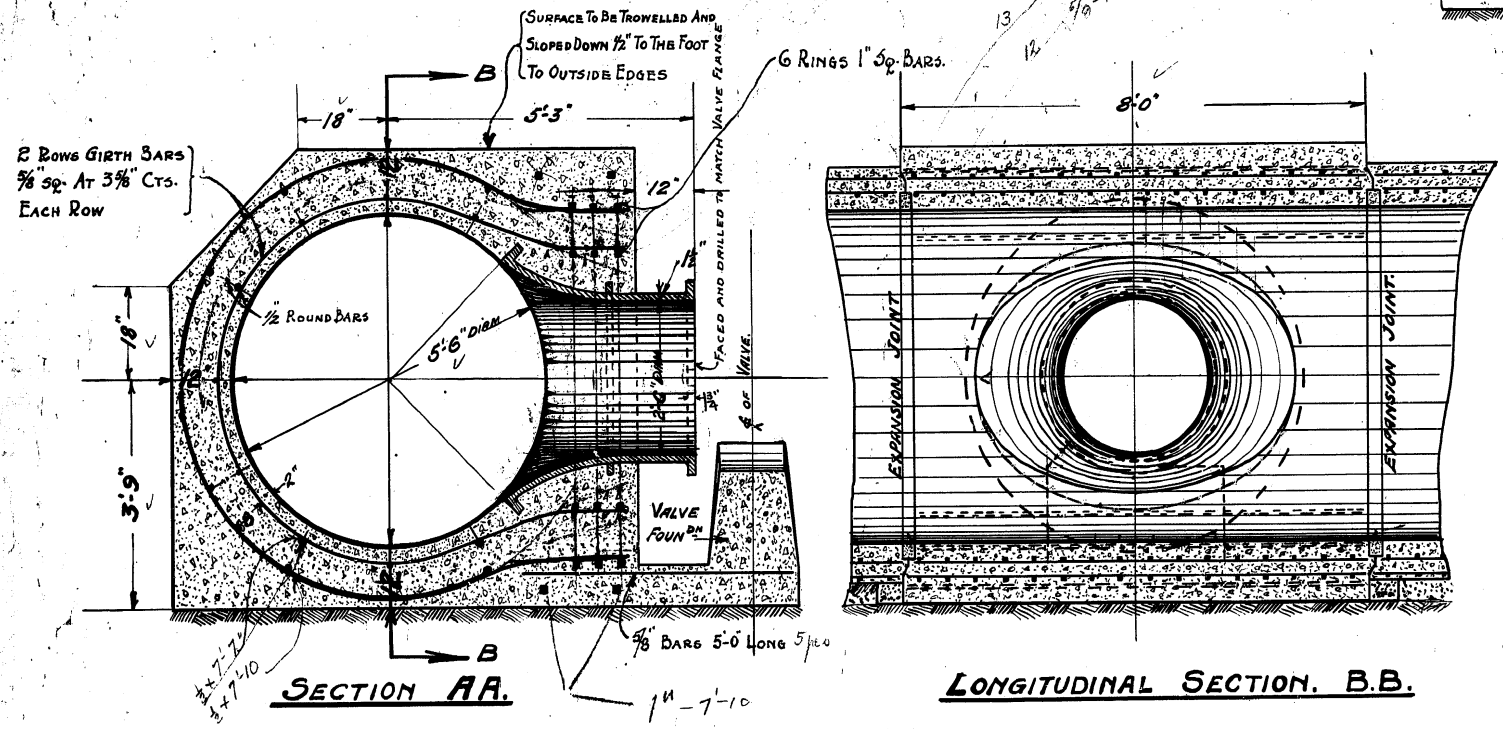
BUILD BRANCH CONNECTION AS A MONOLITH

Branch Connections located at:
 Sta 254+00 Approx
 " 268+00 "
 " 440+00 "

HALF PLAN & SECTION.

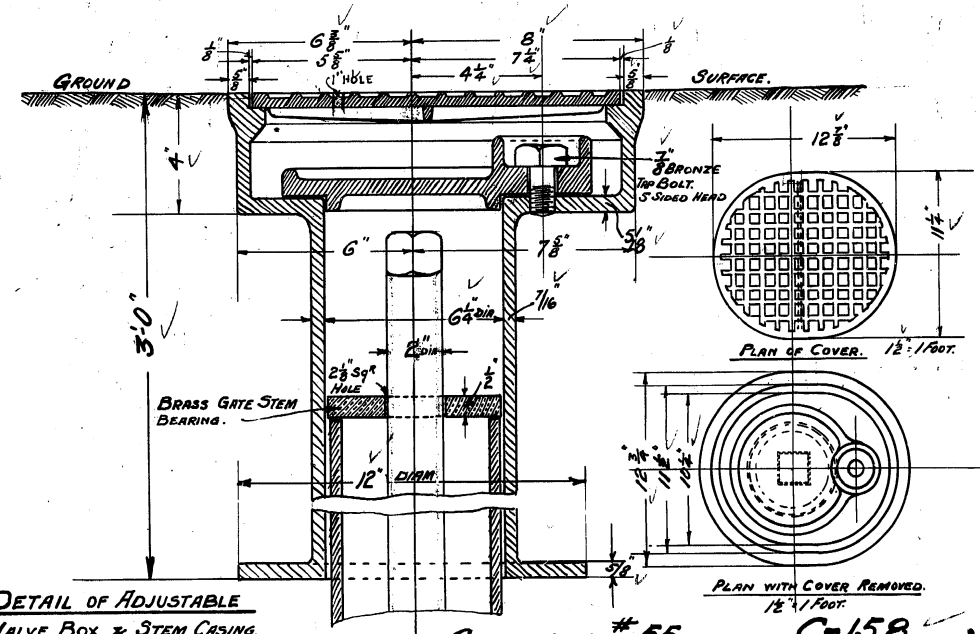


LONGITUDINAL ELEVATION.



SECTION AA.

LONGITUDINAL SECTION. B.B.



DETAIL OF ADJUSTABLE VALVE BOX & STEM CASING. SCALE: 1/8" & 3/16" = 1 FOOT.

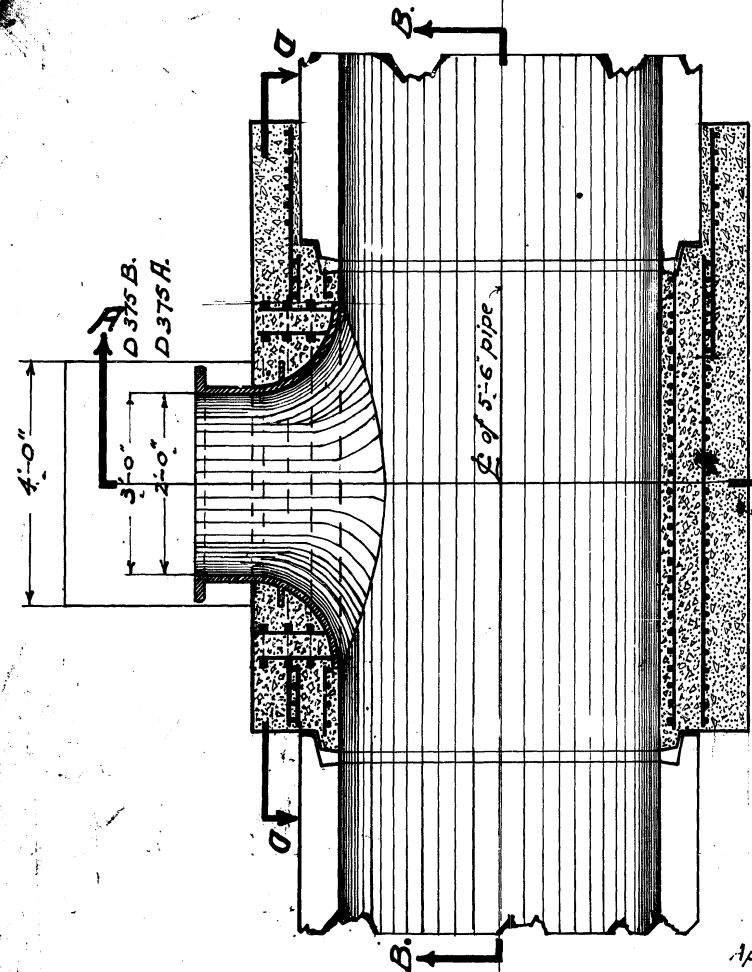
CONTRACT # 55. C-158

DRAWN BY: *S.H.*
 TRACED BY: *S.H.*
 CHECKED BY: *H.B.*
 APPROVED: *M. Sauer*

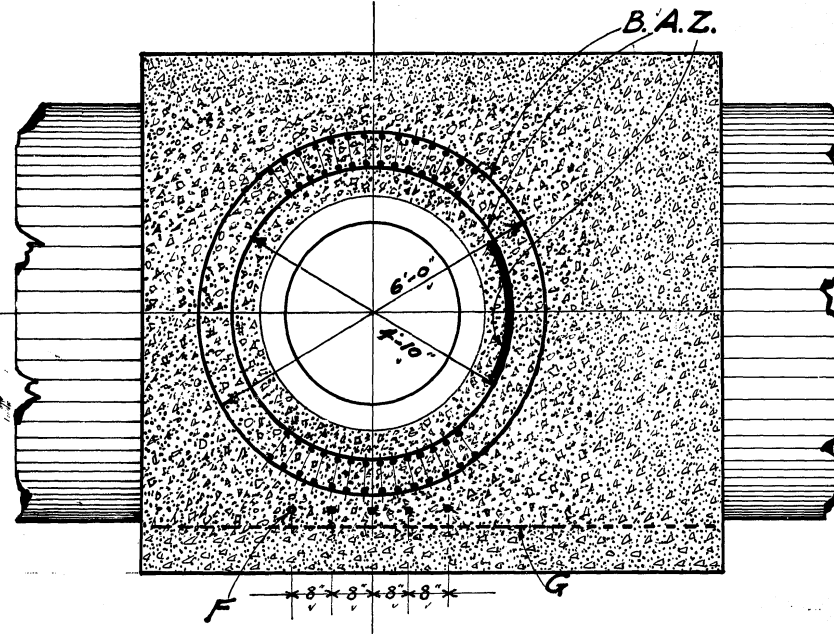
Outer ring of reinforcing moved Jan. 3-1917.

James H. Fuertes
 CONSULTING ENGINEER.
W. G. Chan
 CHIEF ENGINEER.

GREATER WINNIPEG WATER DISTRICT.
 TYPICAL BRANCH CONNECTION DETAIL
 FOR 5 FT 6 INS DIA. REINFORCED CONCRETE PIPE
 DATE: 21-7-1916 SCALES = 3", 1 1/2" & 1/2" = 1 FOOT.



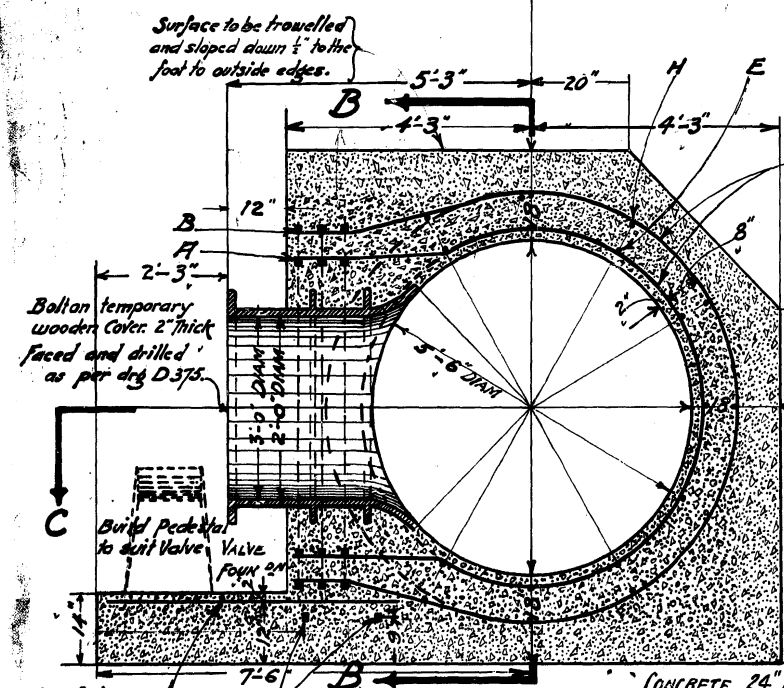
SECTION C.C.



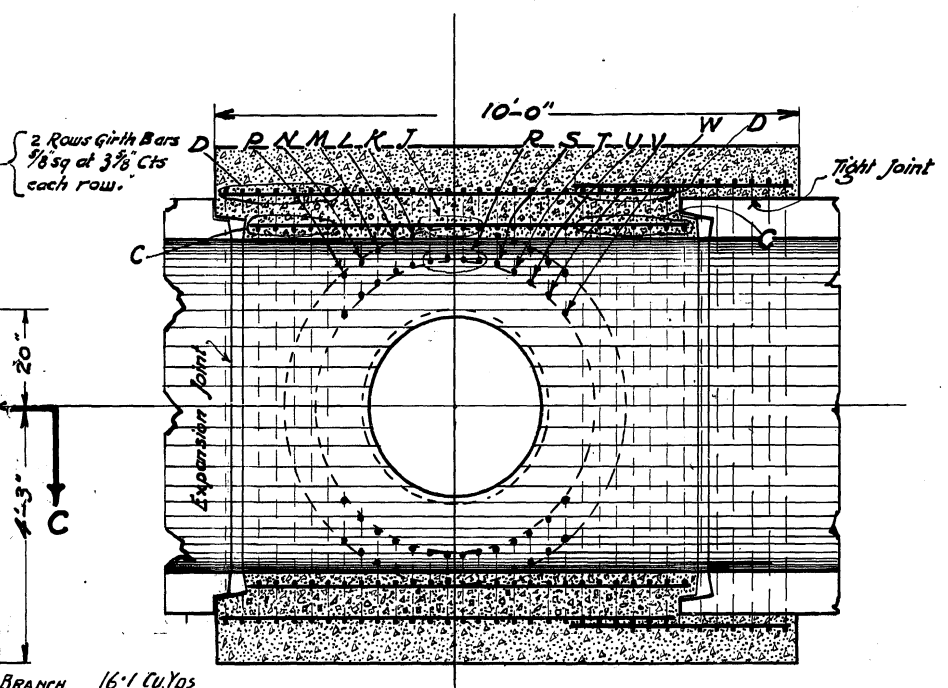
SECTION D.D.

BILL OF MATERIAL.				
Letter	No	Size	Length	Description
A	3	1" dia	15'-6"	Bent Circular 4'-10" dia
B	3	1" dia	21'-3"	" " 6'-0" "
C	12	3/8"	19'-9"	" " 5'-10" "
D	19	1/2"	24'-0"	" " 7'-2" "
E	9	1/2"	7'-7"	Straight
F	5	3/8"	5'-0"	"
G	2	1"	7'-10"	"
H	9	1/2"	7'-10"	"
J	4	3/8"	19'-6"	Bent to Diagram
K	2	"	19'-5"	" " "
L	2	"	19'-6"	" " "
M	2	"	19'-10"	" " "
N	2	"	19'-11 1/2"	" " "
P	2	"	20'-1 1/2"	" " "
R	4	"	17'-6"	" " "
S	2	"	17'-5"	" " "
T	2	"	17'-7"	" " "
U	2	"	17'-8"	" " "
V	2	"	17'-10"	" " "
W	2	"	18'-1"	" " "
Z	3	1" dia	2'-6"	" " 2'-5" Rad. (Lapbars)
Z'	12	1/2" dia	3'-9"	Straight

Approximate Locations
 St Boniface Outlet (3'-0") Sta 279 + 96 EAST KILDONAM (From Dwg G-67)
 Transcona " (3'-0") Sta 469 + 96 BETWEEN 250 + 25.2
 Elmwood " (2'-0") Sta 253 + 08 & 250 + 33.2



SECTION A.A.



LONGITUDINAL SECTION B.B.

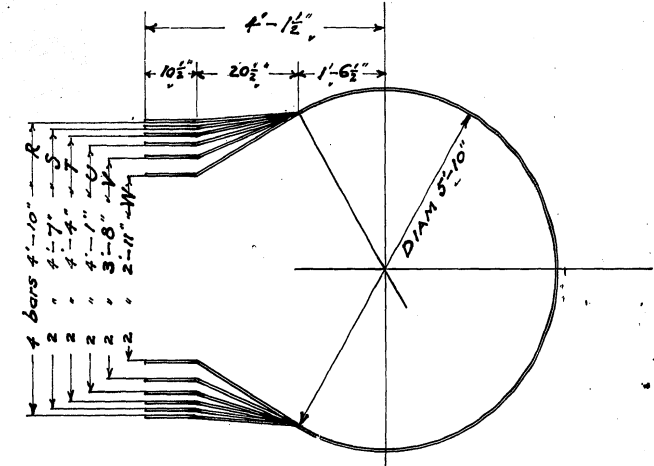


DIAGRAM OF INNER HOOPS

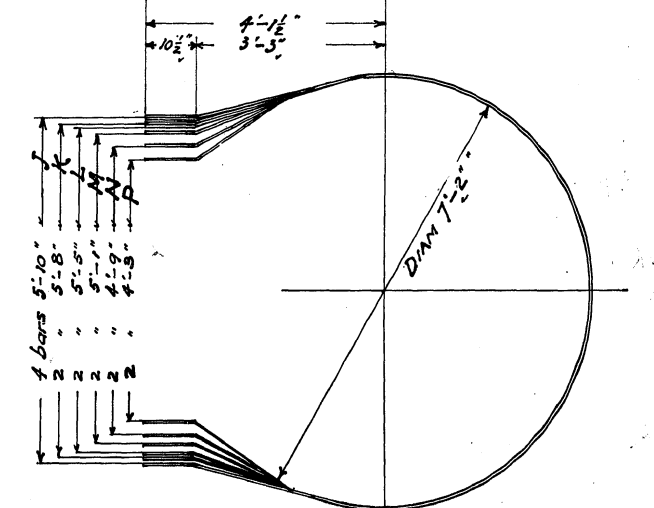


DIAGRAM OF OUTER HOOPS

CONCRETE 24" BRANCH 16.1 Cu.Yds
 36" " " 15.9 Cu.Yds
 STEEL 15 x 9.5 1706 LBS.
 CONCRETE 15 C.Y.
 STEEL 2231.3 Lbs

CONTRACT No 55.

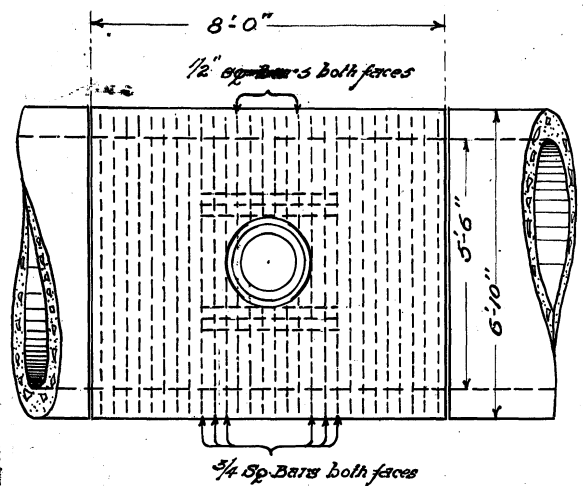
C-208.

DRAWN by *P.D.*
 TRACED *P.D.*
 CHECKED *M.S.*

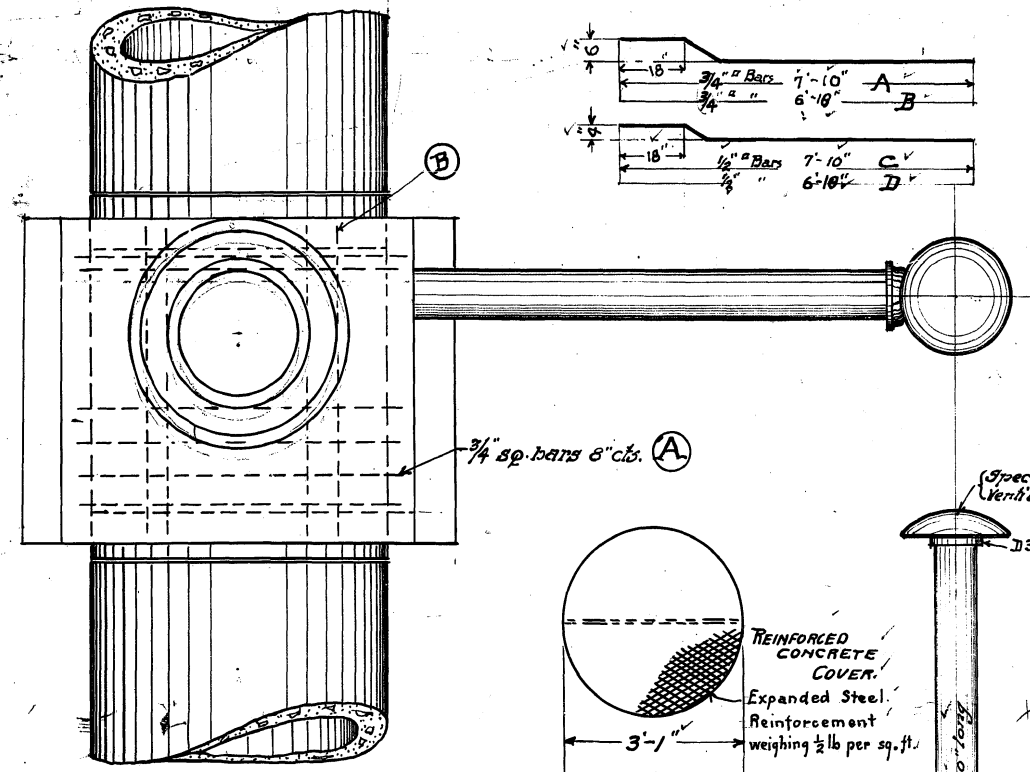
REVISED AUG 29th 1917.
 Thickness of Concrete increased by 6" all around. Length of Outlet at one side enlarged by 2'-0" & lapped over pipe.

James H. Furler
 CONSULTING ENGINEER.
Weghace
 CHIEF ENGINEER

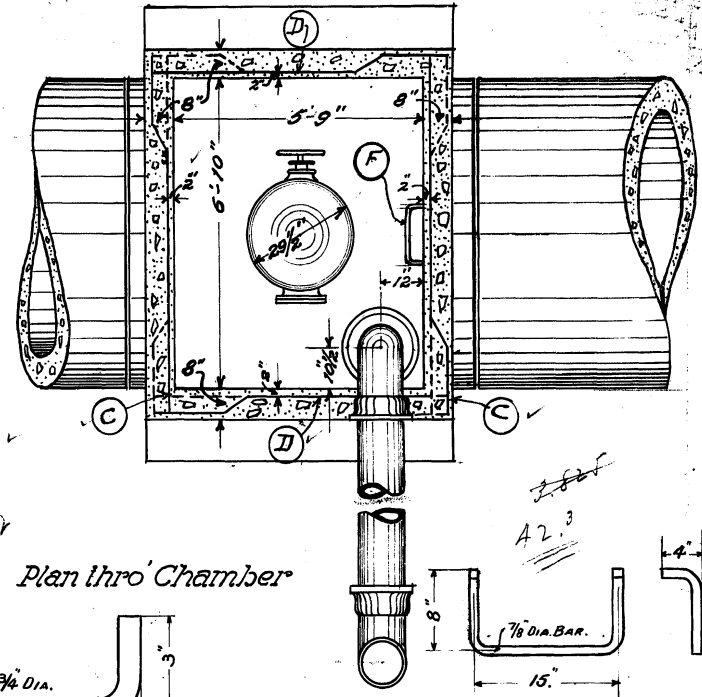
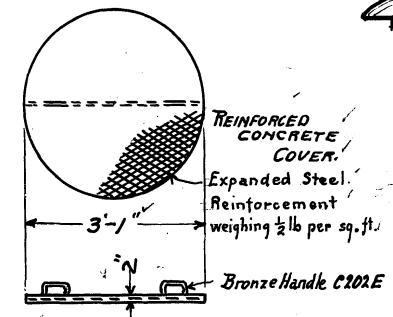
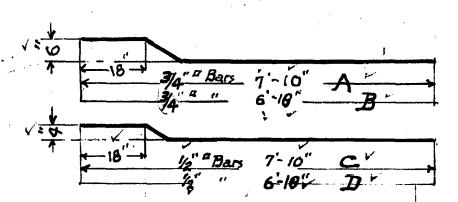
GREATER WINNIPEG WATER DISTRICT.
 DETAILS OF 24" x 36" BRANCH OUTLET.
 APRIL 16th 1917. FOR 5'-6" REINFORCED CONCRETE PIPE SCALE 1/2" = 1'



Plan of pipe showing Reinforcing Steel



Roof plan



Plan thro' Chamber

VALVE CHAMBER STEPS. 15 REQUIRED C202 G. SCALE 1"=1'-0"

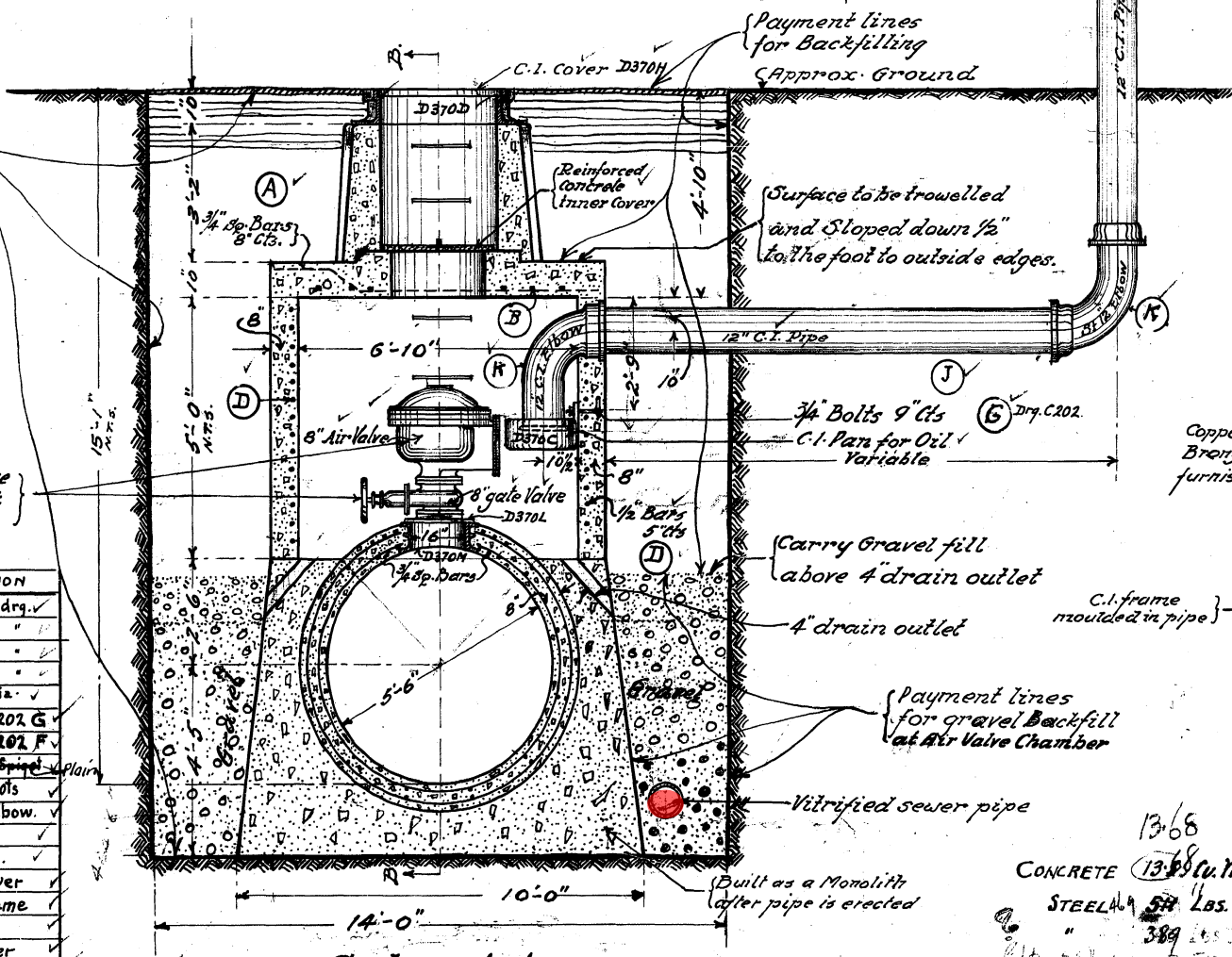
ANCHOR BOLTS. 8 REQUIRED C202 F. SCALE 3"=1'-0"

Payment lines for excavation

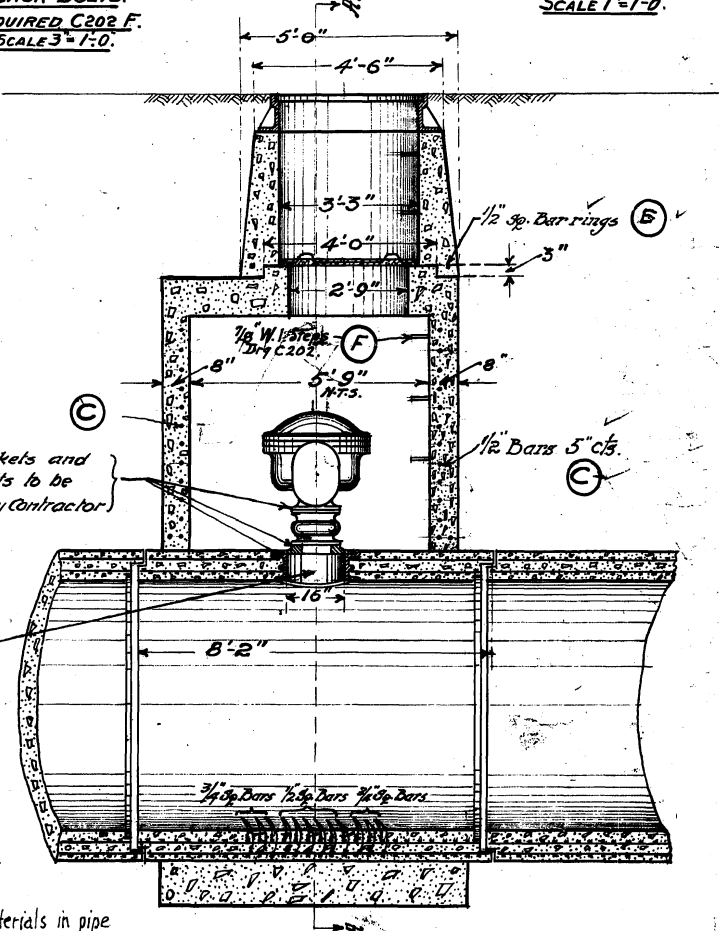
Air Valve and Gate Valve furnished by District, set by Contractor

MATERIAL FOR ONE CHAMBER

LETTER	QTY	SIZE	LENGTH	DESCRIPTION
A	6	1/2"	8'-0"	Bent as per drg. ✓
B	4	3/4"	7'-0"	" " " " ✓
C	24	1/2"	8'-0"	" " " " ✓
D	24	1/2"	7'-0"	" " " " ✓
E	1	1/2"	15'-6"	Bent to 4'-6" dia. ✓
F	5	7/8"		As per drg. C202 G ✓
G	2	3/4"		" " " " C202 F ✓
H	1	12"	12'-0"	C.I. Pipe, Hub & Spigot ✓
J	1	12"	12'-0"	" " 2 Spigots ✓
K	2	12"		" " 90° Elbow. ✓
	1	8"		Air Valve ✓
	1	8"		Gate Valve ✓
D370H	1			Manhole Cover ✓
D370D	1			Manhole Frame ✓
D370C	1			Oil Seal ✓
D370L	1			Manhole Cover ✓
D370	1			Ventilator Cap Comp. ✓



Section A-A



Section B-B

CONCRETE 13.68 Cu. Yds
STEEL 57 LBS.
Extra steel in pipe

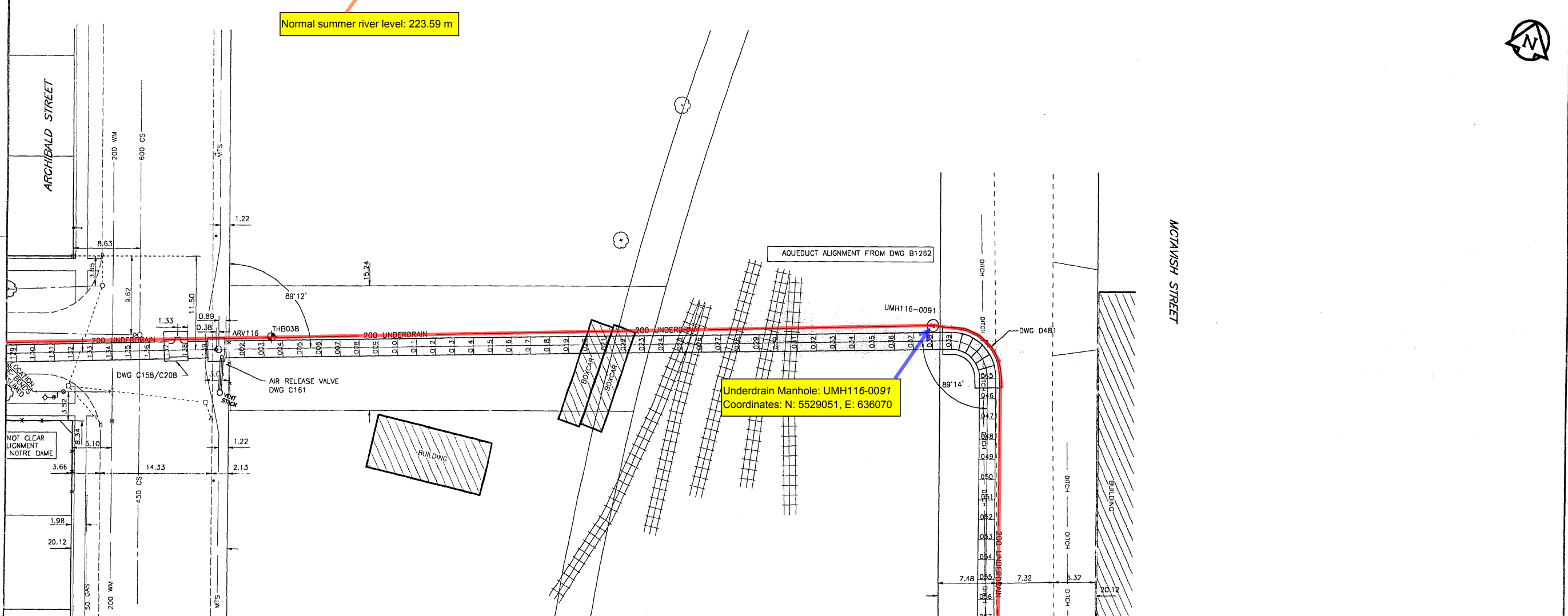
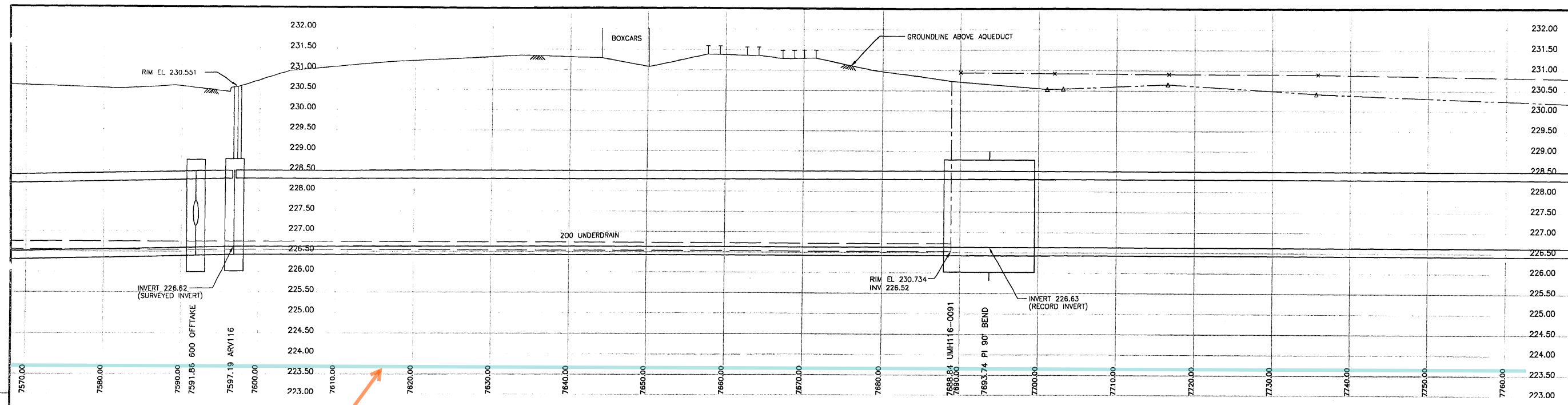
CONTRACT NO 55

DRAWN BY *gfb*
CHECKED BY *A.F.B.*
DESIGNED BY *M.S.*
M.S. Saunders

Bill of Material & Reinforcing details added May 7-1917
May 11, 1917 - "Spigot" changed to "Plain" for Pipe H. and S.
Concrete & Steel quantities added Feb-2-1918

James K. Fuertes
CONSULTING ENGINEER
W. Schae
CHIEF ENGINEER

GREATER WINNIPEG WATER DISTRICT
TYPICAL DETAIL OF AIR VALVE CONNECTIONS
AND CHAMBER FOR 5'-6" PRESSURE PIPE
JULY 27th 1916
Scale 3/4"



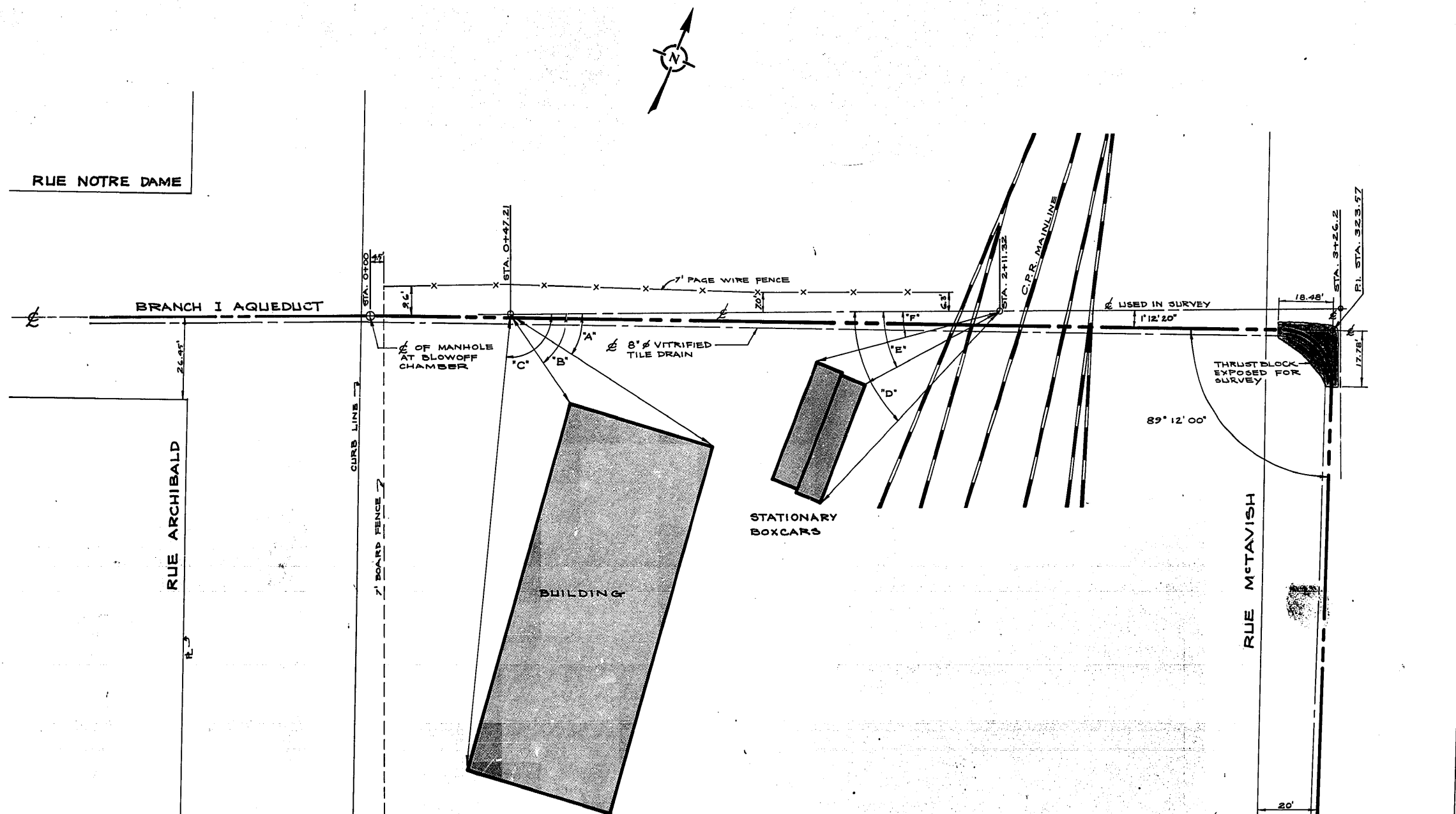
150 mm WM	WATERMAIN	300 mm LWS	LAND DRAINAGE SEWER	HYDRO	100	AQUEDUCT JOINT	AQUEDUCT PIPE		
Hydrant	HYDRANT	250 mm WWS	WASTE WATER SEWER	COMMUNICATION	UNDERDRAIN MANHOLE	UNDERDRAIN	UNDERDRAIN		
Valve	VALVE	Manhole	MANHOLE	TRAFFIC SIGNALS	UNDERDRAIN RISER	GROUNDLINE	GROUNDLINE		
Reducer	REDUCER	Catch Basin	CATCH BASIN	PEDESTAL	UNDERDRAIN WELL	CENTERLINE	CENTERLINE		
Coupling	COUPLING	Curb Inlet	CURB INLET	SIGNAL CONTROLLER	TESTHOLE	N/W GUTTER	N/W GUTTER		
WM Fittings	WM FITTINGS	Culvert	CULVERT	GAS	PEIZOMETER	S/E GUTTER	S/E GUTTER		
Curb Stop	CURB STOP	Ditch	DITCH	STEAM HEAT		N/W DITCH	N/W DITCH		
Edge of Pavement	EDGE OF PAVEMENT	Lamp Standard	LAMP STANDARD	FENCE		S/E DITCH	S/E DITCH		
Railway Track	RAILWAY TRACK	Traffic Signal	TRAFFIC SIGNAL	TREE		N/W PROPERTY LINE	N/W PROPERTY LINE		
Geodetic Benchmark	GEODETTIC BENCHMARK	Wood Pole	WOOD POLE	BUILDING		S/E PROPERTY LINE	S/E PROPERTY LINE		
Survey Bar	SURVEY BAR	Pole Anchor	POLE ANCHOR	SUBSURFACE STRUCTURE					
Existing	EXISTING	Legend - Plan	EXISTING	Legend - Plan	EXISTING	Legend - Plan	EXISTING	Legend - Profile	

DESIGNED BY	BC	CHECKED BY	CCM
DRAWN BY	BC/MAG	APPROVED BY	CCM
HOR. SCALE:	1:250	RELEASED FOR CONSTRUCTION	
VERTICAL:	1:50	DATE	

UMA UMA Engineering Ltd. Engineers and Planners	CGSS CH2M GORE & STORIE LIMITED	ENGINEER'S SEAL
--	---	---------------------

THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT	SHEET 39 OF 214 CITY DRAWING NUMBER D-6317
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Plan and Profile of Branch I Aqueduct From Joint J115-129 To Joint J116-057 From Mile 4.72 To Mile 4.82	REV 41-02-0265-136-01
--	--------------------------

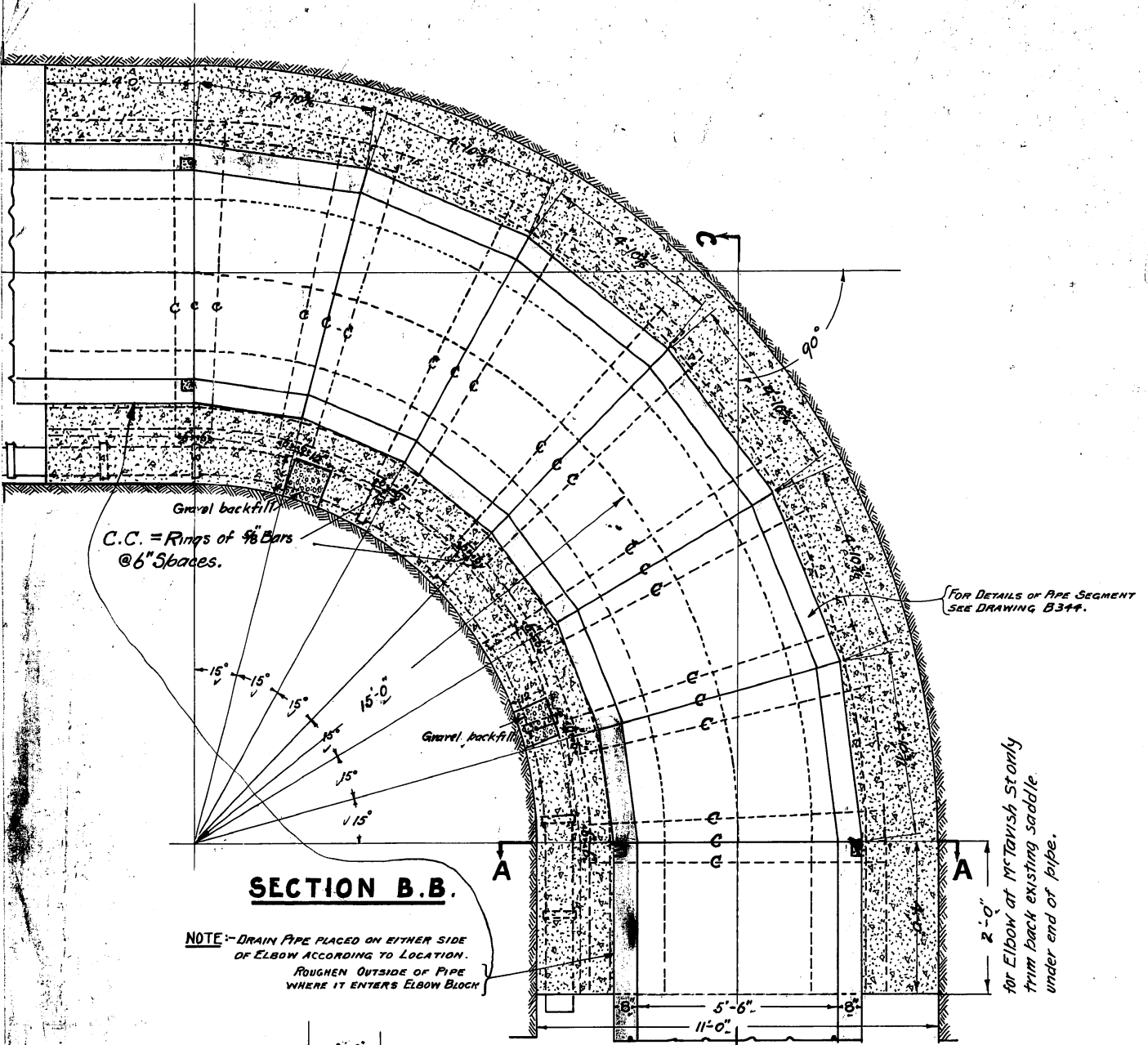


STA. 0+47.21	
ANGLES TURNED	DISTANCE CHAINED
"A" 32° 07' 20"	80.16'
"B" 74° 45' 00"	34.57'
"C" 95° 51' 40"	146.50'

STA. 2+11.32	
ANGLES TURNED	DISTANCE CHAINED
"D" 44° 56' 00"	85.45'
"E" 26° 41' 30"	50.44'
"F" 13° 37' 30"	63.67'

NO.	DESCRIPTION	DATE	BY
REVISIONS			
<i>The City of Winnipeg</i>			
DEPARTMENT Waterworks			
Aqueduct Crossing Of Canadian Pacific Railway On The Projection Of Rue Notre Dame In St. Boniface			
Drawing Made From Survey By Waterworks May, 1973			
Field Book #371	DESIGNED BY	DRAWN BY L.A.N.	
	CHECKED BY	DATE Dec. 11, 1973	
	APPROVED BY		
SCALE 1" = 20'	DRAWING NO. D-1262		

MICROFILMED mar77



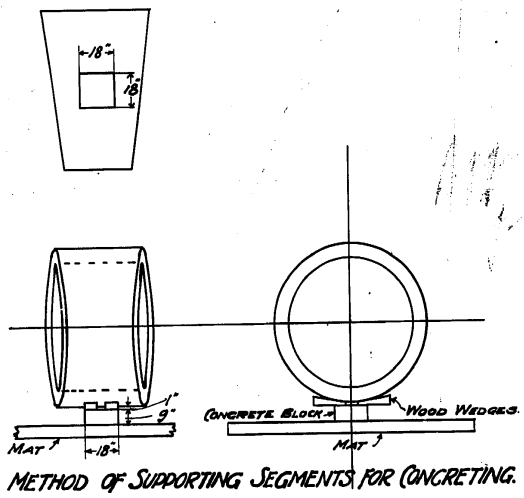
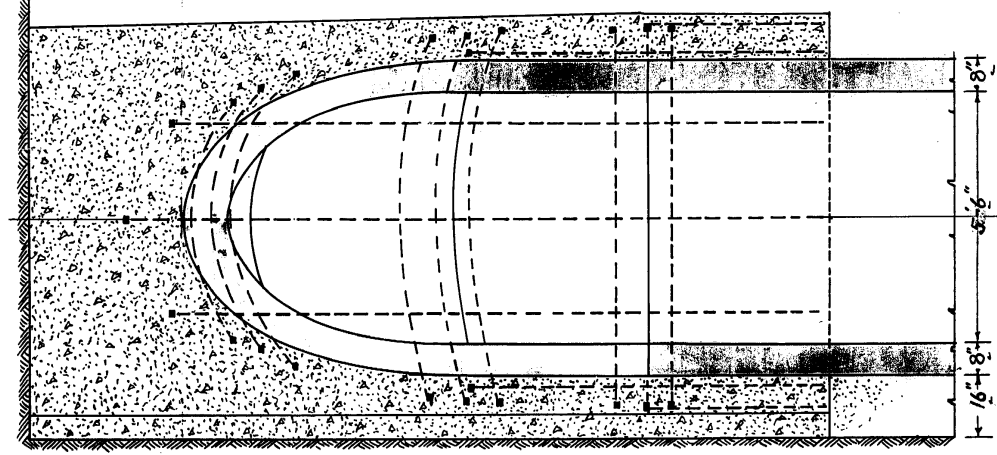
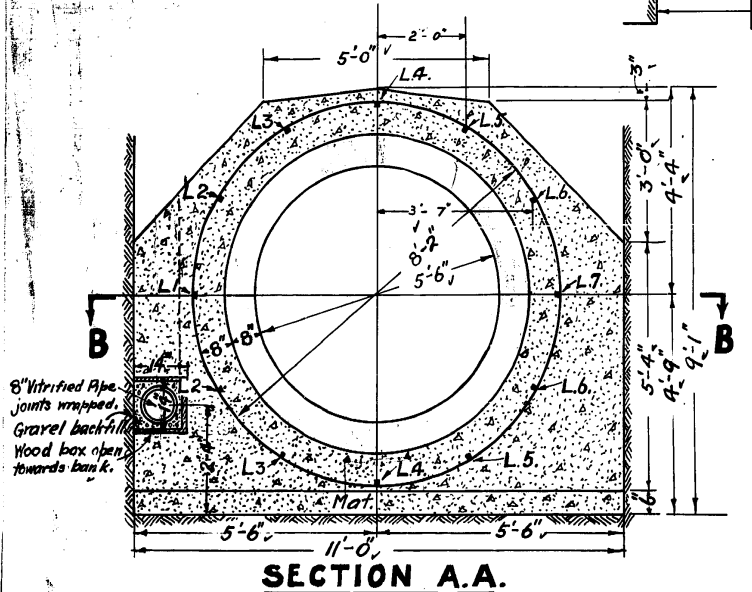
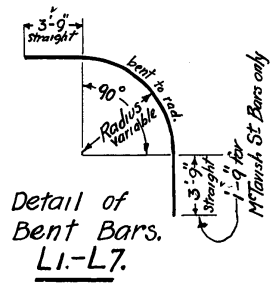
Bill of Reinforcing Steel.

Letter	No	Size	Length	Description
C	21	$\frac{3}{8}$ " Sa	27'-6"	bent to ring 8'-2" dia.
L1	1		24'-9"	" " radius 11'-0" Straight at
L2	2		25'-7"	" " " 11'-6" ends.
L3	2		27'-11"	" " " 13'-0"
L4	2		31'-1"	" " " 15'-0"
L5	2		34'-3"	" " " 17'-0"
L6	2		36'-7"	" " " 18'-6"
L7	1		37'-4"	" " " 19'-0"

FOR McTAVISH ST ELBOW CUT 2'-0" OFF STRAIGHT PART OF EACH BAR.

QUANTITIES OF MATERIAL.

	STANDARD ELBOW.	McTAVISH ST ELBOW.
CONCRETE.	58-75 Cu Yds.	CONCRETE. 55-0 Cu Yds.
STEEL.	1264 LBS.	STEEL. 1230 LBS.
LUMBER.	112 F.B.M.	LUMBER. 100 F.B.M.



Checked by
 Drawn by
 J.F.
 J. H. G. 10/18

CONCRETE QUANTITIES REVISED 19TH OCT 1918. R.S.

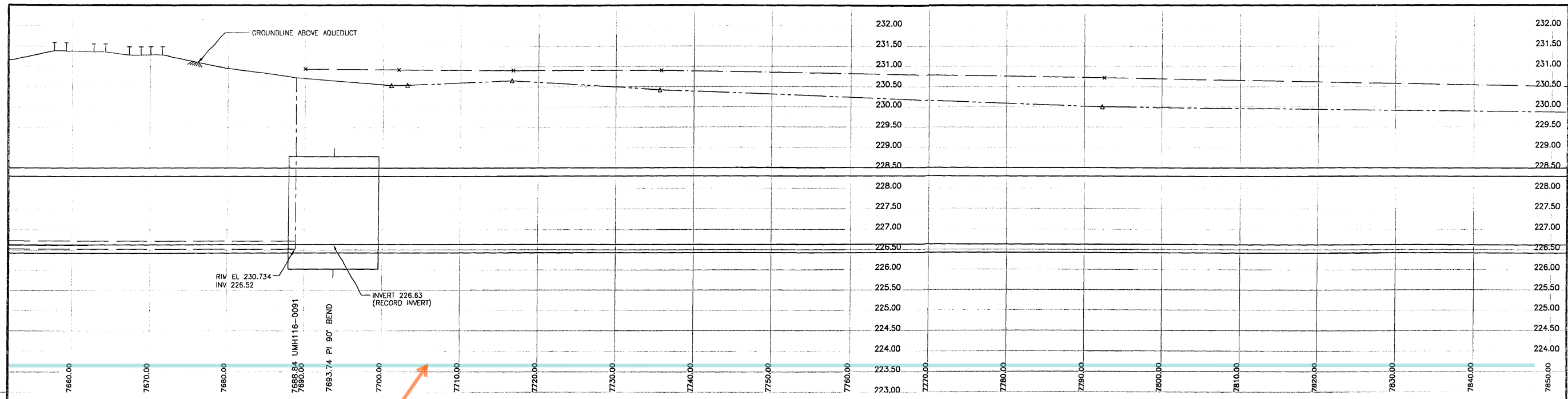
W. G. Chan
 CHIEF ENGINEER

CONTRACT # 55.

D481

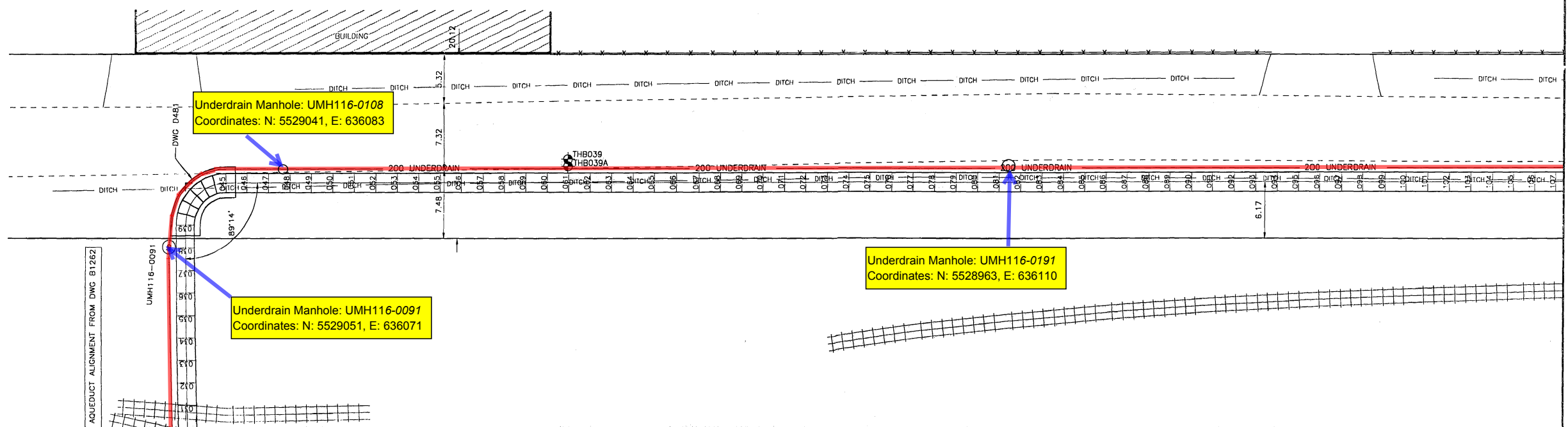
GREATER WINNIPEG WATER DISTRICT.
 5'-6" PRESSURE PIPE LINE.
 90° ELBOW.

MAR 30TH 1918. Scale 1/2" = 1 FT.



MCTAVISH STREET

MCTAVISH STREET



150 mm WU	WATERMAIN	300 mm LOS	LAND DRAINAGE SEWER	HYDRO	100	AQUEDUCT JOINT	AQUEDUCT PIPE
⊕	HYDRANT	250 mm WWS	WASTE WATER SEWER	COMMUNICATION	⊕	UNDERDRAIN MANHOLE	UNDERDRAIN
⊙	VALVE	○	MANHOLE	TRAFFIC SIGNALS	⊕	UNDERDRAIN RISER	GROUNDLINE
⊖	REDUCER	△	CATCH BASIN	PEDESTAL	⊕	UNDERDRAIN WELL	CENTERLINE
⊕	COUPLING	□	CURB INLET	SIGNAL CONTROLLER	⊕	TESTHOLE	N/W GUTTER
⊕	WM FITTINGS	⊖	CULVERT	GAS	⊕	PEIZOMETER	S/E GUTTER
⊕	CURB STOP	⊖	DITCH	STEAM HEAT	⊕		N/W DITCH
⊕	EDGE OF PAVEMENT	⊖	LAMP STANDARD	FENCE	⊕		S/E DITCH
⊕	RAILWAY TRACK	⊖	TRAFFIC SIGNAL	TREE	⊕		N/W PROPERTY LINE
⊕	GEODETIC BENCHMARK	⊖	WOOD POLE	BUILDING	⊕		S/E PROPERTY LINE
⊕	SURVEY BAR	⊖	POLE ANCHOR	SUBSURFACE STRUCTURE	⊕		
⊕	EXISTING	⊖	EXISTING	EXISTING	⊕		

NO. REVISIONS DATE BY

DATA SOURCES
 Aqueduct Joints: Integrated From Manholes Located in 1994
 UMA Total Station Survey and 1995 Internal Inspections
 Unless Otherwise Noted
 Surface Features: UMA Total Station Survey (1994)
 Legal Right of Way M12 to M12: City of Wpg LBS (1994)
 Legal Right of Way M12 to M17: Pollock & Wright (1995)
 Utilities: Compiled from Information Obtained From
 City of Winnipeg Underground Structures (1994)

METRIC
 WHOLE NUMBERS INDICATE MILLIMETRES
 DECIMALIZED NUMBERS INDICATE METRES

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 Engineers and Planners

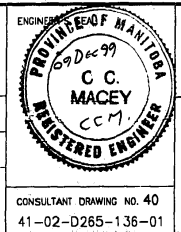
CGSS
 CH2M GORE & STORIE LIMITED

DESIGNED BY: BC
 CHECKED BY: CCM

DRAWN BY: BC/MAG
 APPROVED BY: CCM

HOR. SCALE: 1:250
 VERTICAL: 1:50

DATE: _____



THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT

Plan and Profile of
 Branch I Aqueduct

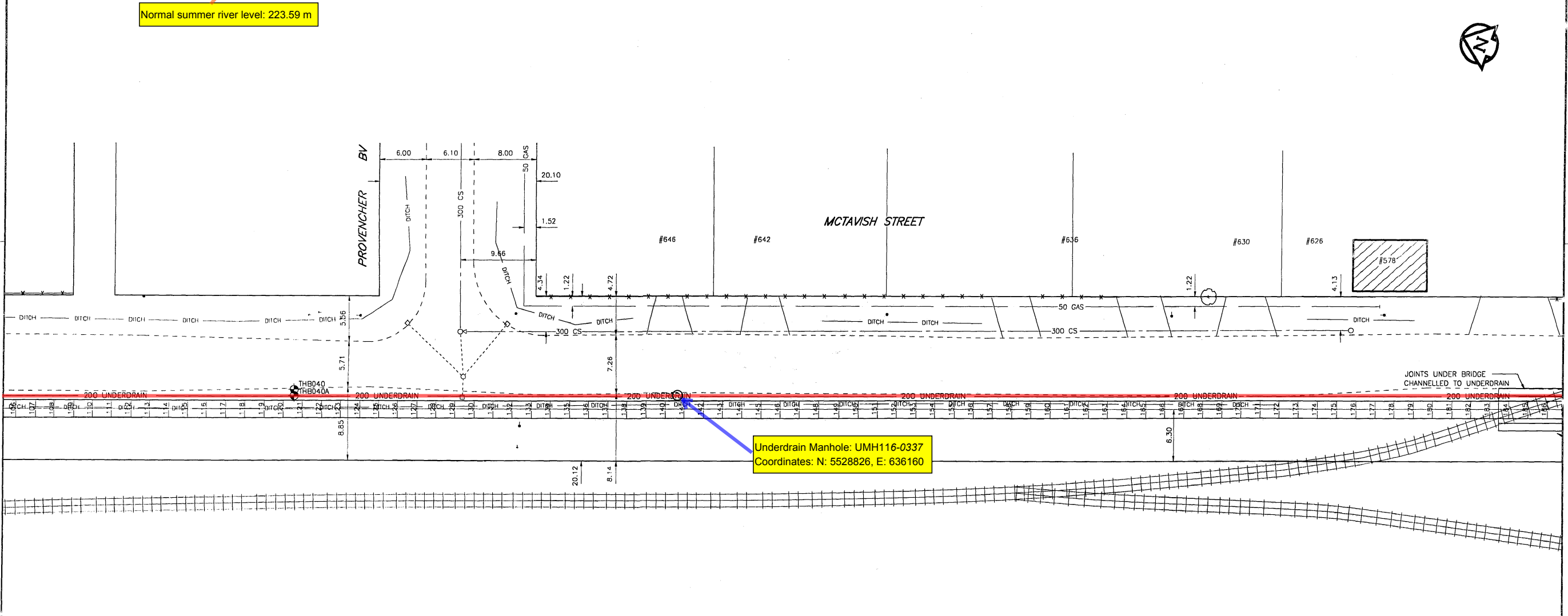
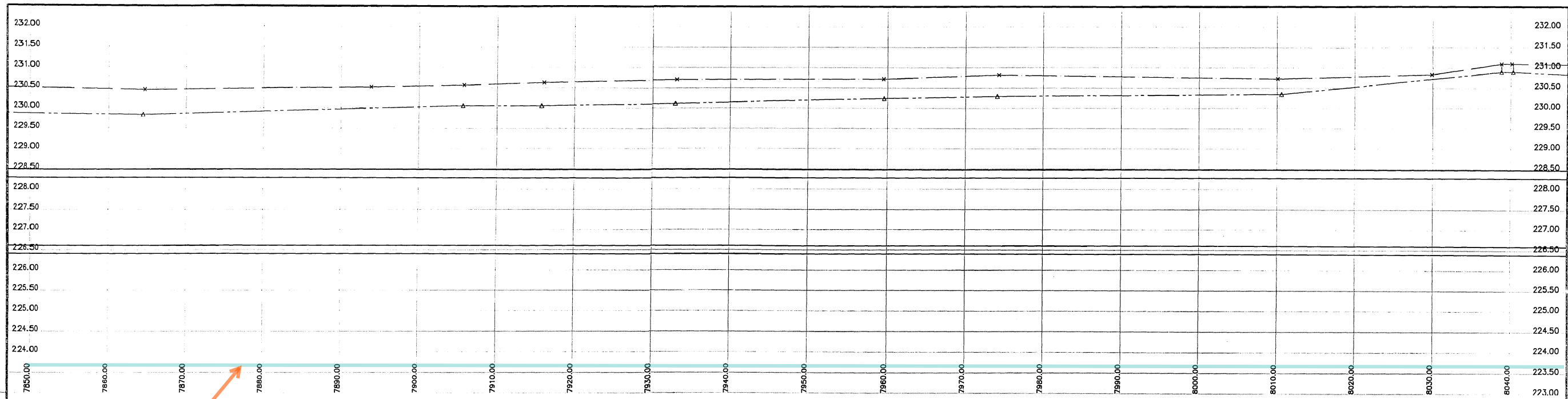
From Joint J116-030 To Joint J116-107
 From Mile 4.78 To Mile 4.90

SHEET 40 OF 214
 CITY DRAWING NUMBER
D-6318 REV

CONSULTANT DRAWING NO. 40
 41-02-D265-136-01

41-02-D265-136-01

D-6318.dwg



Normal summer river level: 223.59 m

Underdrain Manhole: UMH116-0337
Coordinates: N: 5528826, E: 636160

150 mm WM	WATERMAIN	300 mm LGS	LAND DRAINAGE SEWER	HYDRO	AQUEDUCT JOINT	AQUEDUCT PIPE
Hydrant symbol	HYDRANT	250 mm WWS	WASTE WATER SEWER	COMMUNICATION	UNDERDRAIN MANHOLE	UNDERDRAIN
Valve symbol	VALVE		MANHOLE	TRAFFIC SIGNALS	UNDERDRAIN RISER	GROUNDLINE
Reducer symbol	REDUCER		CATCH BASIN	PEDESTAL	UNDERDRAIN WELL	CENTERLINE
Coupling symbol	COUPLING		CURB INLET	SIGNAL CONTROLLER	TESTHOLE	N/W GUTTER
WM fittings symbol	WM FITTINGS		CULVERT	GAS	PEIZOMETER	S/E GUTTER
Curb stop symbol	CURB STOP		DITCH	STEAM HEAT		N/W DITCH
Edge of pavement symbol	EDGE OF PAVEMENT		LAMP STANDARD	FENCE		S/E DITCH
Railway track symbol	RAILWAY TRACK		TRAFFIC SIGNAL	TREE		N/W PROPERTY LINE
Geodetic benchmark symbol	GEODETIC BENCHMARK		WOOD POLE	BUILDING		S/E PROPERTY LINE
Survey bar symbol	SURVEY BAR		POLE ANCHOR	SUBSURFACE STRUCTURE		
Existing symbol	EXISTING	Existing symbol	EXISTING	Existing symbol	EXISTING	Existing symbol
Legend - Plan	LEGEND - PLAN	Legend - Plan	LEGEND - PLAN	Legend - Plan	LEGEND - PLAN	Legend - Profile

NO. REVISIONS DATE BY

DATA SOURCES
 Aqueduct Joints: Interpreted From Manholes Located in 1994
 UMA Total Station Survey and 1995 Internal Inspections
 Unless Otherwise Noted
 Surface Features: UMA Total Station Survey (1994)
 Legal Right of Way M11 to M12: City of Wpg LBS (1994)
 Legal Right of Way M12 to M17: Pollock & Wright (1995)
 Utilities: Compiled from Information Obtained From
 City of Winnipeg Underground Structures (1994)

METRIC
 WHOLE NUMBERS INDICATE MILLIMETRES
 DECIMALIZED NUMBERS INDICATE METRES

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UMA Engineering Ltd.
Engineers and Planners

COSY
CHAM GORE & STORRIE LIMITED

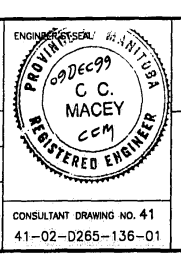
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 CHECKED BY: CCM

DRAWN BY: BC/MAG
 APPROVED BY: [Signature]

HR. SCALE: 1:250
 VERTICAL: 1:50

RELEASED FOR CONSTRUCTION

DATE



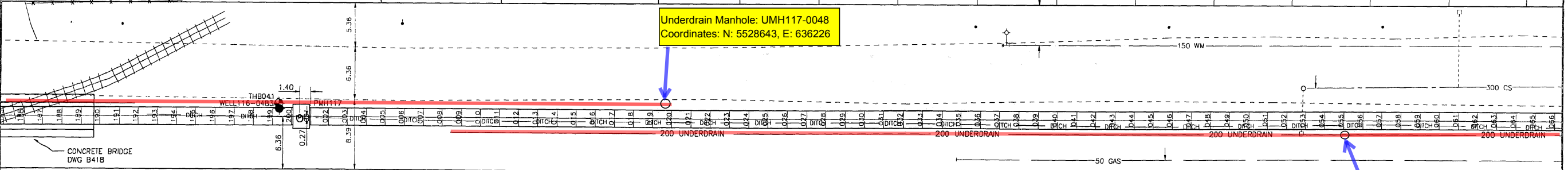
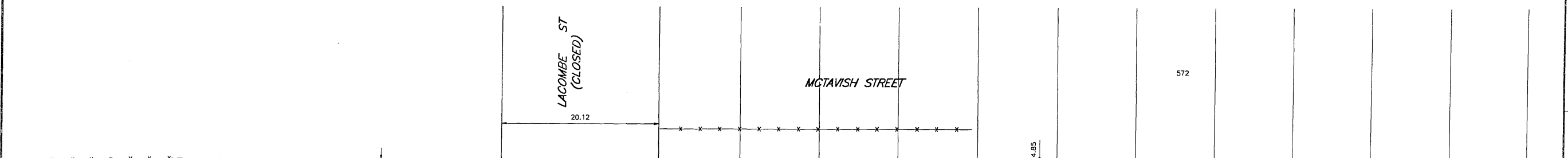
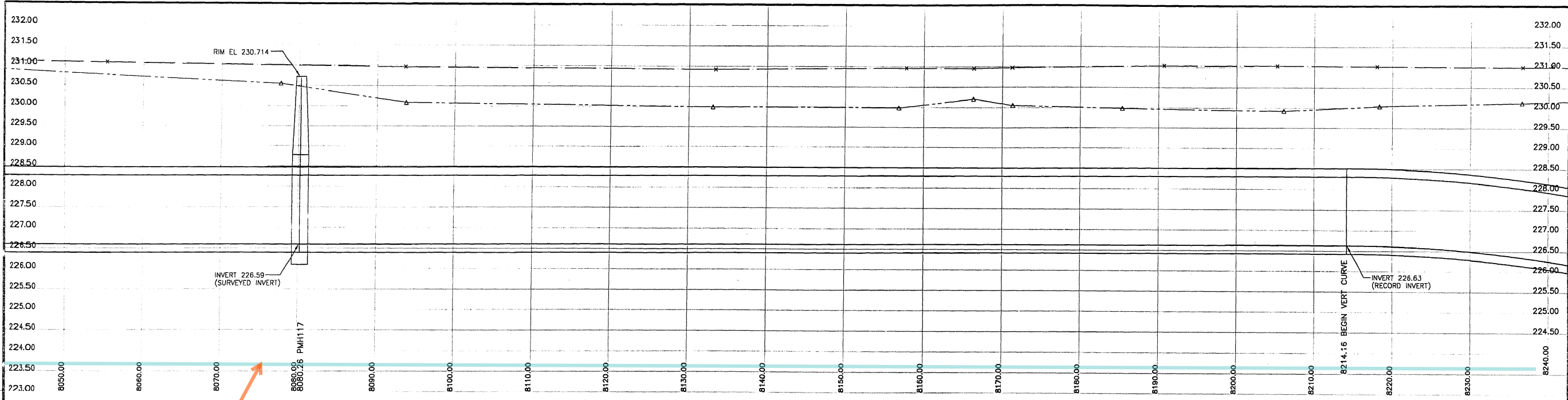
THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

Plan and Profile of
Branch I Aqueduct

From Joint J116-106 To Joint J116-186
From Mile 4.90 To Mile 5.02

SHEET 41 OF 214
CITY DRAWING NUMBER
REV
D-6319

CONSULTANT DRAWING NO. 41
41-02-0265-136-01



150 mm WM	WATERMAIN	300 mm LGS	LAND DRAINAGE SEWER	HYDRO	100	AQUEDUCT JOINT	AQUEDUCT PIPE
Hydrant	HYDRANT	250 mm WWS	WASTE WATER SEWER	COMMUNICATION	Underdrain Manhole	Underdrain	Underdrain
Valve	VALVE	Manhole	MANHOLE	Traffic Signals	Underdrain Riser	Groundline	Groundline
Reducer	REDUCER	Catch Basin	CATCH BASIN	Pedestal	Underdrain Well	Centerline	Centerline
Coupling	COUPLING	Curb Inlet	CURB INLET	Signal Controller	Testhole	N/W Gutter	N/W Gutter
WM Fittings	WM FITTINGS	Culvert	CULVERT	Gas	Peizometer	S/E Gutter	S/E Gutter
Curb Stop	CURB STOP	Ditch	DITCH	Steam Heat		N/W Ditch	N/W Ditch
Edge of Pavement	EDGE OF PAVEMENT	Lamp Standard	LAMP STANDARD	Fence		S/E Ditch	S/E Ditch
Railway Track	RAILWAY TRACK	Traffic Signal	TRAFFIC SIGNAL	Tree		N/W Property Line	N/W Property Line
Geodetic Benchmark	GEODETIC BENCHMARK	Wood Pole	WOOD POLE	Building		S/E Property Line	S/E Property Line
Survey Bar	SURVEY BAR	Pole Anchor	POLE ANCHOR	Subsurface Structure			
Existing	EXISTING	Existing	EXISTING	Existing	Legend - Plan	Existing	Legend - Profile

NO. REVISIONS DATE BY

DATA SOURCES
 Aqueduct Joints: Interpreted From Manholes Located in 1994
 UMA Total Station Survey and 1985 Internal Inspections
 Unless Otherwise Noted
 Surface Features: UMA Total Station Survey (1994)
 Legal Right of Way M11 to M12: City of Wpg LBS (1994)
 Legal Right of Way M12 to M17: Pollock & Wright (1995)
 Utilities: Compiled from Information Obtained From
 City of Winnipeg Underground Structures (1994)

METRIC
 WHOLE NUMBERS INDICATE MILLIMETRES
 DECIMALIZED NUMBERS INDICATE METRES

UMA Engineering Ltd.
Engineers and Planners

CASS
CHYM GORE & STORRE LIMITED

DESIGNED BY: BC
 CHECKED BY: CCM

DRAWN BY: BC/MAG
 APPROVED BY: CCM

HOR. SCALE: 1:250
 VERTICAL: 1:50

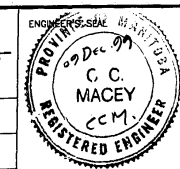
CONSULTANT DRAWING NO. 42
 41-02-0265-136-01

THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT

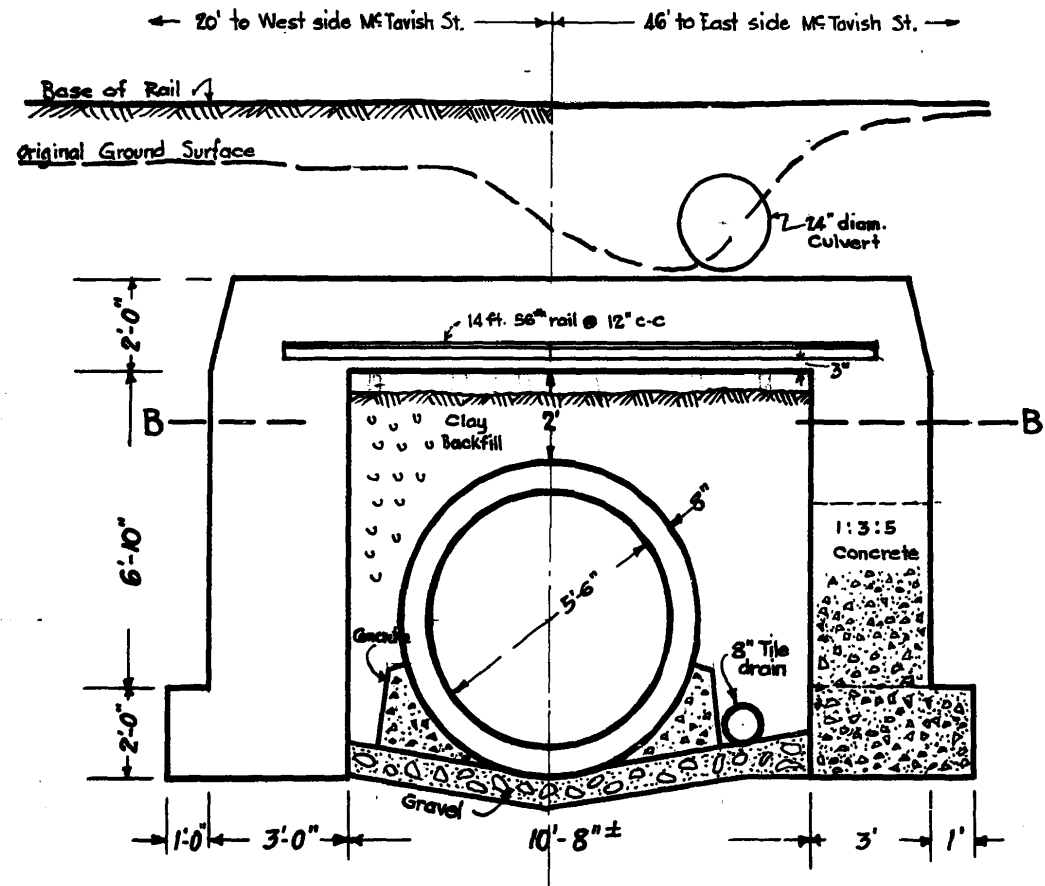
**Plan and Profile of
 Branch I Aqueduct**

From Joint J116-185 To Joint J117-066
 From Mile 5.02 To Mile 5.14

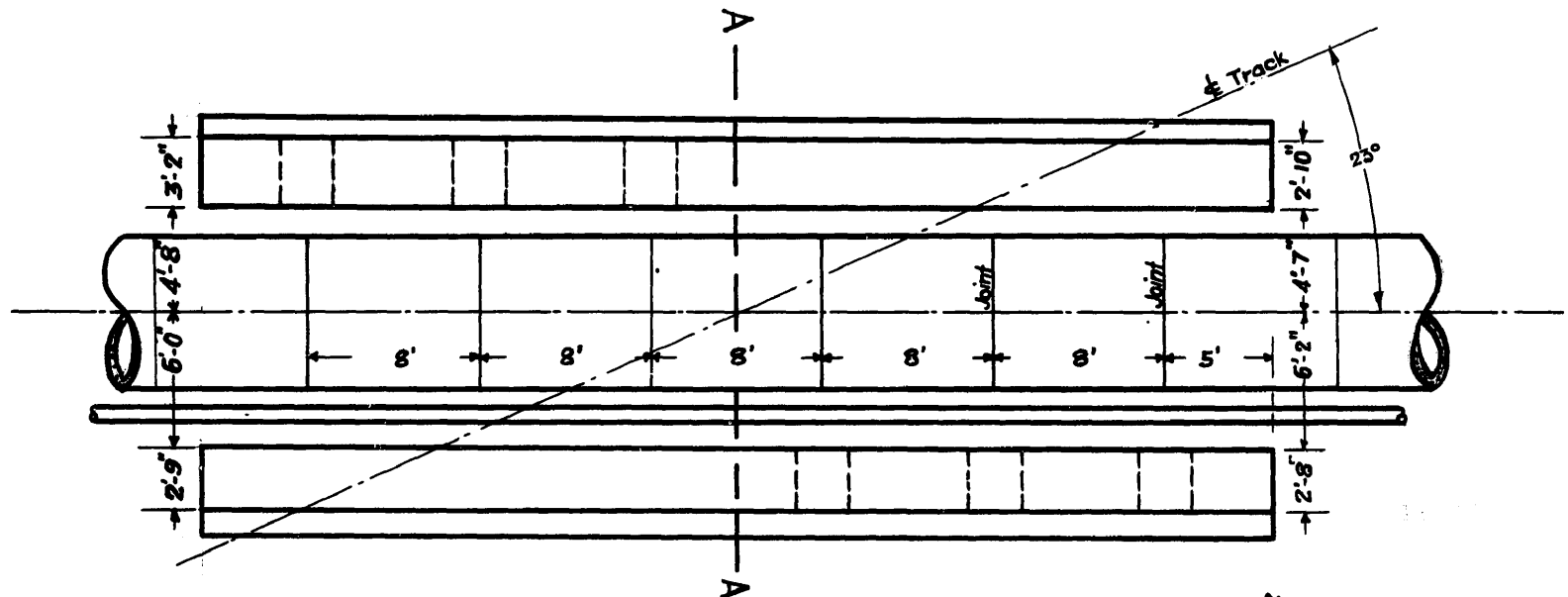
SHEET 42 OF 214
 CITY DRAWING NUMBER
D-6320 REV



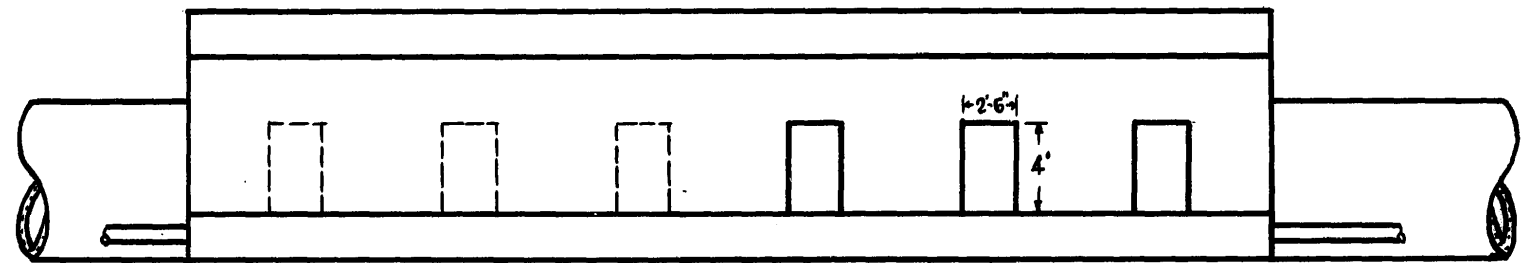
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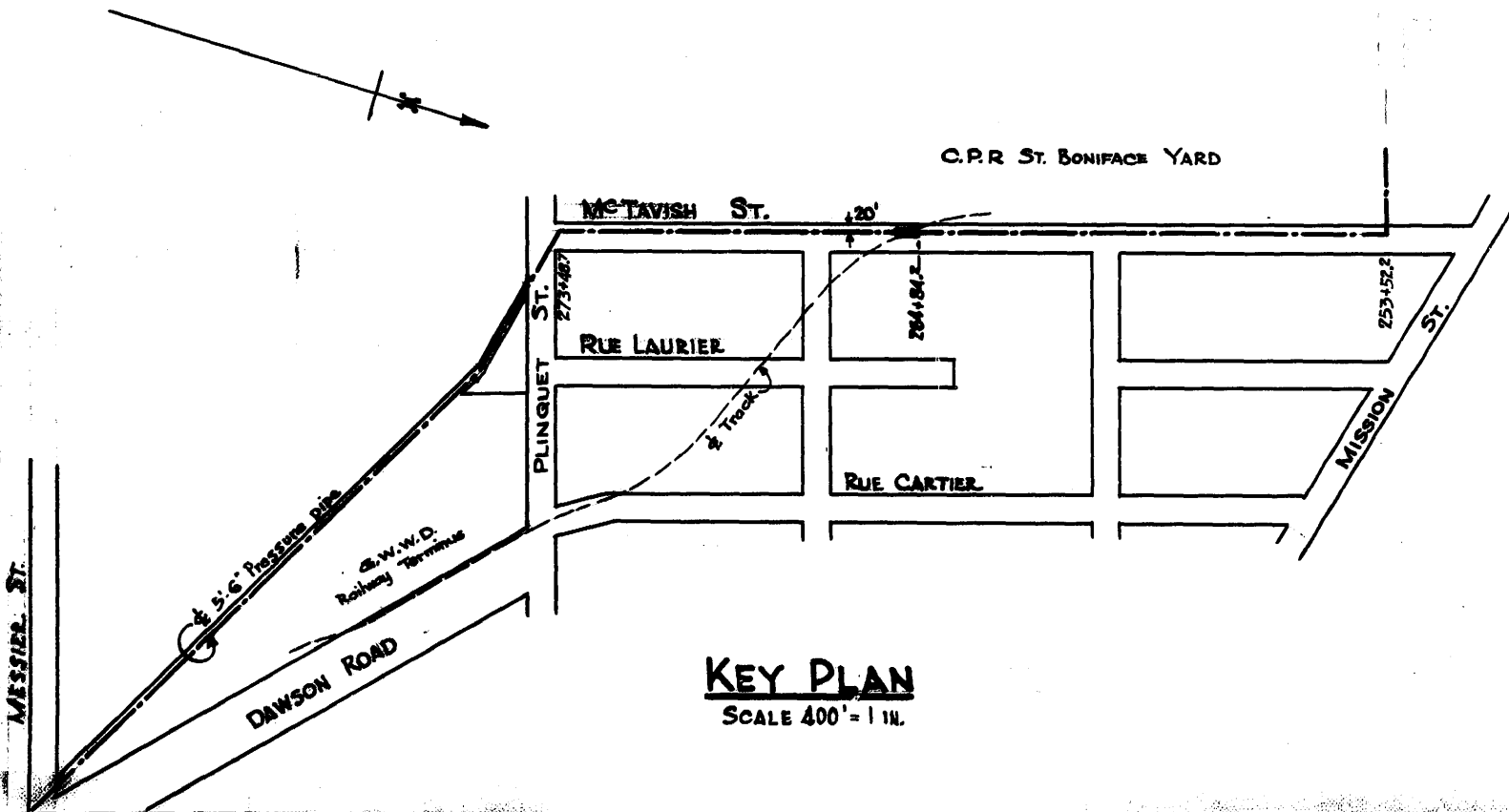
SECTION AA.
SCALE 1/4 IN. = 1 FT.



SECTION BB.
SCALE 1/8 IN. = 1 FT.

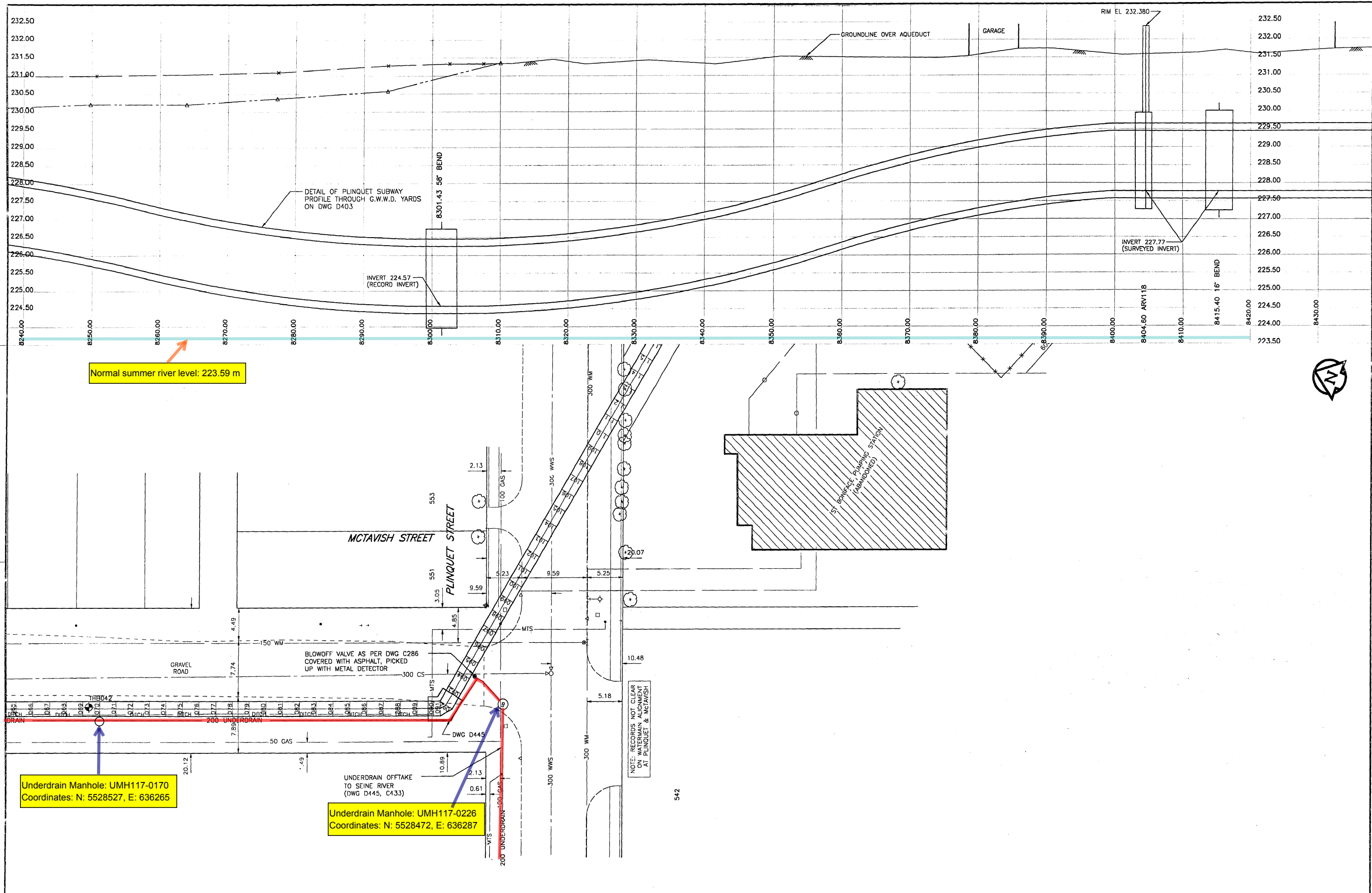


SIDE ELEVATION



KEY PLAN
SCALE 400' = 1 IN.

GREATER WINNIPEG WATER DISTRICT
CONCRETE BRIDGE OVER 5'-6" DIAM. PRESSURE PIPE
McTAVISH STREET, ST. BONIFACE
FOR C.P.R. - G.W.W.D. TRACK CONNECTION
AS CONSTRUCTED BY C.P.R.



150 mm WM	WATERMAIN	300 mm LDS	LAND DRAINAGE SEWER	HYDRO	AQUEDUCT JOINT	AQUEDUCT PIPE	
Hydrant	HYDRANT	250 mm WWS	WASTE WATER SEWER	COMMUNICATION	UNDERDRAIN MANHOLE	UNDERDRAIN	
Valve	VALVE	Manhole	MANHOLE	TRAFFIC SIGNALS	UNDERDRAIN RISER	GROUNDLINE	
Reducer	REDUCER	Catch Basin	CATCH BASIN	PEDESTAL	UNDERDRAIN WELL	CENTERLINE	
Coupling	COUPLING	Curb Inlet	CURB INLET	SIGNAL CONTROLLER	TESTHOLE	N/W GUTTER	
WM Fittings	WM FITTINGS	Culvert	CULVERT	GAS	PEIZOMETER	S/E GUTTER	
Curb Stop	CURB STOP	Ditch	DITCH	STEAM HEAT		N/W DITCH	
Edge of Pavement	EDGE OF PAVEMENT	Lamp Standard	LAMP STANDARD	FENCE		S/E DITCH	
Railway Track	RAILWAY TRACK	Traffic Signal	TRAFFIC SIGNAL	TREE		N/W PROPERTY LINE	
Geodetic Benchmark	GEODETIC BENCHMARK	Wood Pole	WOOD POLE	BUILDING		S/E PROPERTY LINE	
Survey Bar	SURVEY BAR	Pole Anchor	POLE ANCHOR	SUBSURFACE STRUCTURE			
EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PROFILE

NO. REVISIONS DATE BY

DATA SOURCES

Aqueduct Joints: Interpreted From Manholes Located in 1994
 UMA Total Station Survey and 1995 Internal Inspections
 Unless Otherwise Noted

Surface Features: UMA Total Station Survey (1994)
 Legal Right of Way M11 to M12: City of Wpg LBS (1994)
 Legal Right of Way M12 to M17: Pollack & Wright (1995)
 Utilities: Compiled from Information Obtained From
 City of Winnipeg Underground Structures (1994)

METRIC
 WHOLE NUMBERS INDICATE MILLIMETRES
 DECIMALIZED NUMBERS INDICATE METRES

UMA
 UMA Engineering Ltd.
 Engineers and Planners

CGSS
 CHYM GORE & STORIE LIMITED

DESIGNED BY: BC
 CHECKED BY: CCM

DRAWN BY: BC/MAG
 APPROVED BY: CCM

HOR. SCALE: 1:250
 VERTICAL: 1:50

RELEASED FOR CONSTRUCTION

DATE: _____

PROVINCE OF MANITOBA
 REGISTERED ENGINEER
 C.C. MACEY
 C.E.M.

CONSULTANT DRAWING NO. 43
 41-02-D265-136-01

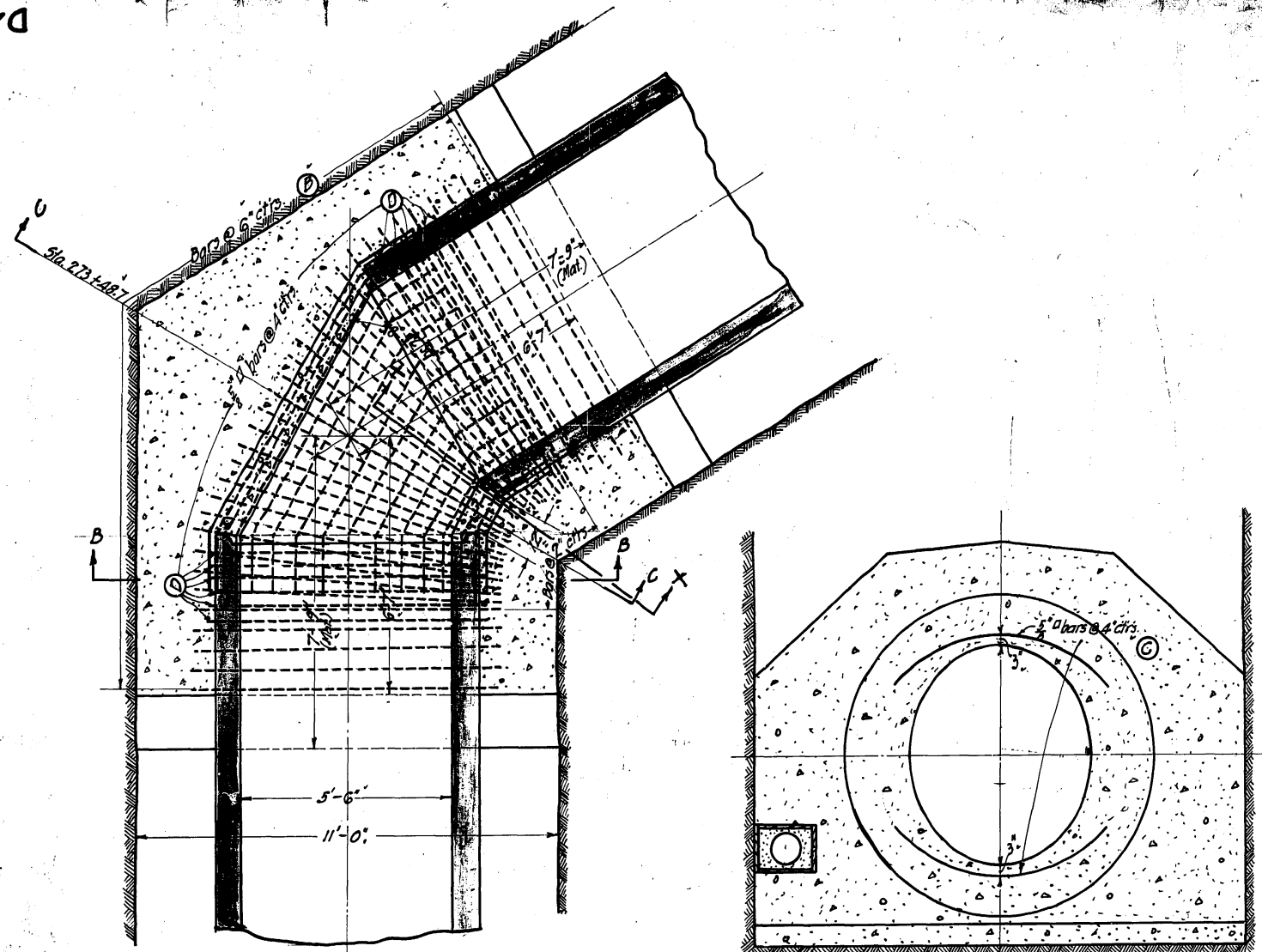
THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT

Plan and Profile of
 Branch I Aqueduct

From Joint J117-065 To Joint J117-115
 From Mile 5.14 To Mile 5.21

SHEET 43 OF 214
 CITY DRAWING NUMBER
D-6321 REV

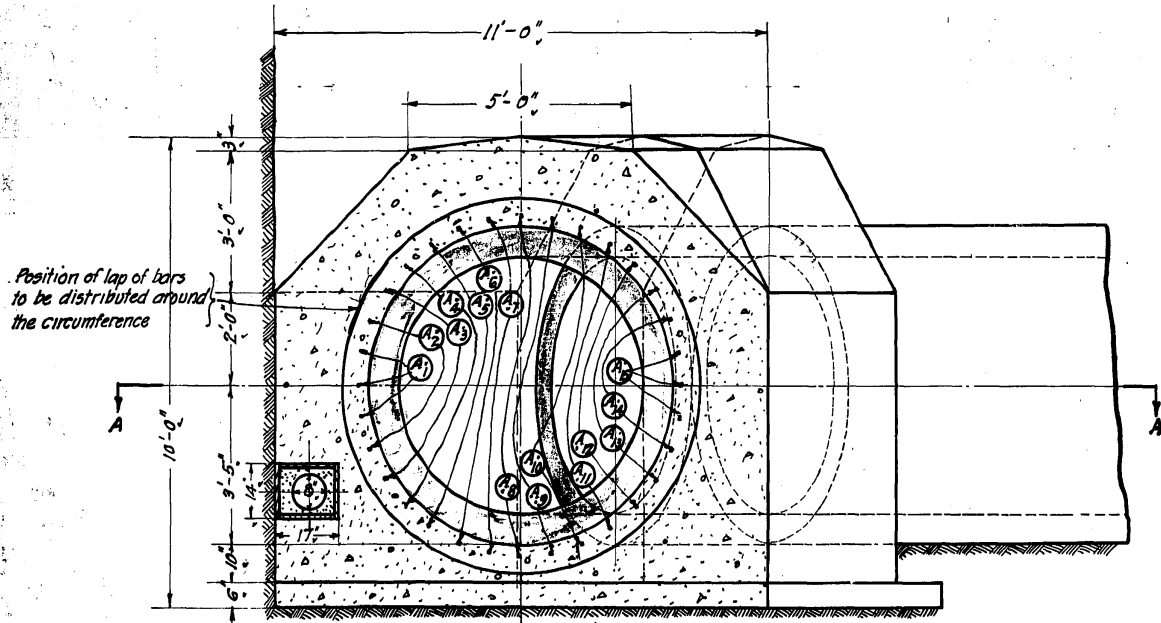
D-6321.dwg



SECTION A-A

SECTION C-C.

BILL OF MATERIAL				
Letter	No.	Size	Length	Description.
A ₁	3	3/8" dia	10'-10"	Bent as shown
A ₂	2	"	10'-6"	" " "
A ₃	2	"	10'-3"	" " "
A ₄	2	"	9'-10"	" " "
A ₅	2	"	9'-4"	" " "
A ₆	2	"	8'-9"	" " "
A ₇	2	"	8'-2"	" " "
A ₈	2	"	7'-7"	" " "
A ₉	2	"	6'-10"	" " "
A ₁₀	2	"	6'-2"	" " "
A ₁₁	2	"	5'-8"	" " "
A ₁₂	2	"	5'-2"	" " "
A ₁₃	2	"	4'-8"	" " "
A ₁₄	2	"	4'-5"	" " "
A ₁₅	3	"	4'-2"	" " "
B	33	"	26'-9"	Bent to 8'-0" dia.
C	36	"	6'-0"	" " 7'-4" "
D	12	"	24'-6"	" " 7'-4" "



SECTION B-B.

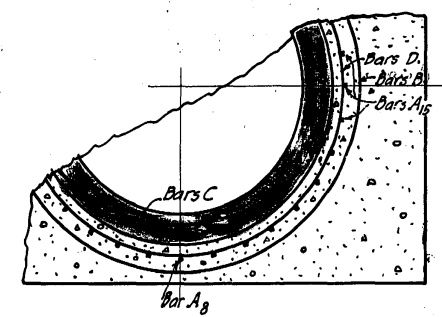
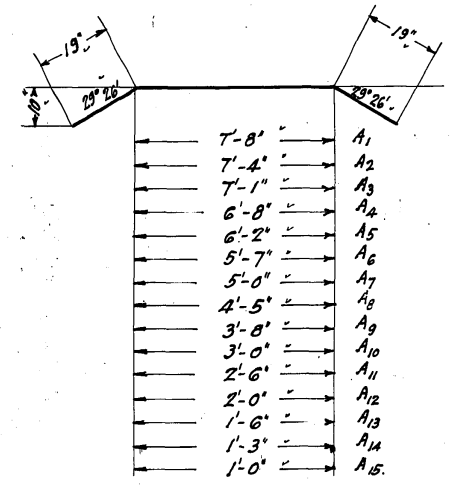


DIAGRAM SHOWING RELATIVE POSITIONS OF BARS IN SECTION X-X.



DETAIL OF BENT BARS.

CONCRETE 34 Cub. Yds. Materials in pipe not included.
 STEEL 2169 lbs.

CONTRACT 55.

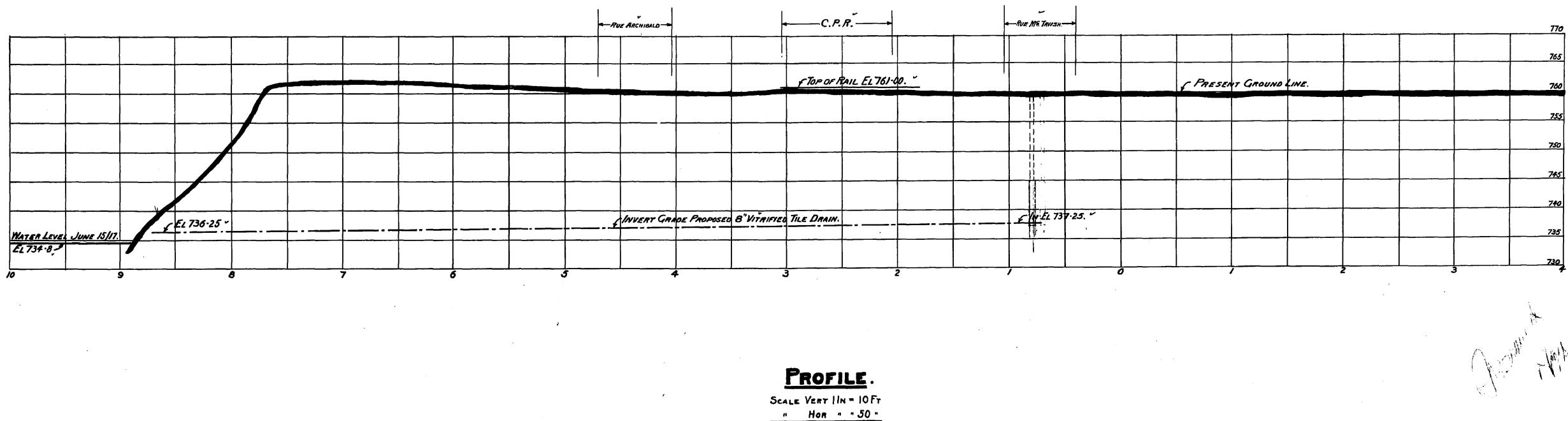
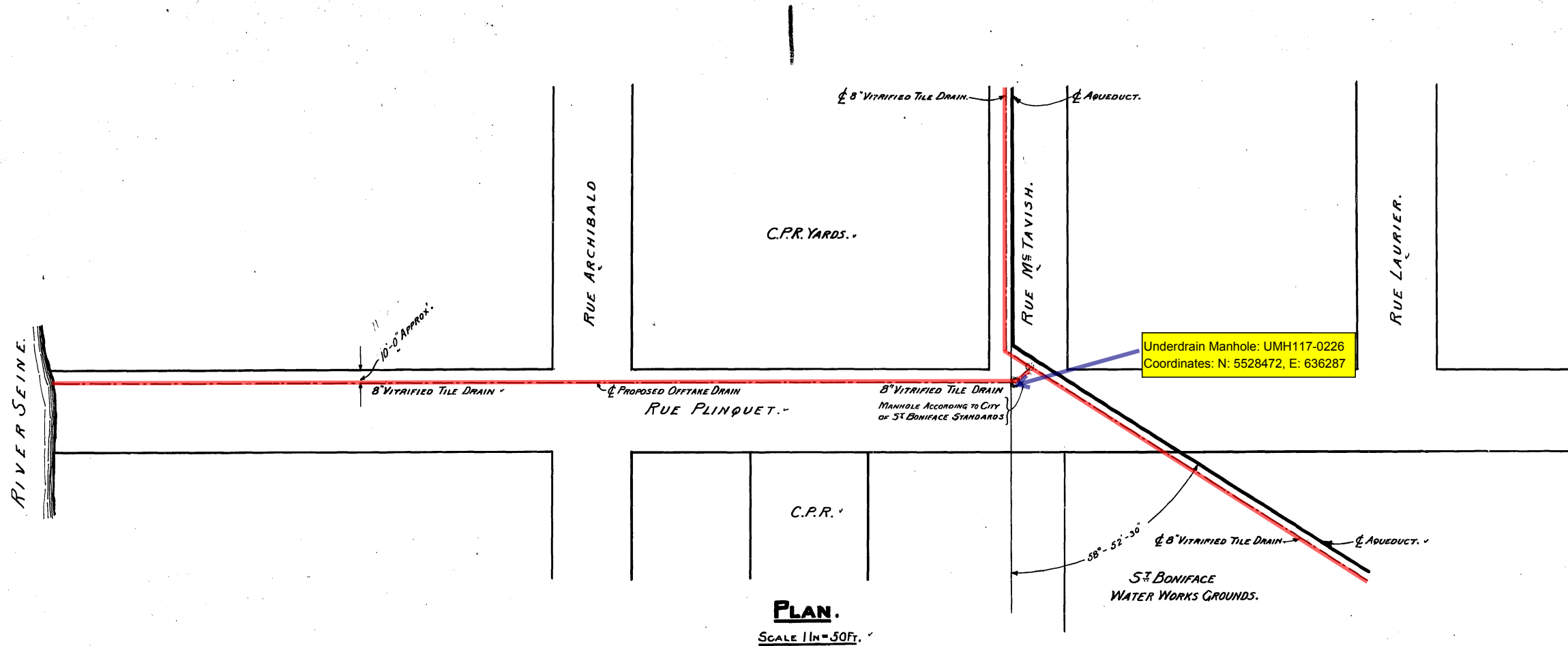
D412.

Drawn by: [Signature]
 Traced by: [Signature]
 Checked by: [Signature]
 Approved: [Signature]

Concrete & Steel quantities added Feb. 2-1918

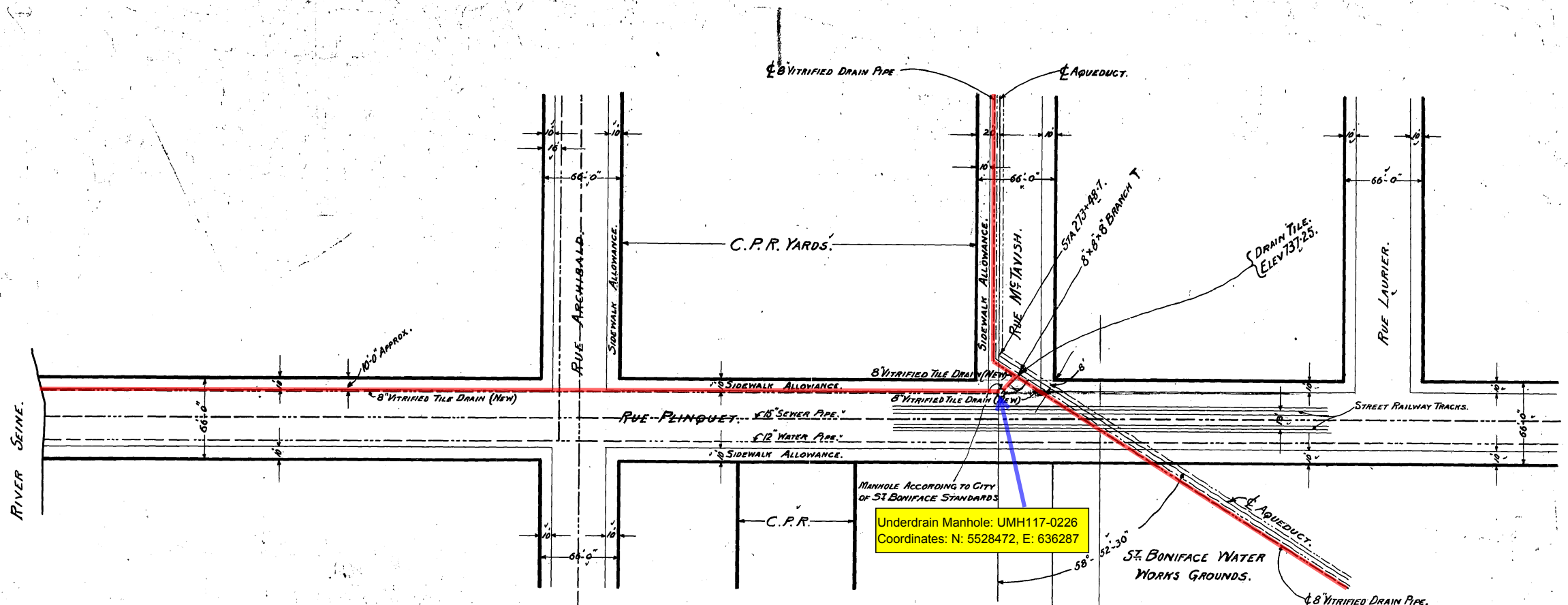
James H. Fierstein
 Consulting Engineer.
 W. Chase
 Chief Engineer.

GREATER WINNIPEG WATER DISTRICT.
 PLAN & DETAIL OF 58° 52' 30" ELBOYY
 AT STA. 273+40.7
 July 30th 1917. Scale: 1/2 in. = 1 ft.

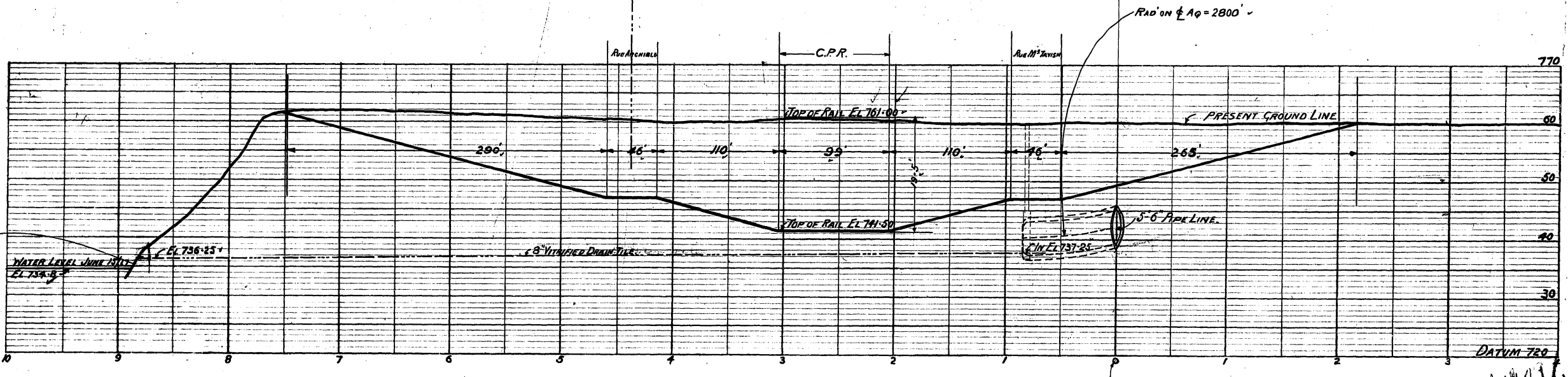


Approved
10/17/17

<p>Drawn By R.S. Traced By R.S. Checked By J.H. Approved M. Sams</p>	<p>MANHOLE ADDED NOV 13TH 1917. R.S. Plan of Drain Outlet & Constructed Drawing No. 5316 3/2/20 R.S.</p>	<p>APPROVED FOR CANADIAN PACIFIC RAILWAY. 1917.</p>	<p>James B. Fuentes CONSULTING ENGINEER. W. L. Chase CHIEF ENGINEER.</p>	<p>GREATER WINNIPEG WATER DISTRICT. PLAN AND PROFILE OF PROPOSED OFFTAKE TO TRENCH DRAIN RUE PLINQUET ST. BONIFACE. OCT 31ST 1917 SCALE AS SHOWN.</p>
--	---	---	--	--



PLAN.
SCALE 1 IN = 50 FT.



PROFILE ON & RUE PLINQUET.
SCALE VERT 1 IN = 10 FT.
SCALE HORIZ 1 IN = 50 FT.

FOR DRAIN OUTLET
SEE DRAWING C162

CONTRACT 55. D413.

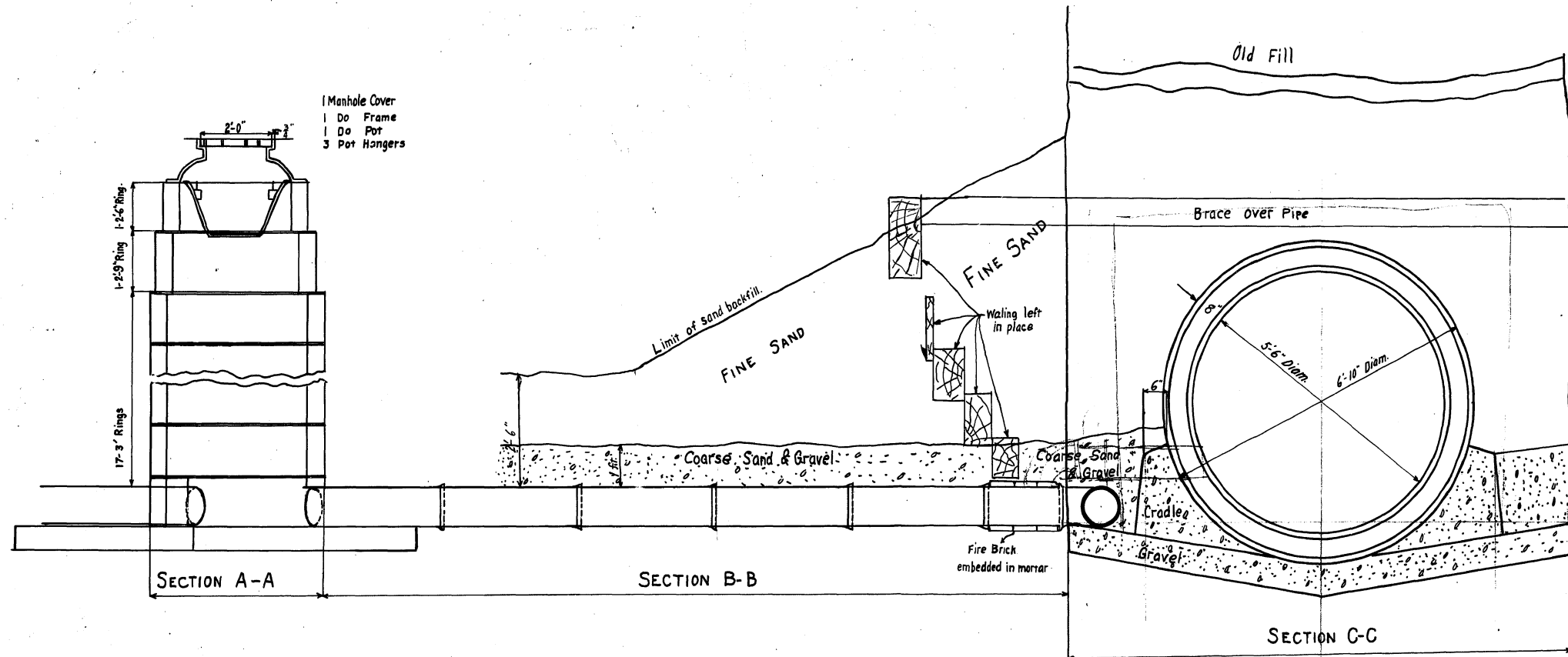
DRAWN BY: BT
CHECKED BY: R.S.
DESIGNED BY: J.H.
APPROVED: [Signature]

MANHOLE ADDED NOV 14TH 1917. R.S.

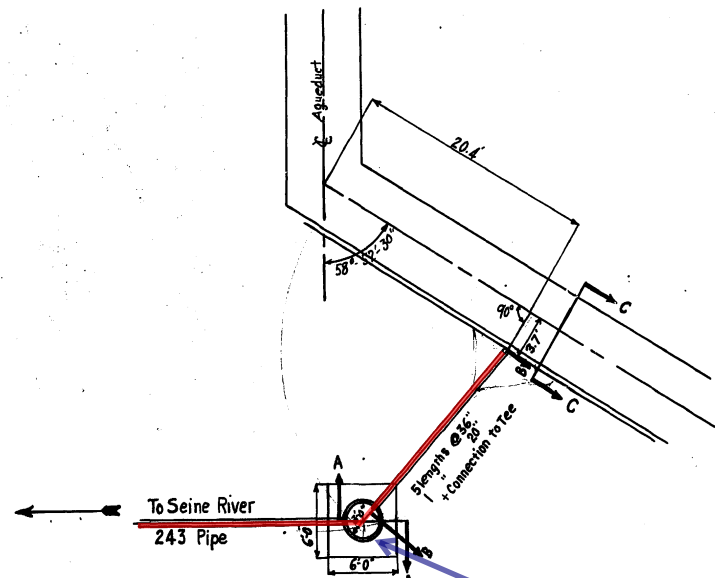
APPROVED FOR THE CITY OF ST BONIFACE. 1917.
MAYOR: [Signature]
CITY CLERK: [Signature]
CITY ENGINEER: [Signature]

[Signature]
CONSULTING ENGINEER
[Signature]
CHIEF ENGINEER

GREATER WINNIPEG WATER DISTRICT.
5-6" PIPE LINE.
PLAN AND PROFILE CROSSING PLINQUET STREET SHOWING OUTLINES
OF PROPOSED SUBWAY.
AUGUST 14TH 1917. SCALE AS SHOWN.



Scale 1/2 in. = 1 ft.



Scale 10 ft. = 1 in.

Underdrain Manhole: UMH117-0226
 Coordinates: N: 5528472, E: 636287

BILL OF MATERIAL

Description	Location	Amount
8" Vit. Tile Pipe	Seine River to Aqueduct	745'-8"
12" C.I.	Outlet into Seine R.	24'-0"
Cement	Abutments - Seine R.	14 1/2 bbls.
Gravel	" "	6 cu. yds.
Cement	Joints	2 1/2 bbls.
<i>Std. St. Boniface Manhole</i>		
3' Rings		17
2'-9" "		1
2'-6" "		1
Cover		1
Frame		1
Pot		1
Steps		1
Cement	in Rings	3 bbl.
Cement	Concrete Base	1 bbl.
Gravel	" "	2 1/2 cu. yds.

Drawn by *W.H.H.*
 Traced by *W.H.H.*
 Checked by _____

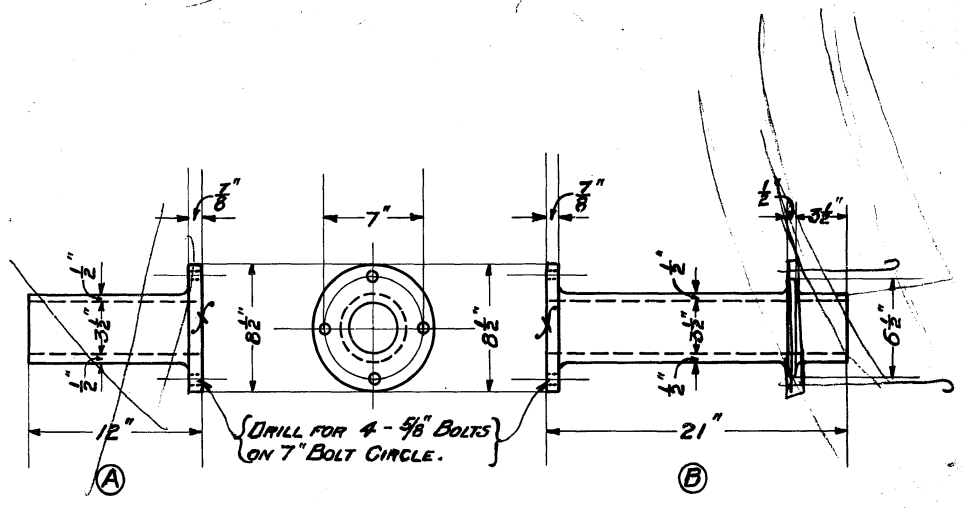
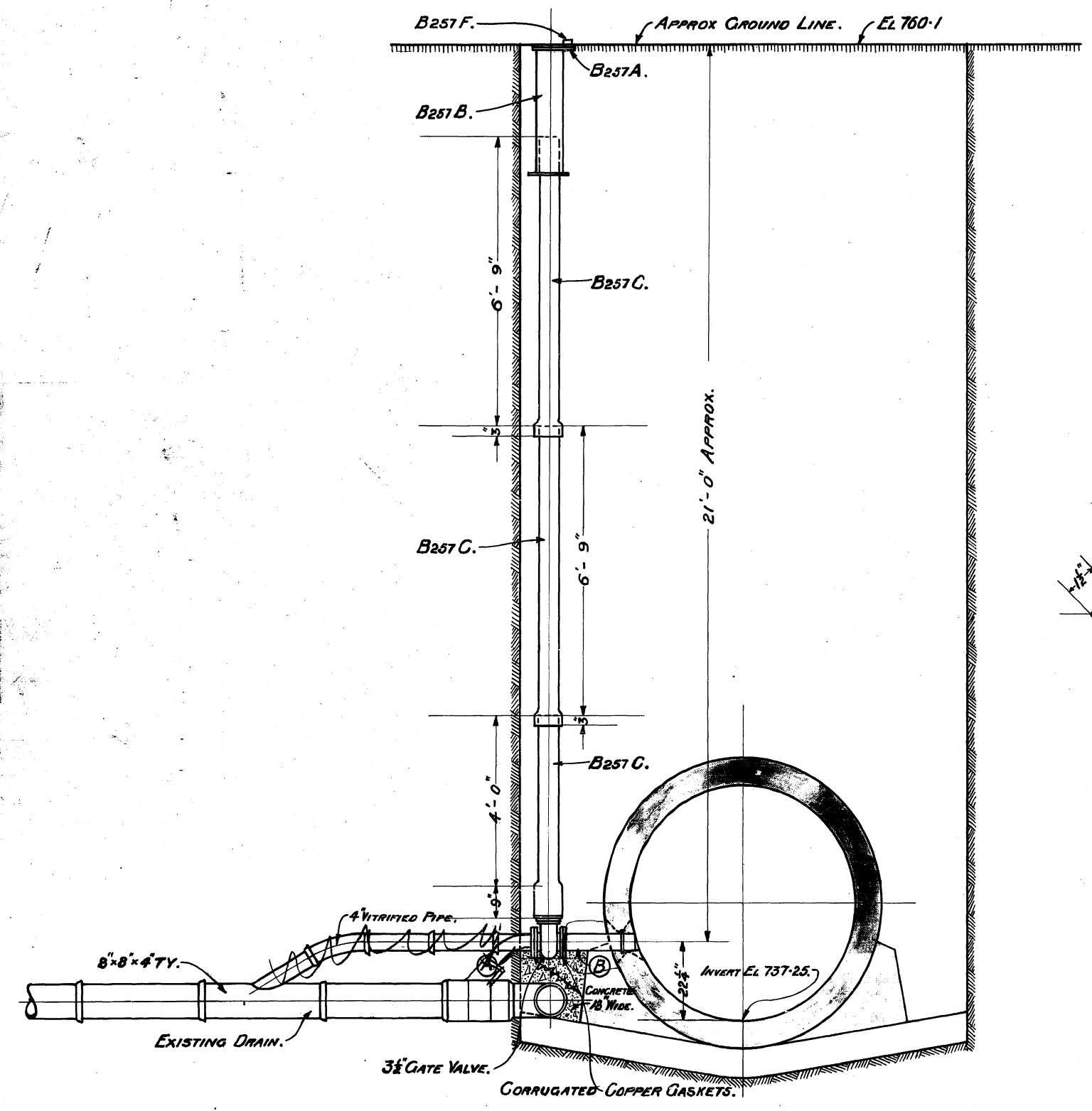
C. M. Mee
 Division Engineer
W. Schaefer
 Chief Engineer

GREATER WINNIPEG WATER DISTRICT.
PLAN OF PLINQUET STREET TILE DRAIN-SIPHON
TO SEINE RIVER

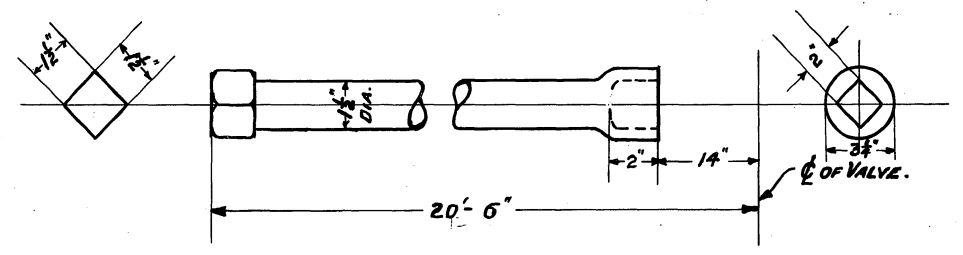
29th Jan. 1918

Scales as shown.

C286



DETAIL OF CAST IRON PIPE CONNECTIONS.
 ONE REQD MARK (A) ONE REQD MARK (B)



GATE STEM EXTENSION. STEEL FORGING.
 ONE REQD.

CONTRACT 55.

C286.

DRAWN BY: R.S.
 TRACED BY: R.S.
 CHECKED BY: *[Signature]*
 APPROVED: *[Signature]*

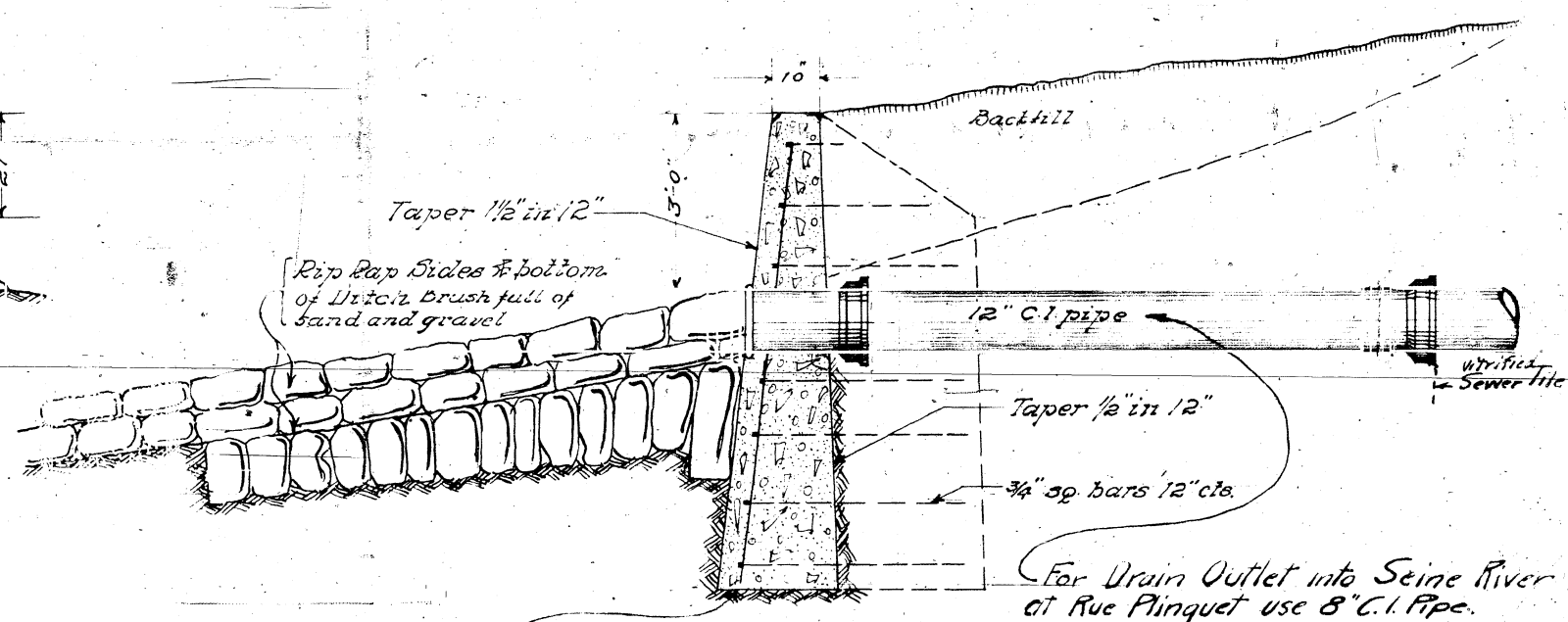
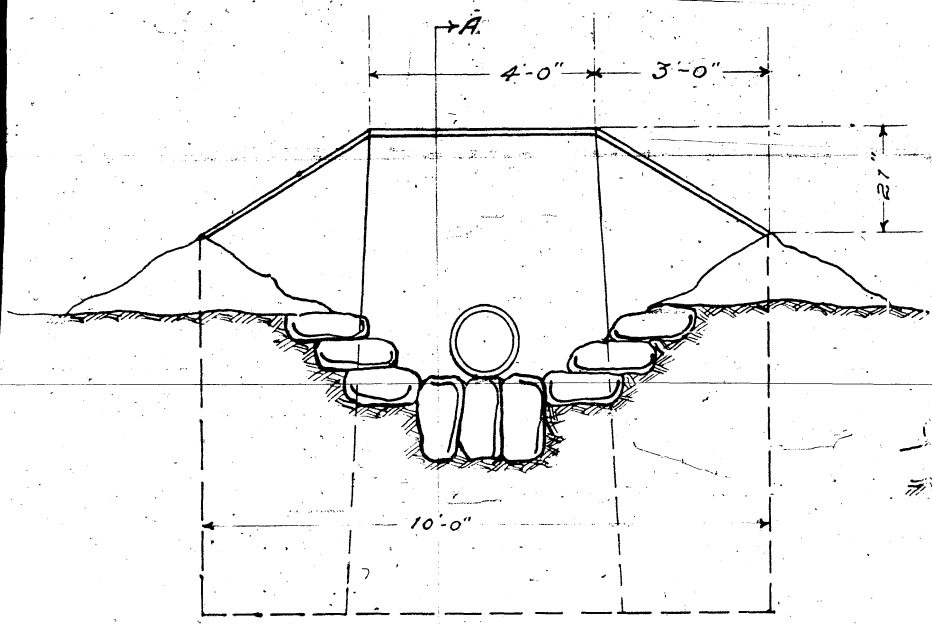
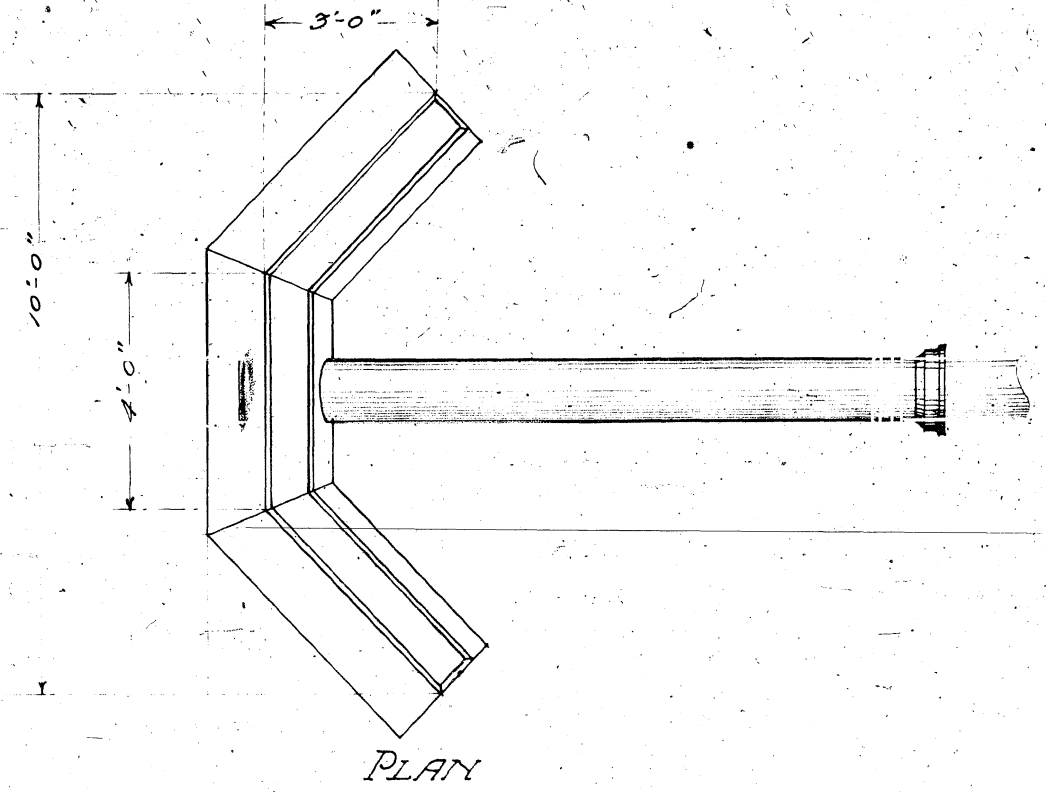
[Signature]
 CHIEF ENGINEER.

GREATER WINNIPEG WATER DISTRICT.

BLOW OFF CONNECTIONS AT STA 273+69.1.

OCT 30th 1918.

SCALE 1/4" = 1 FT.



Base of wall shall be carried to solid footing not less than 5'-0" below ground surface.

For Drain Outlet into Seine River at Rue Pinquet use 8" C.I. Pipe.

CONTRACT No 55

C-162

DRAWN BY *W.*
 TRACED BY *A.F.B.*
 CHECKED BY *M.*
 APPROVED *M. Sauer*

Oct. 11, 1917. - Note re outlet at Rue Pinquet added. *M.S.*

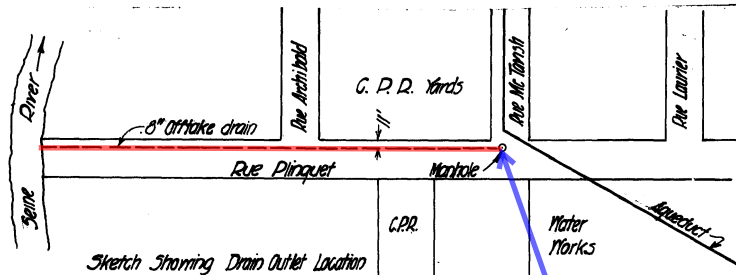
James H. Fawcett
 CONSULTING ENGINEER
W. Schae
 CHIEF ENGINEER.

GREATER WINNIPEG WATER DISTRICT
GENERAL ARRANGEMENT OF DRAIN OUTLET

AUGUST 15TH 1916

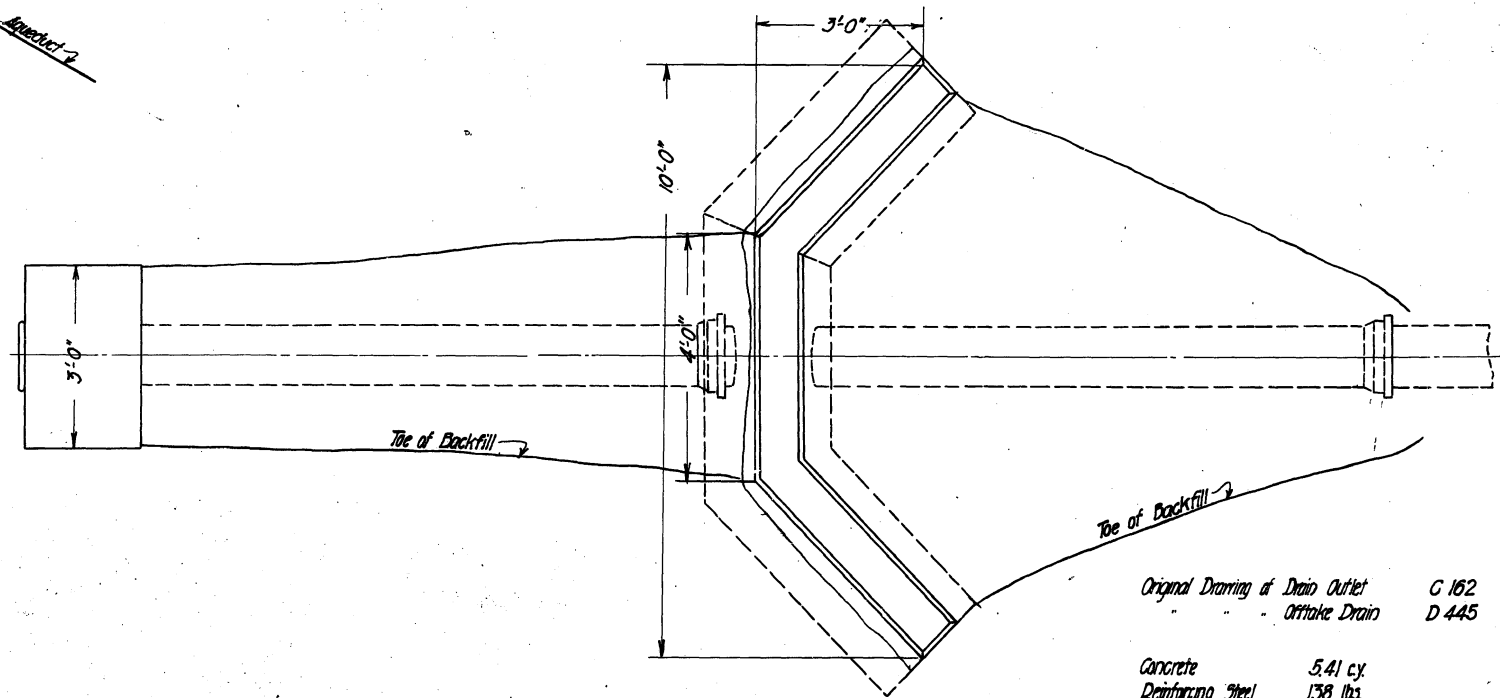
SCALE

9160



Sketch Showing Drain Outlet Location
Scale 1" = 200'
See Dwg No. D445

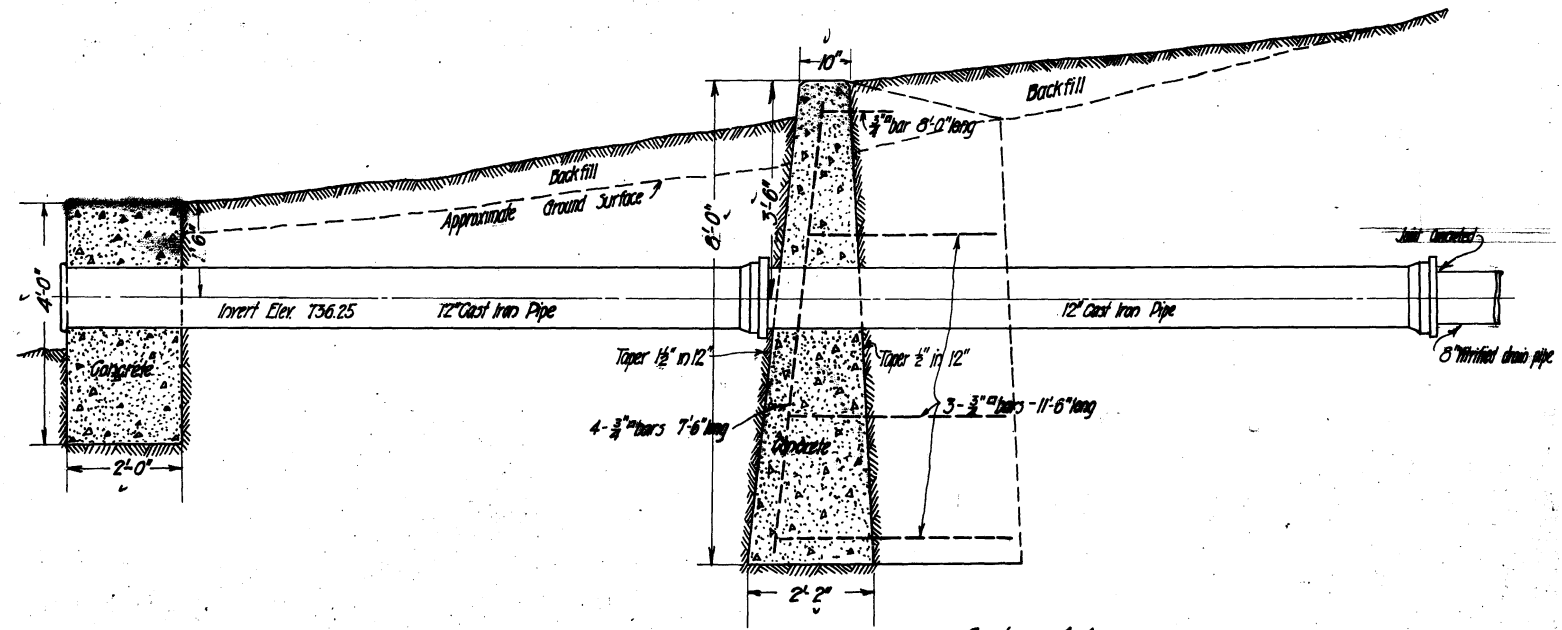
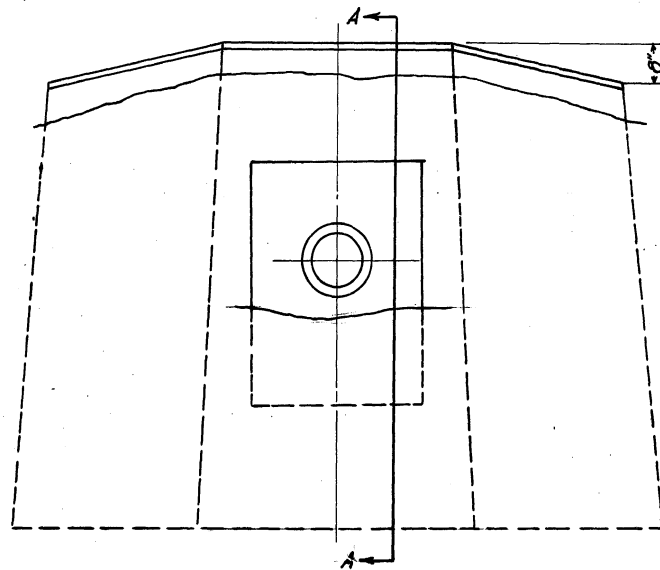
Underdrain Manhole: UMH117-0226
Coordinates: N: 5528472, E: 636287



Original Drawing of Drain Outlet G 162
- Offtake Drain D 445

Concrete 5.41 cy.
Reinforcing Steel 138 lbs.

Drain constructed Nov. 1917 - Jan. 1918



Section A-A

C316

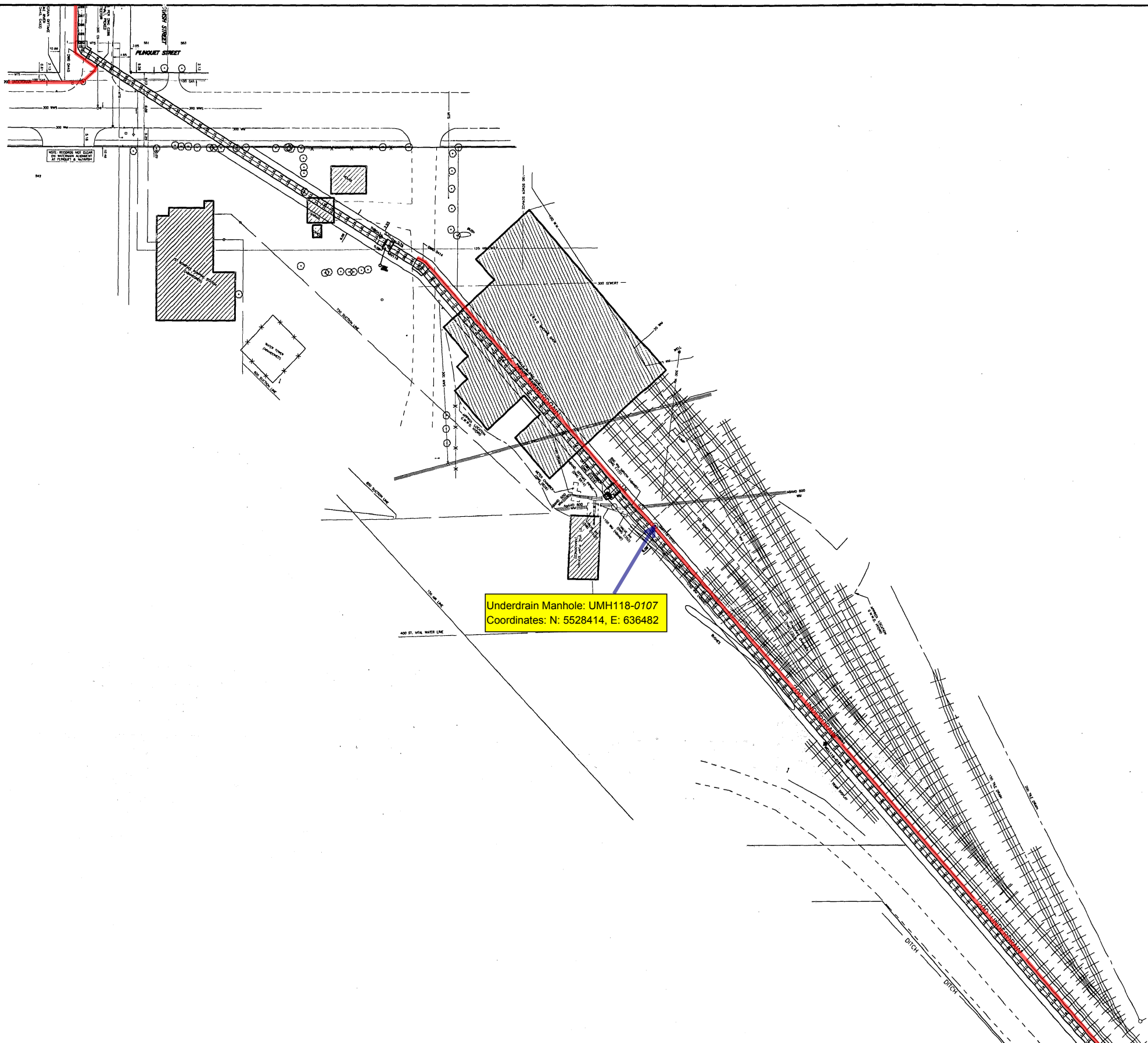
Drawn by J.C.S.
Traced by J.C.S.
Checked by J.C.S.

W. Schoe
Chief Engineer

GREATER WINNIPEG WATER DISTRICT
DRAIN OUTLET - PLINQUET ST.
AS CONSTRUCTED

4-3-20

Scale 1/2" = 1'-0"



Underdrain Manhole: UMH118-0107
Coordinates: N: 5528414, E: 636482

150 mm WM		300 mm LDS		250 mm WWS		HYDRO		AQUEDUCT JOINT		AQUEDUCT PIPE		NO. REVISIONS		DATE		BY	
◇	WATERMAIN	○	LAND DRAINAGE SEWER	○	WASTE WATER SEWER	○	HYDRO	○	AQUEDUCT JOINT	○	AQUEDUCT PIPE						
⊕	HYDRANT	○	WASTE WATER SEWER MANHOLE	○	MANHOLE	○	COMMUNICATION	○	UNDERDRAIN MANHOLE	○	UNDERDRAIN						
○	VALVE	○	CATCH BASIN	○	CATCH BASIN	○	TRAFFIC SIGNALS	○	UNDERDRAIN RISER	○	GROUNDLINE						
○	REDUCER	○	CURB INLET	○	CURB INLET	○	PEDESTAL	○	UNDERDRAIN WELL	○	CENTERLINE						
○	COUPLING	○	CULVERT	○	CULVERT	○	SIGNAL CONTROLLER	○	TESTHOLE	○	N/W GUTTER						
○	WM FITTINGS	○	DITCH	○	DITCH	○	GAS	○	PEIZOMETER	○	S/E GUTTER						
○	CURB STOP	○	LAMP STANDARD	○	LAMP STANDARD	○	STEAM HEAT			○	N/W DITCH						
○	EDGE OF PAVEMENT	○	TRAFFIC SIGNAL	○	TRAFFIC SIGNAL	○	FENCE			○	S/E DITCH						
○	RAILWAY TRACK	○	WOOD POLE	○	WOOD POLE	○	TREE			○	N/W PROPERTY LINE						
○	GEODETIC BENCHMARK	○	POLE ANCHOR	○	POLE ANCHOR	○	BUILDING			○	S/E PROPERTY LINE						
○	SURVEY BAR	○	SUBSURFACE STRUCTURE	○	SUBSURFACE STRUCTURE												
○	EXISTING	○	EXISTING	○	EXISTING	○	EXISTING	○	EXISTING	○	EXISTING						
○	LEGEND - PLAN	○	LEGEND - PLAN	○	LEGEND - PLAN	○	LEGEND - PLAN	○	LEGEND - PLAN	○	LEGEND - PROFILE						

UMA
UMA Engineering Ltd.
Engineers and Planners

CGSS
CHAM GORE & STORRE LIMITED

DESIGNED BY: BC
DRAWN BY: BC/MAG
HOR. SCALE: 1:500
VERTICAL: N/A

CHECKED BY: CCM
APPROVED BY: CC
RELEASED FOR CONSTRUCTION

DATE: _____

CONSULTANT DRAWING NO. 44
41-02-D265-136-01



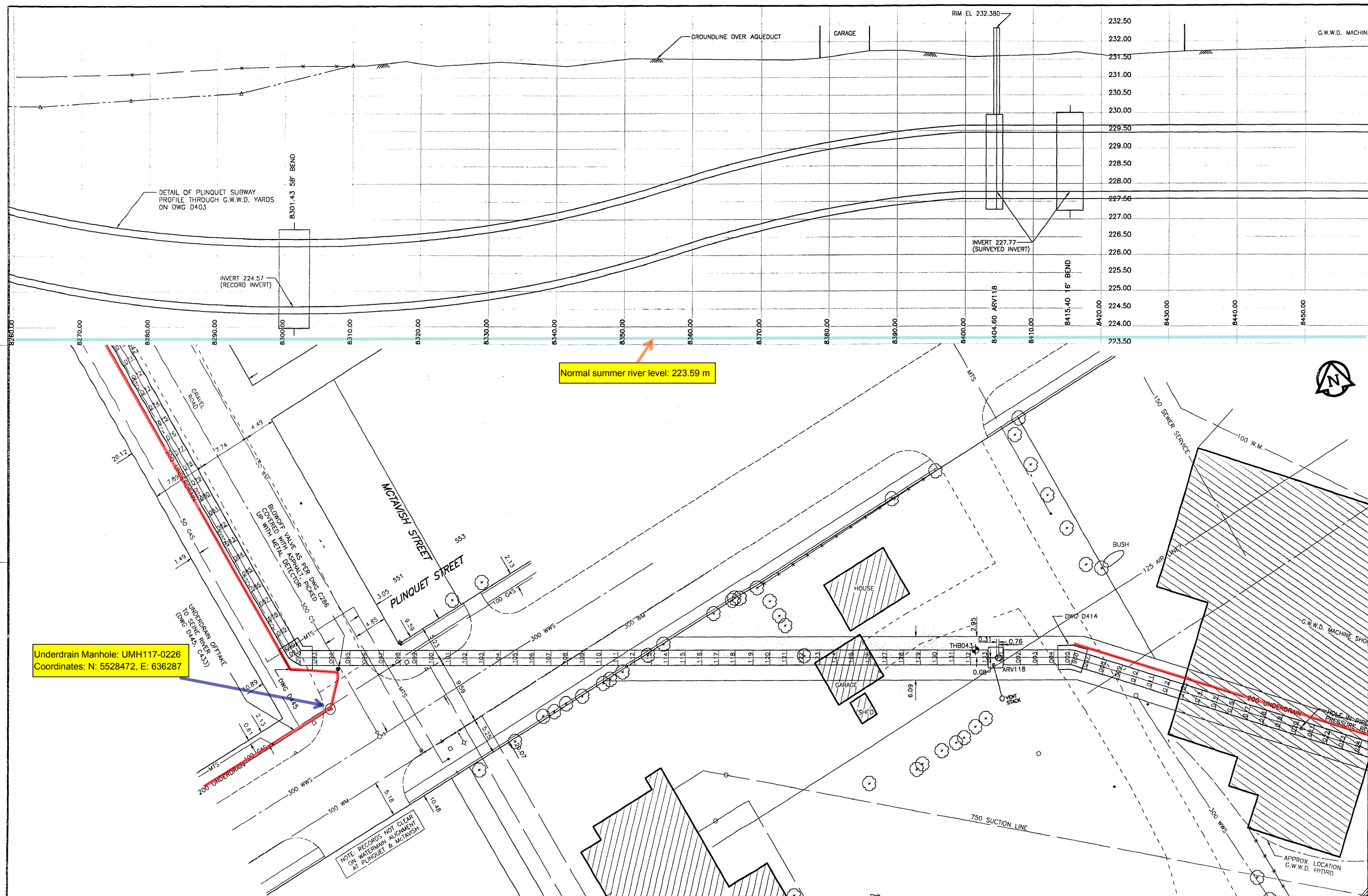
THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

Site Plan of
Plinguet Yards

SHEET 44 OF 214
CITY DRAWING NUMBER
D-6322 REV

AutoCAD Release 14

D-6322.dwg



EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PROFILE
150 mm WW	WATERMAIN	300 mm LGS	LAND DRAINAGE SEWER	HYDRO	COMMUNICATION	100	AQUEDUCT JOINT	---	AQUEDUCT PIPE
⊕	HYDRANT	250 mm WWS	WASTE WATER SEWER	---	TRAFFIC SIGNALS	⊕	UNDERDRAIN MANHOLE	---	UNDERDRAIN
⊙	VALVE	○	MANHOLE	---	PEDESTAL	⊕	UNDERDRAIN RISER	---	GROUNDLINE
⊖	REDUCER	△	CATCH BASIN	---	PEDESTAL	⊕	UNDERDRAIN WELL	---	CENTERLINE
⊕	COUPLING	□	CURB INLET	---	⊕	⊕	TESTHOLE	---	N/W GUTTER
⊕	WM FITTINGS	⊕	INVERT	---	⊕	⊕	PEIZOMETER	---	S/E GUTTER
⊕	CURB STOP	---	DITCH	---	---	---	---	---	N/W DITCH
---	EDGE OF PAVEMENT	---	LAMP STANDARD	---	---	---	---	---	S/E DITCH
---	RAILWAY TRACK	---	TRAFFIC SIGNAL	---	---	---	---	---	N/W PROPERTY LINE
⊕	GEODETIC BENCHMARK	---	WOOD POLE	---	---	---	---	---	S/E PROPERTY LINE
⊕	SURVEY BAR	---	POLE ANCHOR	---	---	---	---	---	---

DATA SOURCES
 Aqueduct Joints: Interpreted From Manholes Located in 1994
 UMA Total Station Survey and 1995 Internal Inspections
 Unless Otherwise Noted
 Surface Features: UMA Total Station Survey (1994)
 Legal Right of Way M11 to M12: City of Wpg LBS (1994)
 Legal Right of Way M12 to M17: Pollock & Wright (1994)
 Utilities: Compiled from Information Obtained From
 City of Winnipeg Underground Structures (1994)

METRIC
 WHOLE NUMBERS INDICATE MILLIMETRES
 DECIMALIZED NUMBERS INDICATE METRES

UMA Engineering Ltd. Engineers and Planners
CASS CHYM GORE & STORRE LIMITED

DESIGNED BY: BC
 CHECKED BY: CCM

DRAWN BY: BC/MAG
 APPROVED BY: CCM

HR. SCALE: 1:250
 VERTICAL: 1:50

DATE: _____

CONSULTANT DRAWING NO. 45
 41-02-D265-136-01

THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT

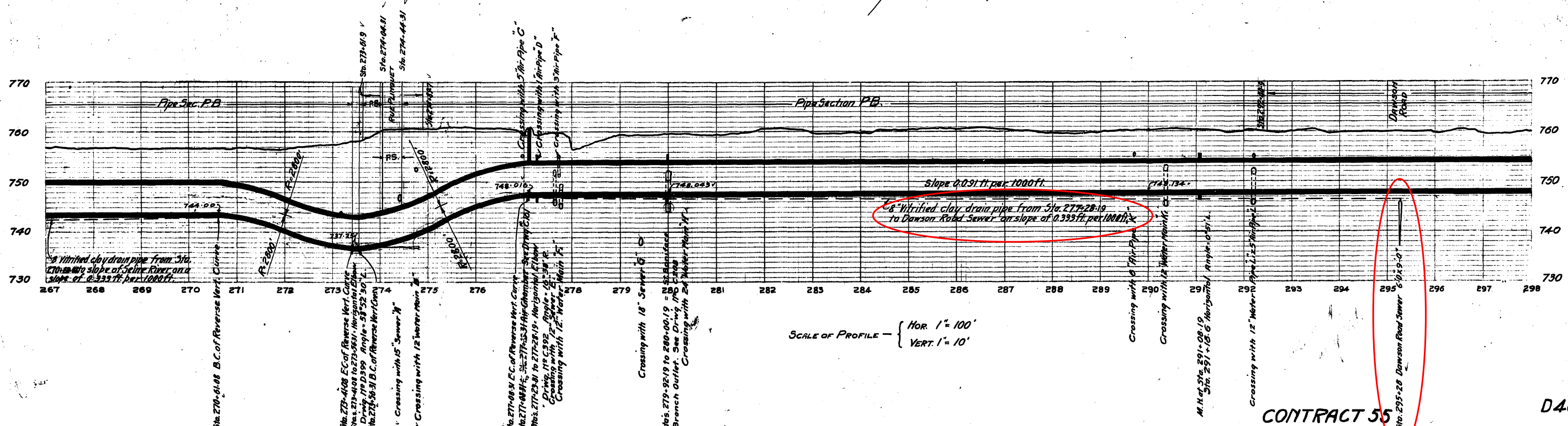
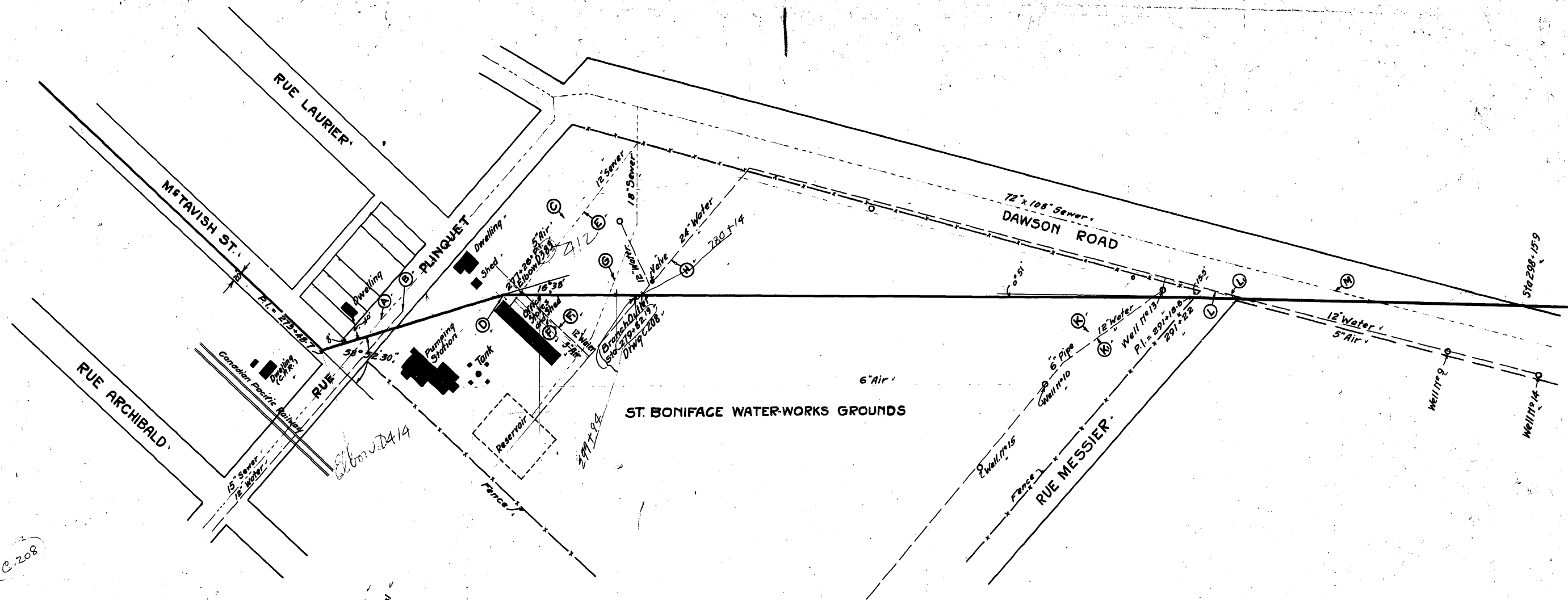
Plan and Profile of Branch I Aqueduct

From Joint J117-070 To Joint J118-024
 From Mile 5.15 To Mile 5.28

SHEET 45 OF 214
 CITY DRAWING NUMBER
D-6323 REV

AutoCAD Release 14

D-6323.dwg



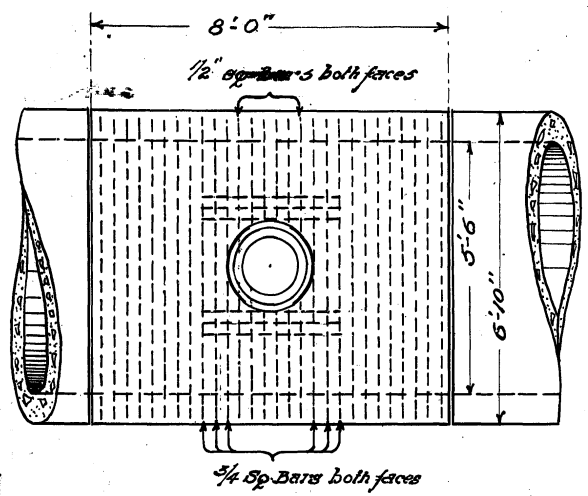
DRAWN BY L.I.J.
 TRACED BY L.I.J.
 CHECKED BY [Signature]
 [Signature]

Note - Profile Sta. 270+00 to Sta. 277+16.31 Revised May 29, 1917. L.I.J.

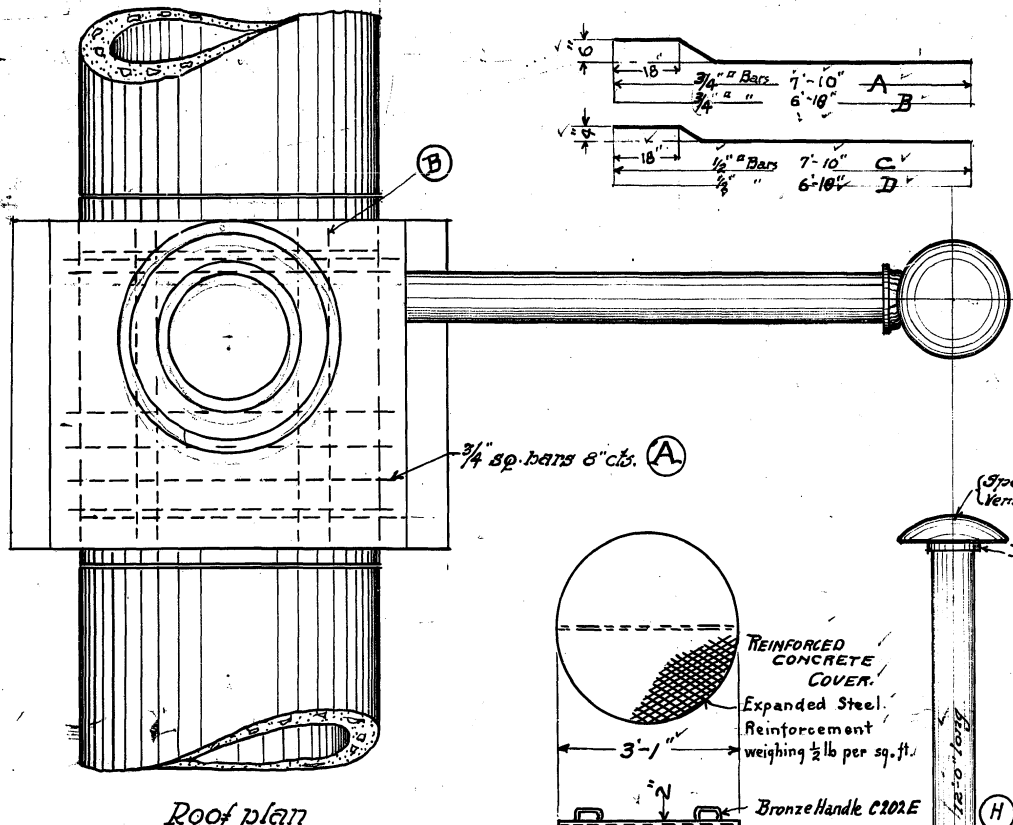
APPROVED FOR THE CITY OF ST. BONIFACE
 [Signature] MAYOR
 [Signature] CITY CLERK
 MAY 29 1917

James H. Twiss
 CONSULTING ENGINEER
 [Signature] CHIEF ENGINEER

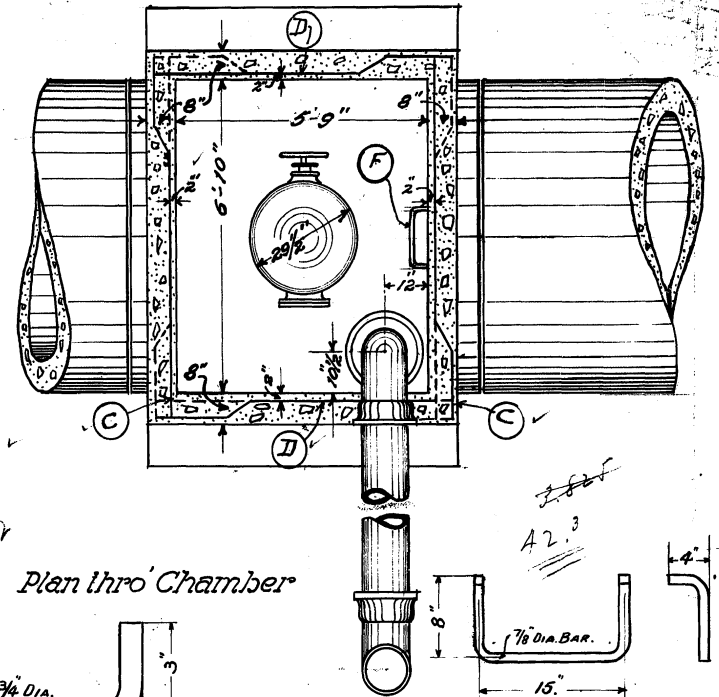
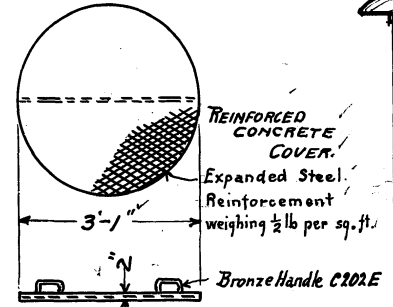
CONTRACT 55
 GREATER WINNIPEG WATER DISTRICT
 5-6" PIPE LINE
 PLAN AND PROFILE STA. 267+00 TO STA. 298+00
 May 15, 1917. Scale 1" = 10'



Plan of pipe showing Reinforcing Steel

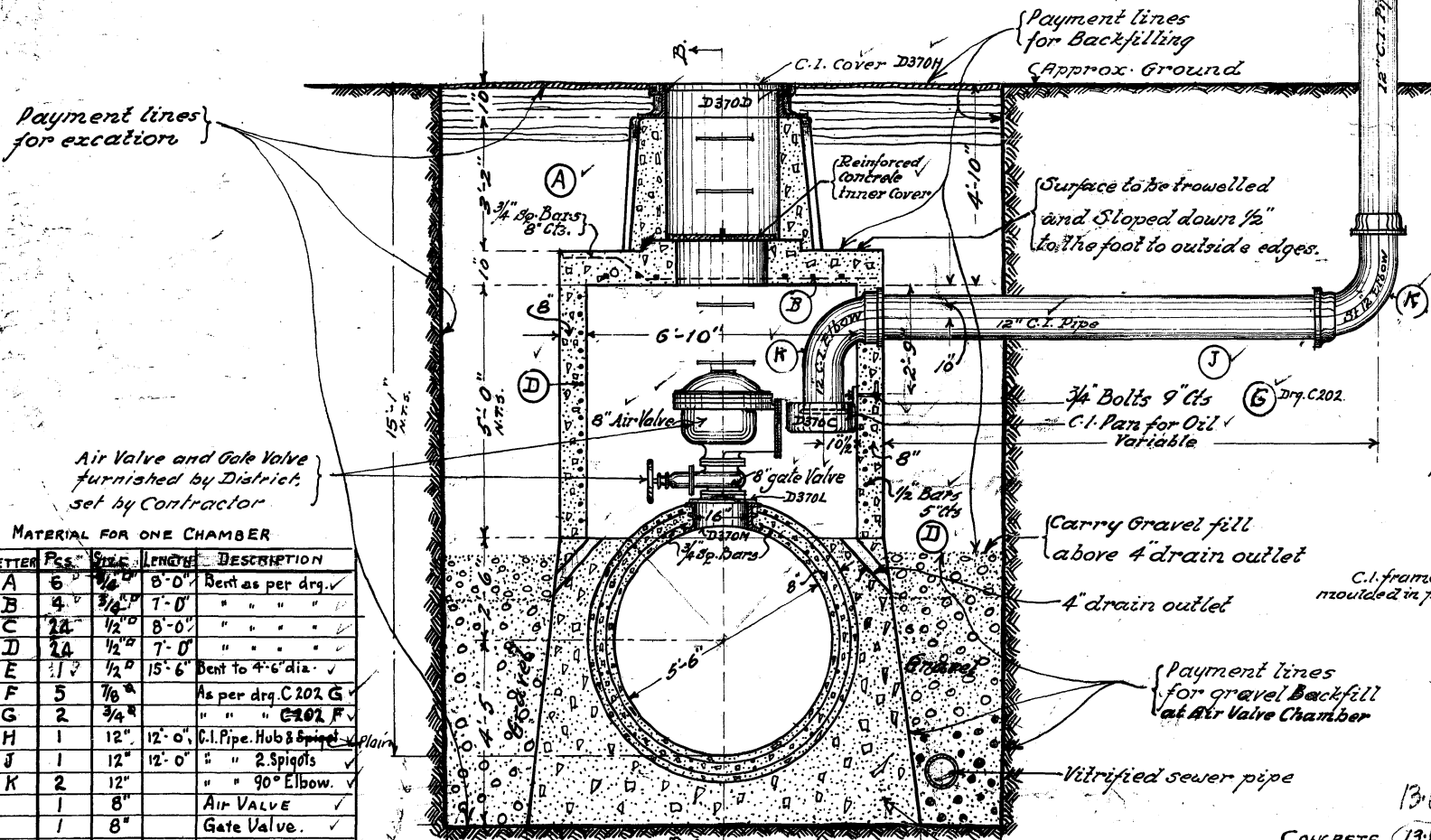


Roof plan

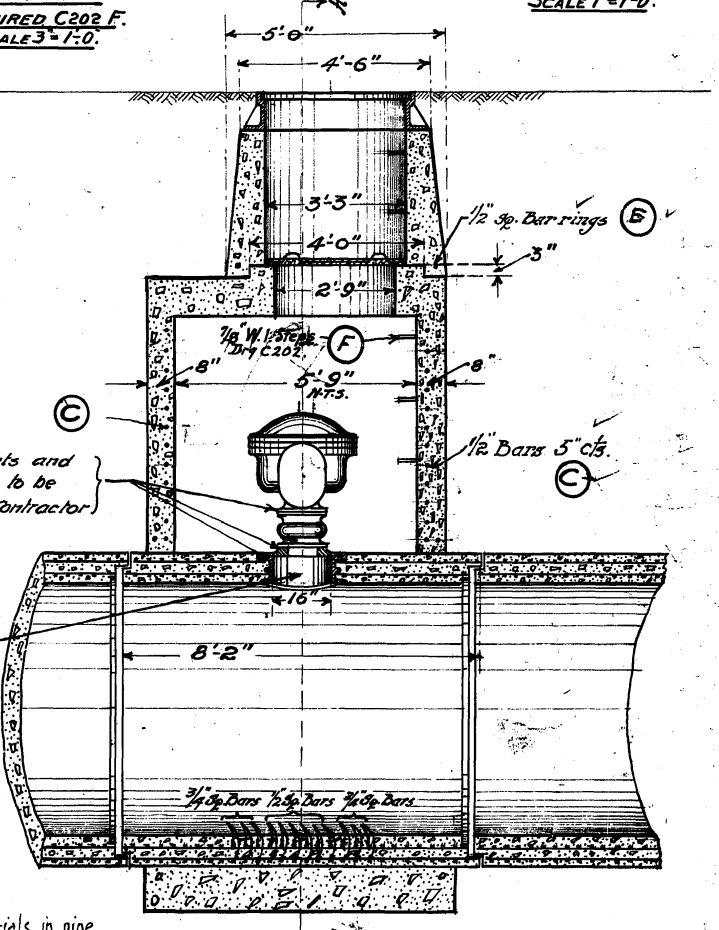


Plan thro' Chamber

VALVE CHAMBER STEPS
15 REQUIRED C202 G.
SCALE 1"=1'-0"



Section A-A



Section B-B

MATERIAL FOR ONE CHAMBER

LETTER	QTY	SIZE	LENGTH	DESCRIPTION
A	6	3/4"	8'-0"	Bent as per drg.
B	4	3/4"	7'-0"	" " " "
C	24	1/2"	8'-0"	" " " "
D	24	1/2"	7'-0"	" " " "
E	17	1/2"	15'-6"	Bent to 4'-6" dia.
F	5	7/8"		As per drg. C202 G
G	2	3/4"		" " " C202 F
H	1	12"	12'-0"	C.I. Pipe, Hub & Spigot
J	1	12"	12'-0"	" " 2 Spigots
K	2	12"		" " 90° Elbow
	1	8"		AIR VALVE
	1	8"		GATE VALVE
D370H	1			Manhole Cover
D370D	1			Manhole Frame
D370C	1			Dil Seal
D370L	1			Manhole Cover
D370	1			Ventilator Cap Comp.

DRAWN BY *J.H.*
 TRACED BY *A.J.B.*
 CHECKED BY *M.S.*

Bill of Material & Reinforcing details added May 7-1917
 May 11, 1917 - "Spigot" changed to "Flange" for Pipe H. and S.
 Concrete & Steel quantities added Feb-2-1918

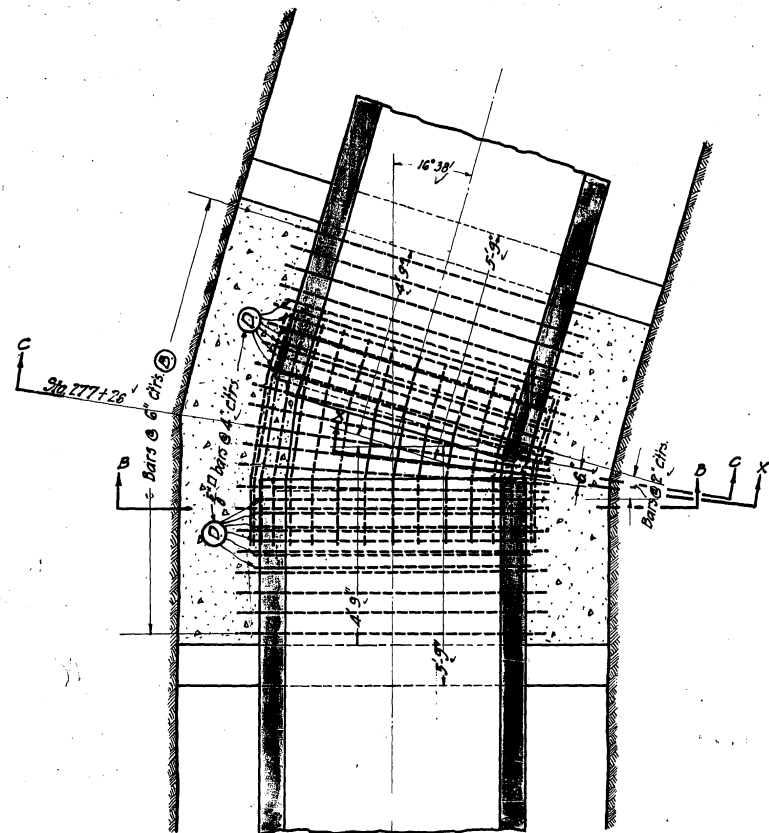
James K. Fuertes
 CONSULTING ENGINEER
W. Schaefer
 CHIEF ENGINEER

GREATER WINNIPEG WATER DISTRICT
 TYPICAL DETAIL OF AIR VALVE CONNECTIONS
 AND CHAMBER FOR 5'-6" PRESSURE PIPE
 JULY 27th 1916
 Scale 3/8"

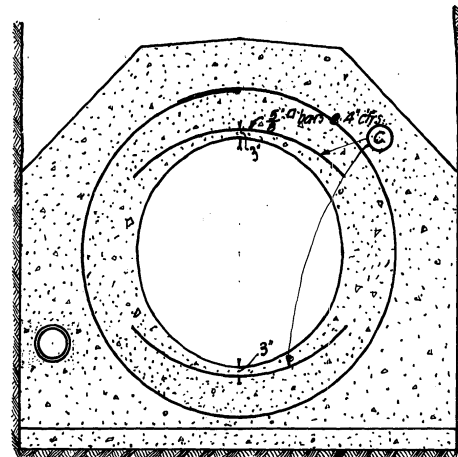
CONTRACT N^o 55

C-161

CONCRETE (13 cu. Yds) Materials in pipe not included
 STEEL (54 LBS)
 389 LBS Extra steel in pipe

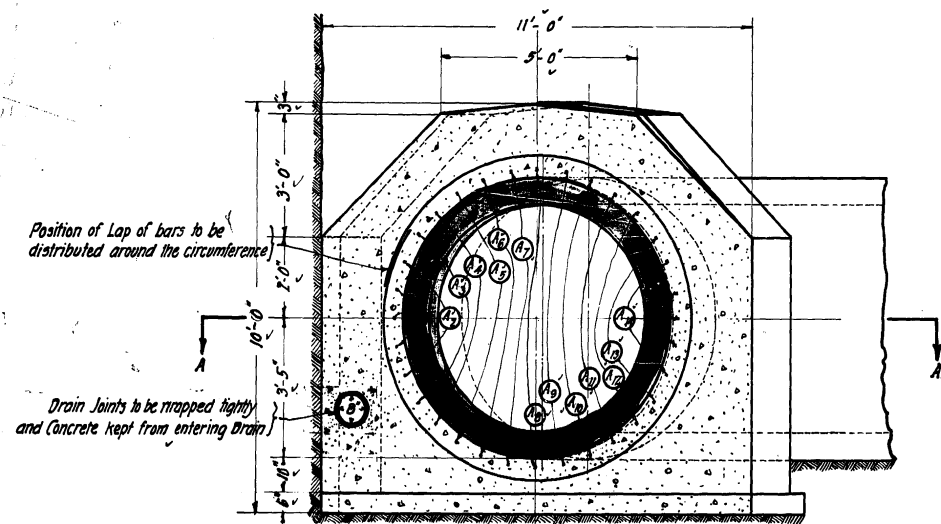


SECTION A-A



SECTION C-C.

BILL OF MATERIAL				
Letter	No	Size	Length	Description
A ₁	3	5/8" □	5'-9"	Bent as shown
A ₂	2	"	5'-8"	" " "
A ₃	2	"	5'-7"	" " "
A ₄	2	"	5'-6"	" " "
A ₅	2	"	5'-4"	" " "
A ₆	2	"	5'-1"	" " "
A ₇	2	"	4'-11"	" " "
A ₈	2	"	4'-8"	" " "
A ₉	2	"	4'-6"	" " "
A ₁₀	2	"	4'-4"	" " "
A ₁₁	2	"	4'-2"	" " "
A ₁₂	2	"	4'-0"	" " "
A ₁₃	2	"	3'-11"	" " "
A ₁₄	2	"	3'-9"	" " "
A ₁₅	3	"	3'-8"	" " "
B	21	"	26'-9"	Bent to 8'-0" dia. -
C	22	"	6'-0"	" " 7'-4" -
D	12	"	24'-6"	" " 7'-4" -



SECTION B-B.

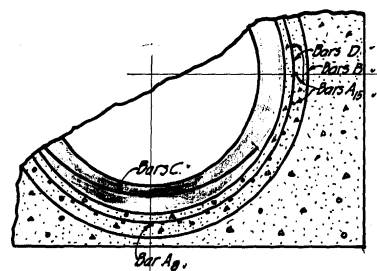
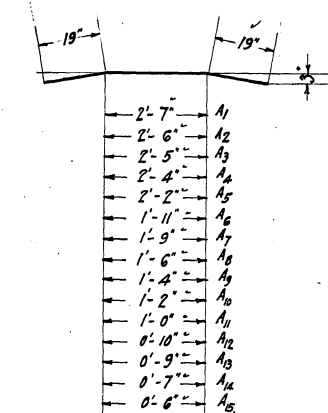


DIAGRAM SHOWING RELATIVE POSITIONS OF BARS IN SECTION X-X.



DETAIL OF BENT BARS.

CONCRETE 23 Cu. Yds } Materials in pipe
STEEL 1512.5 lbs. } not included

This Drawing Supersedes Drawing No. D392.

CONTRACT 55.

D414.

Examined by: _____
Designed by: _____
Checked by: _____
W. J. Chace

Concrete & Steel quantities added Feb. 2-1916

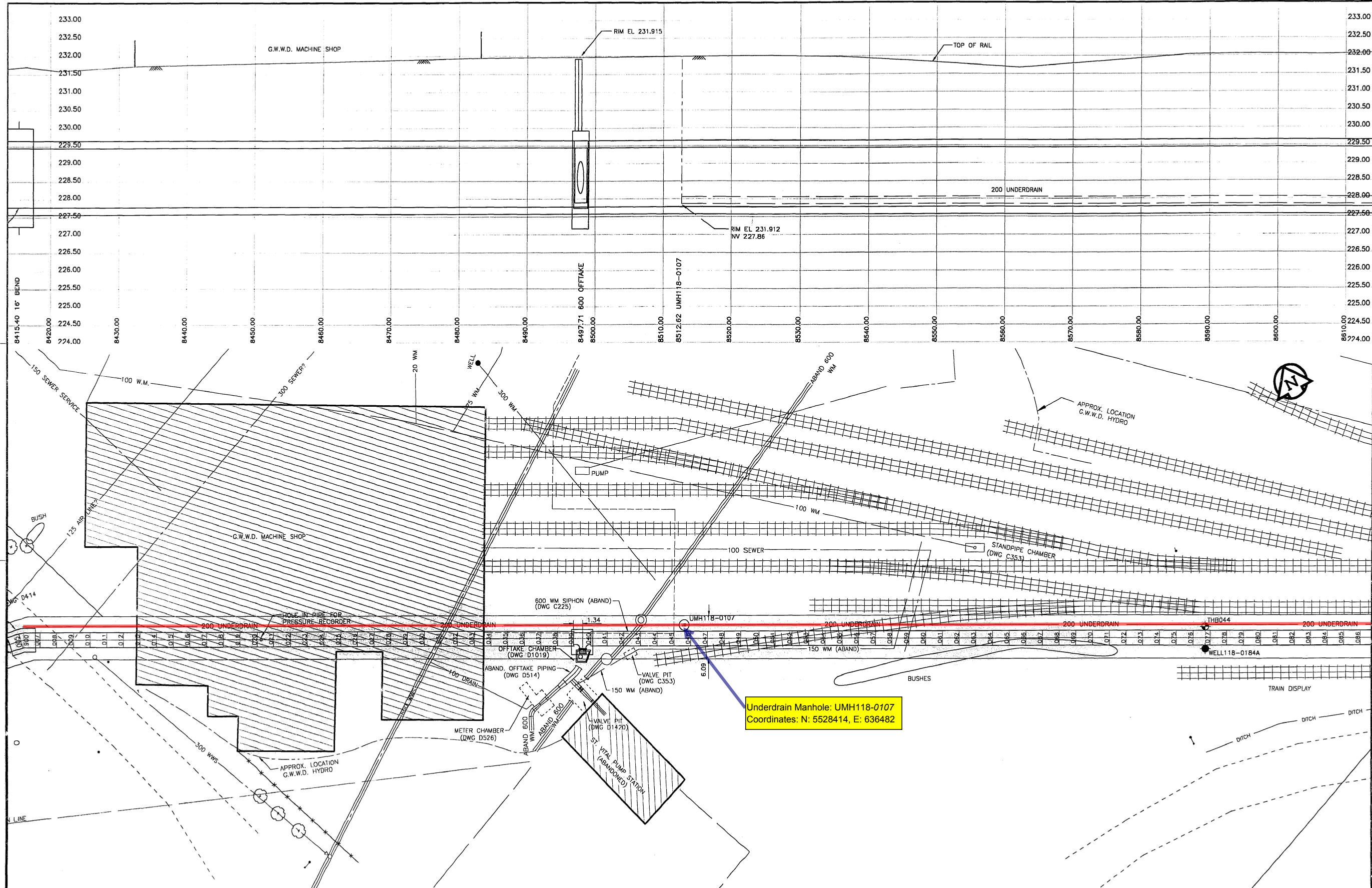
James H. Fuertes
Consulting Engineer

W. J. Chace
Chief Engineer

GREATER WINNIPEG WATER DISTRICT.
PLAN & DETAIL OF 16° 38' ELBOUY
AT STA. 277 + 26

Aug. 15th 1917

Scale: 1/4" = 1' 0"



Underdrain Manhole: UMH118-0107
Coordinates: N: 5528414, E: 636482

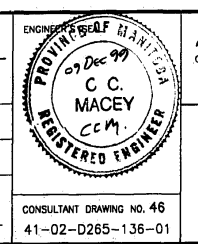
150 mm WM	WATERMAIN	300 mm LOS	LAND DRAINAGE SEWER	HYDRO	100	AQUEDUCT JOINT	AQUEDUCT PIPE
HYDRANT	WASTE WATER SEWER	MANHOLE	COMMUNICATION	UNDERDRAIN MANHOLE	UNDERDRAIN	GROUNDLINE	UNDERDRAIN
VALVE	MANHOLE	CATCH BASIN	TRAFFIC SIGNALS	UNDERDRAIN WELL	CENTERLINE	N/W GUTTER	S/E GUTTER
REDUCER	CATCH BASIN	CURB INLET	PEDESTAL	TESTHOLE	N/W DITCH	S/E DITCH	N/W PROPERTY LINE
COUPLING	CURB INLET	CULVERT	SIGNAL CONTROLLER	PEIZOMETER	S/E DITCH	N/W PROPERTY LINE	S/E PROPERTY LINE
WM FITTINGS	CULVERT	DITCH	GAS				
CURB STOP	DITCH		STEAM HEAT				
EDGE OF PAVEMENT	LAMP STANDARD		FENCE				
RAILWAY TRACK	TRAFFIC SIGNAL		TREE				
GEODETIC BENCHMARK	WOOD POLE		BUILDING				
SURVEY BAR	POLE ANCHOR		SUBSURFACE STRUCTURE				
EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PROFILE

NO.	REVISIONS	DATE	BY

DATA SOURCES
 Aqueduct Joints: Interpreted From Manholes Located in 1994
 UMA Total Station Survey and 1995 Internal Inspections
 Unless Otherwise Noted
 Surface Features: UMA Total Station Survey (1994)
 Legal Right of Way M12 to M17: City of Winnipeg (1994)
 Legal Right of Way M12 to M17: Pollock & Wright (1995)
 Utilities: Compiled from Information Obtained from
 City of Winnipeg Underground Structures (1994)

METRIC
 WHOLE NUMBERS INDICATE MILLIMETERS
 DECIMALIZED NUMBERS INDICATE METRES

uma UMA Engineering Ltd. Engineers and Planners	CASS CHAM GORE & STORRE LIMITED
DESIGNED BY: BC	CHECKED BY: CCM
DRAWN BY: BC/MAG	APPROVED BY: CCM
HOR. SCALE: 1:250	RELEASED FOR CONSTRUCTION
VERTICAL: 1:50	DATE



THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT

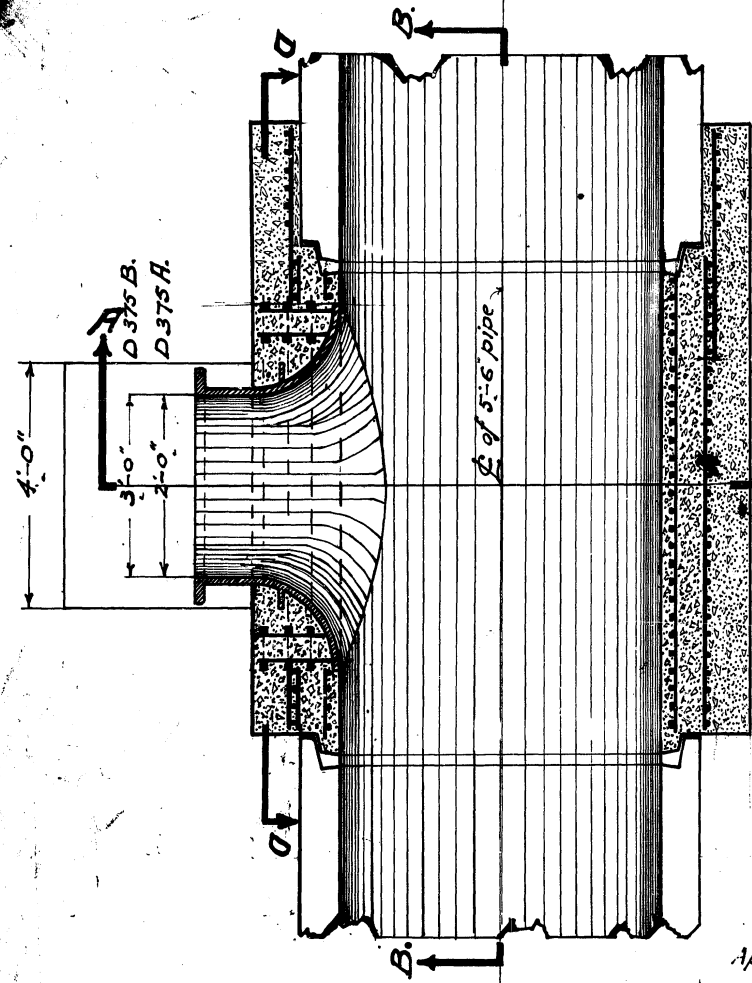
Plan and Profile of
 Branch I Aqueduct

From Joint J118-005 To Joint J118-086
 From Mile 5.25 To Mile 5.37

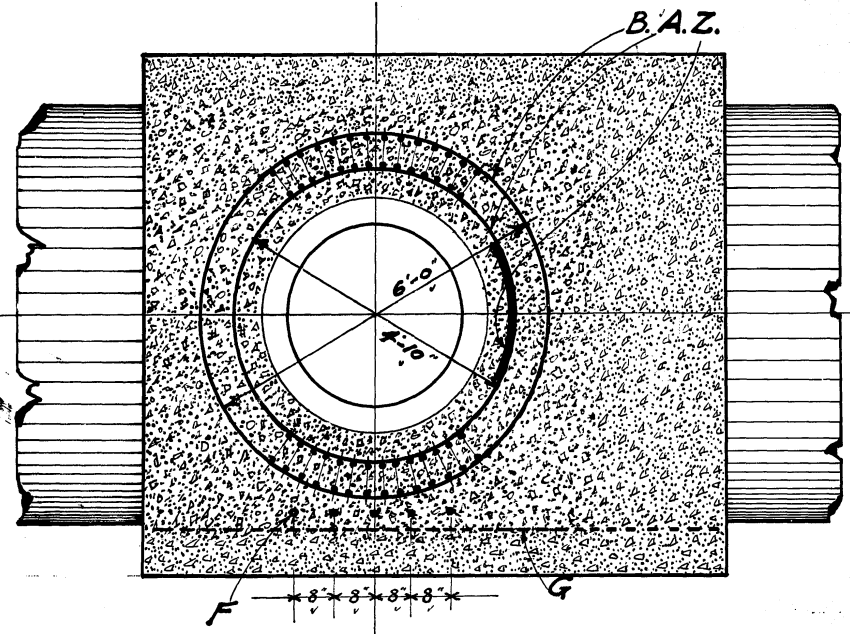
SHEET 46 OF 214
 CITY DRAWING NUMBER
D-6324 REV

CONSULTANT DRAWING NO. 46
 41-02-D265-136-01

D-6324.dwg



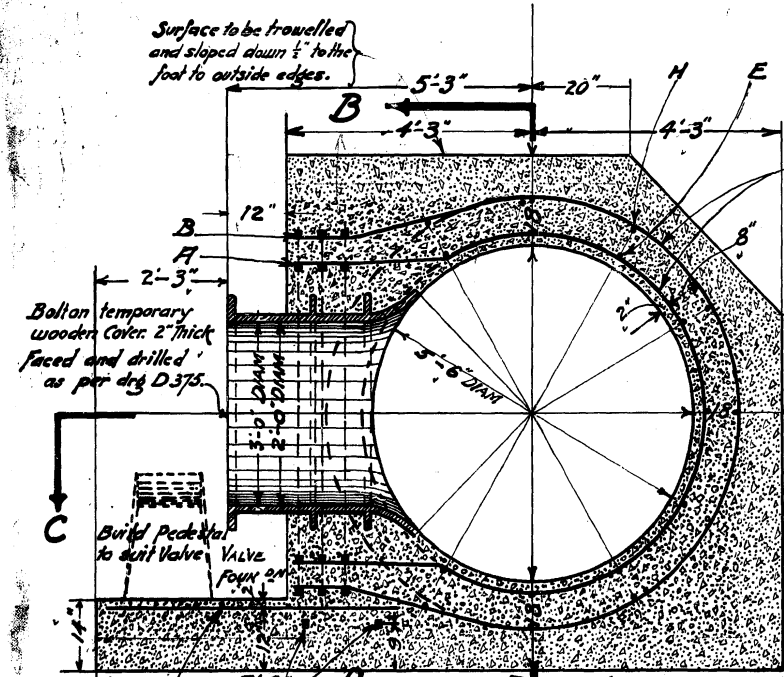
SECTION C.C.



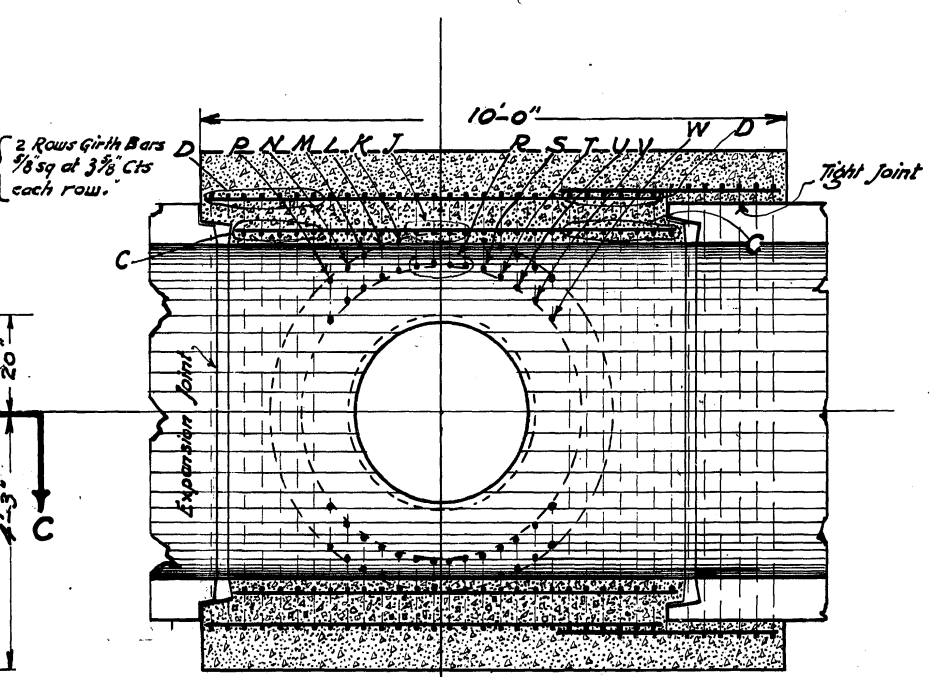
SECTION D.D.

BILL OF MATERIAL.				
Letter	No	Size	Length	Description
A	3	1" dia	15'-6"	Bent Circular 4'-10" dia
B	3	1"	21'-3"	" " 6'-0" "
C	12	3/8"	19'-9"	" " 5'-10" "
D	19	"	24'-0"	" " 7'-2" "
E	9	1/2"	7'-7"	Straight
F	5	3/8"	5'-0"	"
G	2	1"	7'-10"	"
H	9	1/2"	7'-10"	"
J	4	3/8"	19'-6"	Bent to Diagram
K	2	"	19'-5"	" " "
L	2	"	19'-5"	" " "
M	2	"	19'-10"	" " "
N	2	"	19'-11 1/2"	" " "
P	2	"	20'-1 1/2"	" " "
R	4	"	17'-6"	" " "
S	2	"	17'-5"	" " "
T	2	"	17'-7"	" " "
U	2	"	17'-8"	" " "
V	2	"	17'-10"	" " "
W	2	"	18'-1"	" " "
Z	3	1" dia	2'-6"	" " 2'-5" Rad: (Lapbars)
Z'	12	1/2"	3'-9"	Straight

Approximate Locations
 St Boniface Outlet (3'-0") Sta 279+96 EAST KILDONAM (From Dug G-67)
 Transcona " (3'-0") Sta 409+95 BETWEEN 250+25.2
 Elmwood " (2'-0") Sta 263+08 & 250+23.2



SECTION A.A.



LONGITUDINAL SECTION B.B.

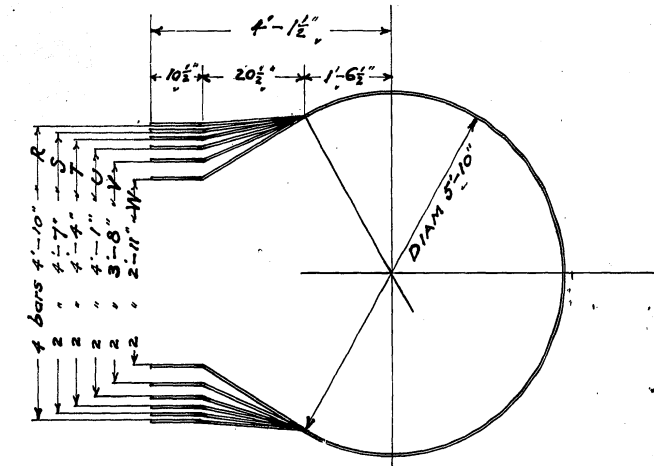


DIAGRAM OF INNER HOOPS

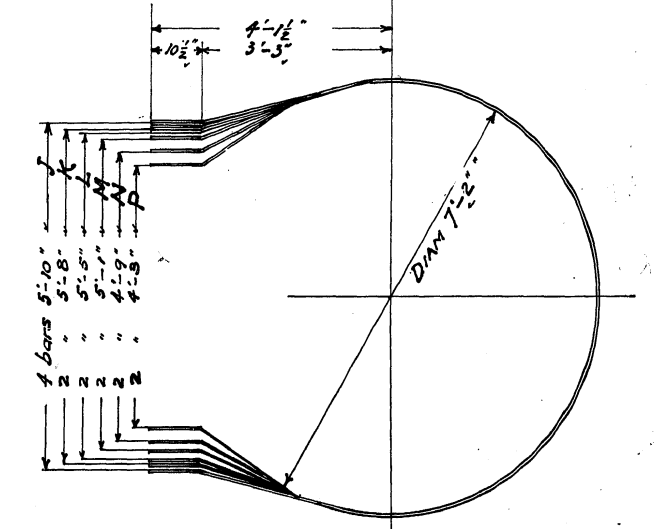


DIAGRAM OF OUTER HOOPS

CONCRETE 24" BRANCH 16.1 Cu.Yds
 2.4 cu. Yds 96" dia 15.9 Cu.Yds
 STEEL 15.95 cu. Yds 1906 LBS.
 CONCRETE 15. C.Y.
 STEEL 2231.3 Lbs

CONTRACT No 55.

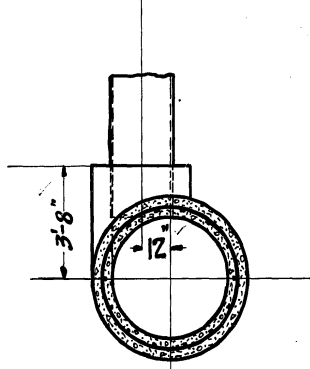
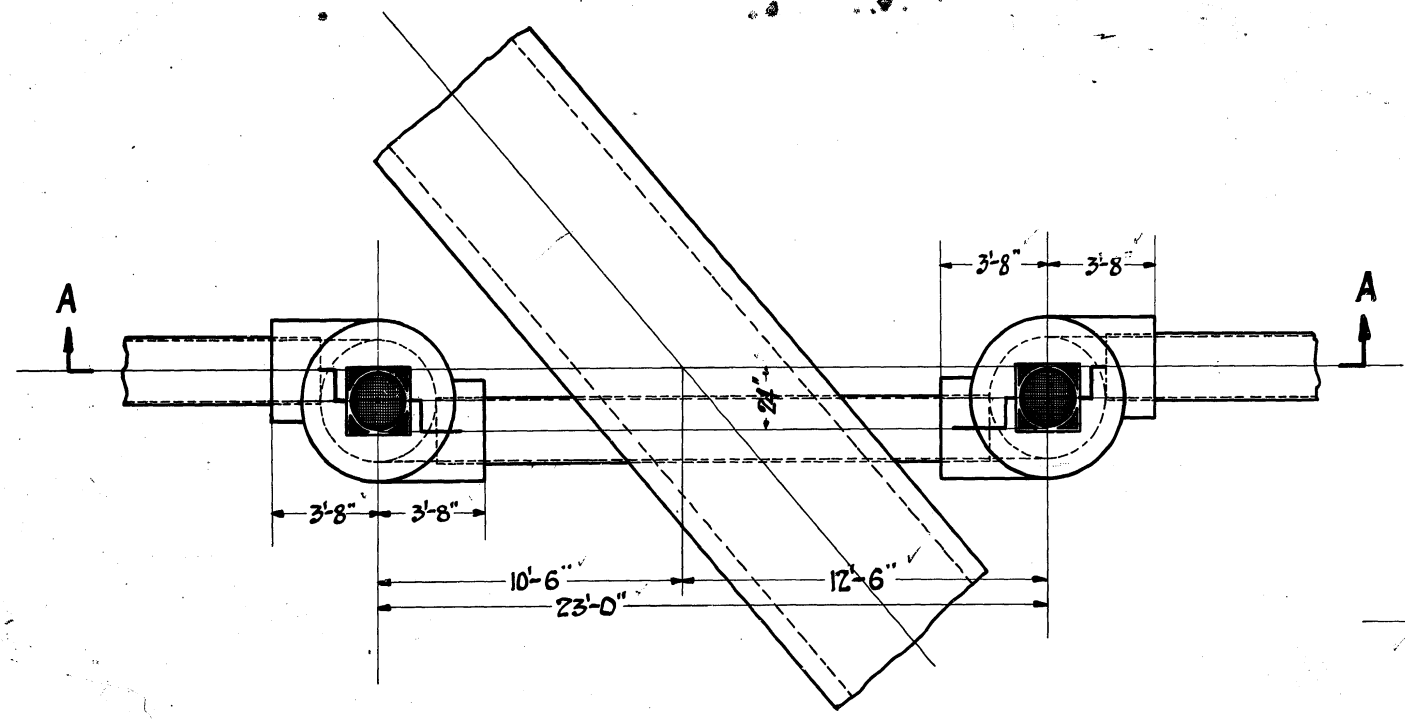
C-208.

DRAWN by *P.D.*
 TRACED *P.D.*
 CHECKED *M. Sawyer*

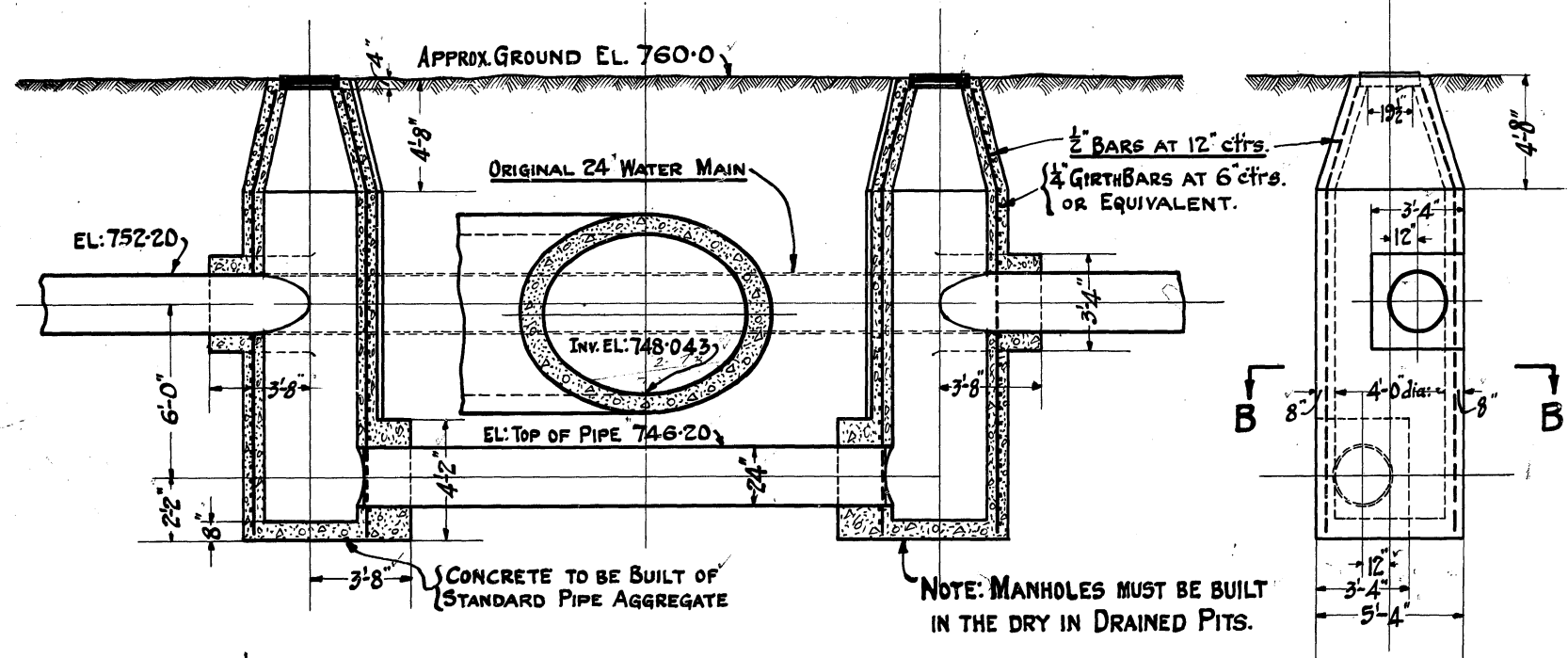
REVISED AUG 29th 1917.
 Thickness of Concrete increased by 6" all around. Length of Outlet at one side enlarged by 2'-0" & lapped over pipe.

James H. Fuerles
 CONSULTING ENGINEER.
Wegchase
 CHIEF ENGINEER

GREATER WINNIPEG WATER DISTRICT.
 DETAILS OF 24" x 36" BRANCH OUTLET.
 APRIL 16th 1917. FOR 5'-6" REINFORCED CONCRETE PIPE SCALE 1/2" = 1'



BILL OF MATERIAL
 19 FT. OF W.I. PIPE 24" DIAM.
 2-9t. BONIFACE STD. Sq. PATT. CATCHBASIN COVER.
 28-2" BARS 16'-6" LONG
 64-2" GIRTBARS 16'-0" LONG.
 13.25 CU.YDS. CONCRETE.



SUPERSEDES CROSSING H AS SHOWN ON DR. N° D398.

CROSSING OF OLD 24" STEEL WATER LINE VICINITY ST. BOX OFFTAKE

APPROVED *J.A. Meindl*
 CITY ENGINEER. ST. BONIFACE
 DATE. _____

CROSSING AT 24" WATER MAIN H SECTION AA.

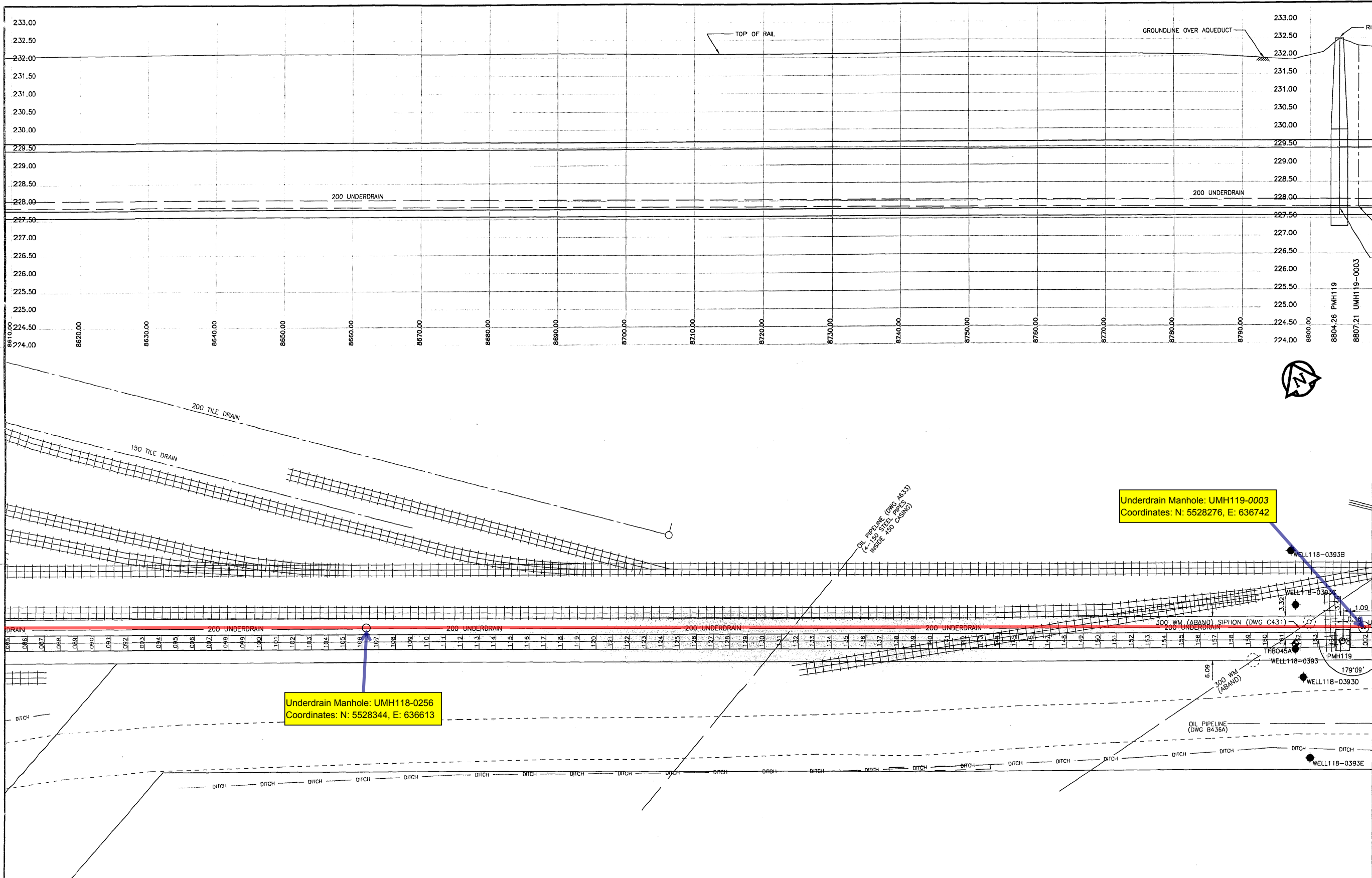
CONTRACT # 55 C225.

DRAWN BY: *Alm*
 TRACED BY: *Alm*
 CHECKED BY: *L.I.J.*
 APPROVED: *M. Sauer*

DIMENSION FROM GROUND SURFACE TO BEGINNING OF TAPER CHANGED FROM 4'-0" TO 4'-8" 18-8-17, 70

James H. Fuester
 CONSULTING ENGINEER.
W. Gehae
 CHIEF ENGINEER.

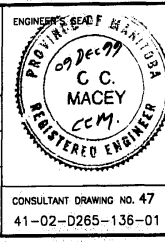
GREATER WINNIPEG WATER DISTRICT.
 SYPHON UNDER 5'-6" PIPE LINE
 STA: 280+00. Scale 1/4" = 1 Foot.
 Date: 9-8-1917



150 mm WM	WATERMAIN	300 mm L/S	LAND DRAINAGE SEWER	HYDRO	100	AQUEDUCT JOINT	AQUEDUCT PIPE
HYDRANT	WASTE WATER SEWER	250 mm WWS	MANHOLE	COMMUNICATION	UNDERDRAIN MANHOLE	UNDERDRAIN	
VALVE			CATCH BASIN	TRAFFIC SIGNALS	UNDERDRAIN RISER	GROUNDLINE	
REDUCER			CURB INLET	PEDESTAL	UNDERDRAIN WELL	CENTERLINE	
COUPLING			CULVERT	SIGNAL CONTROLLER	TESTHOLE	N/W GUTTER	
WM FITTINGS			DITCH	GAS	PEIZOMETER	S/E GUTTER	
CURB STOP			LAMP STANDARD	STEAM HEAT		N/W DITCH	
EDGE OF PAVEMENT			TRAFFIC SIGNAL	FENCE		S/E DITCH	
RAILWAY TRACK			WOOD POLE	TREE		N/W PROPERTY LINE	
GEODETIC BENCHMARK			POLE ANCHOR	BUILDING		S/E PROPERTY LINE	
SURVEY BAR				SUBSURFACE STRUCTURE			
EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PLAN	EXISTING	LEGEND - PROFILE

NO.	REVISIONS	DATE	BY
DATA SOURCES			
Aqueduct Joints: Interpreted From Manholes Located in 1994			
UMA Total Station Survey and 1995 Internal Inspections			
Unless Otherwise Noted			
Surface Features: UMA Total Station Survey (1994)			
Legal Right of Way M12 to M17: Patsack & Wright (1994)			
Legal Right of Way M12 to M17: Patsack & Wright (1995)			
Utilities: Compiled from Information Obtained From			
City of Winnipeg Underground Structures (1994)			
METRIC			
WHOLE NUMBERS INDICATE MILLIMETRES			
DECIMALIZED NUMBERS INDICATE METRES			

UMA UMA Engineering Ltd. Engineers and Planners		CASS CHYM GORE & STORRE LIMITED	
DESIGNED BY	BC	CHECKED BY	CCM
DRAWN BY	BC/MAG	APPROVED BY	CCM
HOR. SCALE:	1:250	RELEASED FOR CONSTRUCTION	
VERTICAL:	1:50	DATE	



THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

**Plan and Profile of
Branch I Aqueduct**

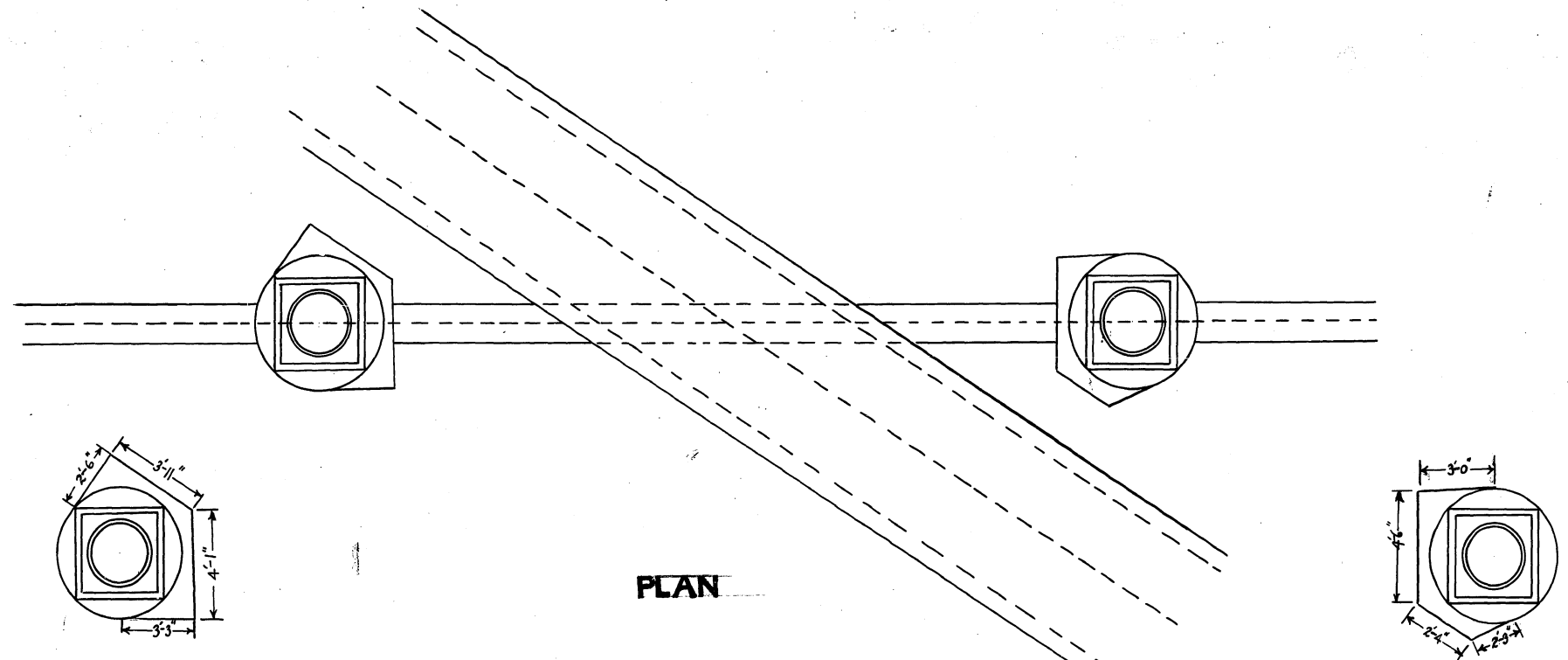
From Joint J118-085 To Joint J119-002
From Mile 5.37 To Mile 5.49

SHEET 47 OF 214
CITY DRAWING NUMBER
D-6325 REV

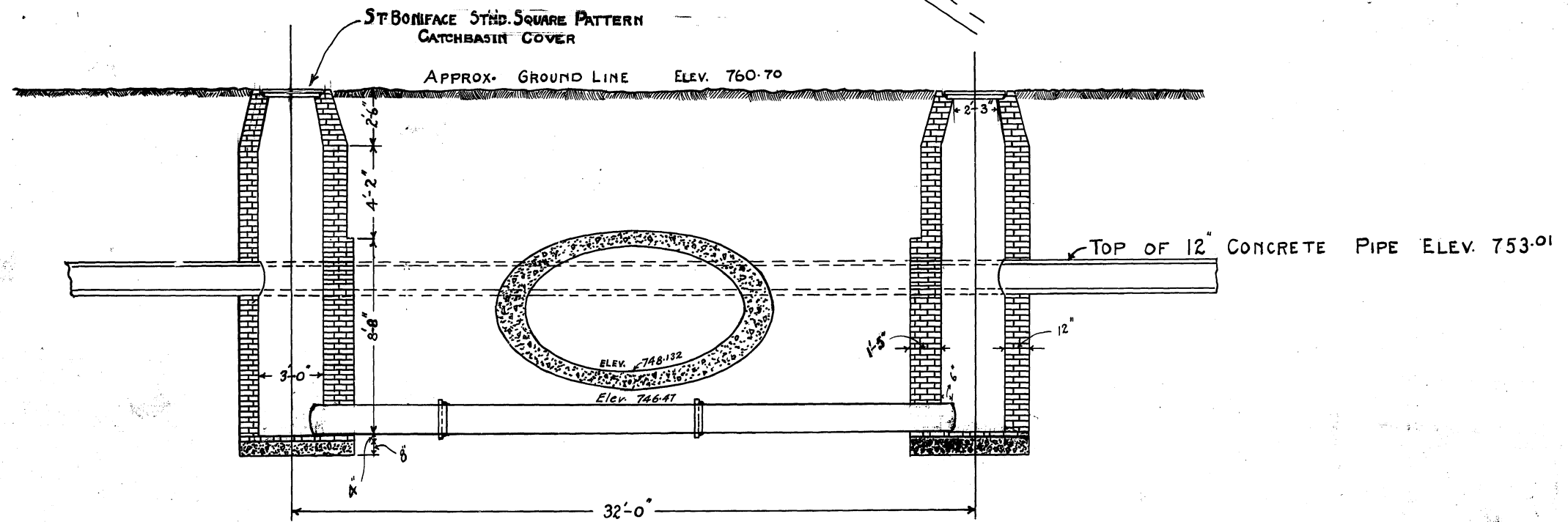
CONSULTANT DRAWING NO. 47
41-02-0265-136-01

D-6325.dwg

C-431



PLAN



SECTION

AS CONSTRUCTED—INSTEAD OF PLAN C 223.

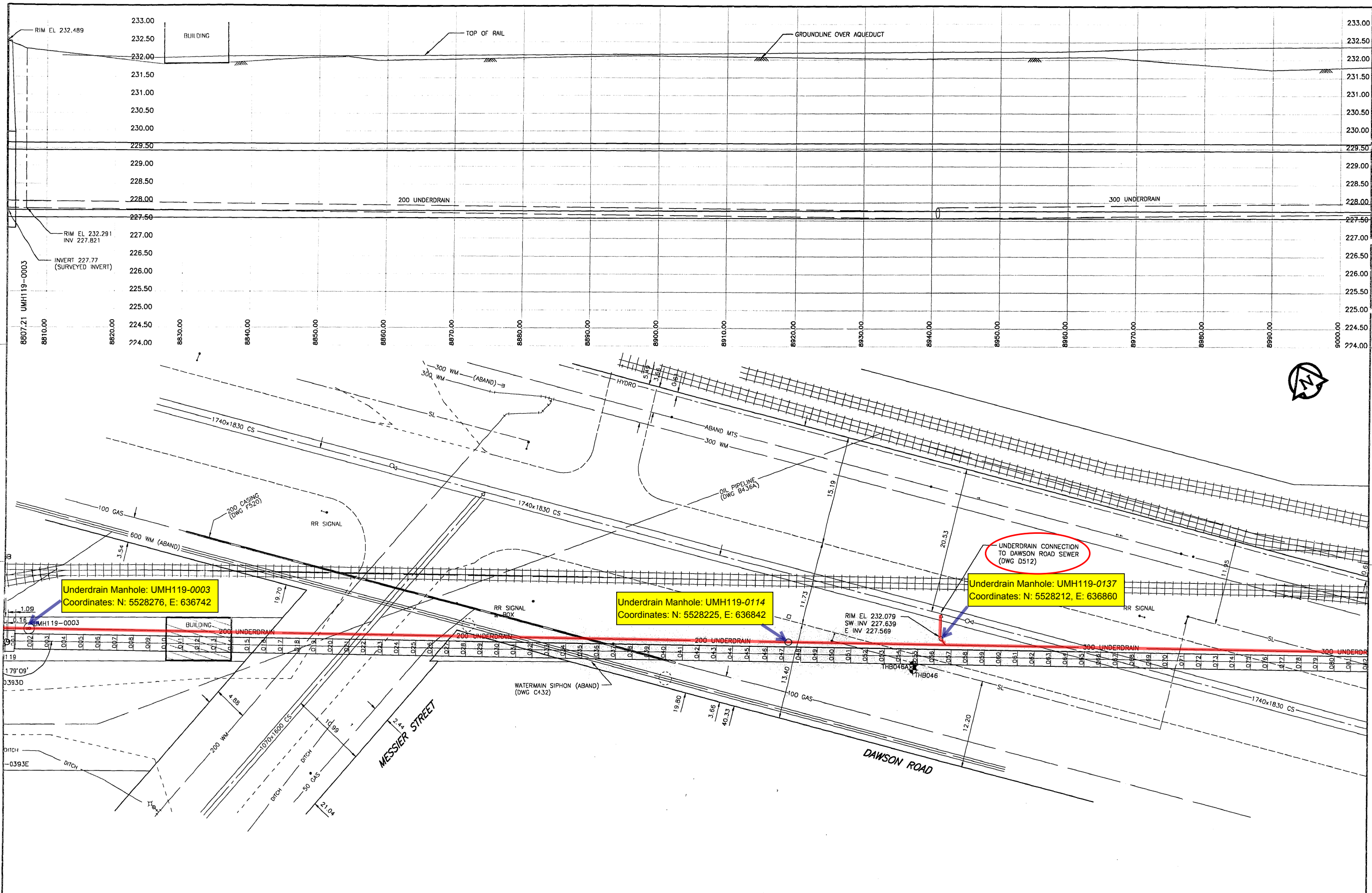
DRAWN BY *D.H.S.*
 TRACED BY *D.H.S.*
 CHECKED
 APPROVED

CONSULTING ENGINEER
W. Chan
 CHIEF ENGINEER
C. M. Mee
 DIVISION ENGINEER

GREATER WINNIPEG WATER DISTRICT
SIPHON UNDER AQUEDUCT
 SHOWING BRICK MANHOLES
 JAN. 25 1918 MESSIER ST. STA. 289 + 69

C-431

SCALE-HN-4 FT



150 mm WM	WATERMAIN	300 mm LDS	LAND DRAINAGE SEWER	HYDRO	100	AQUEDUCT JOINT	AQUEDUCT PIPE
⊕	HYDRANT	250 mm WWS	WASTE WATER SEWER	COMMUNICATION	⊕	UNDERDRAIN MANHOLE	UNDERDRAIN
⊕	VALVE	□	MANHOLE	TRAFFIC SIGNALS	⊕	UNDERDRAIN RISER	GROUNDLINE
⊕	REDUCER	□	CATCH BASIN	PEDESTAL	⊕	UNDERDRAIN WELL	CENTERLINE
⊕	COUPLING	△	CURB INLET	SIGNAL CONTROLLER	⊕	TESTHOLE	N/W GUTTER
⊕	WM FITTINGS	⊕	CULVERT	GAS	⊕	PEIZOMETER	S/E GUTTER
⊕	CURB STOP	⊕	DITCH	STEAM HEAT	⊕		N/W DITCH
⊕	EDGE OF PAVEMENT	⊕	LAMP STANDARD	FENCE	⊕		S/E DITCH
⊕	RAILWAY TRACK	⊕	TRAFFIC SIGNAL	TREE	⊕		N/W PROPERTY LINE
⊕	GEODETIC BENCHMARK	⊕	WOOD POLE	BUILDING	⊕		S/E PROPERTY LINE
⊕	SURVEY BAR	⊕	POLE ANCHOR	SUBSURFACE STRUCTURE	⊕		
⊕	EXISTING	⊕	EXISTING	EXISTING	⊕		

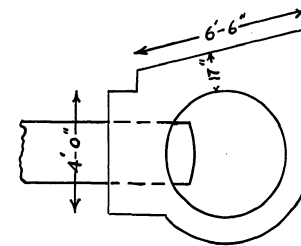
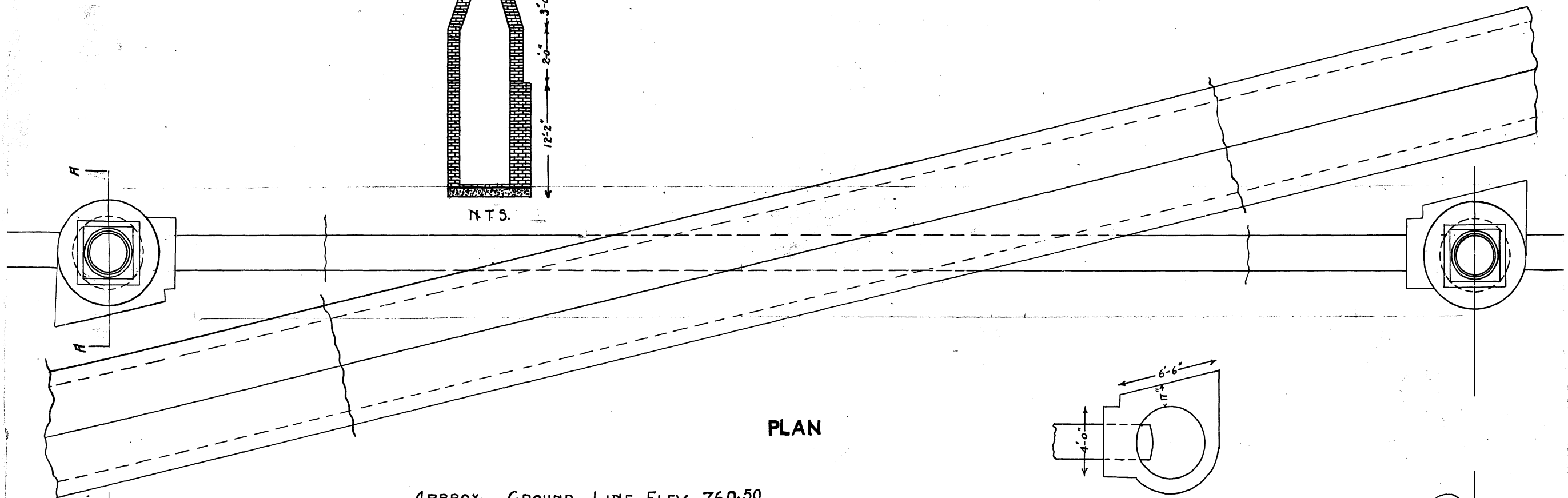
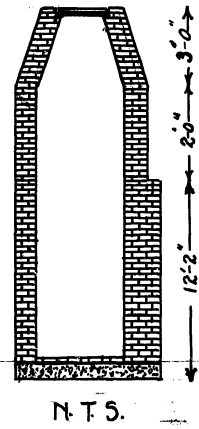
NO.	REVISIONS	DATE	BY
DATA SOURCES			
Aqueduct Joints: Interpreted From Manholes Located in 1994			
UMA Total Station Survey and 1995 Internal Inspections			
Unless Otherwise Noted			
Surface Features: UMA Total Station Survey (1994)			
Legal Right of Way M11 to M12: City of Wpg LBS (1994)			
Legal Right of Way M12 to M17: Pollock & Wright (1995)			
Utilities: Compiled from Information Obtained from City of Winnipeg Underground Structures (1994)			
METRIC			
WHOLE NUMBERS INDICATE MILLIMETRES DECIMALIZED NUMBERS INDICATE METRES			

UMA UMA Engineering Ltd. Engineers and Planners		CASS CHYM GORE & STORRE LIMITED	
DESIGNED BY	BC	CHECKED BY	CCM
DRAWN BY	BC/MAG	APPROVED BY	CCM
HOR. SCALE:	1:250	RELEASED FOR CONSTRUCTION	
VERTICAL:	1:50	DATE	

THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT		SHEET 48 OF 214
Plan and Profile of Branch I Aqueduct		CITY DRAWING NUMBER
From Joint J119-001 To Joint J119-082 From Mile 5.49 To Mile 5.62		D-6326 REV

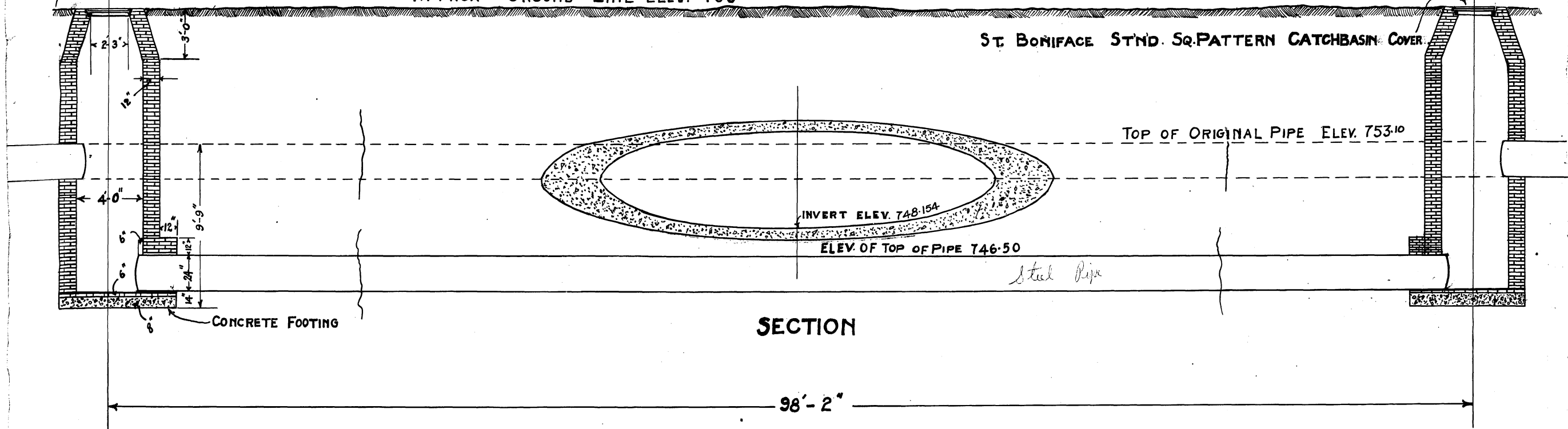
C-432

SECTION A-A



APPROX. GROUND LINE ELEV. 760.50

ST. BONIFACE ST'ND. SQ. PATTERN CATCHBASIN COVER



SECTION

98'-2"

SCALE-1 IN. = 4 FT.

AS CONSTRUCTED—INSTEAD OF PLAN C224

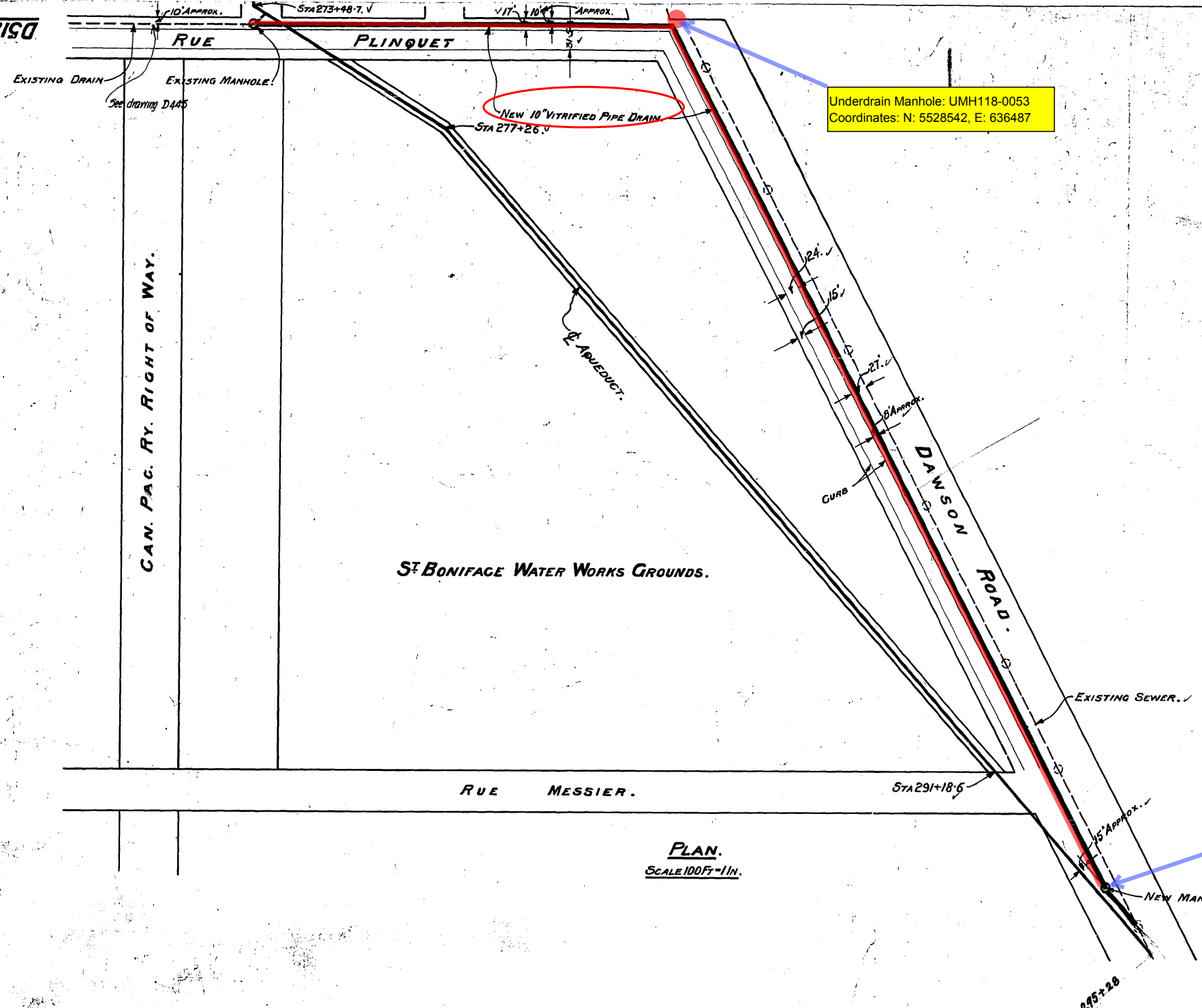
C-432

DRAWN BY *D.M.S.*
 TRACED BY *D.M.S.*
 CHECKED
 APPROVED

CONSULTING ENGINEER
Wilson
 CHIEF ENGINEER
Chapman
 DIVISION ENGINEER

GREATER WINNIPEG WATER DISTRICT
 SIPHON UNDER AQUEDUCT
 SHOWING BRICK MANHOLES
 STA. 292 + 68
 JAN. 25 1918.

D512

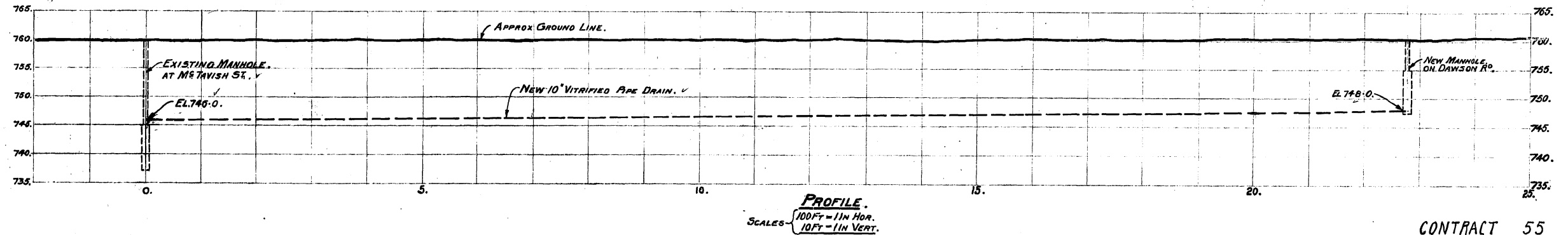


Underdrain Manhole: UMH118-0053
 Coordinates: N: 5528542, E: 636487

Underdrain Manhole: UMH119-0114
 Coordinates: N: 5528225, E: 636842

NEW MANHOLE. CONNECTION TO BE MADE HERE WITH AQUEDUCT DRAIN COMING FROM EAST & WEST.

PLAN.
 SCALE 100 FT = 1 IN.



PROFILE.
 SCALES - 100 FT = 1 IN HOR.
 10 FT = 1 IN VERT.

CONTRACT 55

D512

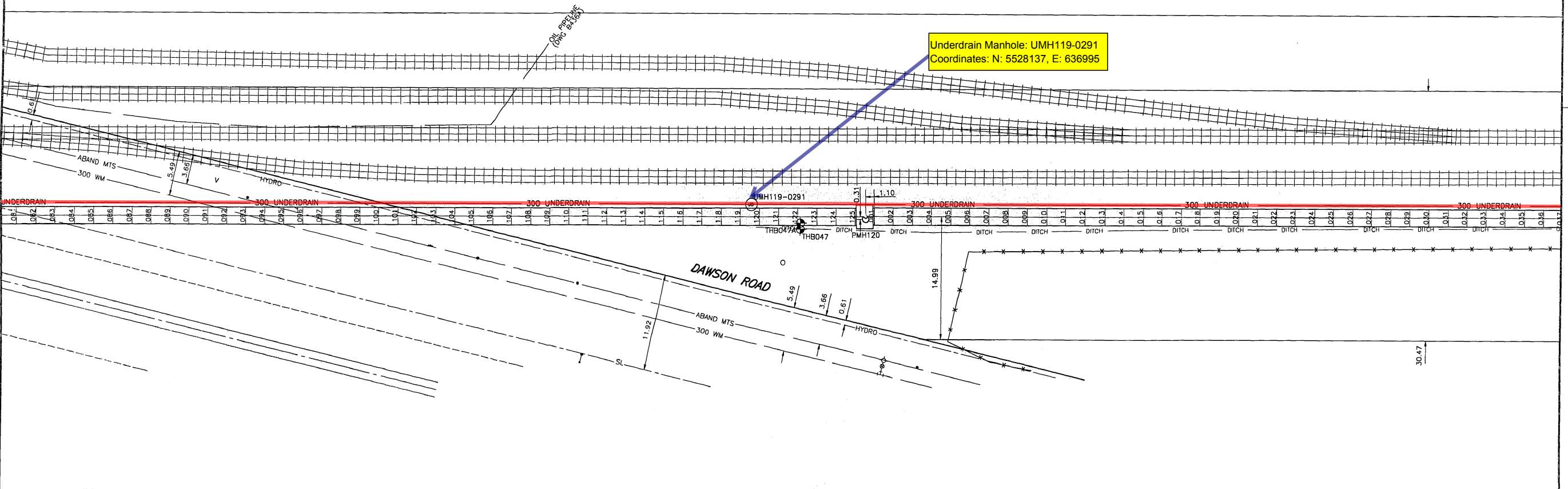
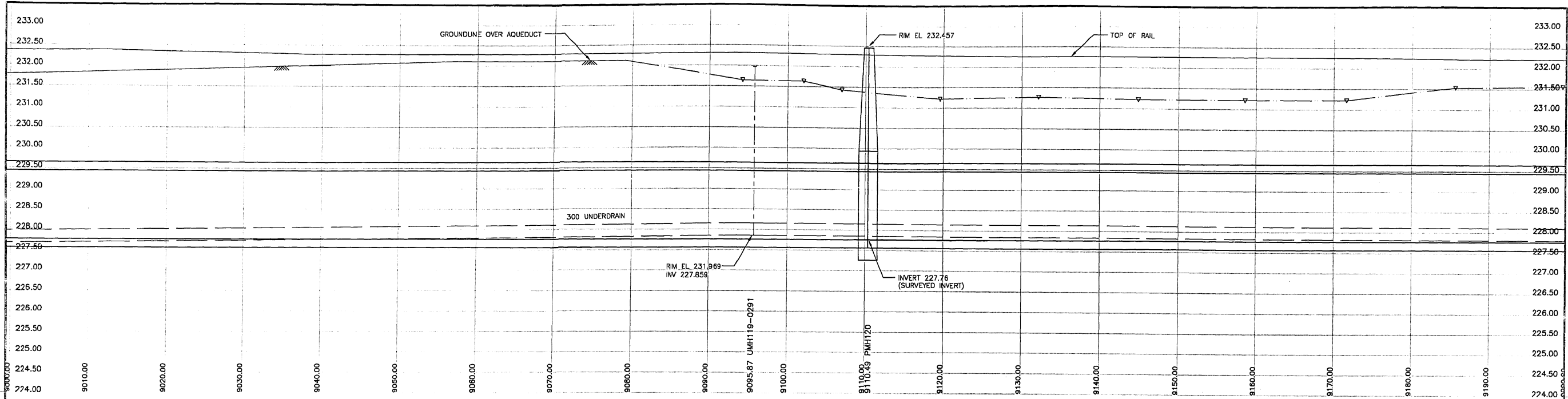
DRAWN BY R.S.
 TRACED BY R.S.
 CHECKED BY [Signature]
 APPROVED [Signature]

4-3-20 Note added re Dwg D445

APPROVED FOR THE CITY OF ST BONIFACE.
 [Signature] MAYOR.
 [Signature] CITY CLERK.
 25th December 1918.

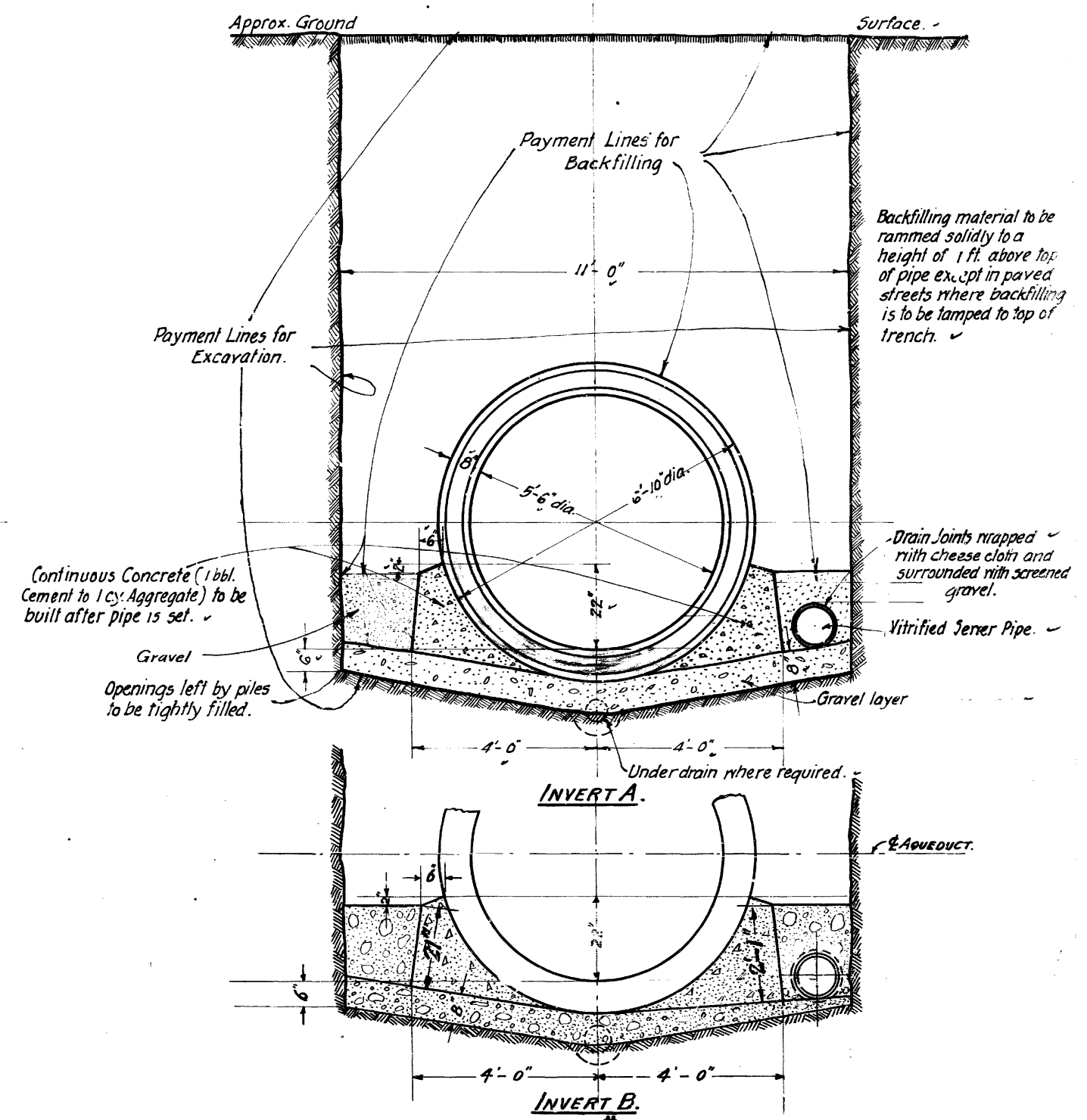
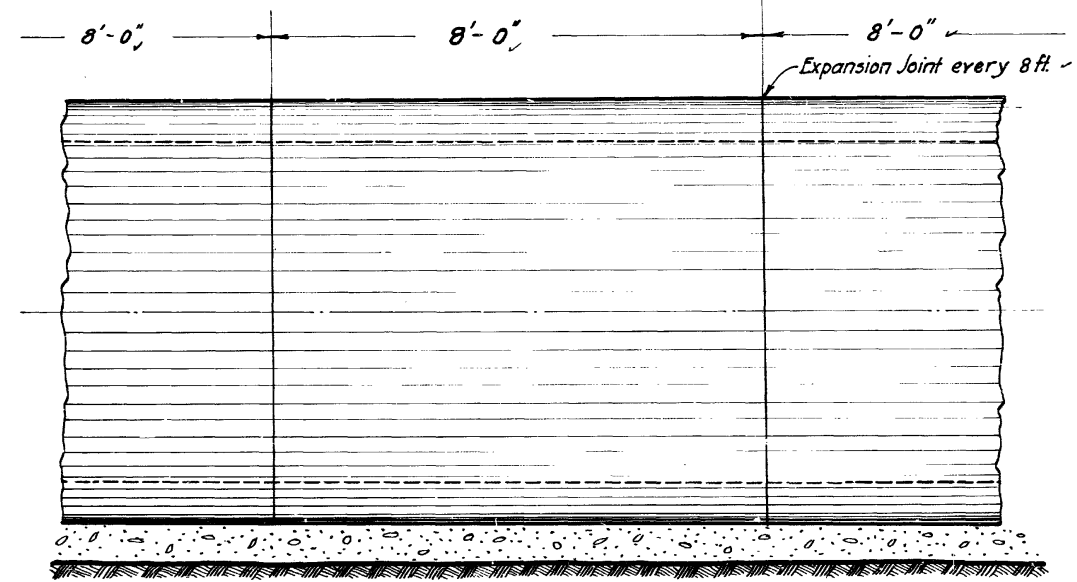
[Signature] CHIEF ENGINEER.

GREATER WINNIPEG WATER DISTRICT.
 PLAN & PROFILE OF PROPOSED OFFTAKE TO TRENCH DRAIN ALONG
 DAWSON ROAD & RUE PLINQUET ST BONIFACE.
 SEPT 26th 1918.



150 mm WM	WATERMAIN	300 mm LDS	LAND DRAINAGE SEWER	HYDRO	100	AQUEDUCT JOINT	AQUEDUCT PIPE	NO. REVISIONS		DATE	BY	 DESIGNED BY BC CHECKED BY CCM DRAWN BY BC/MAG APPROVED BY CCM HOR. SCALE: 1:250 VERTICAL: 1:50 DATE	 CONSULTANT DRAWING NO. 49 41-02-0265-136-01	THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT Plan and Profile of Branch I Aqueduct From Joint J119-081 To Joint J120-036 From Mile 5.61 To Mile 5.74	SHEET 49 OF 214 CITY DRAWING NUMBER D-6327 REV
VALVE REDUCER COUPLING WM FITTINGS CURB STOP EDGE OF PAVEMENT RAILWAY TRACK GEODETIC BENCHMARK SURVEY BAR EXISTING	250 mm WWS MANHOLE CATCH BASIN CURB INLET CULVERT DITCH LAMP STANDARD TRAFFIC SIGNAL WOOD POLE POLE ANCHOR EXISTING	WASTE WATER SEWER MANHOLE CATCH BASIN CURB INLET CULVERT DITCH LAMP STANDARD TRAFFIC SIGNAL WOOD POLE POLE ANCHOR EXISTING	COMMUNICATION TRAFFIC SIGNALS PEDESTAL SIGNAL CONTROLLER GAS STEAM HEAT FENCE TREE BUILDING SUBSURFACE STRUCTURE EXISTING	UNDERDRAIN MANHOLE UNDERDRAIN RISER UNDERDRAIN WELL TESTHOLE PEIZOMETER	AQUEDUCT JOINT UNDERDRAIN MANHOLE UNDERDRAIN RISER UNDERDRAIN WELL TESTHOLE PEIZOMETER	CENTERLINE N/W GUTTER S/E GUTTER N/W DITCH S/E DITCH N/W PROPERTY LINE S/E PROPERTY LINE	DATA SOURCES Aqueduct Joints: Integrated From Manholes Located in 1994 UMA Total Station Survey and 1985 Internal Inspections Unless Otherwise Noted Surface Features: UMA Total Station Survey (1994) Legal Right of Way M11 to M12: City of Wpg LBS (1994) Legal Right of Way M12 to M17: Pollock & Wright (1995) Utilities: Compiled from Information Obtained From City of Winnipeg Underground Structures (1994)	LEGEND - PLAN EXISTING	LEGEND - PLAN EXISTING	LEGEND - PLAN EXISTING	LEGEND - PLAN EXISTING				

D-6327.dwg



INVERT A.	INVERT B.
Concrete in pipe = 0.47835 cy. per lin. ft.	Concrete in pipe. = 0.47835 cy. per lin. ft.
Gravel in 8" layer = 0.28 cy. per lin. ft.	Gravel in 8" layer. = 0.235 cy. per lin. ft.
Gravel around 8" drain = 0.077 cy. per lin. ft.	Gravel around 8" Drain. = 0.10 cy. per lin. ft.
Backfill = 0.88 cy. per lin. ft. to top of pipe	Backfill = 0.886 cy. per lin. ft. to Top of Pipe.
Concrete = 0.18 cy. per lin. ft.	Concrete = 0.208 cy. per lin. ft.
Haunch Gravel Backfill = 0.097 cy. per lin. ft.	Haunch Gravel Backfill = 0.097 cy. per lin. ft.

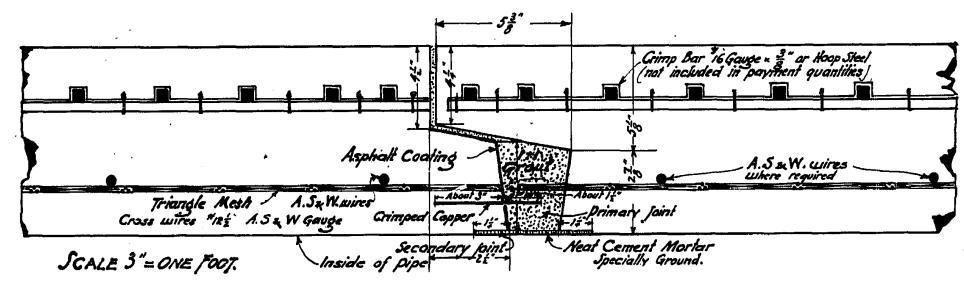
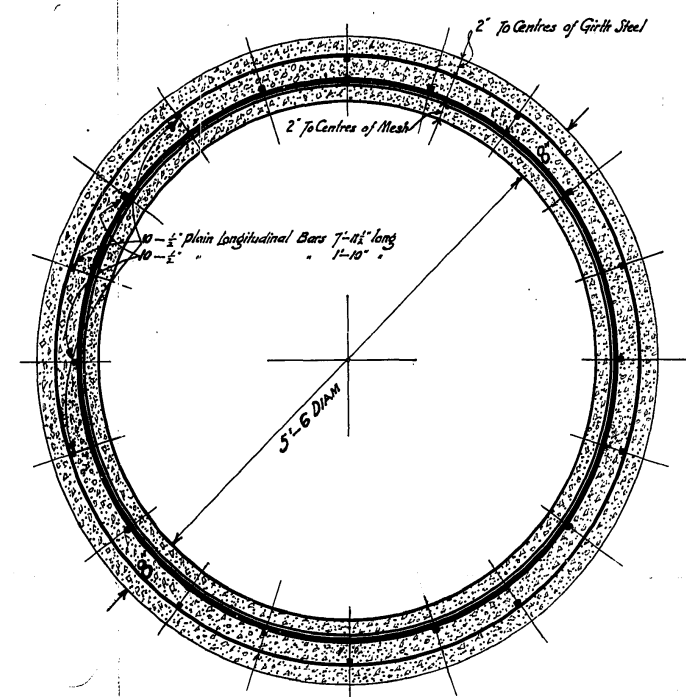
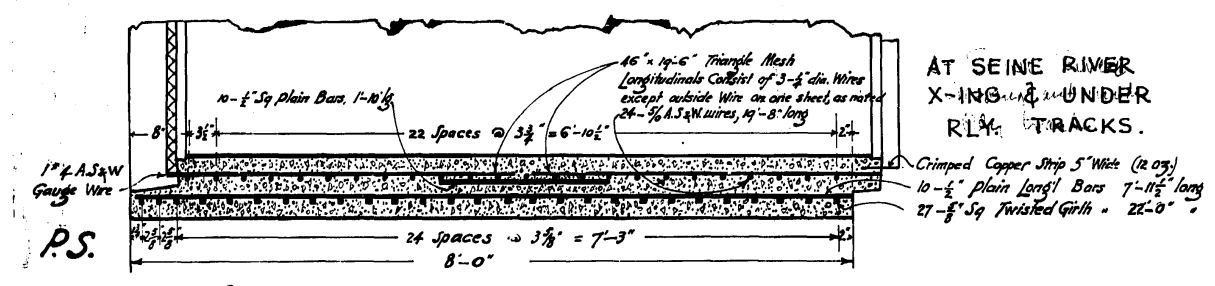
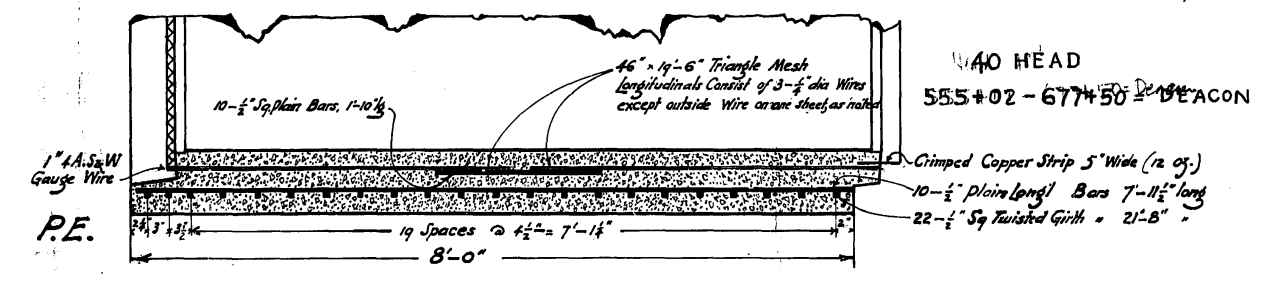
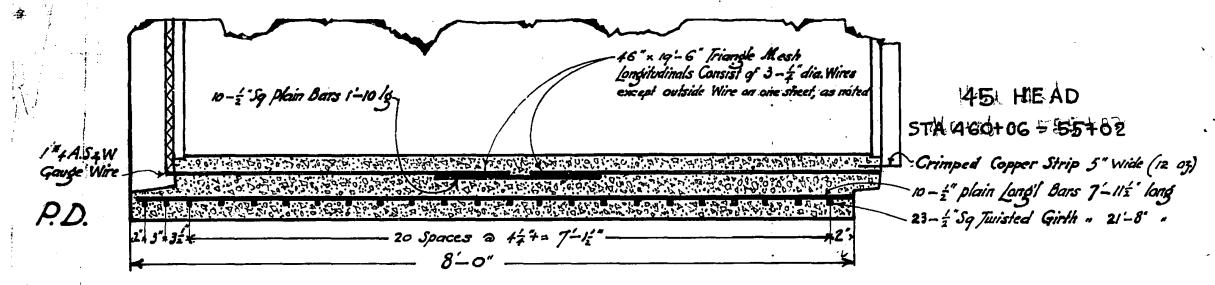
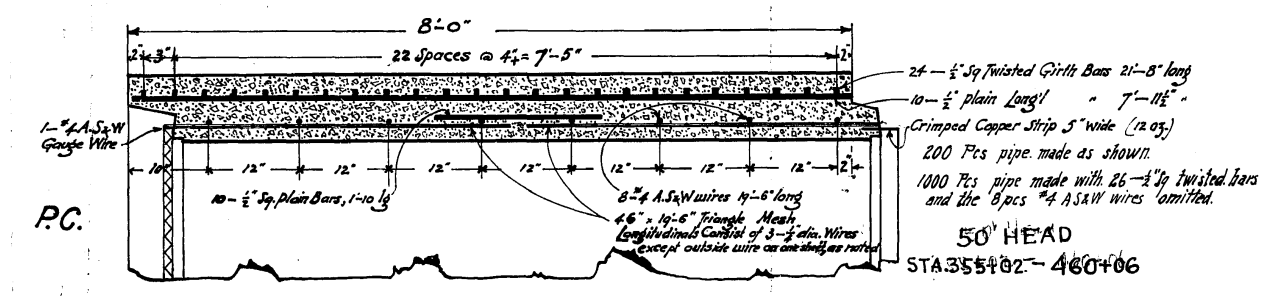
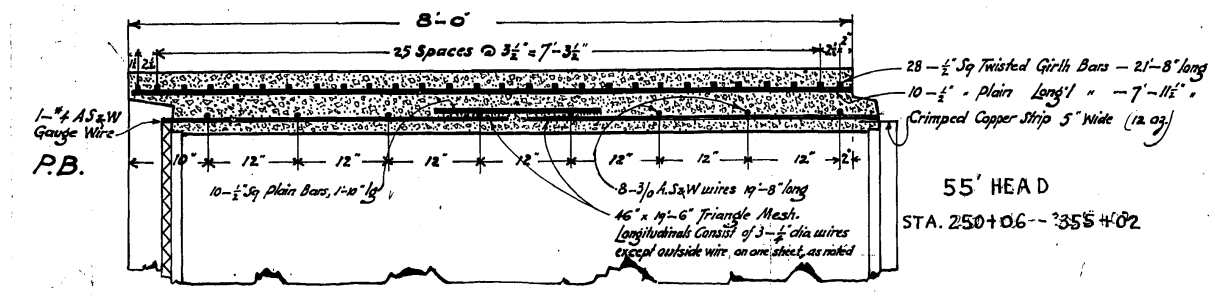
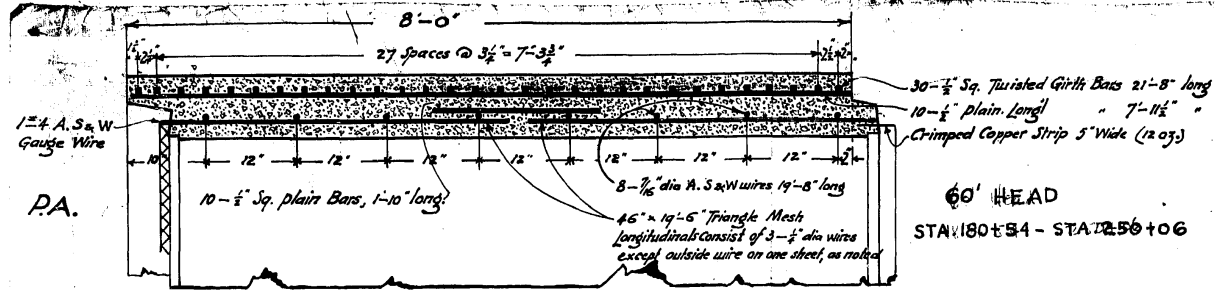
CONTRACT # 55 - C216.

Drawn by: *[Signature]*
 Traced by: *[Signature]*
 Checked by: *[Signature]*
 Approved: *[Signature]*

Quantities added July 3rd 1917.
 Gravel backfill behind concrete block added. Aug 7-1915. *[Signature]*
 Haunch Gravel backfill quantity added and backfill adjusted Nov. 22, 1917. *[Signature]*
 Quantity of concrete in pipe added. 15th Dec. 1917. *[Signature]*
 Backfill, Gravel, G. Backfill revised. *[Signature]*
 Invert B added. June 13th 1918. R.S. *[Signature]*

James H. Fuertes
 Consulting Engineer
W. G. Chase
 Chief Engineer.

GREATER YINNIPEG WATER DISTRICT.
 TYPICAL CROSS SECTION OF 5-6" PIPE LINE,
 SHOWING PAYMENT LINES.
 June 12th 1917. Scale: 1/2 in. = 1 ft.



APPROVED FOR WINNIPEG AQUEDUCT CONSTRUCTION COMPANY
 by James H. Sweet as of January 24th 1917
 J. B. McKeen
 April 26 1917
 CONTRACT N^o 55. **D.391**

DRAWN BY [Signature]
 CHECKED [Signature]
 P.C. pipe changed as per note above. June A. 1918 J.C.

James H. Sweet
 CONSULTING ENGINEER
W. A. Chase
 CHIEF ENGINEER
 GREATER WINNIPEG WATER DISTRICT.
 5'-6" REINFORCED CONCRETE PIPE
 SECTIONS SHOWING REINFORCEMENT
 APRIL 23 1917. SCALE 1" = 1'-0"