

APPENDIX C

COCKBURN SEWER RELIEF REFERENCE INFORMATION (CONTRACTS 1, 2, 3, 4, 5A, & 11)

Wilton Trunk – Contract 11 (Bid Opportunity 640-2018)

DRAWING INDEX

SHEET NUMBER	CITY OF WINNIPEG DRAWING NUMBER	DRAWING TITLE
1	LD-8594	COVER SHEET
2	LD-8595	GENERAL INFORMATION - DRAWING INDEX, CONSTRUCTION NOTES, LEGEND - MANHOLE SCHEDULE & TESTHOLE SCHEDULE
3	LD-8596	WILTON STREET - TAYLOR AVENUE TO GRANT AVENUE - TAYLOR AVENUE TO STA 2+20
4	LD-8597	WILTON STREET - TAYLOR AVENUE TO GRANT AVENUE - STA 2+20 TO STA 3+60
5	LD-8598	WILTON STREET - TAYLOR AVENUE TO GRANT AVENUE - STA 3+60 TO STA 4+95
6	LD-8599	WILTON STREET - TAYLOR AVENUE TO GRANT AVENUE - STA 4+95 TO STA GRANT AVENUE
7	LD-8600	WILTON BAY/EBBY AVENUE - WILTON STREET TO GUELPH STREET - WILTON BAY WEST LEG TO STA 2+25
8	LD-8601	EBBY AVENUE - WILTON STREET TO GUELPH STREET - STA 2+25 TO GUELPH STREET
9	LD-8602	HECTOR AVENUE - HECTOR BAY EAST TO GUELPH STREET - HECTOR BAY EAST TO STA 2+10
10	LD-8603	HECTOR AVENUE - HECTOR BAY EAST TO GUELPH STREET - STA 2+10 TO STA 3+25
11	LD-8604	HECTOR AVENUE - HECTOR BAY EAST TO GUELPH STREET - STA 3+25 TO STA 4+40
12	LD-8605	HECTOR AVENUE - HECTOR BAY EAST TO GUELPH STREET - STA 4+40 TO GUELPH STREET
13	LD-8606	HECTOR BAY EAST - WEST LEG
14	LD-8607	HECTOR BAY EAST - SOUTH LEG
15	LD-8608	HECTOR BAY EAST - EAST LEG
16	LD-8609	CARTER AVENUE - WILTON STREET TO GUELPH STREET - WILTON STREET TO STA 1+80
17	LD-8610	CARTER AVENUE - WILTON STREET TO GUELPH STREET - STA 1+80 TO ±30m EAST OF GUELPH STREET
18	LD-8611	WEATHERDON AVENUE - WILTON STREET TO GUELPH STREET - WILTON STREET TO STA 2+05
19	LD-8612	WEATHERDON AVENUE - WILTON STREET TO GUELPH STREET - STA 2+05 TO ±40m EAST OF GUELPH STREET
20	LD-8613	MANHOLE DETAILS (MUNICIPAL)
21	LD-8614	MANHOLE/TRANSITION CHAMBER MH-01 - PLAN AND SECTIONS (STRUCTURAL)
22	LD-8632	MANHOLE/TRANSITION CHAMBER MH-01 - SECTIONS AND DETAILS (STRUCTURAL)

CONSTRUCTION NOTES

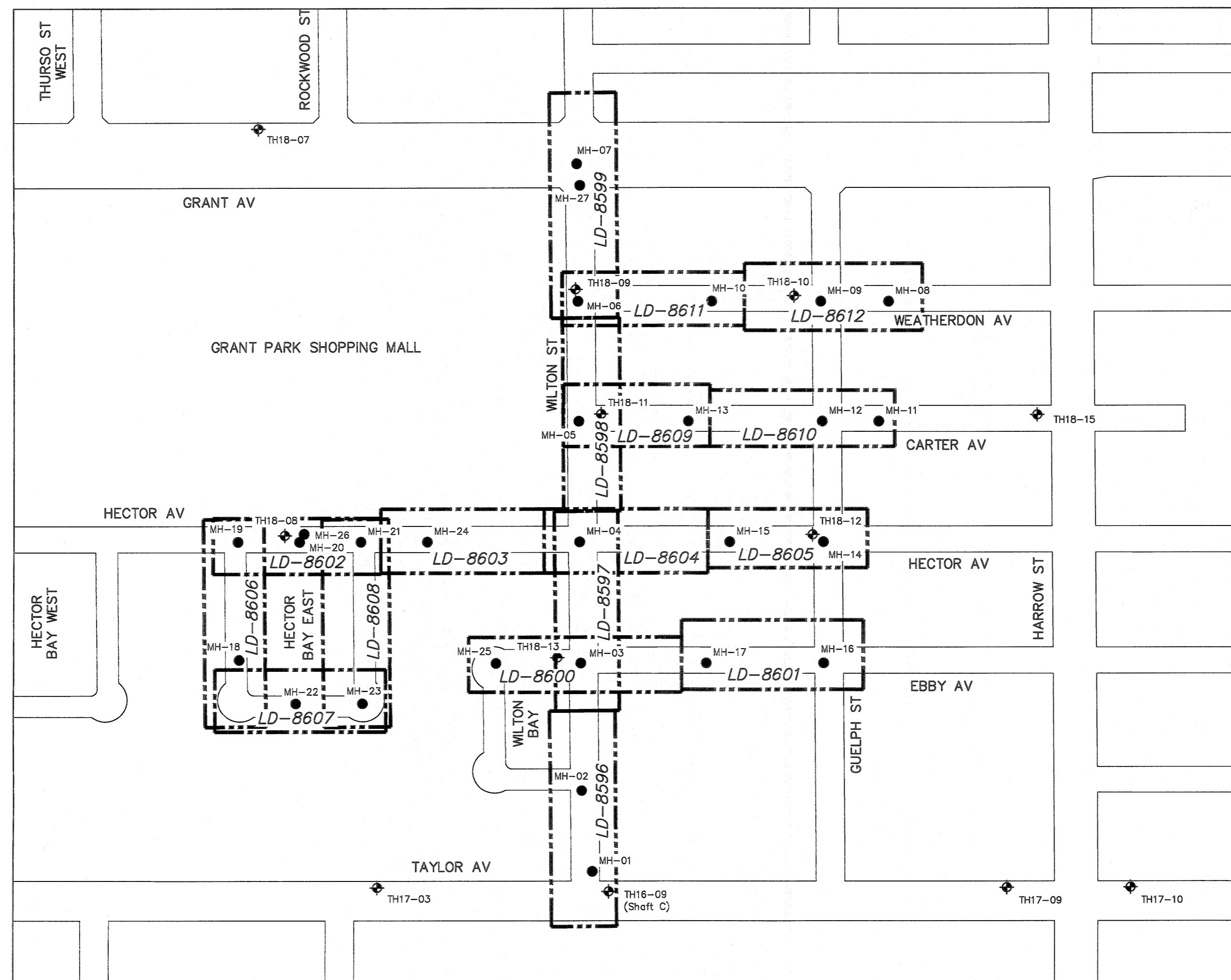
- ALL UNDERGROUND WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST REVISION OF THE CITY OF WINNIPEG STANDARD CONSTRUCTION SPECIFICATIONS.
- ALL EXISTING UNDERGROUND SERVICES SHOWN ON DRAWINGS ARE APPROXIMATE ONLY.
- CONTRACTOR TO VERIFY LOCATIONS OF ALL EXISTING UNDERGROUND UTILITIES AND SERVICES PRIOR TO START OF CONSTRUCTION.
- PIPE MATERIAL FOR ALL PIPES INSTALLED WITH 3.5 OR DEEPER OF COVER, SHALL BE REINFORCED CONCRETE TO ASTM C78 WITH STRENGTH CLASS TYPE INDICATED ON DRAWINGS.
- PIPE MATERIAL FOR PIPES HAVING LESS THAN 3.5 OF COVER CAN BE REINFORCED CONCRETE TO ASTM C76 OR SDR 35 PVC.
- FOR DETAILS OF STANDARD MANHOLE, LARGE DIAMETER MANHOLE AND LARGE DIAMETER DROP MANHOLE SEE DWG. LD-8613.
- STANDARD DROP MANHOLE SHALL COMPLY WITH C.O.W. DETAIL SD-010D.
- ALL NEW CATCH BASINS LEADS TO BE 250Ø PVC SDR 35 PIPES.
- ALL PIPE SHALL HAVE CLASS B BEDDING WHEN INSTALLED BY TRENCH METHOD.
- CONTRACTOR TO INSTALL SEWER BY TRENCHLESS METHODS.
- BACKFILL UNDER PAVEMENT & WITHIN 1.0 OF PAVEMENT ON REGIONAL STREETS TO BE CLASS 1.
- BACKFILL UNDER PAVEMENT & WITHIN 1.0 OF PAVEMENT ON OTHER ROADWAYS TO BE CLASS 3.
- BACKFILL IN BOULEVARD TO BE CLASS 5.
- CONTRACTOR TO INSTALL SEWER SERVICE RISERS TO AN ELEVATION WHERE MINIMUM SLOPE OF 2% IS MAINTAINED FOR ALL SERVICES.
- SHAFT LOCATIONS SHOWN ON DRAWINGS ARE FOR PLANNING PURPOSES ONLY. ACTUAL SHAFT LOCATIONS ARE THE RESPONSIBILITY OF THE CONTRACTOR TO MEET THEIR CONSTRUCTION MEANS AND METHODS.
- CONTRACTOR SHALL MITIGATE IMPACTS TO THE WORK AREA FROM SITE SURFACE RUNOFF.
- PEDESTRIAN ACCESS MUST BE MAINTAINED DURING CONSTRUCTION AT ALL TIMES.
- EXISTING SEWER AND WATER SERVICES TO BE REGRADED AS REQUIRED FOR CONSTRUCTION OF THE NEW LDS PIPING.
- EXISTING SERVICES OF THE CS TO BE ABANDONED SHALL BE INSPECTED IN ADVANCE OF ABANDONING TO CONFIRM THAT NO REMAINING SERVICE CONNECTIONS EXIST.

ABBREVIATIONS

WWS	WASTE WATER SEWER
CS	COMBINED SEWER
LDS	LAND DRAINAGE SEWER
ℙ	PROPERTY LINE
℄	CENTER LINE
G.I.S.	GEOGRAPHIC INFORMATION SYSTEM
B.M.	BENCH MARK
TH	TEST HOLE
ELEV	ELEVATION
INV	INVERT
MIN	MINIMUM
MAX	MAXIMUM
SL	STREET LIGHTING
TS	TRAFFIC SIGNALS
ABAND	ABANDONED
BLDG	BUILDING
HSE	HOUSE
CRN	CORNER
OPP	OPOSITE
C/S OR S/C	CURB STOP
MTS	MANITOBA TELEPHONE SYSTEM
R.O.W.	RIGHT-OF-WAY
WM	WATERMAIN
CULV	CULVERT
MH	MANHOLE
CB	CATCH BASIN
CI	CURB INLET
VERT.	VERTICAL
HORZ.	HORIZONTAL
I.B.	IRON BAR
FIBRE	FIBRE OPTIC
TYP	TYPICAL
X-ING	CROSSING
HYD	HYDRANT
EXIST	EXISTING
N	NORTH
E	EAST
S	SOUTH
W	WEST
W/W	WITH
C/W	CONSTRUCTED WITH
CONC	CONCRETE
AC	ASBESTOS CEMENT
VC OR CLAY	VITRIFIED CLAY
CI	CAST IRON
DI	DUCTILE IRON
PVC	POLYVINYL CHLORIDE
HDPE	HIGH DENSITY POLYETHYLENE
PCCP	PRESTRESSED CONCRETE CYLINDER PIPE
JCT	JUNCTION

LEGEND

DESCRIPTION	PLAN VIEW	
	EXISTING	PROPOSED
WATER PIPE	---	---
FIRE HYDRANT	⊕	⊕
VALVE	⊗	⊗
CURB STOP	⊕	⊕
REDUCER	⊕	⊕
COUPLING OR SLIDER	X	X
CROSS	⊕	⊕
BEND - 11.25', 22.5', 45', 90'	⊕	⊕
TEE	⊕	⊕
VERTICAL BEND	H	H
ANODE	⊕	⊕
REPAIR MARKER	⊕	⊕
PLUG	J	J
SEWER PIPE	---	---
MANHOLE	⊕	⊕
CATCH BASIN	⊕	⊕
CURB INLET	⊕	⊕
JUNCTION	⊕	⊕
DITCH	---	---
CULVERT	---	---
SURVEY BAR	⊕	⊕
SURVEY MONUMENT	⊕	⊕
TREE - DECIDUOUS	⊕	⊕
TREE - CONIFEROUS	⊕	⊕
HYDRO	---	---
HYDRO POLE	⊕	⊕
LAMP STANDARD	⊕	⊕
HYDRO POLE W/STREET LIGHTING	⊕	⊕
POLE	⊕	⊕
GUY ANCHOR	⊕	⊕
M.T.S. POLE	⊕	⊕
PEDESTAL OR BOX	⊕	⊕
CABINET	⊕	⊕
M.T.S., SHAW, OR VIDEON	---	---
TRAFFIC SIGNALS	---	---
TRAFFIC LIGHT STANDARD	⊕	⊕
GAS	---	---
STEAM	---	---
FIBRE OPTIC	---	---
FENCE	---	---
EDGE OF PAVEMENT OR GUTTER	---	---
EDGE UNPAVED OR GRAVEL ROAD	---	---
PROJECTED	---	---
LOT LINE	---	---
SIDEWALK - PATHWAY	---	---
EASEMENT	---	---
EDGE OF BUILDING	---	---
MAILBOX	⊕	⊕
PARKING METER	⊕	⊕
TEST HOLE	⊕	⊕
TREE LINE OR BUSH	---	---

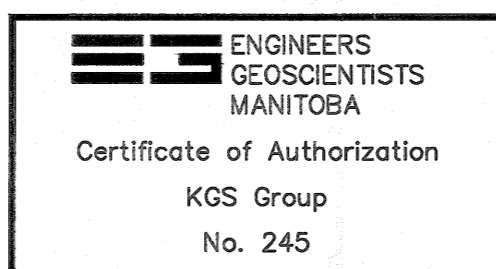


MANHOLE & TESTHOLE LOCATION PLAN
SCALE: N.T.S.

REFERENCE	NORTHING	EASTING
MH-01	5524249.64	632277.14
MH-02	5524296.04	632243.31
MH-03	5524374.87	632199.17
MH-04	5524448.70	632157.82
MH-05	5524522.07	632116.70
MH-06	5524595.71	632075.44
MH-07	5524670.71	632033.41
MH-08	5524700.73	632266.99
MH-09	5524678.02	632225.57
MH-10	5524641.09	632158.21
MH-11	5524623.52	632301.62
MH-12	5524604.40	632266.69
MH-13	5524559.25	632184.41
MH-14	5524531.12	632308.13
MH-15	5524499.39	632250.28
MH-16	5524457.04	632349.02
MH-17	5524417.34	632276.62
MH-18	5524261.04	631987.74
MH-19	5524333.18	631947.17
MH-20	5524354.07	631985.25
MH-21	5524374.68	632022.84
MH-22	5524253.25	632037.39
MH-23	5524275.81	632078.38
MH-24	5524397.06	632063.65
MH-25	5524346.19	632146.86
MH-26	5524356.51	631985.13
MH-27	5524666.48	632038.18

REFERENCE	NORTHING	EASTING
TH16-09	5524243.0	632294.0
TH17-03	5524167.0	632150.0
TH17-09	5524380.0	632538.0
TH17-10	5524422.0	632614.0
TH18-07	5524594.0	631820.0
TH18-08	5524353.0	631974.0
TH18-09	5524602.0	632070.0
TH18-10	5524672.0	632207.0
TH18-11	5524534.0	632128.0
TH18-12	5524532.0	632299.0
TH18-13	5524370.0	632183.0
TH18-15	5524681.0	632397.0

DESCRIPTION	PROFILE	
	EXISTING	PROPOSED
WATER PIPE	---	---
HYDRANT TOP	+	+
VALVE	X	X
TEE OR CROSS	⊕	⊕
COUPLING OR BEND	⊕	⊕
REDUCER	⊕	⊕
END OF PIPE	⊕	⊕
SEWER PIPE	---	---
UNPAVED GROUND SURFACE	---	---
PAVED GROUND SURFACE - E PIPE	---	---
GUTTER (NORTH AND WEST)	---	---
GUTTER (SOUTH AND EAST)	---	---
E DITCH (NORTH AND WEST)	---	---
E DITCH (SOUTH AND EAST)	---	---
STRUCTURE	---	---
MANHOLE OR CATCH BASIN	---	---



LOCATION APPROVED
UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES COMMITTEE DATE

NOTE:

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

B.M. ELEV.

ISSUED FOR CONSTRUCTION

DATE

BY

NO.

REVISIONS

DATE

BY

DATE

BY



DESIGNED BY MID

CHECKED BY

DRAWN BY GEL

APPROVED BY

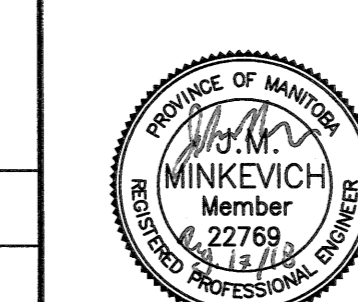
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VERTICAL

DATE 2018 08 17

PLOT DATE: 2018 08 17

ENGINEER'S SEAL



CONSULTANT DRAWING NUMBER

11-0107-18-C11_LD-8595

BID OPPORTUNITY: 640-2018

CONTRACT NUMBER: 11



THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT
ENGINEERING DIVISION

COCKBURN & CALROSSIE SEWER RELIEF WORKS

CONTRACT 11

GENERAL INFORMATION

DRAWING INDEX, CONSTRUCTION NOTES, LEGEND, MANHOLE SCHEDULE & TESTHOLE SCHEDULE

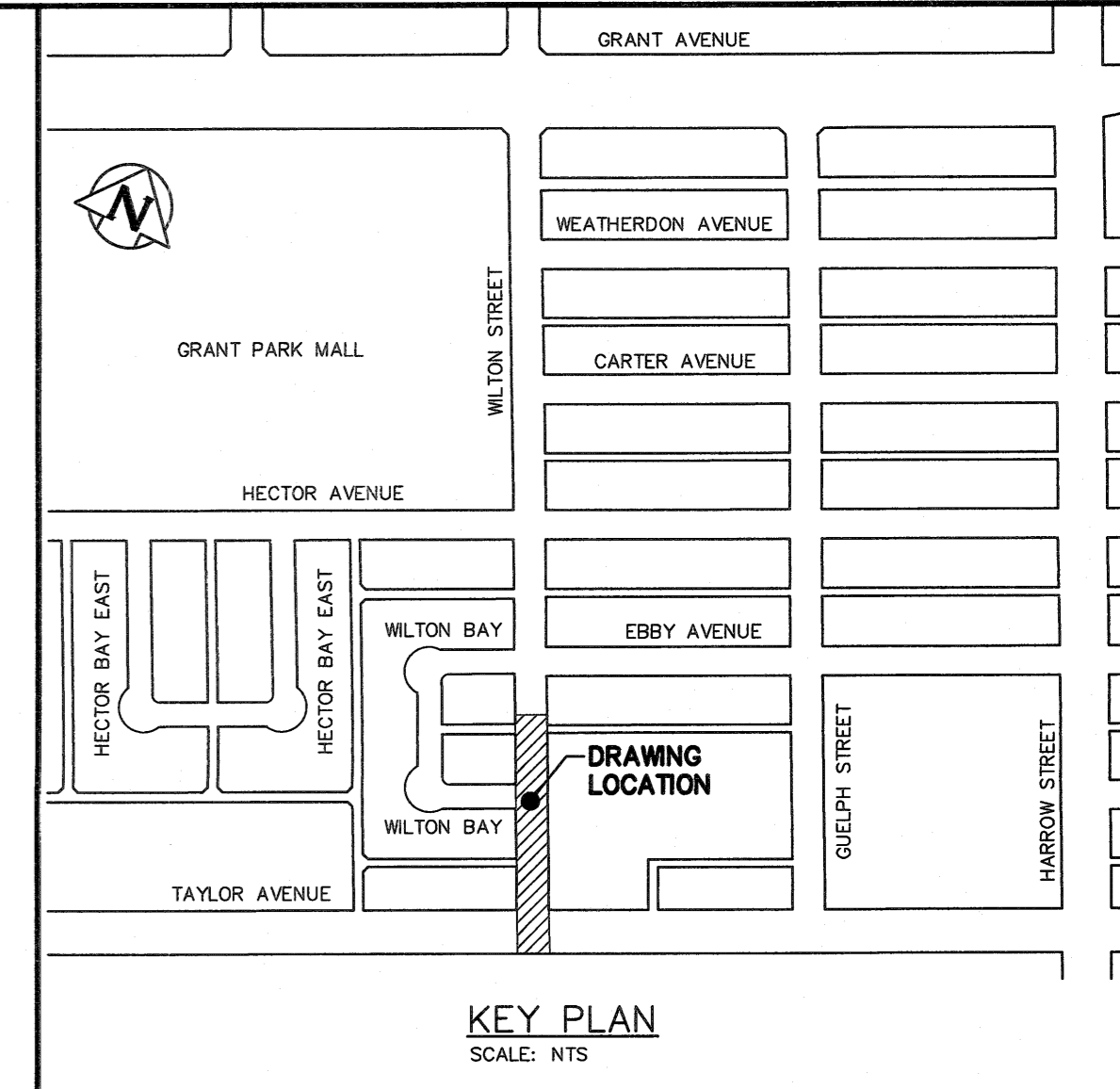
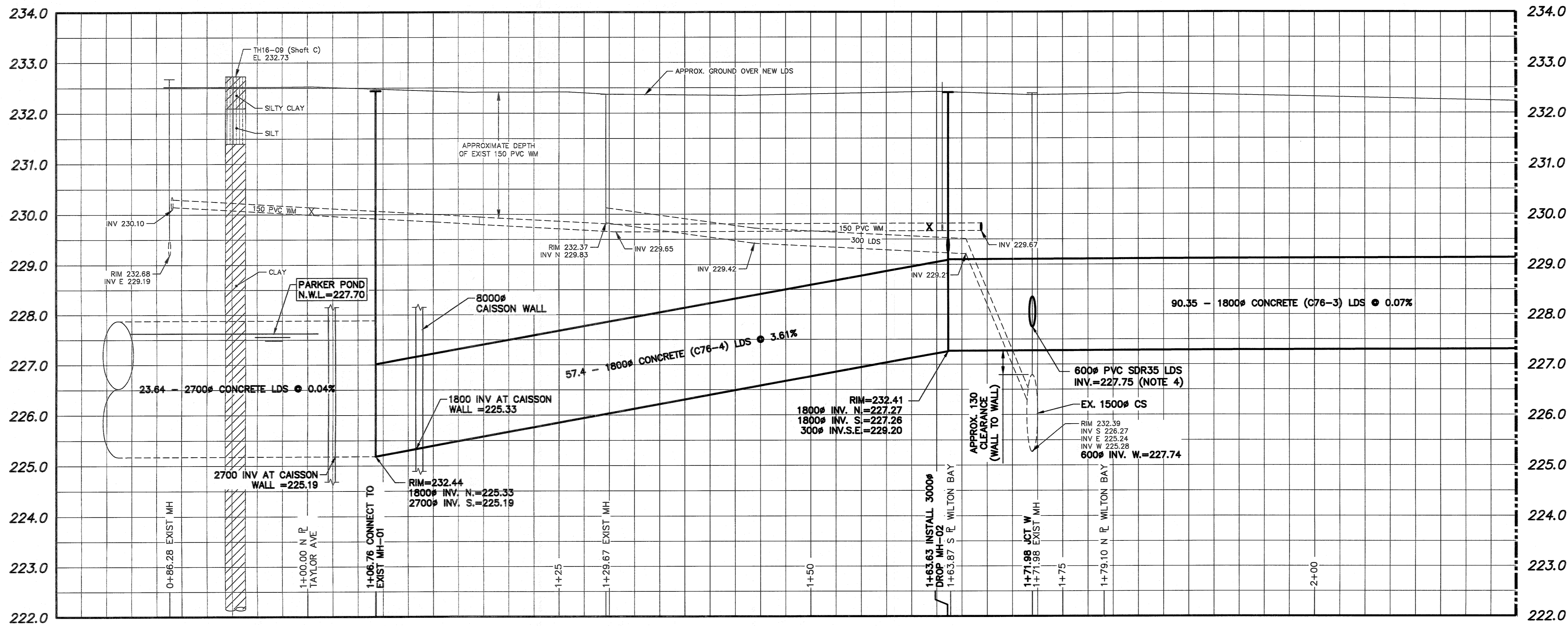
SHEET 2 OF 22

CITY DRAWING NUMBER

LD-8595

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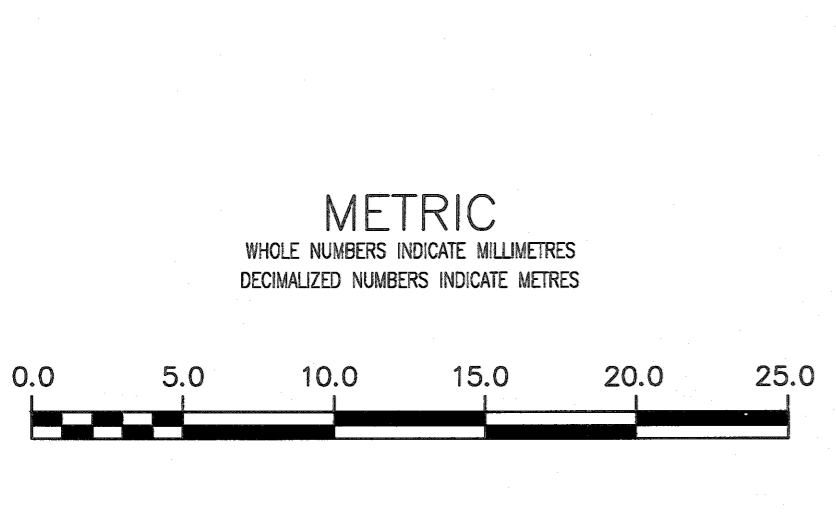
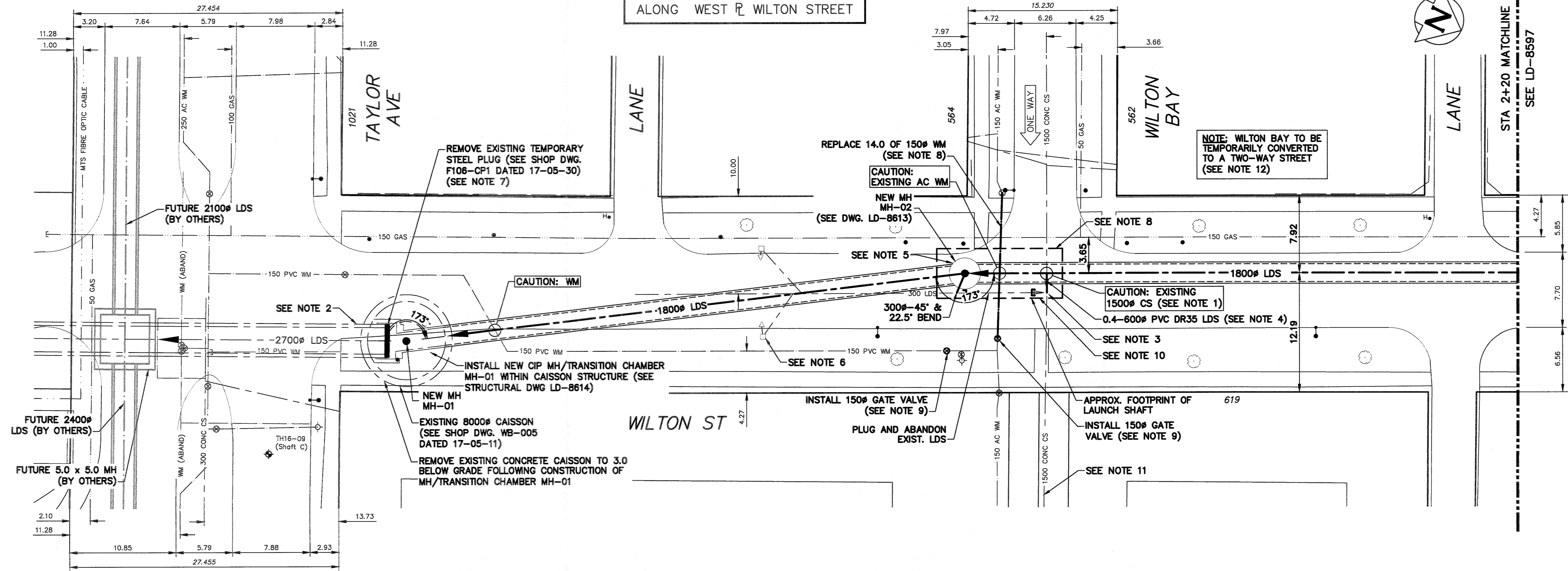
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NOTES:

- SOFT DIG AT THE CROSSING WITH THE 1500# COMBINED SEWER TO CONFIRM DEPTH PRIOR TO START OF TRENCHLESS INSTALLATION OF NEW 1800# CONCRETE LDS.
- INSTALL A TEMPORARY PLUG IN DOWNSTREAM 2700# PIPE AT THE SOUTH SIDE OF MH-01 AND DEWATER THE CAISSON BEFORE START OF CONSTRUCTION.
- RENEW RISERS OF THE EXISTING COMBINED SEWER MANHOLE IN THE OPEN EXCAVATION IF SHAFT LOCATION ENCLOSES ON TO THE 1500# CS.
- TEMPORARY CONNECTION BETWEEN THE COMBINED SEWER AND NEW 1800# LDS. THE CONNECTION WILL BE USED FOR PUMPED DEWATERING OF THE NEW LDS SYSTEM DURING CONSTRUCTION. CONTRACTOR TO INSTALL REMOVABLE PLUG IN 600# AT END OF PROJECT.
- MANHOLE MH-02 TO HAVE 1.0 DEEP TEMPORARY DRAINAGE SUMP THAT MAY BE USED FOR PUMPING DURING CONSTRUCTION. SUMP TO BE FILLED WITH CONCRETE AT END OF PROJECT.
- EXISTING LDS PIPES AND CB TO REMAIN AND BE REROUTED INTO MH-02.
- CONTRACTOR TO SUPPORT EXISTING 2700# PLUG DURING EXCAVATION OF BACKFILL IN EXISTING CAISSON. PLUG IS NOT INTENDED TO SUPPORT DOWNSTREAM WATER LEVEL. REMOVAL OF EXISTING PLUG SHALL BE UNDERTAKEN IN CONJUNCTION WITH CONTRACTOR'S DEWATERING AND DRAINAGE PLAN.
- MIN 1.0 CLEARANCE TO BE MAINTAINED BETWEEN SHAFT SHORING AND 150# MAIN GAS LINE.
- PRIOR TO LAUNCH SHAFT EXCAVATION INSTALL TWO NEW 150# VALVES TO PROVIDE UNDISTURBED WATER SUPPLY FOR ALL PROPERTIES. WATERMAIN SECTION WITHIN THE SHAFT LIMITS CAN BE REMOVED AND RENEWED AFTER MANHOLE MH-02 IS INSTALLED.
- SHORING DESIGN FOR SHAFT TO CONSIDER LOADING OF EXISTING 1500# COMBINED SEWER IF SHAFT LOCATION ENCLOSES ON TO THE 1500# CS.
- COMPLETE PRE-/POST-CONSTRUCTION CCTV INSPECTION OF EXISTING 1500# CS FROM 1ST. MANHOLE WEST OF WILTON ST. TO THE 1ST. MANHOLE EAST OF WILTON ST.
- CONTRACTOR TO COORDINATE WITH CONTRACT ADMINISTRATOR AND THE CITY TO ARRANGE FOR HECTOR BAY TO TEMPORARILY BE MODIFIED TO A TWO-WAY STREET.

NOTE: CHAINAGES SHOWN ARE ALONG WEST R/W WILTON STREET



PROPERTY LIMITS DELINEATION
 DELINEATION OF PROPERTY LIMITS AS SHOWN ON THIS DWG DOES NOT REPRESENT A "LEGAL SURVEY". KGS GROUP MAKES NO REPRESENTATION OR WARRANTY AS TO THE ACCURACY OF PROPERTY LIMITS DELINEATED ON THIS DWG, NOR ON THE DIMENSIONAL ACCURACY OF DWG FEATURES RELATIVE TO THOSE PROPERTY LIMITS.

WARNING
 IF POWER EQUIPMENT OR EXPLOSIVES ARE TO BE USED FOR EXCAVATION ON THIS PROJECT THE CONTRACTOR MUST:
 1) NOTIFY THE GAS COMPANY OF THE PROPOSED LOCATION OF EXCAVATION.
 2) TAKE PRECAUTION TO AVOID DAMAGE TO GAS COMPANY INSTALLATIONS.
 SEE PROVINCIAL REGULATION 210/72 FOR DETAILS

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

B.M. ELEV.	NO.	ISSUED FOR CONSTRUCTION	DATE	BY
	0	ISSUED FOR CONSTRUCTION	2018 08 17	Jm
		REVISIONS	DATE	BY

KGS GROUP CONSULTING ENGINEERS

DESIGNED BY: MID
 CHECKED BY: [Signature]
 DRAWN BY: GEL
 APPROVED BY: [Signature]
 SCALE: HORIZONTAL 1:250, VERTICAL 1:50
 RELEASED FOR CONSTRUCTION
 DATE: 2018 08 17
 DATE: 08-17-18

ENGINEER'S SEAL

 CONSULTANT DRAWING NUMBER: 11-0107-18-C11_LD-8596

THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT ENGINEERING DIVISION

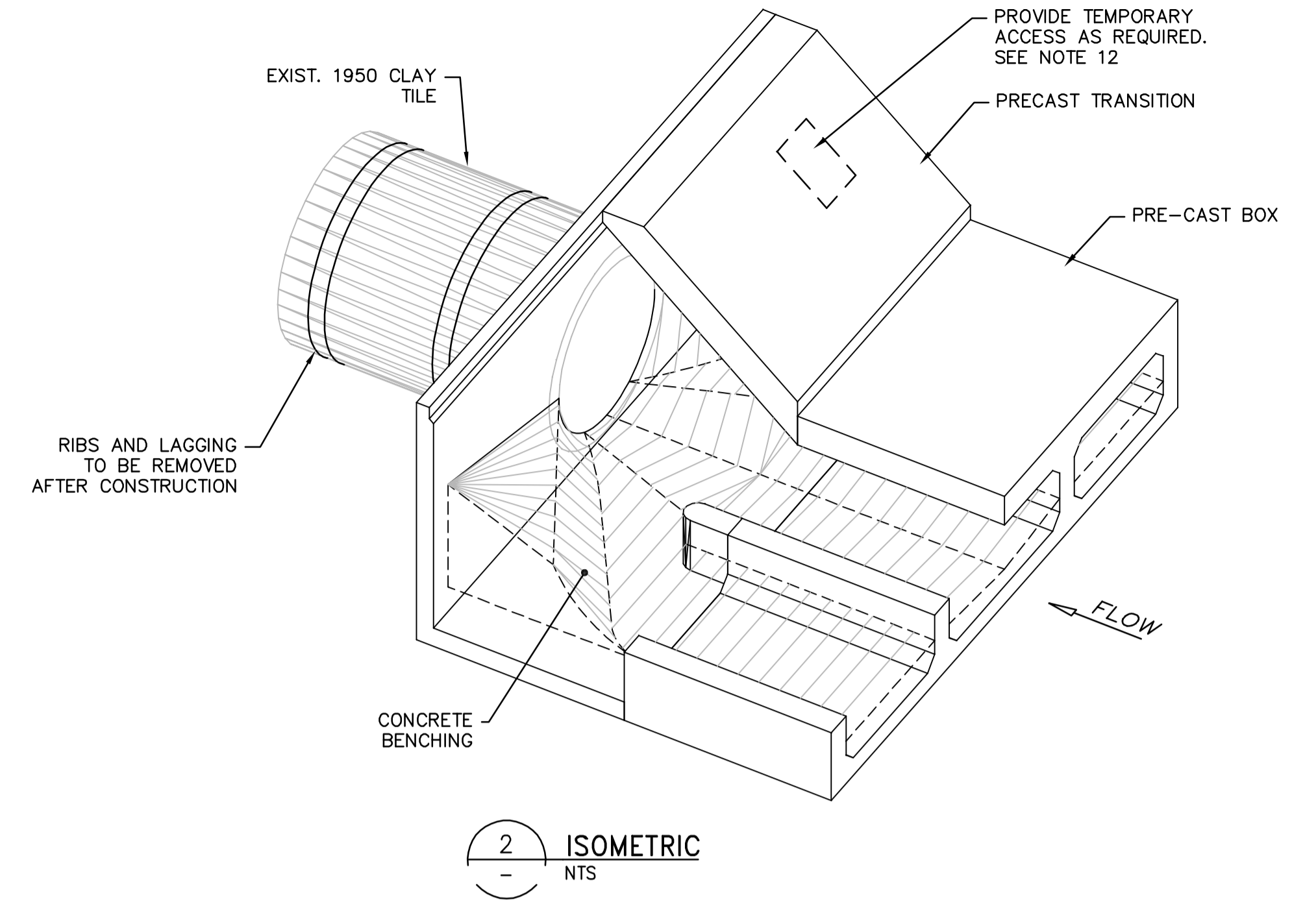
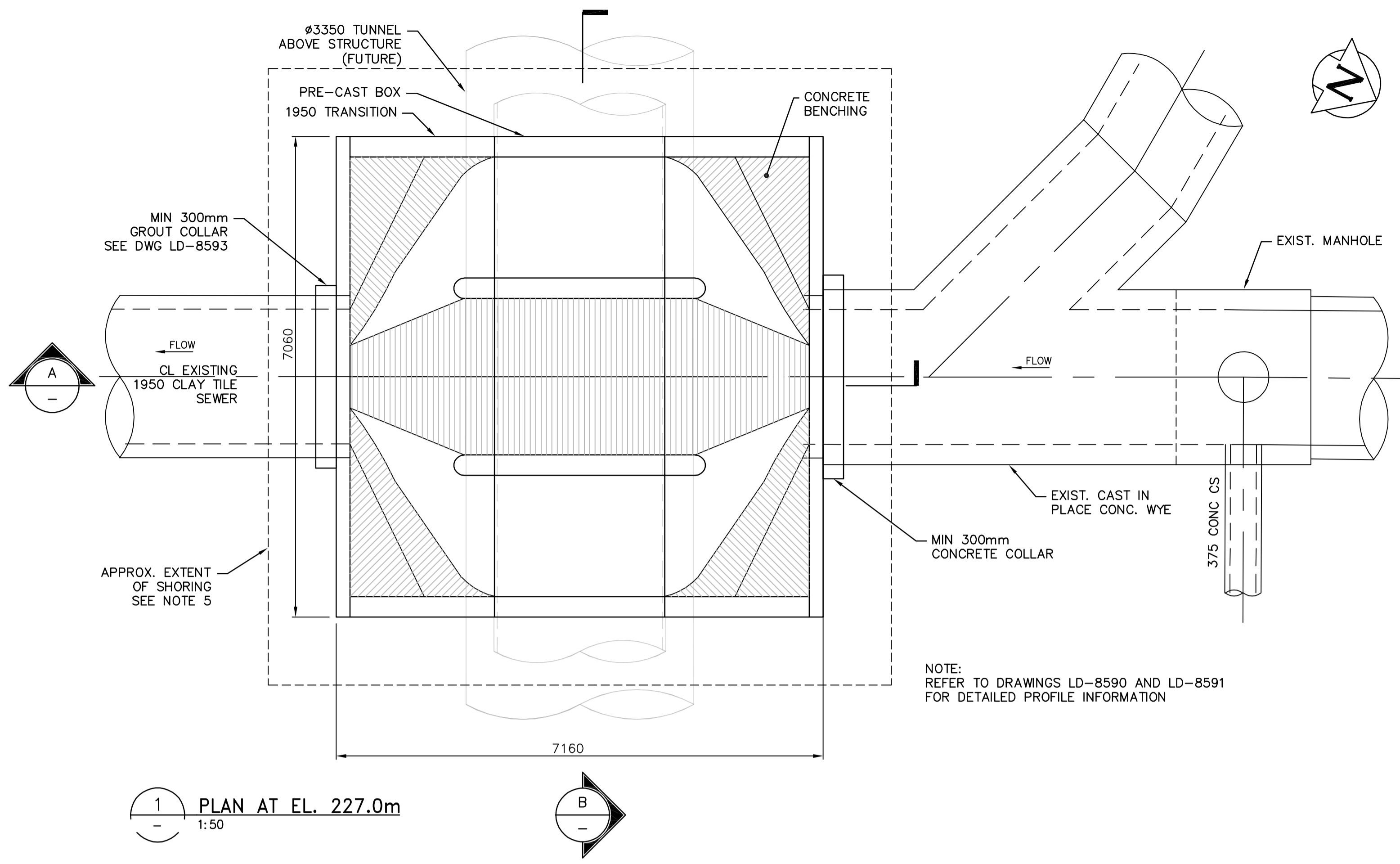
COCKBURN & CALROSSIE SEWER RELIEF WORKS CONTRACT 11

WILTON STREET TAYLOR AVENUE TO GRANT AVENUE TAYLOR AVENUE TO STA 2+20

SHEET 3 OF 22
 CITY DRAWING NUMBER: LD-8596

ENGINEERS GEOSCIENTISTS MANITOBA
 Certificate of Authorization
 KGS Group
 No. 245

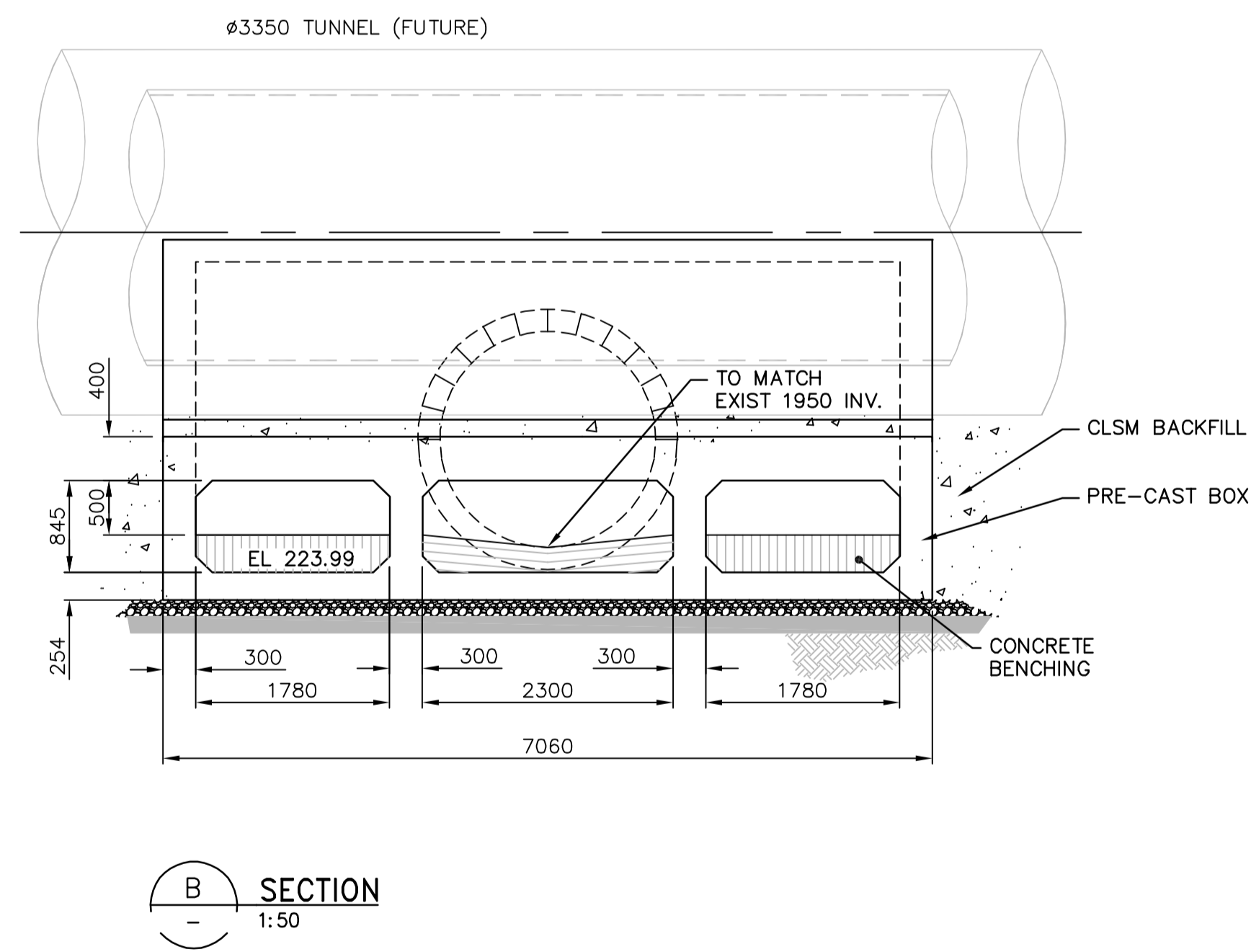
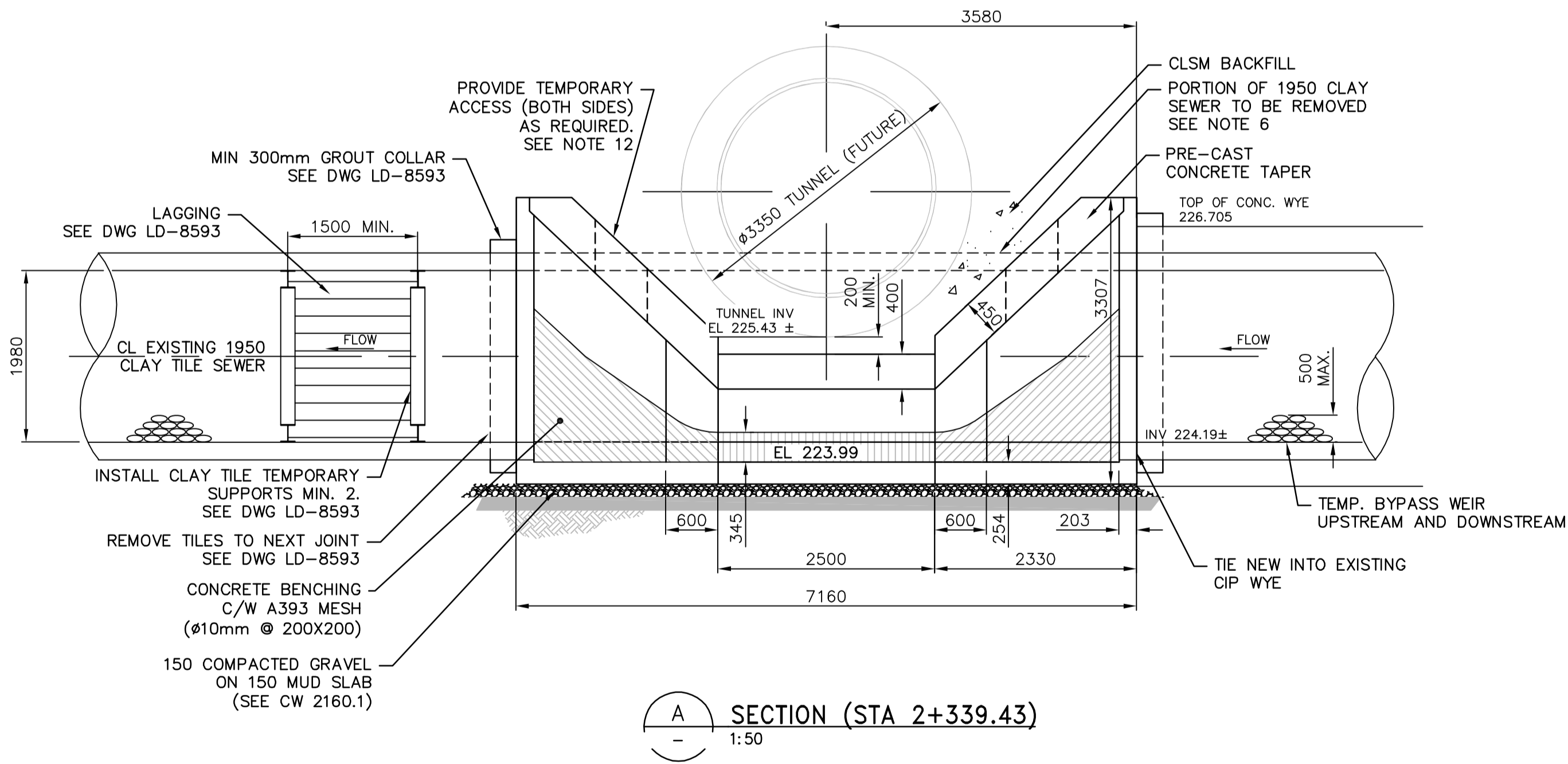
Harrow Crossing – Contract 5A (Bid Opportunity 725-2018)



NOTE:
REFER TO DRAWINGS LD-8590 AND LD-8591
FOR DETAILED PROFILE INFORMATION

CONSTRUCTION NOTES:

1. SEWER AND WATER SERVICES SHOWN ON DRAWING ARE APPROXIMATE ONLY.
2. LOCATION OF ALL SEWER AND WATER LINES TO BE CONFIRMED IN FIELD.
3. DRY WEATHER CONSTRUCTION ONLY.
4. TRAFFIC MANAGEMENT PLAN TO BE IMPLEMENTED AS PER SPECIFICATIONS.
5. CONTRACTOR TO DESIGN TEMPORARY SHORING WORKS. SEE TRAFFIC RESTRICTIONS WITHIN THE DETAIL SPECIFICATIONS FOR CONSTRAINTS.
6. CONTRACTOR TO TEMPORARILY SUPPORT CLAY TILES DURING INSTALLATION.
7. CONTRACTOR TO PROVIDE TEMPORARY BYPASS PUMPING.
8. PRE-CAST CONCRETE STRUCTURES IN ACCORDANCE WITH B7.
9. PRE-CAST UNITS TO BE SEALED WATER TIGHT IN ACCORDANCE WITH PRE-CAST MANUFACTURER'S RECOMMENDATIONS.
10. CONTRACTOR TO ENSURE STRUCTURE HAS BEEN DESIGNED FOR TEMPORARY LOADS FROM TBM AND LONG TERM PERMANENT LOADINGS. CONTRACTOR TO PROVIDE SHOP DRAWINGS SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN MANITOBA.
11. MINIMUM FINAL CROSS SECTION FLOW AREA OF 3.0m² WITH FINAL BENCHING IN PLACE.
12. DOWNSTREAM MANHOLE LOCATED 72m SOUTH OF INTERSECTION.



RECOMMENDED CONSTRUCTION SEQUENCE

1. INSTALL TEMPORARY BYPASS PUMPING FOR SANITARY FLOWS.
2. SUPPORT EXISTING TILE SEWER AT EXTENT OF EXCAVATION.
3. EXPOSE EXISTING CLAY TILE SEWER AND CONFIRM LOCATION AND DIMENSIONS.
4. DEWATER EXCAVATION TO A MIN. 300mm BELOW SUBGRADE.
5. EXCAVATE AND REMOVE EXISTING TILE SEWER WITHIN WORKING LIMITS.
6. PREPARE SUBGRADE.
7. INSTALL PRECAST UNITS AND CAST COLLAR.
8. INSTALL BENCHING AND GROUT GAPS WITHIN THE TILES AT THE UP AND DOWNSTREAM LOCATIONS.
9. REMOVE TEMPORARY BYPASS PUMPS.
10. BACKFILL WITH CLSM TO UNDERSIDE OF ROAD SUBGRADE.
11. REINSTATE TAYLOR AVENUE.

LOADING SCENARIOS

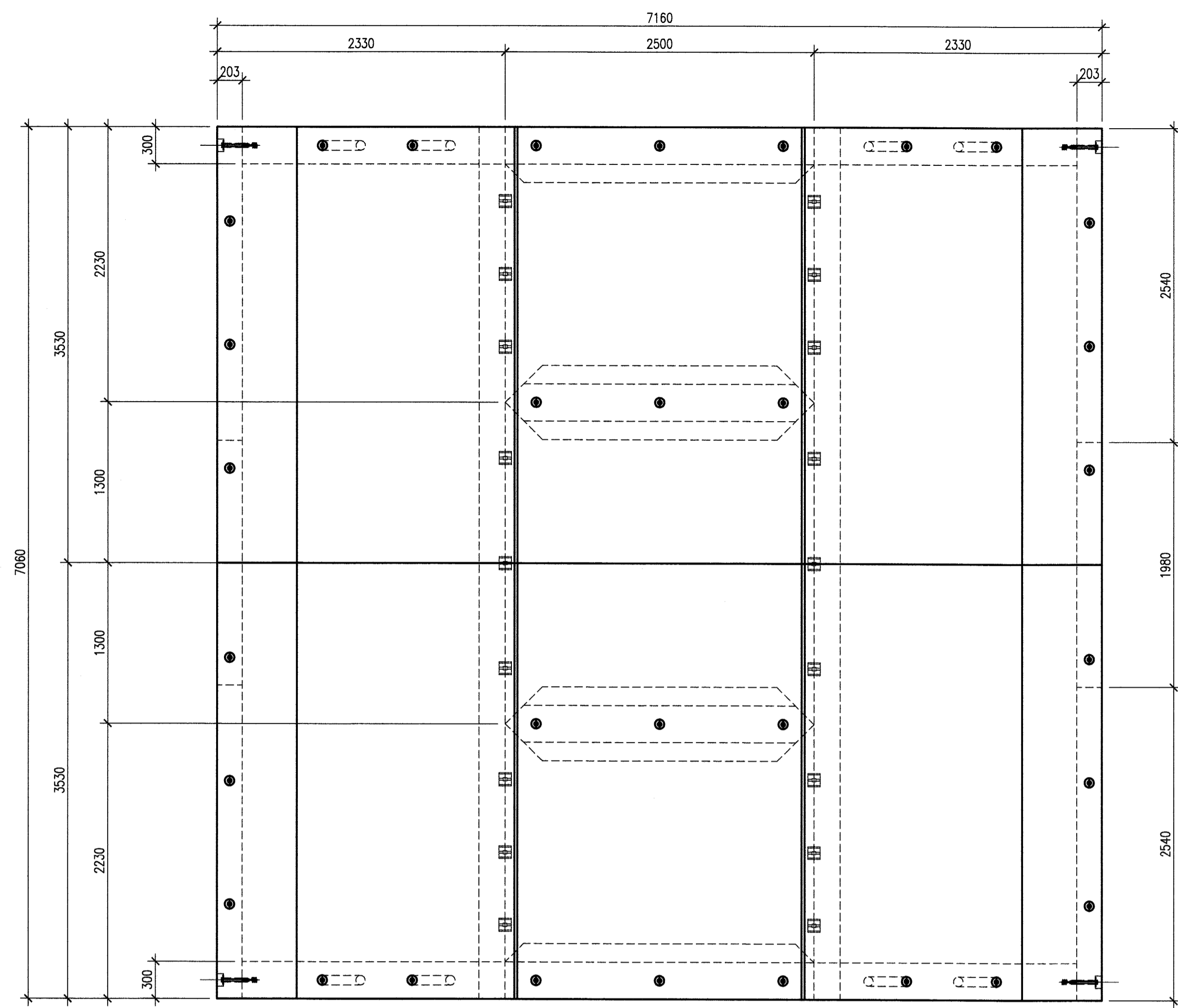
1. DEAD LOADS: CLSM BACKFILL. LIVE LOADS: TRAFFIC.
2. DEAD LOADS: CLSM BACKFILL. LIVE LOADS: TBM* AND TRAFFIC.
3. DEAD LOADS: CLSM BACKFILL + PIPE WEIGHT - PIPE VOID. LIVE LOADS: TRAFFIC.
4. DEAD LOADS: CLSM BACKFILL + PIPE WEIGHT + FULL PIPE WATER. LIVE LOADS: TRAFFIC.

ALL SCENARIOS SUBJECT TO UPLIFT AND SANITARY SEWER FLOWS

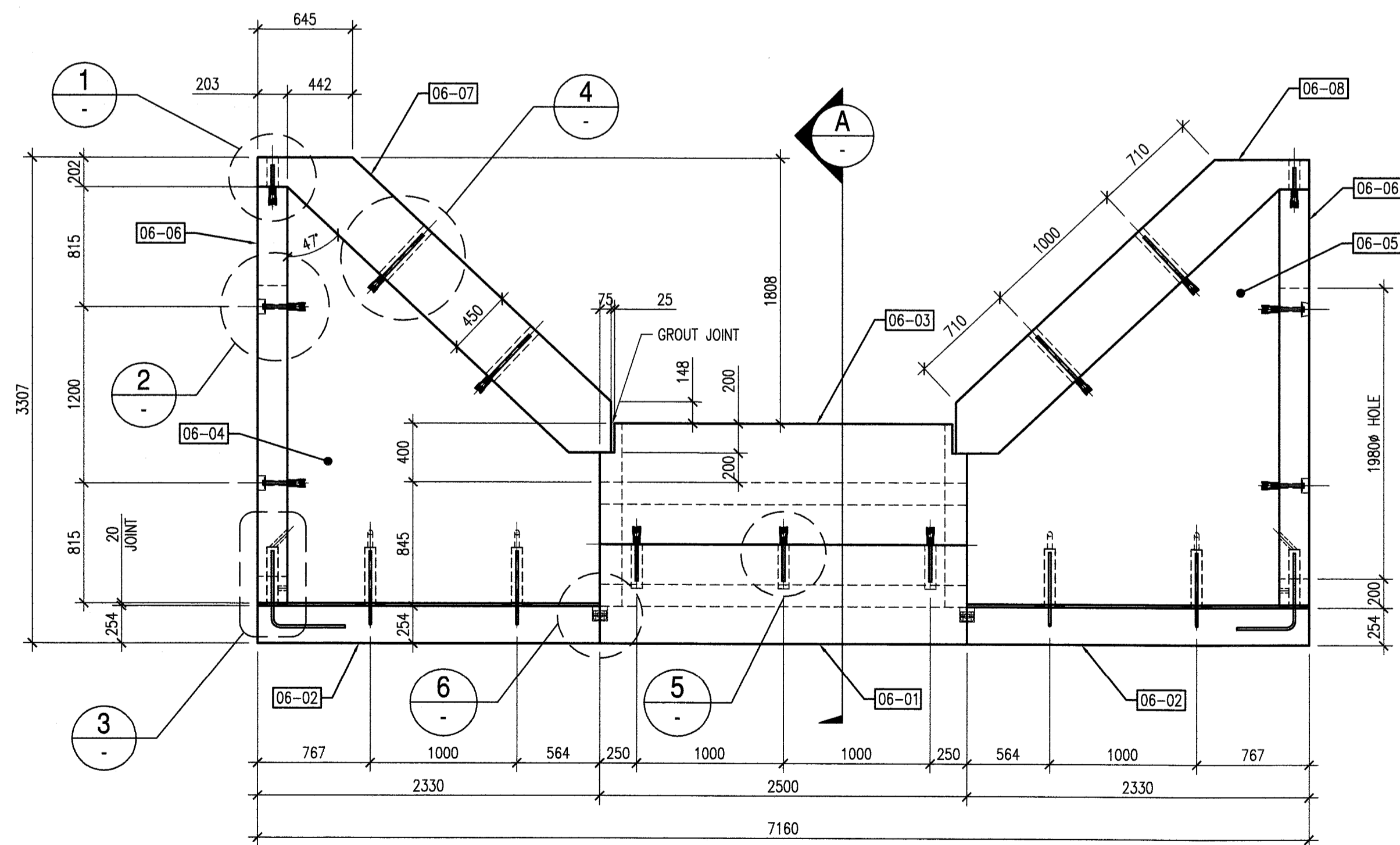
*TBM ASSUMED LOAD 50000 Kg, REFER TO E1.4 FOR ADDITIONAL INFORMATION.



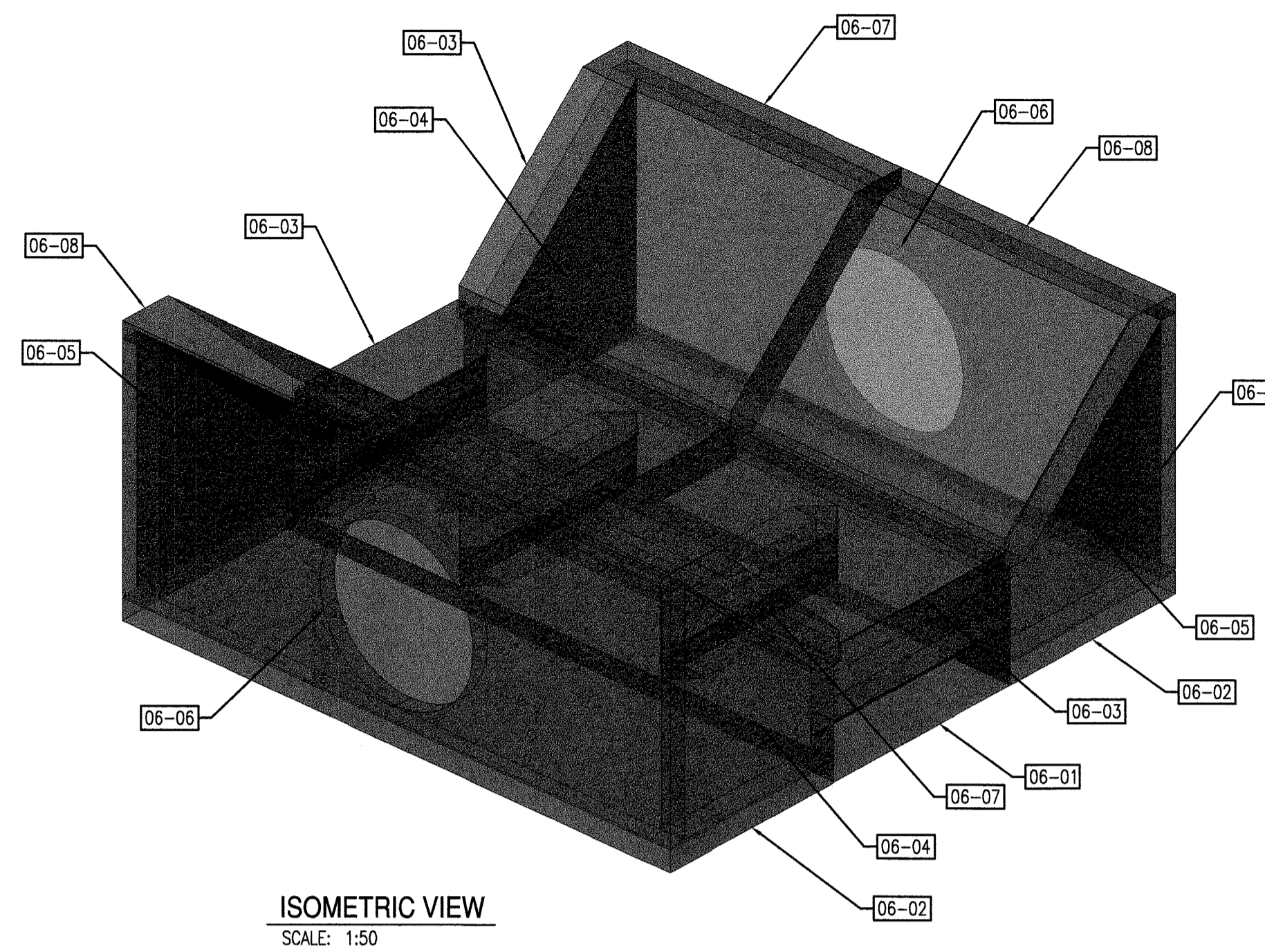
B.M. ELEV.							ENGINEER'S SEAL		THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT	PROJECT TITLE COCKBURN AND CALROSSIE COMBINED SEWER RELIEF WORKS - CONTRACT 5A	SHEET OF 4 OF 5	
							ORIGINAL SIGNED BY M.R. DRAPER DATED 8/3/2018					COMPUTER FILE NAME S-505.dwg
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				DRAWN BY JBC	APPROVED BY RH							
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				DATE	DATE							
1 RE-ISSUED FOR TENDER 08/2018 JBC												
0 ISSUED FOR TENDER 08/2018 JBC												
NO. REVISIONS												



PLAN VIEW
SCALE: 1:30



ELEVATION VIEW
SCALE: 1:30

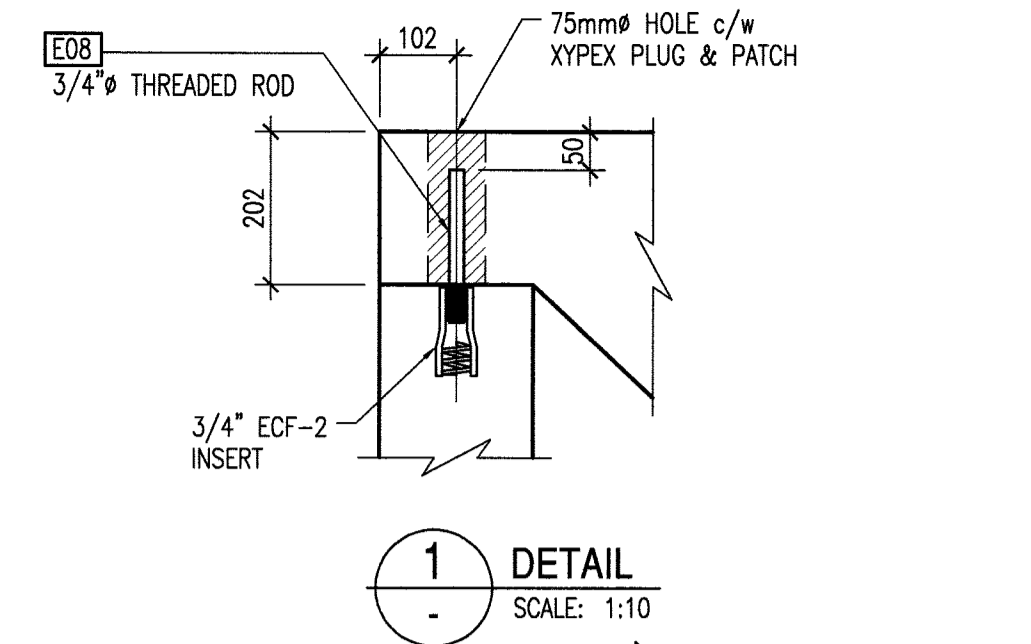


ISOMETRIC VIEW
SCALE: 1:50

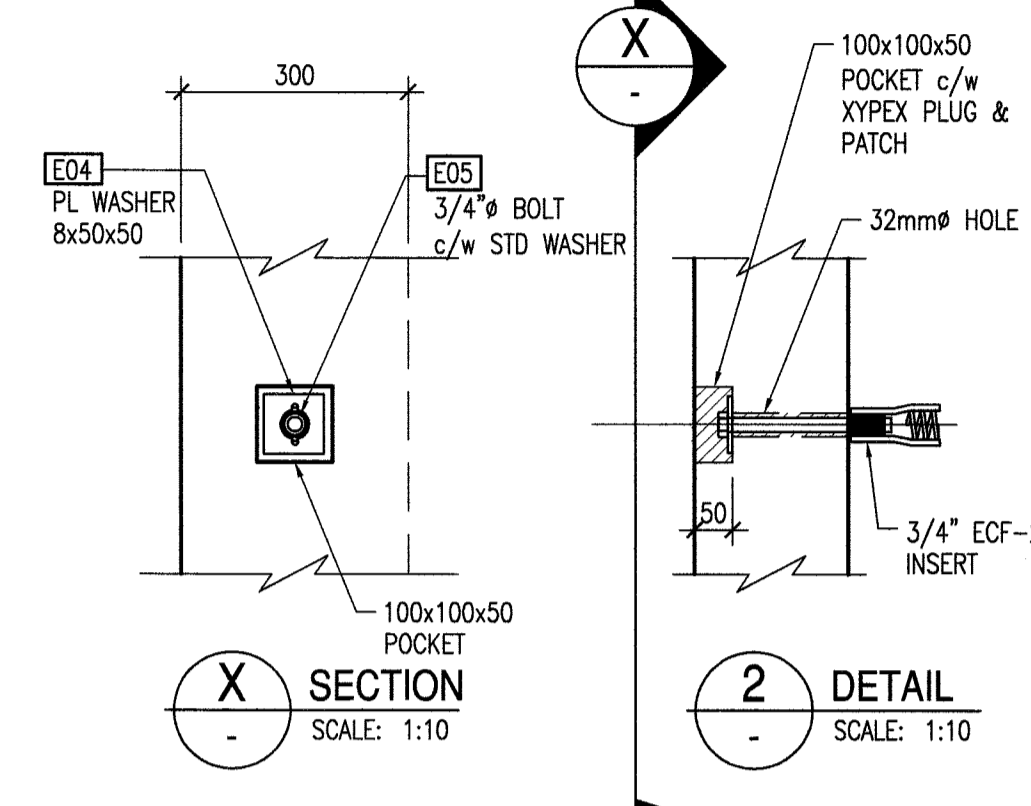
LOADING SCENARIOS:

1. DEAD LOADS: CLSM BACKFILL; LIVE LOADS: TRAFFIC.
2. DEAD LOADS: CLSM BACKFILL; LIVE LOADS: TBM* AND TRAFFIC.
3. DEAD LOADS: CLSM BACKFILL + PIPE WEIGHT - PIPE VOID.
LIVE LOADS: TRAFFIC
4. DEAD LOADS: CLSM BACKFILL + PIPE WEIGHT + FULL PIPE WATER.
LIVE LOADS: TRAFFIC
5. DESIGN VEHICULAR LIVE LOADS: MODIFIED AASHTO HSS-25
AASHTO LRFD "HL-93"

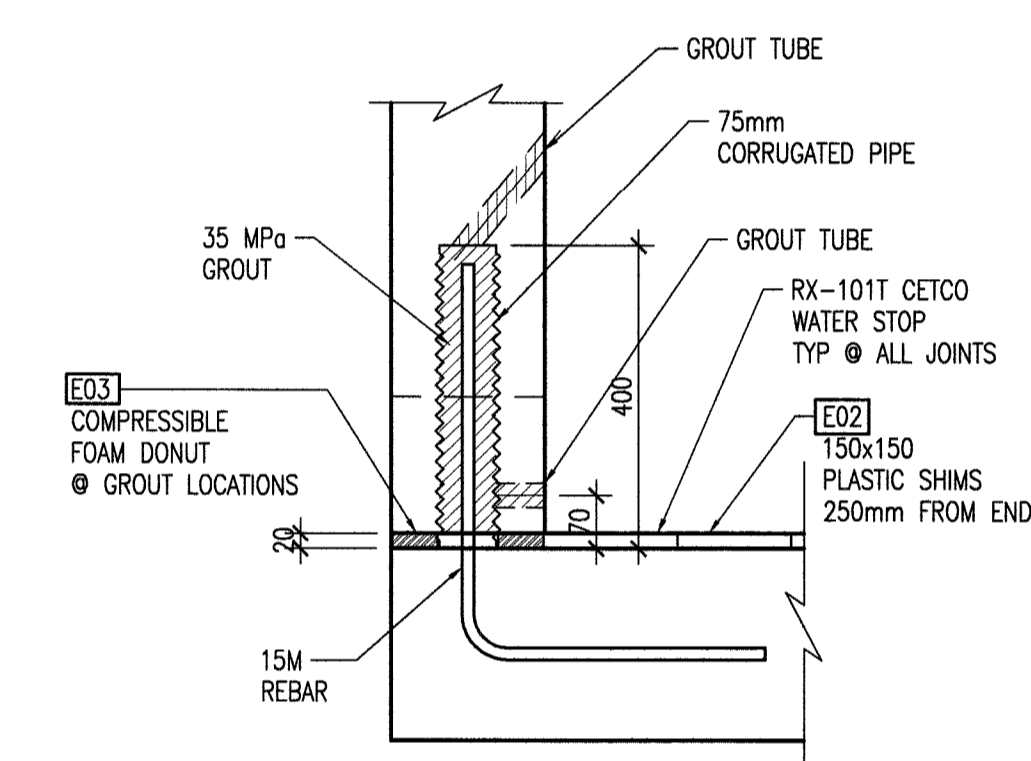
ALL SCENARIOS SUBJECT TO UPLIFT AND SANITARY SEWER FLOWS
*TBM ASSUMED LOAD 50000 Kg, REFER TO 11.4 FOR ADDITIONAL INFORMATION.



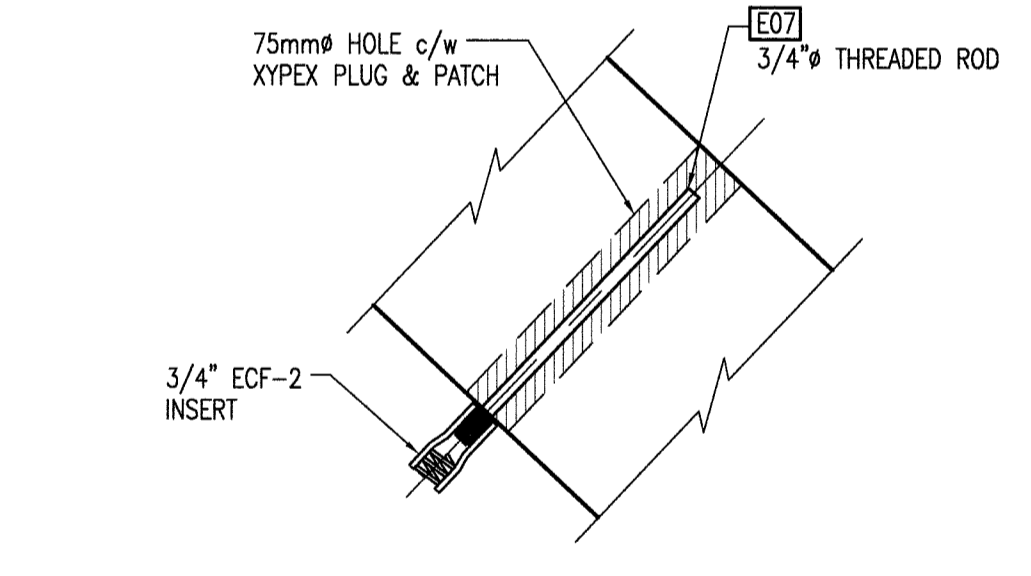
1 DETAIL
SCALE: 1:10



SECTION SCALE: 1:10
2 DETAIL SCALE: 1:10

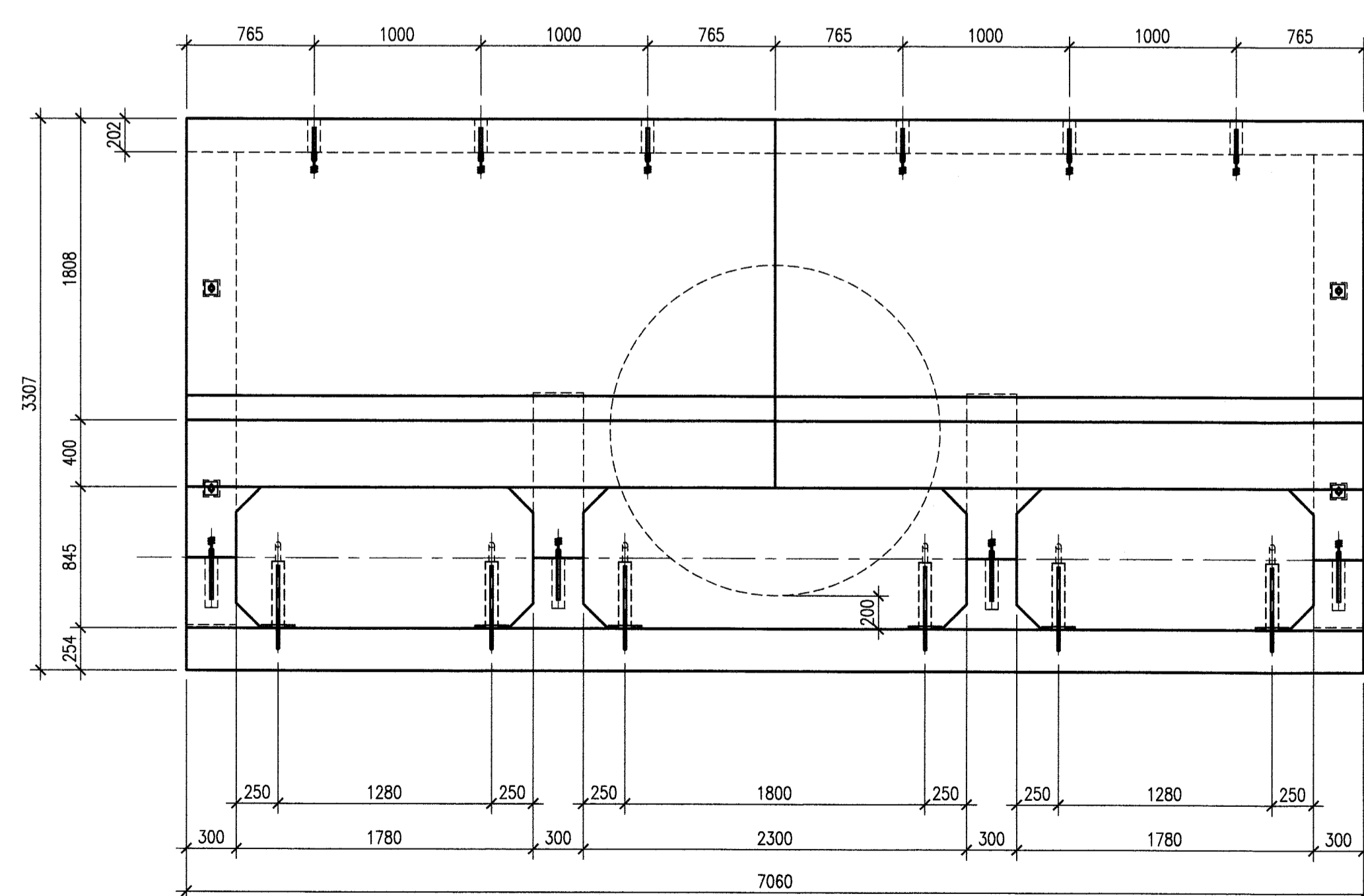


3 DETAIL
SCALE: 1:10

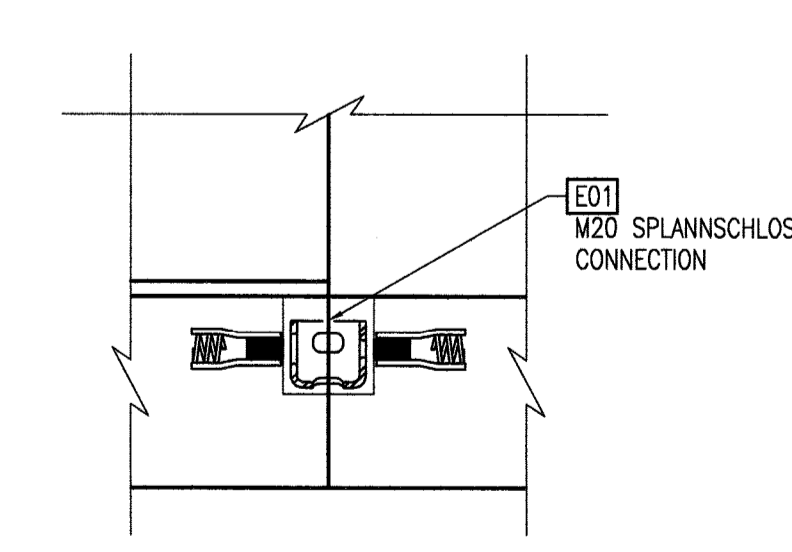


4 DETAIL
SCALE: 1:10

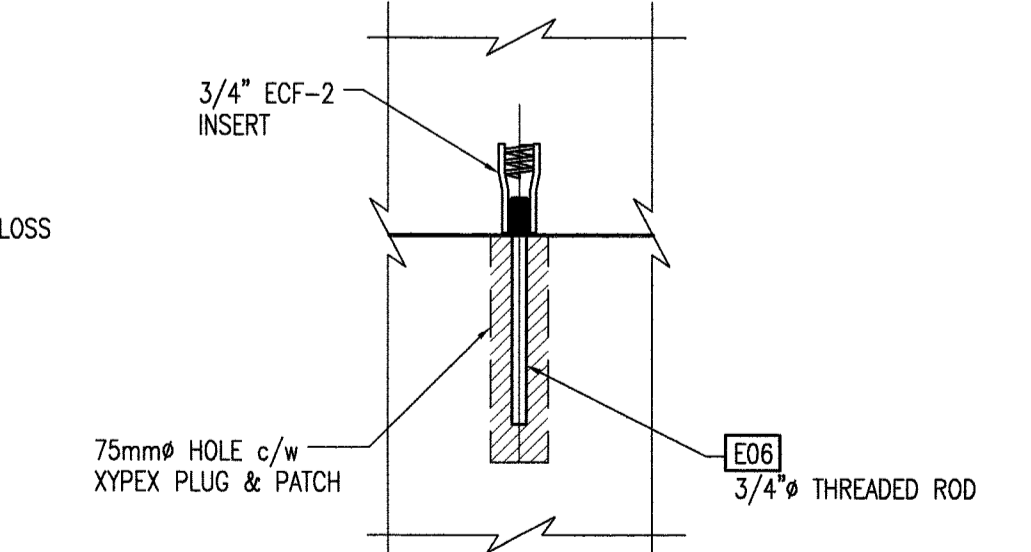
FIELD NOTE:
ON SITE CONTRACTOR RESPONSIBLE FOR FINAL WATER TIGHTNESS
WHERE REQUIRED LIFTERS TO BE CUT AND COLD GALVANIZED AFTER INSTALLATION



A SECTION
SCALE: 1:30

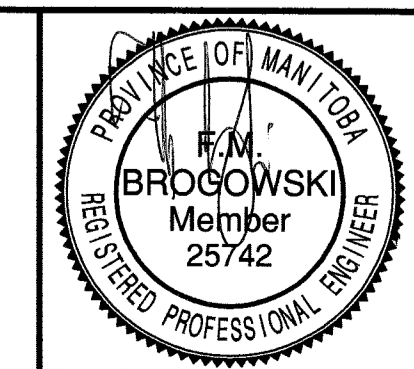


6 DETAIL
SCALE: 1:10



5 DETAIL
SCALE: 1:10

THIS PROFESSIONAL SEAL AND SIGNATURE IS RESTRICTED TO APPLY ONLY TO THE STRUCTURAL DESIGN OF THE INDIVIDUAL PRECAST CONCRETE COMPONENTS AND CONNECTIONS SUPPLIED BY ARMTEC. THE DESIGN SHALL REMAIN THE PROPERTY OF ARMTEC AND ANY USE OF THIS DESIGN WITHOUT THE WRITTEN CONSENT OF ARMTEC IS EXPRESSLY FORBIDDEN. ARMTEC FURTHER DOES NOT WARRANT IN ANY WAY THE DESIGN OF THE TOTAL STRUCTURAL SYSTEM AND FOUNDATION.



APECM
Certificate of Authorization
Armtec LP
No. 6166 April 30, 2018

NEW ISSUE
2018-11-28
DESTROY PREVIOUS REVISION <<
ARMTEC

Released for
CONSTRUCTION
2018-11-27
ARMTEC

REV.	DESCRIPTION	BY	DATE
1	NOTES REVISED	GP	2018-11-28
0	RELEASED FOR CONSTRUCTION	GP	2018-11-27
B	RE-ISSUED FOR APPROVAL NOTES ADDED	GP	2018-11-08
A	RELEASED FOR APPROVAL	GP	2018-11-06
REV.	DESCRIPTION	BY	DATE

SEWER MANIFOLD
HARROW ST & TAYLOR AVE
COCKBURN AND CALROSSIE
COMBINED SEWER RELIEF WORKS
CONTRACT 5A



Drawn by: GP
Checked by: MAH
Date: 710000710-00-01

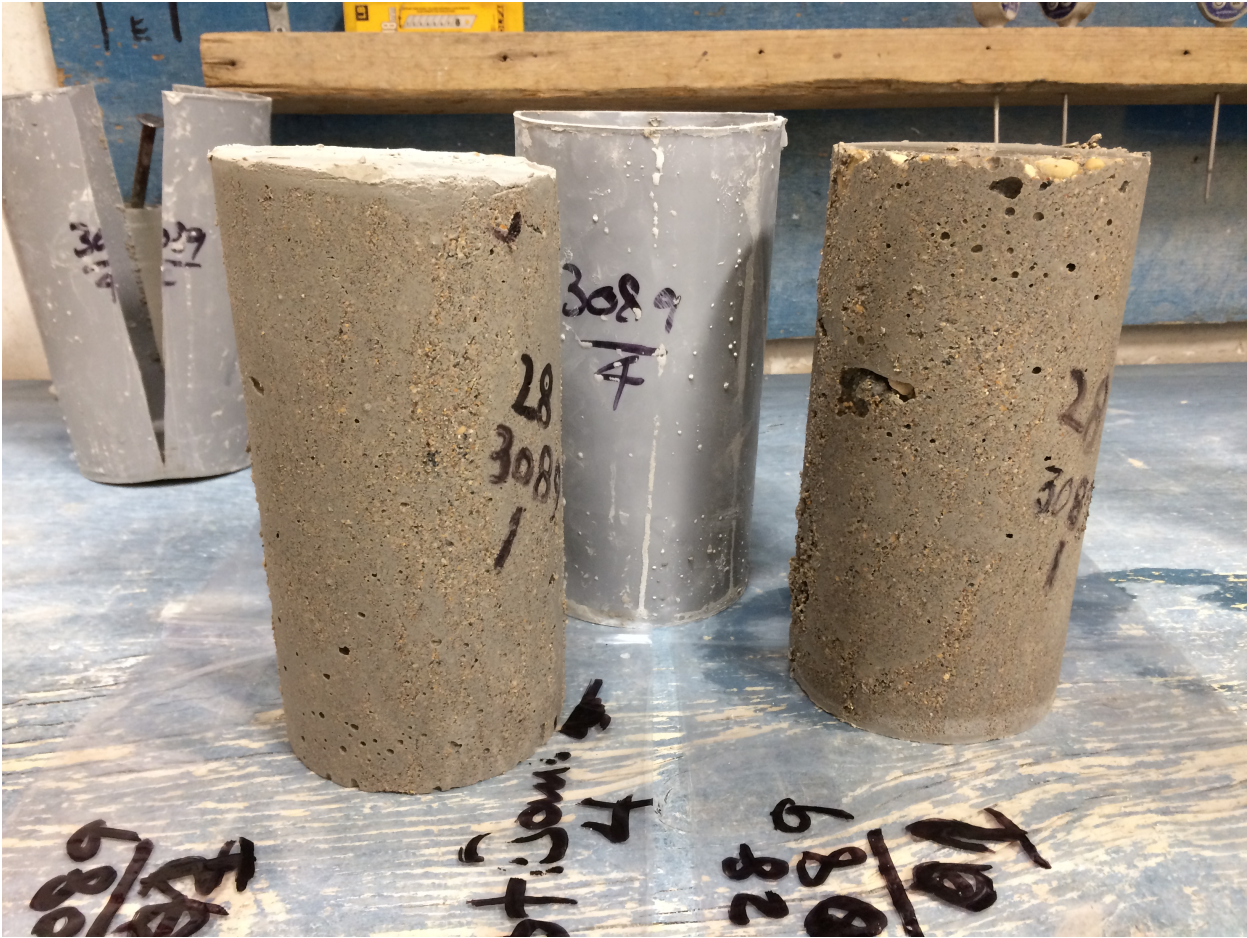
Nov 28, 2018

Break Results for the CLSM Backfill (Consistent with the tunnelling path)

The excavation at Taylor Ave and Harrow St was filled with CLSM with a minimum design strength of 0.5MPa at 28 days. The table below shows the depth of each sample taken and the early break strength. The 28 day results will be provided to the successful bidder. Additional cylinders were cast that will be broken prior to construction reaching the area.

CLSM Sample Elevation	Compressive Strength
225.3	0.43MPa (11 Days)
228.2	0.25MPa (10 Days)
228.9	0.24MPa (10 Days)

Set 2



Set 3



Set 4





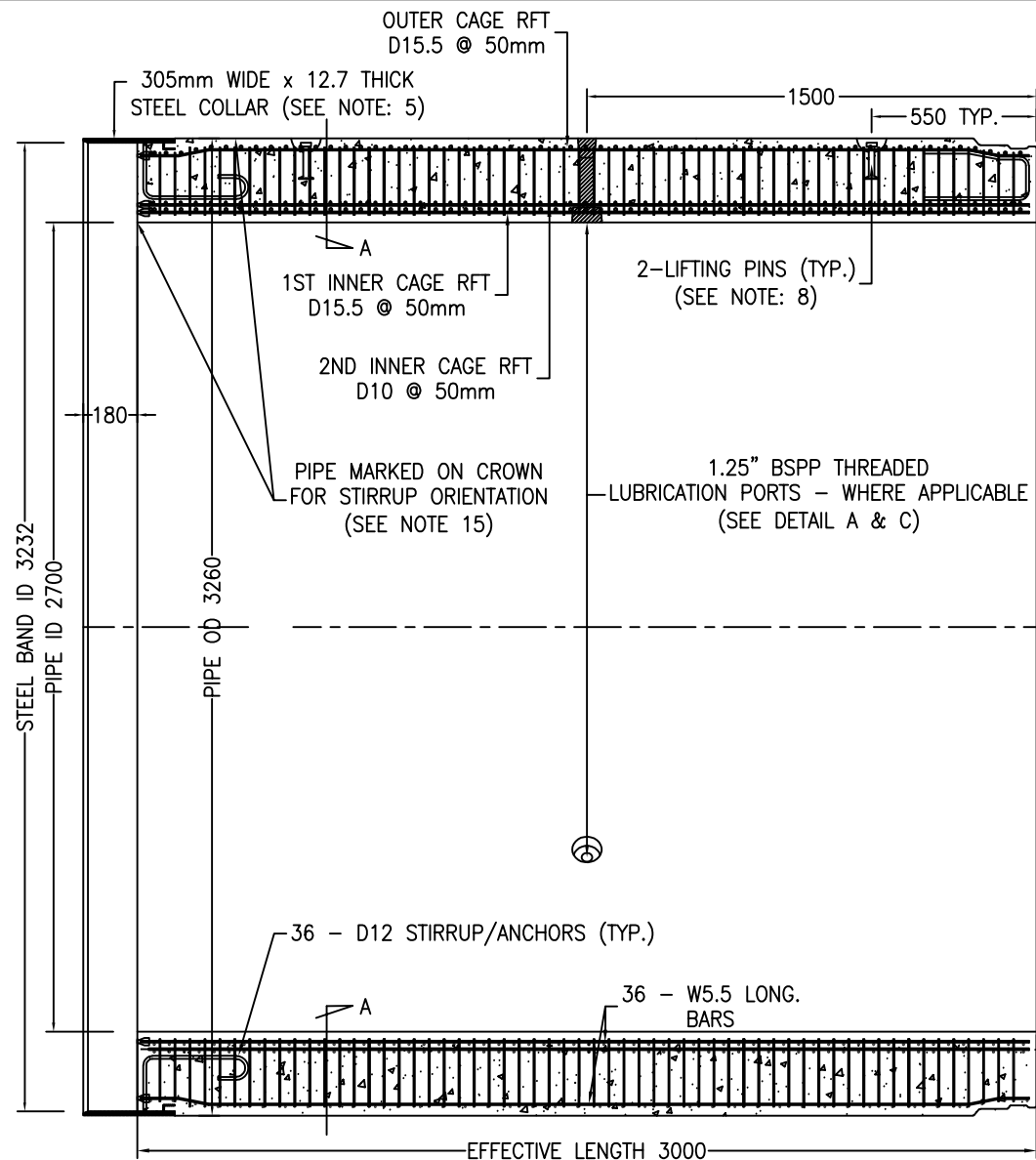
01/05/2019 07:34



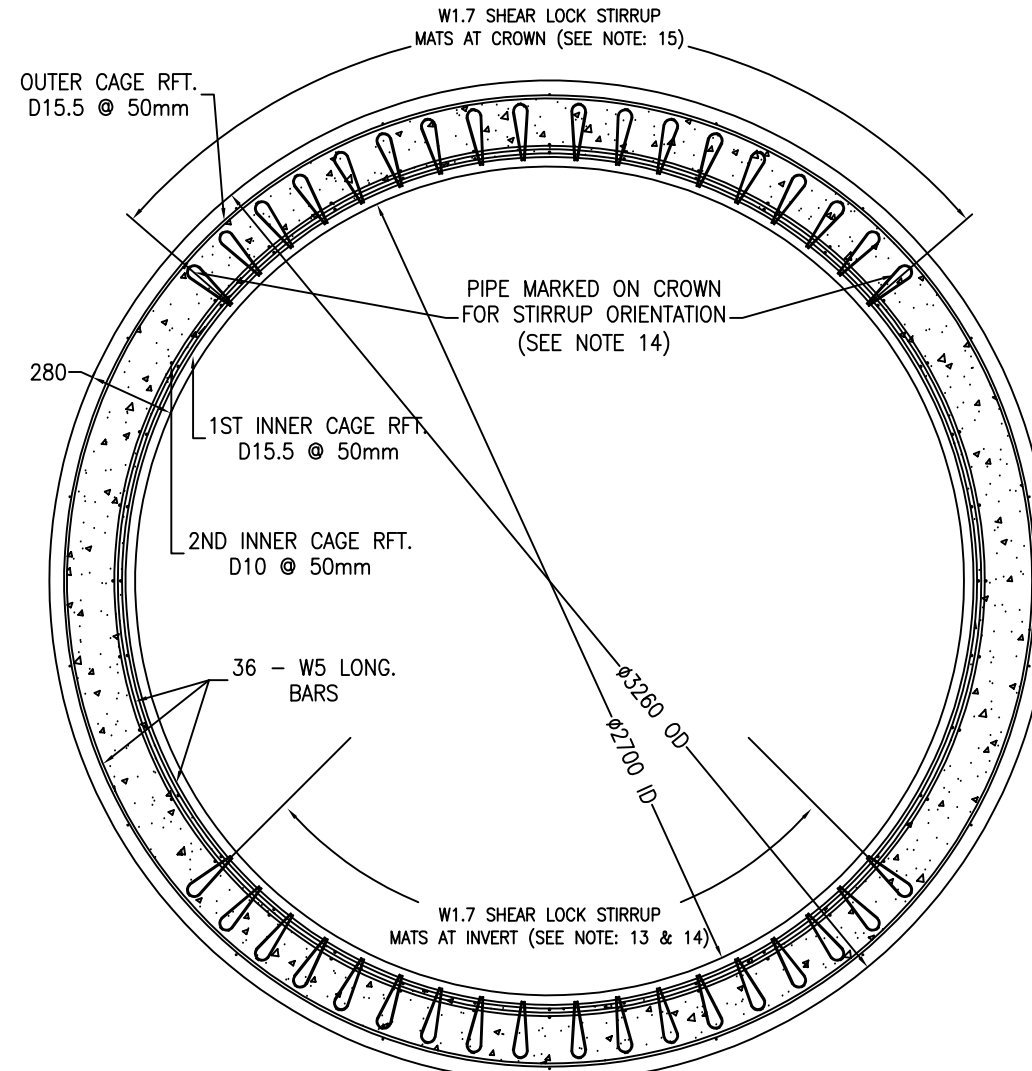
01/05/2019 07:54



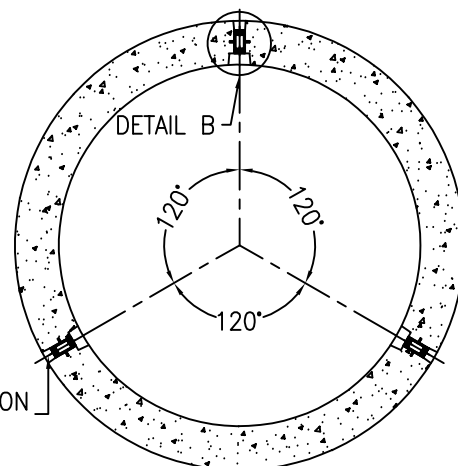
2700 mm Trunk – Contract 4 (Bid Opportunity 748-2016)



REFER TO DRAWING # 2700_C_S.02 FOR JOINT DETAIL

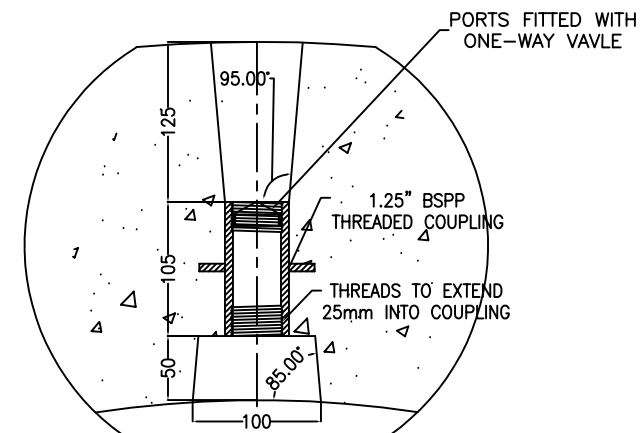


SECTION A-A

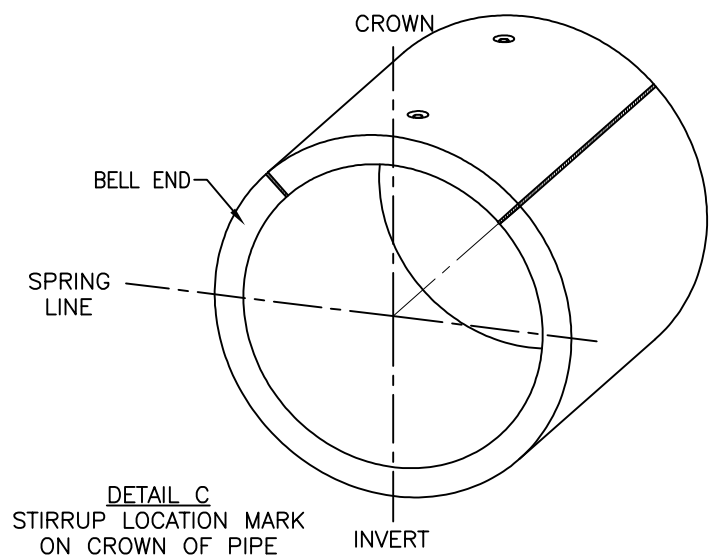


DETAIL A LUBRICATION PORT LOCATION (WHERE APPLICABLE)

QTY	MARK #	DESCRIPTION:
125	MT2700X300CS	2700 ID x 3260 OD x 3000 LG CLASS V MT STD PIPE
45	MT2700X300CP	2700 ID x 3260 OD x 3000 LG CLASS V MT STD PIPE w/ PORTS



DETAIL B



DETAIL C STIRRUP LOCATION MARK ON CROWN OF PIPE

- NOTES:**
- PIPE IS DESIGNED AND MANUFACTURED IN ACCORDANCE WITH ASTM C76 CLASS V; PIPE JOINT COMPLIES TO ASTM C443
 - 28 DAY DESIGN CONCRETE COMPRESSIVE STRENGTH OF 48.3 MPA (PIPE WILL NOT BE SHIPPED BEFORE ATTAINING 100% OF COMPRESSIVE STRENGTH)
 - CONCRETE COVER OVER REINFORCING STEEL SHALL BE MINIMUM 25mm FROM OUTSIDE AND MINIMUM 30mm FROM INSIDE
 - MAIN REINFORCEMENT OF HELICAL WIRE AND LONG. BARS ARE FROM DEFORMED WIRES TO ASTM A1064 WITH YIELD STRENGTH OF 500 MPA
 - STEEL BELL COLLAR FROM 1/2" THICK STEEL PLATE TO ASTM A36 WITH MINIMUM 10 MILS DFT OF AMERCOAT 2 EPOXY COATING ON SURFACE
 - RUBBER GASKETS ARE GRS & BLOCK SEAL
 - JOINT DESIGNED TO MAXIMUM EXTERNAL HYDRO STATIC PRESSURE OF 30psi (207kPa)
 - LIFTING PINS ARE DS P.52 SWIFT LIFTS -2 PER PIPE- 20T x 8" LENGTH
 - APPROXIMATE WEIGHT OF STANDARD PIPE IS 20,000 KG
 - ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED
 - CONCRETE MEETS CSA A3001 DESIGNATION OF TYPE Hsb FOR CEMENTING MATERIALS
 - RECOMMENDED MAXIMUM JACKING FORCE = 4,000 METRIC TONS WITH FULL CONCENTRIC CONTACT/NO DEFLECTION; MAXIMUM JACKING FORCE = 2,500 METRIC TONS WITH FULL ECCENTRIC CONTACT/MAX 0.21' DEFLECTION
 - SHEAR REINFORCEMENT AND STIRRUP MATS ARE FROM COLD DRAWN WIRES TO ASTM A1064 WITH MINIMUM YIELD STRENGTH OF 400 MPA
 - STIRRUP MATS -8 PER PIPE- HAVE 8 LOOPS SPACED @ 6" C.C. ALONG 42" WIDTH, 2" SPACING ALONG 56" LENGTH, LOOPS ARE W1.7 WIRES WITH 7.25" AMPLITUDE
 - SHEAR STIRRUP LOCATION WILL BE MARKED ON THE PIPE EXTERIOR; AS SHOWN ON DETAIL C MARKINGS MADE LONGITUDINALLY AND AT BOTH ENDS, PIPE MUST BE ORIENTATED IN THE FIELD WITH THE DESIGNED INVERT AND CROWN IN PROPER POSITION, AND CENTERED ON THE SHEAR STIRRUPS AT THE TOP AND BOTTOM QUADRANT; AS SHOWN IN SECTION A-A

REV:	DATE:	RECORD OF CHANGE:	BY:	CHECKED BY:
1	MAR 24/17	ADDED NOTE FOR JOINT SPEC	AR	BR

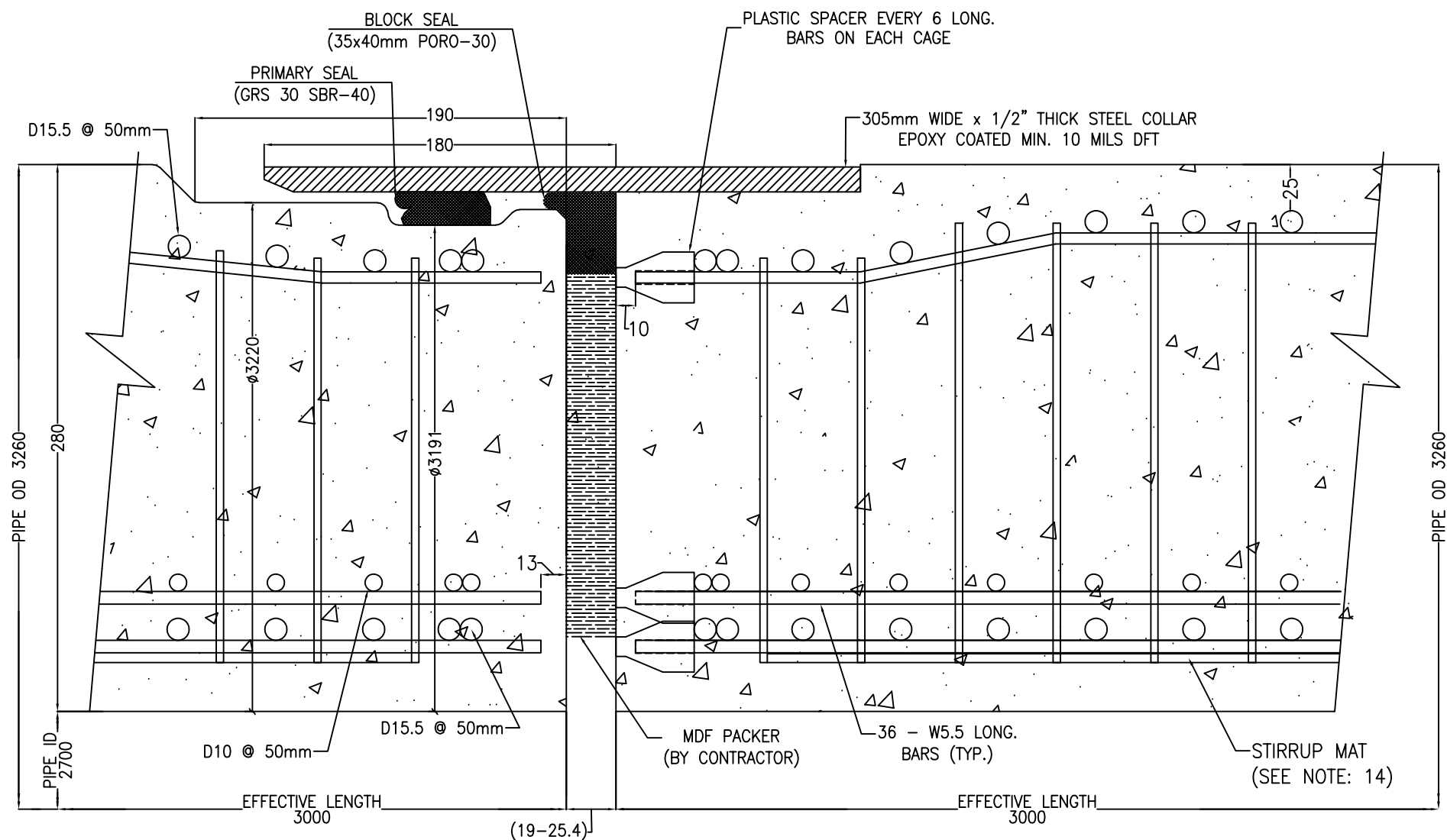
DECAST

T 705.734.2892 8807 County Road 56
 TF 800.461.5632 Utopia, ON LOM 1T0
 F 705.734.2920 decastltd.com

CLIENT: WARD & BURKE / City of Winnipeg - Water and Waste Department			
PROJECT NAME: 2700 ID x 3260 OD x 3000 LG MT Cockburn and Calrossie Combined Sewer Relief Works - Contract 4			
STRUCTURE MT2700X300CS/P	DRAWN BY: AR	CHECKED BY: BR	ENG BY: --
DECAST LTD PROJECT NO.: 5001 2236	DATE: FEB 23 / 17	SCALE: NTS	DWG No.: 2700_C_S.01

NOTICE: THIS DRAWING CONTAINS PROPRIETARY SUBJECT MATTER This drawing contains subject matter proprietary to DECAST LTD. and may be covered by one or more intellectual property rights including trade secret and confidential information, copyright, patent, design and other intellectual property rights of DECAST LTD. Upon receipt of this drawing the recipient irrevocably agrees that all contents of the drawing together with the intellectual property rights thereto is and remain the property of DECAST LTD. No right to reproduce, disclose, disseminate or otherwise deal with the subject matter of the drawing is given nor is any license right or other entitlement given with respect to the intellectual property rights in the subject matter without the express prior written permission of DECAST LTD.

MARK #	DESCRIPTION:
MT2700X300CS/P	STANDARD 2700x3260 MT PIPE JOINT RFT



- NOTES:**
- PIPE IS DESIGNED AND MANUFACTURED IN ACCORDANCE WITH ASTM C76 CLASS V; PIPE JOINT COMPLIES TO ASTM C443
 - 28 DAY DESIGN CONCRETE COMPRESSIVE STRENGTH OF 48.3 MPA (PIPE WILL NOT BE SHIPPED BEFORE ATTAINING 100% OF COMPRESSIVE STRENGTH)
 - CONCRETE COVER OVER REINFORCING STEEL SHALL BE MINIMUM 25mm FROM OUTSIDE AND MINIMUM 30mm FROM INSIDE
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REV:	DATE:	RECORD OF CHANGE:	BY:	CHECKED BY:
1	MAR 24/17	ADDED NOTE FOR JOINT SPEC	AR	BR

DECAST

T 705.734.2892 8807 County Road 56
 TF 800.461.5632 Utopia, ON L0M 1T0
 F 705.734.2920 decastltd.com

CLIENT: WARD & BURKE / City of Winnipeg - Water and Waste Department			
PROJECT NAME: 2700 ID x 3260 OD x 3000 LG CLASS IV MT STD PIPE Cockburn and Calrossie Combined Sewer Relief Works - Contract 4			
STRUCTURE MT2700X300CS/P	DRAWN BY: AR	CHECKED BY: BR	ENG BY: --
DECAST LTD PROJECT NO.: 5001 2236	DATE: FEB 24 / 17	SCALE: NTS	DWG No.: 2700_C_S.02

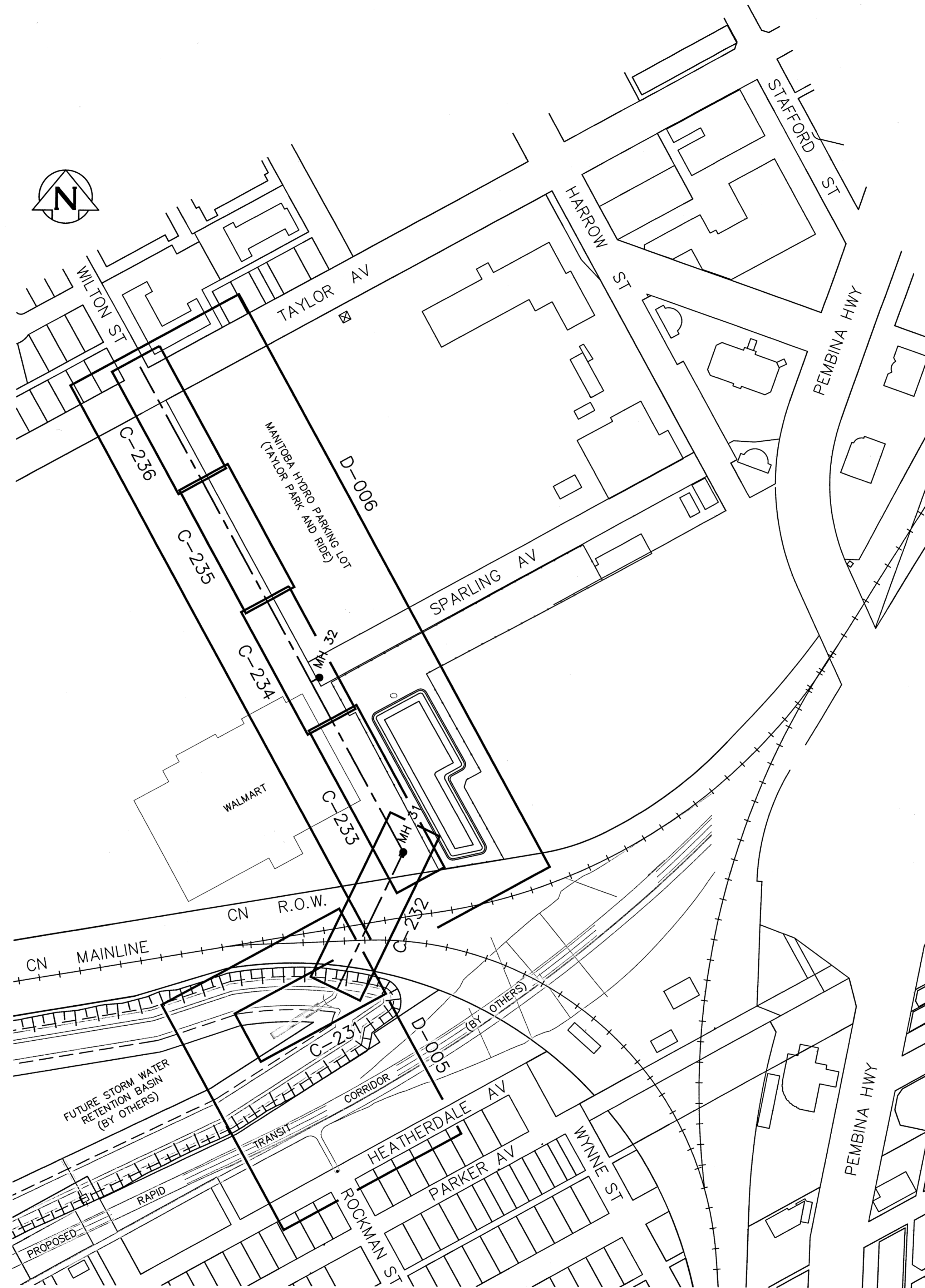
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2017/11/07

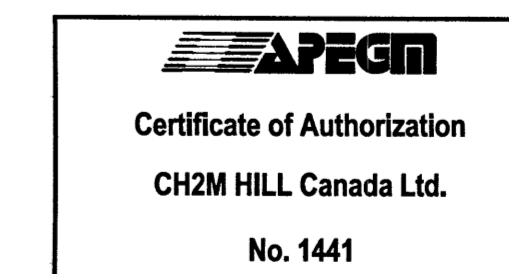
DRAWING INDEX

SHEET NUMBER	CONSULTANT DRAWING NUMBER	CITY DRAWING NUMBER	DRAWING TITLE
1	D-003	LD-7889	COVER
2	D-004	LD-7890	GENERAL PLAN AND MANHOLE SCHEDULE
3	D-005	LD-7957	GENERAL SOUTH CONSTRUCTION ACCESS
4	D-006	LD-7958	GENERAL NORTH CONSTRUCTION ACCESS
5	C-231	LD-7891	FROM STA 1+000 TO 1+040
6	C-232	LD-7892	CN CROSSING - FROM STA 1+000 TO MH 31
7	C-233	LD-7893	WILTON STREET - FROM MH 31 TO STA 1+220
8	C-234	LD-7894	WILTON STREET - FROM STA 1+220 TO STA 1+310
9	C-235	LD-7895	WILTON STREET - FROM STA 1+310 TO STA 1+410
10	C-236	LD-7896	WILTON STREET - FROM STA 1+410 TO MH 32
11	C-502	LD-7897	RISER MANHOLE AND MONITORING POINT DETAILS
12	C-503	LD-7898	SPARLING AVENUE CONNECTION AND JACKING PIPE DETAILS



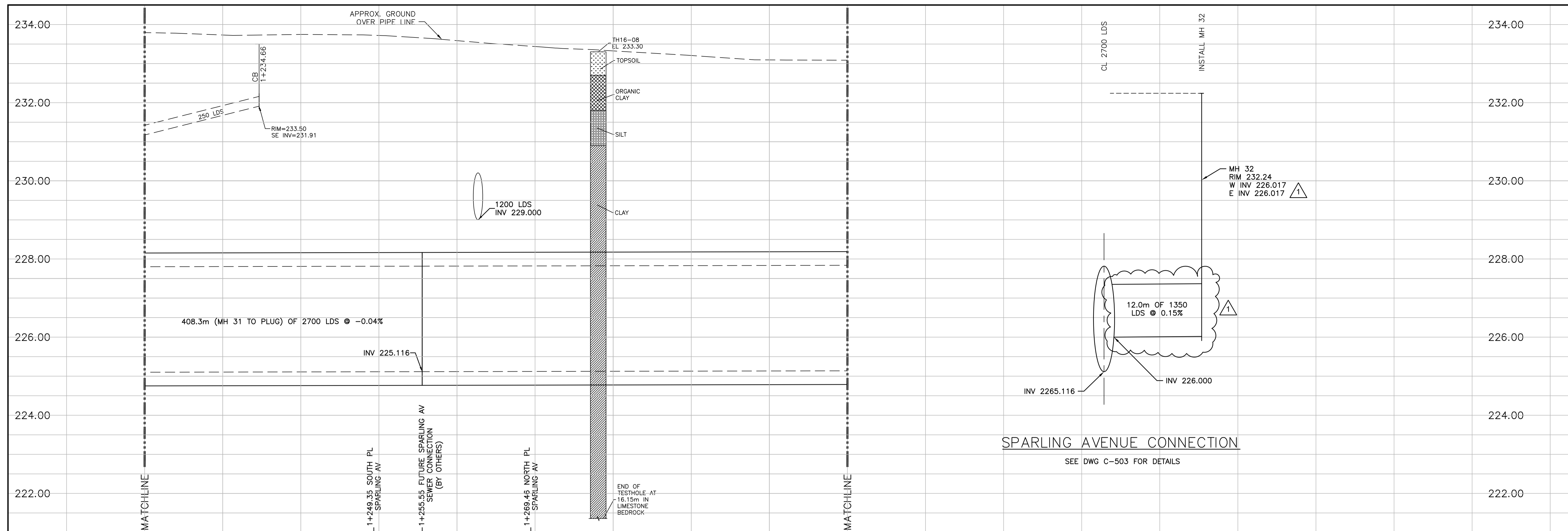
KEY MAP

MANHOLE SCHEDULE		
REFERENCE	NORTHING	EASTING
MH 31	5523888.430	632474.894
MH 32	5524017.519	632412.188



FileName C:\pw_workdir\ch2mhill_wbg\cert\0204789\

B.M. ELEV.								
DESIGNED BY: SDG	CHECKED BY: MD	DRAWN BY: JBC		APPROVED BY: <i>R30</i>		PROJECT TITLE: COCKBURN AND CALROSSIE COMBINED SEWER RELIEF WORKS - CONTRACT 4		SHEET OF 2 OF 12
ISSUED FOR TENDER: 01/2017	DATE: 01/2017	BY: JBC	HOR. SCALE: N.T.S.	VERTICAL: -	RELEASED FOR CONSTRUCTION: <i>[Signature]</i> DATE: JAN 31/17		GENERAL PLAN AND MANHOLE SCHEDULE	
NO. REVISIONS		DATE		DATE		CONSULTANT DRAWING NO. D-004		COMPUTER FILE NAME D-004.dwg
								CITY DRAWING NUMBER LD-7890



SPARLING AVENUE CONNECTION
SEE DWG C-503 FOR DETAILS

WARNING

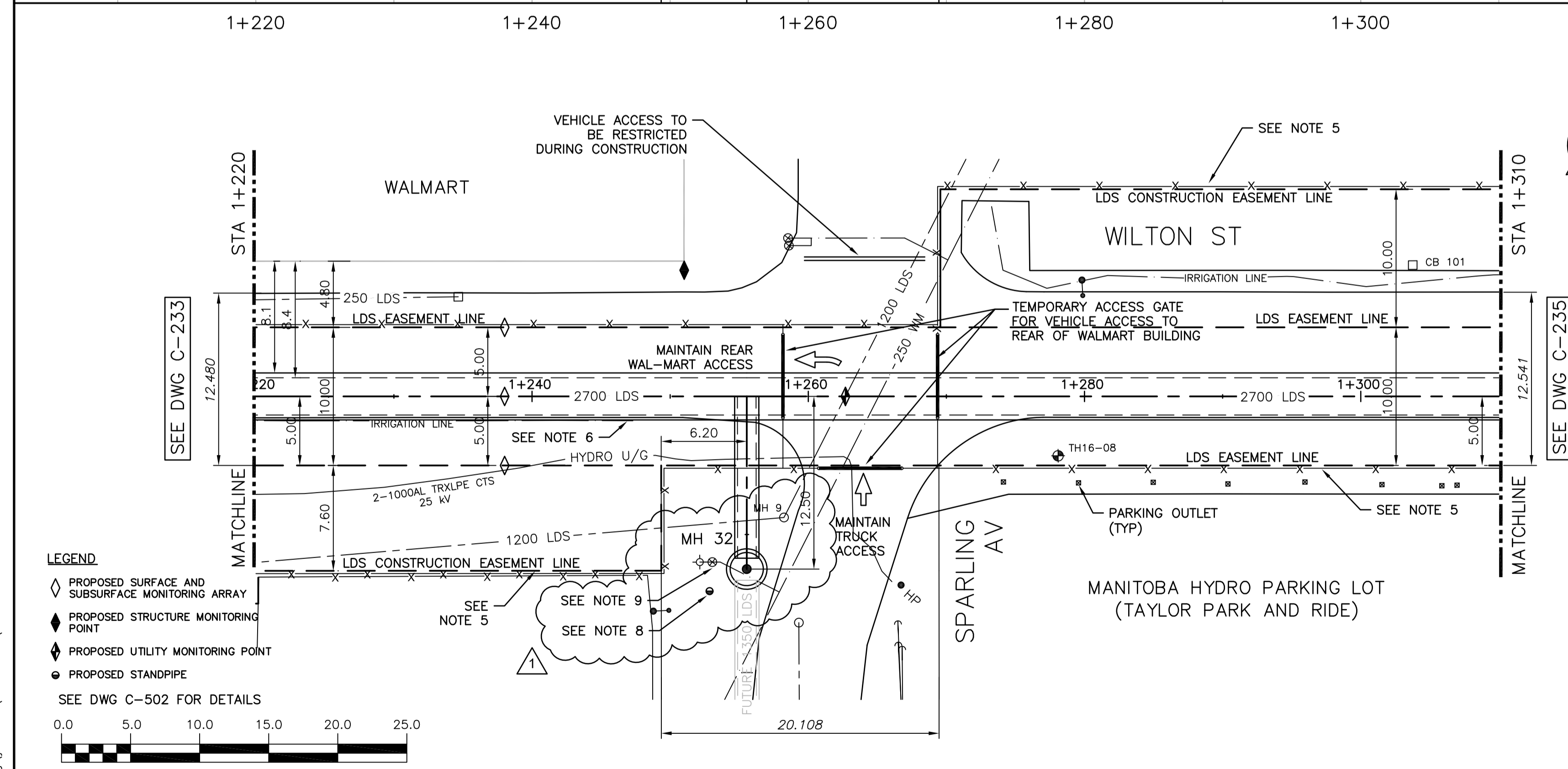
IF POWER EQUIPMENT OR EXPLOSIVES ARE TO BE USED FOR EXCAVATION ON THIS PROJECT THE CONTRACTOR MUST:
1) NOTIFY THE GAS COMPANY OF THE PROPOSED LOCATION OF EXCAVATION.
2) TAKE PRECAUTION TO AVOID DAMAGE TO GAS COMPANY INSTALLATIONS.
SEE PROVINCIAL REGULATION 210/72 FOR DETAILS

PROPERTY LIMITS DELINEATION

DELINEATION OF PROPERTY LIMITS AS SHOWN ON THIS DWG DOES NOT REPRESENT A "LEGAL SURVEY". CH2M HILL MAKES NO REPRESENTATION OR WARRANTY AS TO THE ACCURACY OF PROPERTY LIMITS DELINEATED ON THIS DRAWING, NOR ON THE DIMENSIONAL ACCURACY OF DRAWING FEATURES RELATIVE TO THOSE PROPERTY LIMITS.

CONSTRUCTION NOTES:

- SEWER AND WATER SERVICES SHOWN ON DRAWING ARE APPROXIMATE ONLY.
- LOCATION OF ALL SEWER AND WATER LINES TO BE CONFIRMED IN FIELD.
- INSTALL NEW SEWER BY TRENCHLESS METHODS, UNLESS OTHERWISE NOTED.
- MAINTAIN TRUCK ACCESS TO REAR OF WAL-MART FROM SPARLING AVENUE AT ALL TIMES.
- INSTALL AND MAINTAIN TEMPORARY CONSTRUCTION FENCING ALONG ALL LDS CONSTRUCTION EASEMENT LINES. TEMPORARY ACCESS GATES TO BE INSTALLED AS SHOWN.
- IRRIGATION LINE TO BE CONFIRMED PRIOR TO CONSTRUCTION AND RELOCATED IF NECESSARY.
- TIE-IN LOCATION TO 2700 LDS TO BE LOCATED EITHER NORTH OR SOUTH OF PROPOSED LOCATION TO ALLOW CONNECTION POINT TO BE ALIGNED TO AVOID PIPE JOINTS BY MINIMUM OF 450mm.
- PROPOSED STANDPIPE LOCATION TO BE DETERMINED ON SITE BY THE CONTRACTOR PRIOR TO CONSTRUCTION COMMENCEMENT. REFER TO SPECIFICATION FOR DETAILS.
- RELOCATE EXISTING HYDRANT, HYDRANT VALVE AND PIPE AS REQUIRED FOR MH 32 INSTALLATION AS DIRECTED BY CONTRACT ADMINISTRATOR.



LEGEND

- PROPOSED SURFACE AND SUBSURFACE MONITORING ARRAY
- PROPOSED STRUCTURE MONITORING POINT
- PROPOSED UTILITY MONITORING POINT
- PROPOSED STANDPIPE

SEE DWG C-502 FOR DETAILS

EXISTING	LEGEND-PLAN	PROPOSED	EXISTING	LEGEND-PLAN	PROPOSED	EXISTING	LEGEND-PROFILE	PROPOSED
150 WM	WATER MAIN	150 WM	HYDRO	M.T.S.	150 WM	WATER MAIN	150 WM	HYDRANT, VALVE
300 LDS	LAND DRAINAGE SEWER	300 LDS	CONCRETE	ASPHALT	300 LDS	LAND DRAINAGE SEWER	300 LDS	LAND DRAINAGE SEWER
250 WWS	WASTE WATER SEWER	250 WWS	SIDEWALK	PLANNING	250 WWS	WASTE WATER SEWER	250 WWS	WASTE WATER SEWER
MANHOLE	MANHOLE	MANHOLE	PROPERTY LINE	SURVEY BAR	MANHOLE	MANHOLE	MANHOLE	MANHOLE
CATCH BASIN	CATCH BASIN	CATCH BASIN	GAS	CURB STOP	CATCH BASIN	CATCH BASIN	CATCH BASIN	CATCH BASIN
CURB INLET	CURB INLET	CURB INLET	TEE	TEE	CURB INLET	CURB INLET	CURB INLET	CURB INLET
BEND	BEND	BEND			BEND	BEND	BEND	BEND
REDUCER	REDUCER	REDUCER			REDUCER	REDUCER	REDUCER	REDUCER

LOCATION APPROVED UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES COMMITTEE DATE

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

NO.	REVISIONS	DATE	BY
1	ISSUED FOR ADDENDUM NO. 2	01/2017	JBC
0	ISSUED FOR TENDER	01/2017	JBC

KGS GROUP CONSULTING ENGINEERS

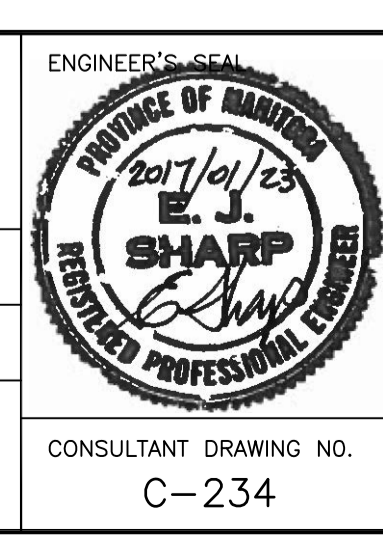
ch2m

DESIGNED BY: SDG
DRAWN BY: JBC

CHECKED BY: MD
APPROVED BY:

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

RELEASED FOR CONSTRUCTION: DATE



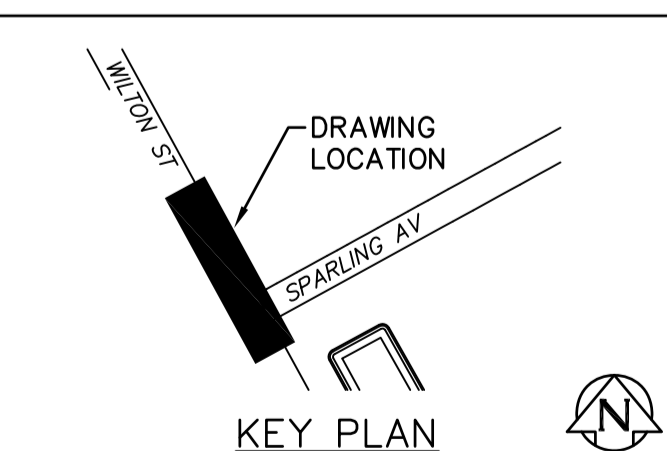
THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT

PROJECT TITLE: COCKBURN AND CALROSSIE COMBINED SEWER RELIEF WORKS - CONTRACT 4

FROM STA 1+220 TO STA 1+310

CONSULTANT DRAWING NO. C-234

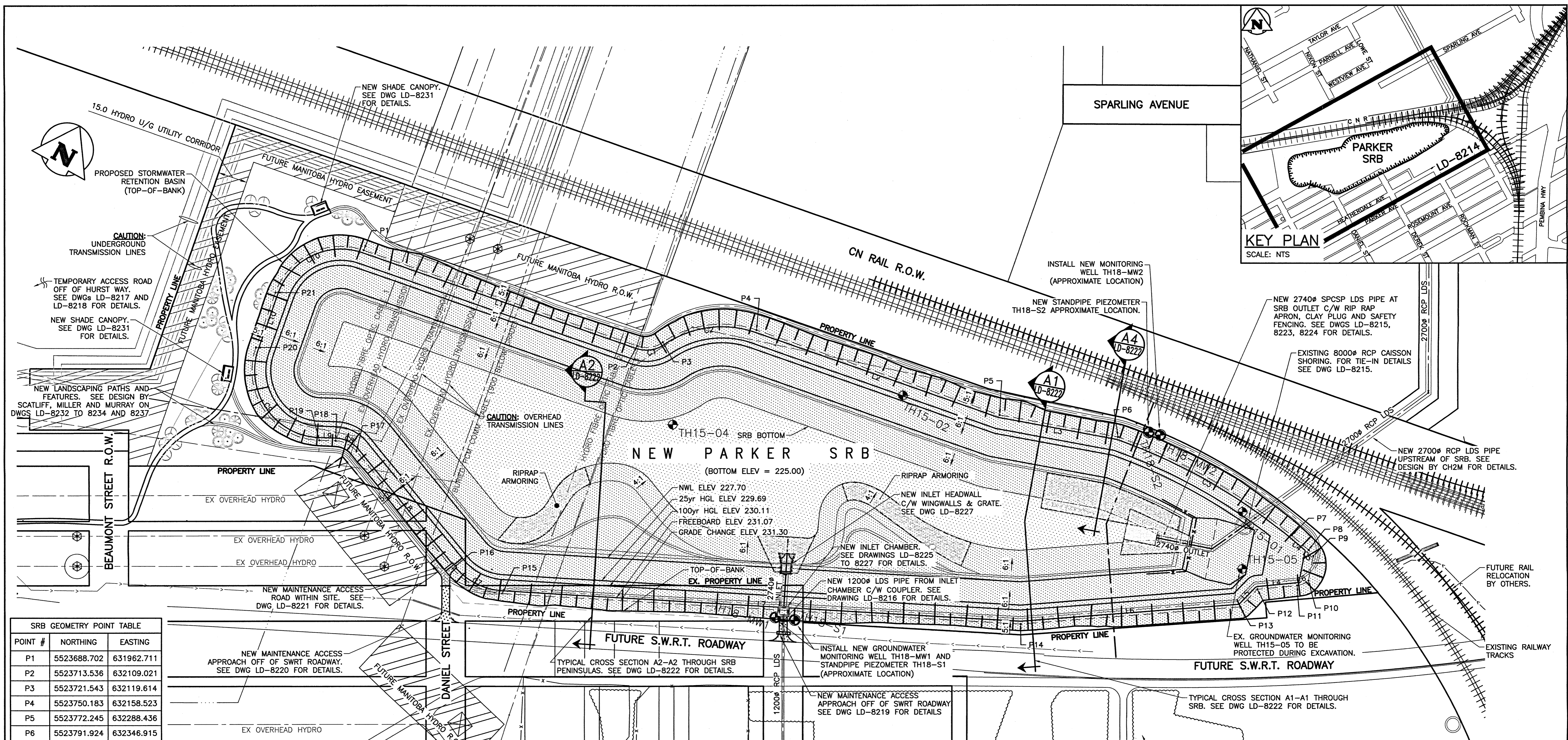
SHEET OF 8 OF 12
COMPUTER FILE NAME: C-234.dwg
CITY DRAWING NUMBER: LD-7894



File name: C:\pw_workdir\ch2mhill_wbg\jortez\0204776\

Contract 3 (Bid Opportunity 388-2017)

File Name: P:\Projects\2011\11-0107-18_Dwg_Mun\G3 - Pond\11-0107-18_POND.dwg - Tab: C303 Plotted By: Gloewen 17/07/12 [Wed 2:07pm]



POINT #	NORTHING	EASTING
P1	5523688.702	631962.711
P2	5523713.536	632109.021
P3	5523721.543	632119.614
P4	5523750.183	632158.523
P5	5523772.245	632288.436
P6	5523791.924	632346.915
P7	5523790.884	632449.089
P8	5523788.557	632460.260
P9	5523786.966	632463.852
P10	5523774.673	632467.766
P11	5523769.668	632463.866
P12	5523758.073	632446.996
P13	5523745.936	632443.730
P14	5523683.776	632349.729
P15	5523569.213	632109.928
P16	5523568.250	632081.525
P17	5523596.938	632009.267
P18	5523596.353	631997.279
P19	5523592.530	631989.854
P20	5523618.237	631938.590
P21	5523647.847	631933.638

LINE #	LENGTH	DIRECTION
L1	148.403	S80°22'00"W
L2	131.825	S80°23'36"W
L3	61.701	S71°24'05"W
L4	20.471	N55°29'51"E
L5	12.569	N15°03'39"E
L6	112.695	N56°31'30"E
L7	265.762	N64°27'51"E
L8	77.744	S68°20'44"E
L9	8.351	N62°45'26"E
L10	30.021	S09°29'37"E

CURVE #	LENGTH	RADIUS	DELTA
C1	13.833	14.0	056°30'31"
C2	50.120	53.4	053°47'48"
C3	102.706	292.4	020°07'38"
C4	11.412	292.4	002°14'11"
C5	3.954	10.0	022°40'56"
C6	6.449	10.5	035°14'36"
C7	29.239	35.5	047°11'25"
C8	12.375	14.5	048°53'50"
C9	66.760	35.5	107°44'57"
C10	55.677	35.5	089°51'37"

NOTE THAT AREA (BETWEEN HEATHERDALE AVE AND THE SWRT PROPERTY LINE) TO BE REPLANTED WITH TREES SUBSEQUENT TO COMPLETION OF SRB CONSTRUCTION, AND AS DIRECTED BY THE CONTRACT ADMINISTRATOR

NOTE THAT AREA (BETWEEN HEATHERDALE AVE AND THE SWRT PROPERTY LINE) TO BE REPLANTED WITH TREES SUBSEQUENT TO COMPLETION OF SRB CONSTRUCTION, AND AS DIRECTED BY THE CONTRACT ADMINISTRATOR

EXISTING	LEGEND-PLAN	PROPOSED	EXISTING	LEGEND-PLAN	PROPOSED	EXISTING	LEGEND-PROFILE	PROPOSED
150 WM	WATER MAIN	150 WM	HYDRANT	150 WM	WATER MAIN	150 WM	HYDRANT, VALVE	150 WM
300 LDS	LAND DRAINAGE SEWER	300 LDS	VALVE	300 LDS	LAND DRAINAGE SEWER	300 LDS	LAND DRAINAGE SEWER	300 LDS
250 WWS	WASTE WATER SEWER	250 WWS	MANHOLE	250 WWS	WASTE WATER SEWER	250 WWS	WASTE WATER SEWER	250 WWS
	HYDRO		CATCH BASIN		HYDRO		CENTRELINE	
	M.T.S.		CURB INLET		NORTH/WEST GUTTER		SOUTH/EAST GUTTER	
	GAS		RAILWAY TRACKS		FENCE		N/W, S/E R'S	
	CONCRETE		DITCH		HYDRO POLE		HYDRO TOWER	
	ASPHALT		FENCE		TEST HOLE			
	SIDEWALK							
	TURF STONE							
	PROPERTY LINE							

LOCATION APPROVED UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES COMMITTEE DATE

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

NO.	REVISIONS	DATE	BY
0	ISSUED FOR CONSTRUCTION	17/07/12	RBO

DESIGNED BY	CHECKED BY	DATE
JMM	RBO	16/06/10

ENGINEER'S SEAL

PROVINCE OF MANITOBA
R.B. OFFMAN
Member
24701

THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

PROJECT TITLE
COCKBURN/CALROSSIE COMBINED SEWER RELIEF WORKS - CONTRACT 3

SHEET OF
1 OF 1

COMPUTER FILE NAME
11-0107-18_POND

CITY DRAWING NUMBER
LD-8214

CONSULTANT DRAWING NO.
11-0107-18_C303

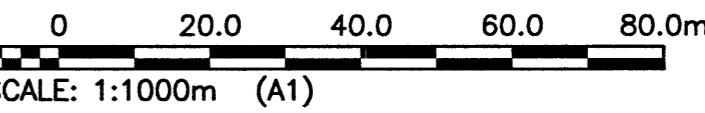
- WARNING**
1. NOTIFY THE GAS COMPANY OF THE PROPOSED LOCATION OF EXCAVATION.
 2. TAKE PRECAUTION TO AVOID DAMAGE TO GAS COMPANY INSTALLATIONS.
 3. SEE PROVINCIAL REGULATION 210/72 FOR DETAILS.

PROPERTY LIMITS DELINEATION

DELINEATION OF PROPERTY LIMITS AS SHOWN ON THIS DWG DOES NOT REPRESENT A "LEGAL SURVEY". KGS GROUP MAKES NO REPRESENTATION OR WARRANTY AS TO THE ACCURACY OF PROPERTY LIMITS DELINEATED ON THIS DWG, NOR ON THE DIMENSIONAL ACCURACY OF DWG FEATURES RELATIVE TO THOSE PROPERTY LIMITS.

METRIC

WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES



APEGM
Certificate of Authorization
KGS Group
No. 245

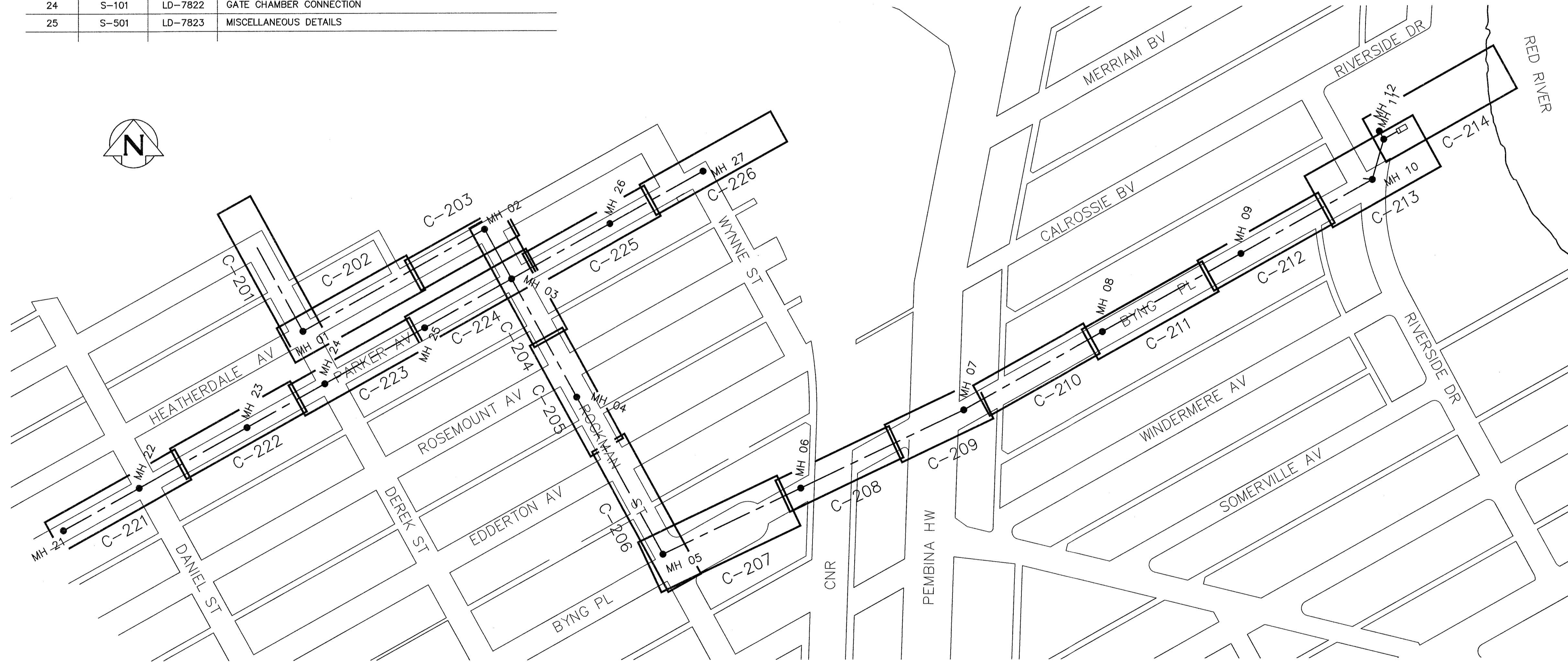
PLAN
SCALE: 1:1000

Contract 2 (Bid Opportunity 62-2016)

DRAWING INDEX

SHEET NUMBER	CONSULTANT DRAWING NUMBER	CITY DRAWING NUMBER	DRAWING TITLE
1	D-001	LD-7799	COVER
2	D-002	LD-7800	GENERAL PLAN AND MANHOLE SCHEDULE
3	C-201	LD-7801	DEREK STREET - FROM STA 0+900 TO HEATHERDALE AV
4	C-202	LD-7802	HEATHERDALE AVENUE - FROM DEREK STREET TO STA 1+170
5	C-203	LD-7803	HEATHERDALE AVENUE - FROM STA 1+170 TO ROCKMAN STREET
6	C-204	LD-7804	ROCKMAN STREET - FROM HEATHERDALE AV TO STA 1+340
7	C-205	LD-7805	ROCKMAN STREET - FROM STA 1+340 TO STA 1+440
8	C-206	LD-7806	ROCKMAN STREET - FROM STA 1+440 TO BYNG PLACE
9	C-207	LD-7807	BYNG PLACE - FROM ROCKMAN STREET TO STA 1+650
10	C-208	LD-7808	BYNG PLACE - CNR CROSSING
11	C-209	LD-7809	BYNG PLACE - PEMBINA HIGHWAY CROSSING
12	C-210	LD-7810	BYNG PLACE - FROM STA 1+830 TO STA 1+930
13	C-211	LD-7811	BYNG PLACE - FROM STA 1+930 TO STA 2+040
14	C-212	LD-7812	BYNG PLACE - FROM STA 2+040 TO STA 2+150
15	C-213	LD-7813	BYNG PLACE - FROM STA 2+150 TO MH 11
16	C-214	LD-7814	BYNG PLACE - FROM MH 11 TO EXISTING GATE CHAMBER
17	C-221	LD-7815	PARKER AVENUE - FROM STA 1+000 TO STA 1+110
18	C-222	LD-7816	PARKER AVENUE - FROM STA 1+110 TO STA 1+220
19	C-223	LD-7817	PARKER AVENUE - FROM STA 1+220 TO STA 3+330
20	C-224	LD-7818	PARKER AVENUE - FROM STA 1+330 TO STA 1+440
21	C-225	LD-7819	PARKER AVENUE - FROM STA 1+440 TO STA 1+550
22	C-226	LD-7820	PARKER AVENUE - FROM STA 1+550 TO MH 027
23	C-501	LD-7821	MISCELLANEOUS DETAILS
24	S-101	LD-7822	GATE CHAMBER CONNECTION
25	S-501	LD-7823	MISCELLANEOUS DETAILS

MANHOLE SCHEDULE		
REFERENCE	NORTHING	EASTING
MH 01	5523565.542	632276.010
MH 02	5523647.993	632424.814
MH 03	5523607.740	632447.050
MH 04	5523511.503	632500.326
MH 05	5523383.794	632571.083
MH 06	5523437.284	632684.060
MH 07	5523500.510	632817.600
MH 08	5523563.631	632931.247
MH 09	5523626.753	633044.894
MH 10	5523686.595	633152.636
MH 11	5523719.266	633161.982
MH 12	5523725.817	633158.344
MH 21	5523404.131	632079.704
MH 22	5523438.551	632141.803
MH 23	5523487.514	632230.141
MH 24	5523522.903	632293.989
MH 25	5523568.231	632375.768
MH 26	5523652.340	632527.517
MH 27	5523694.760	632604.047



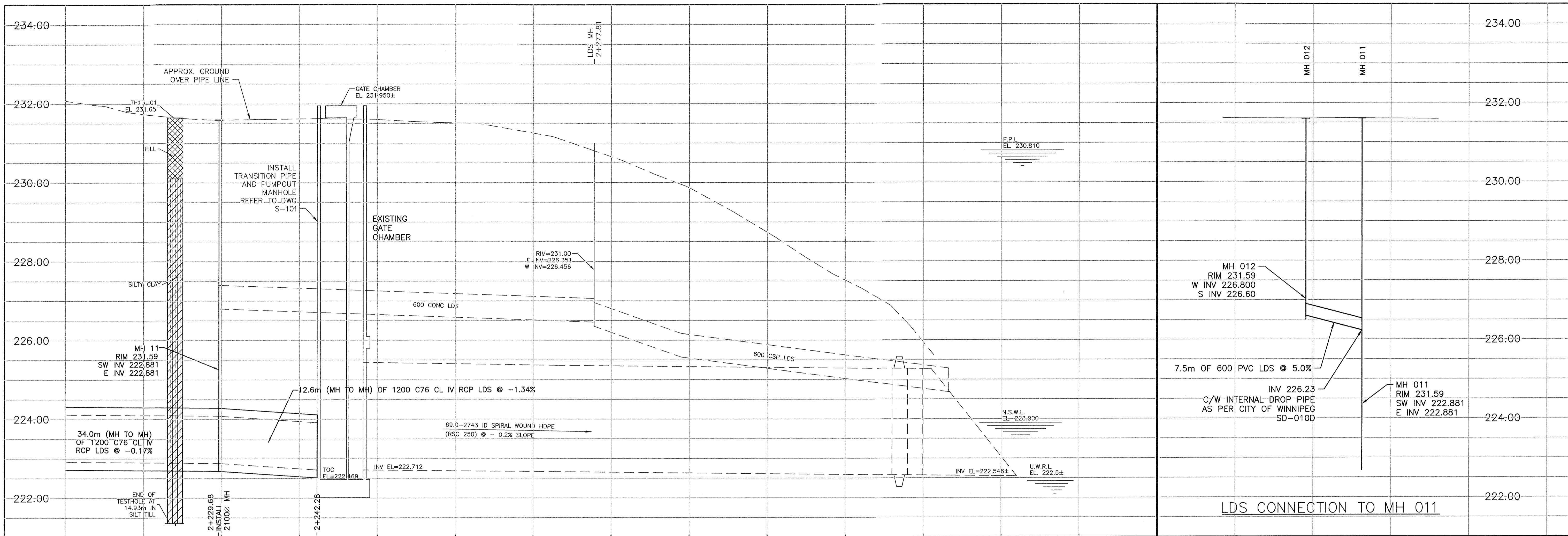
KEY MAP



B.M. ELEV. CONSTRUCTION COMPLETION DATE: YYYY MM DD		KGS GROUP CONSULTING ENGINEERS	ch2m	ENGINEER'S SEAL PROVINCE OF MANITOBA MAY 4, 2016 S.D. GODON REGISTERED PROFESSIONAL ENGINEER Member 25524	THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT ENGINEERING DIVISION
DESIGNED BY: SDG DRAWN BY: JBC	CHECKED BY: MAF APPROVED BY: ES	SCALE: HORIZONTAL 1: 250 VERTICAL 1: 50		RELEASED FOR CONSTRUCTION DATE: May 4, 2016	COCKBURN AND CALROSSIE COMBINED SEWER RELIEF WORKS
1 ISSUED FOR CONSTRUCTION 04/2016 JBC 0 ISSUED FOR TENDER 02/2016 JBC	REVISIONS NO. DATE BY	DATE: May 4, 2016 PLOT DATE: 2016 05 03	CONSULTANT DRAWING NUMBER D-002	GENERAL PLAN AND MANHOLE SCHEDULE	SHEET 2 OF 25 CITY DRAWING NUMBER LD-7800

BD OPPORTUNITY: 62-2016
 FILE PATH: C:\pw_workdir\ch2mhill\wbs\jportez1\j0204789\
 FILE NAME: D-002.dwg

Contract 1 (Bid Opportunity 915-2013)



LDS CONNECTION TO MH 011

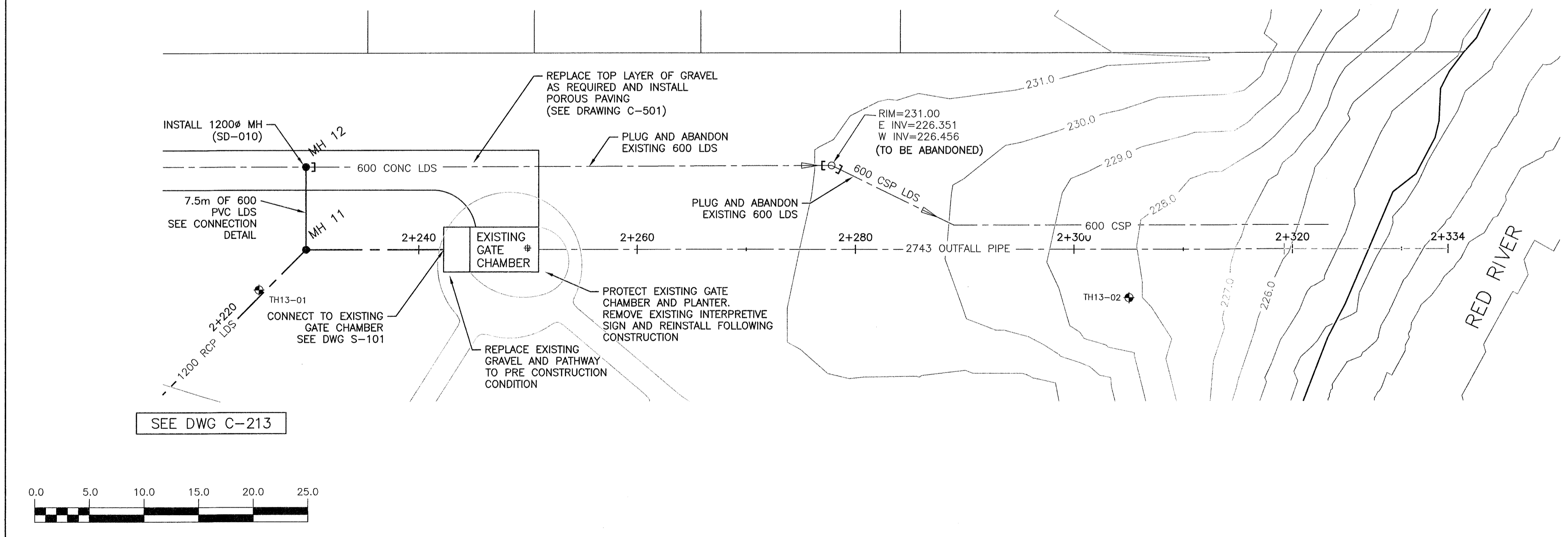
2+220 2+240

NOTE: REFER TO DRAWING LD-7231 FOR COMPLETE OUTFALL PLAN AND PROFILE

WARNING
 IF POWER EQUIPMENT OR EXPLOSIVES ARE TO BE USED FOR EXCAVATION ON THIS PROJECT THE CONTRACTOR MUST:
 1) NOTIFY THE GAS COMPANY OF THE PROPOSED LOCATION OF EXCAVATION.
 2) TAKE PRECAUTION TO AVOID DAMAGE TO GAS COMPANY INSTALLATIONS. SEE PROVINCIAL REGULATION 210/72 FOR DETAILS.

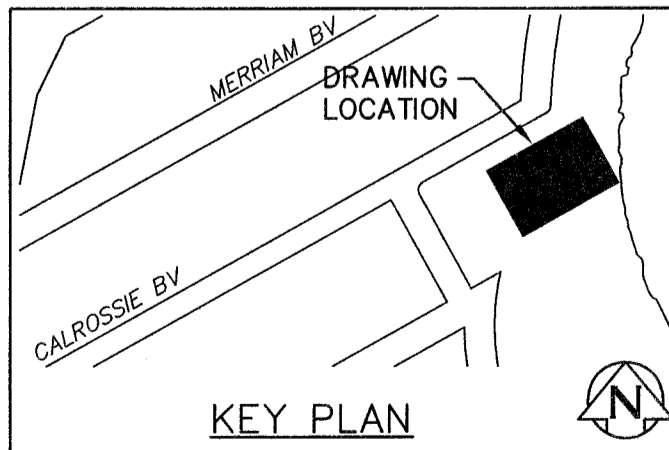
PROPERTY LIMITS DELINEATION
 DELINEATION OF PROPERTY LIMITS AS SHOWN ON THIS DWG DOES NOT REPRESENT A "LEGAL SURVEY". CH2M HILL MAKES NO REPRESENTATION OR WARRANTY AS TO THE ACCURACY OF PROPERTY LIMITS DELINEATED ON THIS DRAWING, NOR ON THE DIMENSIONAL ACCURACY OF DRAWING FEATURES RELATIVE TO THOSE PROPERTY LIMITS.

- CONSTRUCTION NOTES:**
- SEWER AND WATER SERVICES SHOWN ON DRAWING ARE APPROXIMATE ONLY.
 - LOCATION OF ALL SEWER AND WATER LINES TO BE CONFIRMED IN FIELD.
 - INSTALL NEW SEWER BY TRENCHLESS METHODS, UNLESS OTHERWISE NOTED.
 - NO STOCKPILING OF MATERIAL WITHIN 107m OF NORMAL SUMMER RIVER LEVEL (NSRL).
 - ALL EXCAVATED MATERIAL WITHIN 107m OF NSRL TO BE REMOVED FROM SITE.



SEE DWG C-213

APEGM
 Certificate of Authorization
 CH2M HILL Canada Ltd.
 No. 1441 Date: May 4, 2016



200 WM	WATERMAIN	200 WM	SL, HYDRO	150 WM	WATERMAIN	150 WM
⊕	HYDRANT	⊕	MTS	⊕	HYDRANT	⊕
⊙	VALVE	⊙	TRAFFIC SIGNALS	⊙	VALVE	⊙
---	LAND DRAINAGE SEWER	---	GAS	---	LAND DRAINAGE SEWER	---
---	WASTEWATER SEWER	---	SURVEY BAR	---	WASTEWATER SEWER	---
○	MANHOLE	○	FENCE	○	PROFILE	○
□	CATCH BASIN	□	POLE - HYDRO, MTS	□	GROUND ABOVE PIPE	□
▽	CURB INLET	▽	CURB STOP	▽		▽
+	JUNCTIONS	+	GUY ANCHOR	+		+
⊔	CULVERT	⊔	LIGHT STANDARD	⊔		⊔
⊖	ANODE	⊖	TREE	⊖		⊖
---	EXISTING LEGEND-PLAN	---	PROPOSED	---	EXISTING LEGEND-PROFILE	---

LOCATION APPROVED UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES COMMITTEE DATE

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NO.	REVISIONS	DATE	BY
1	ISSUED FOR CONSTRUCTION	04/2016	JBC
0	ISSUED FOR TENDER	02/2016	JBC

KGS GROUP CONSULTING ENGINEERS

ch2m

DESIGNED BY: SDG
 CHECKED BY: MAF
 DRAWN BY: JBC
 APPROVED BY: ES

SCALE: HORIZONTAL 1:250
 VERTICAL 1:50

DATE: May 4, 2016
 PLOT DATE: 2016 05 04

ENGINEER'S SEAL

PROVINCE OF MANITOBA
 S.D.
 GODON
 Member
 25524
 REGISTERED PROFESSIONAL ENGINEER

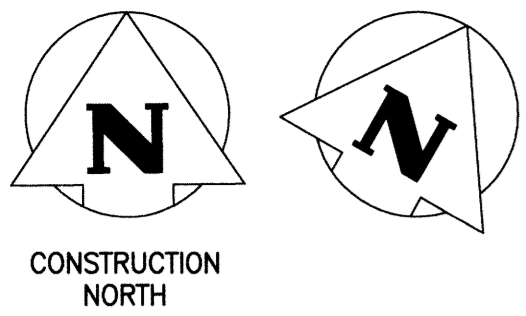
CONSULTANT DRAWING NUMBER: C-214

THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT
 ENGINEERING DIVISION

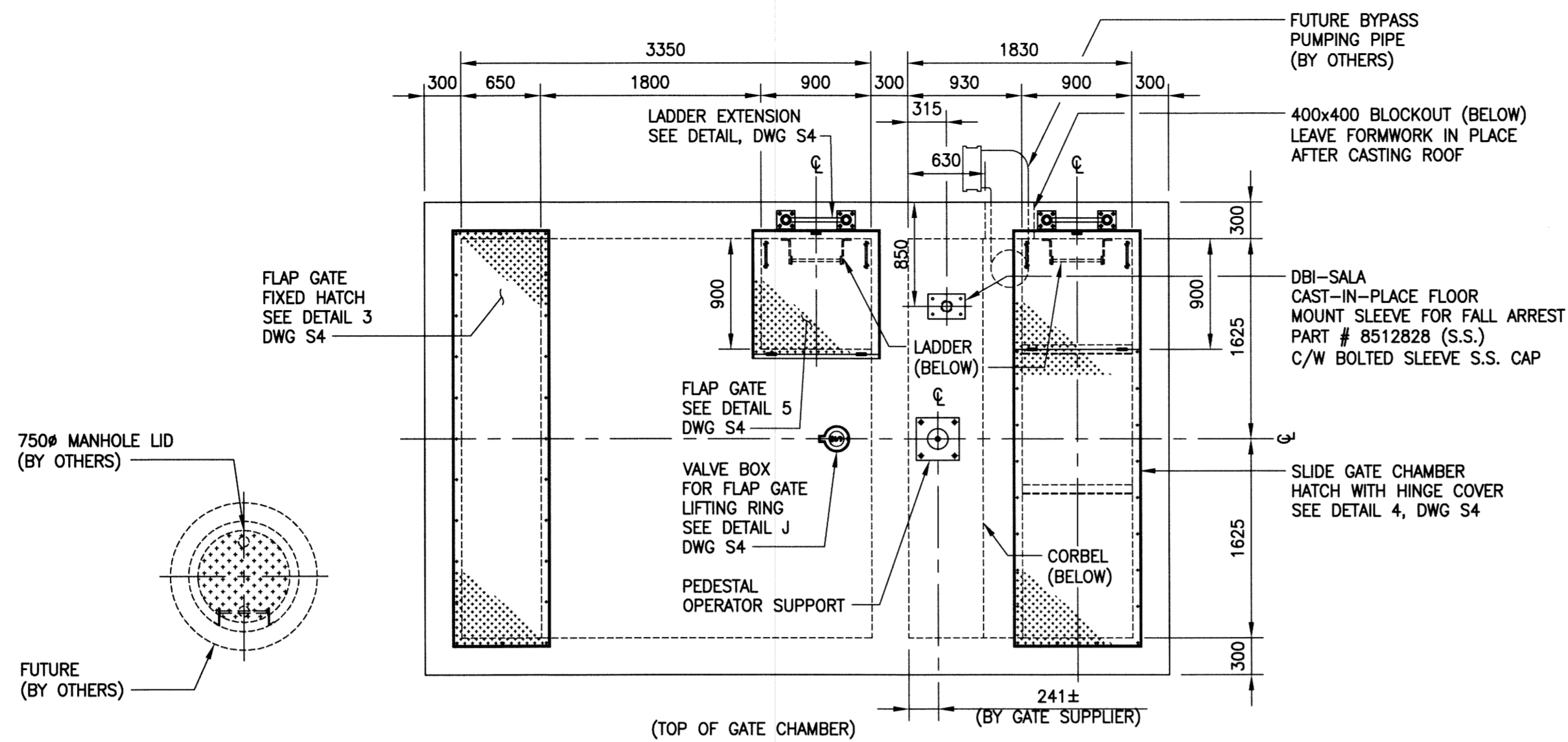
COCKBURN AND CALROSSIE COMBINED SEWER RELIEF WORKS

BYNG PLACE FROM MH 11 TO EXISTING GATE CHAMBER

SHEET 16 OF 25
 CITY DRAWING NUMBER: LD-7814

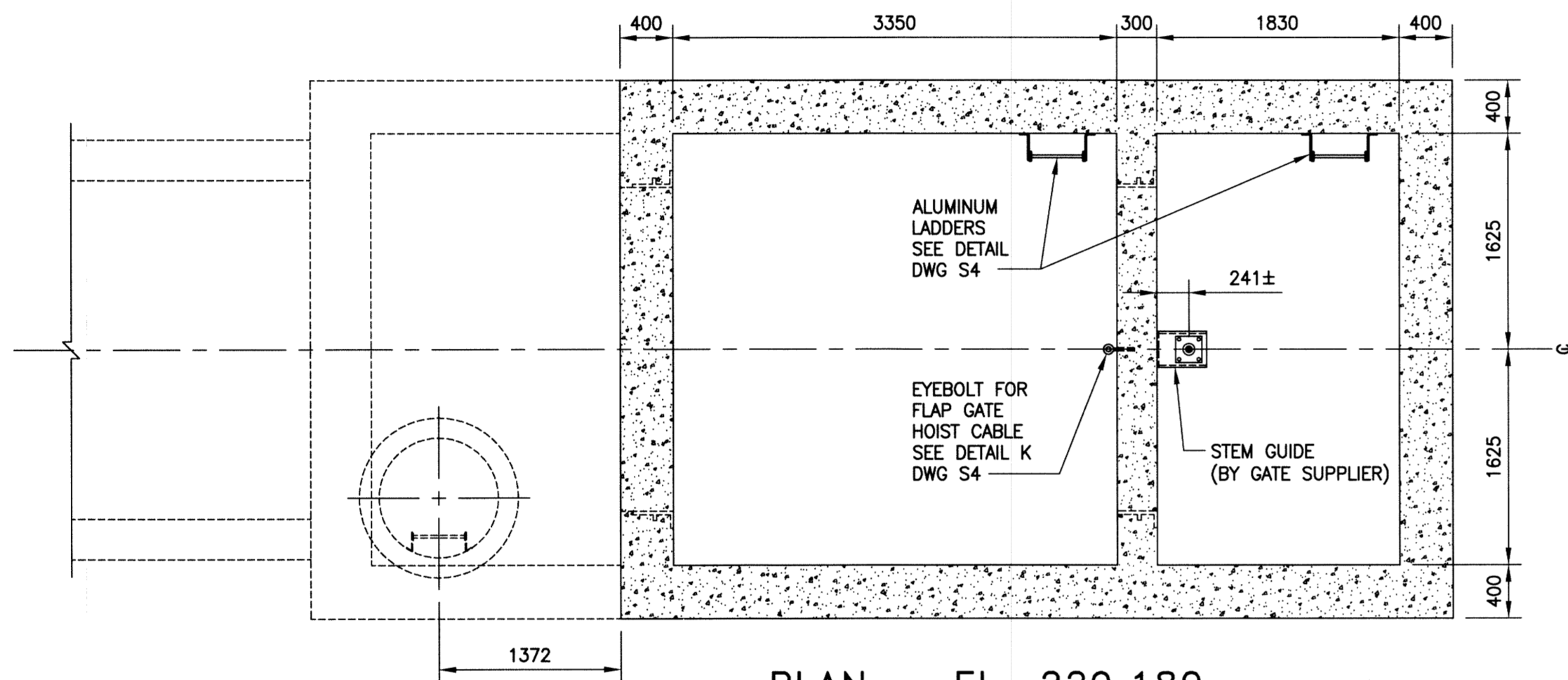


CONSTRUCTION NORTH



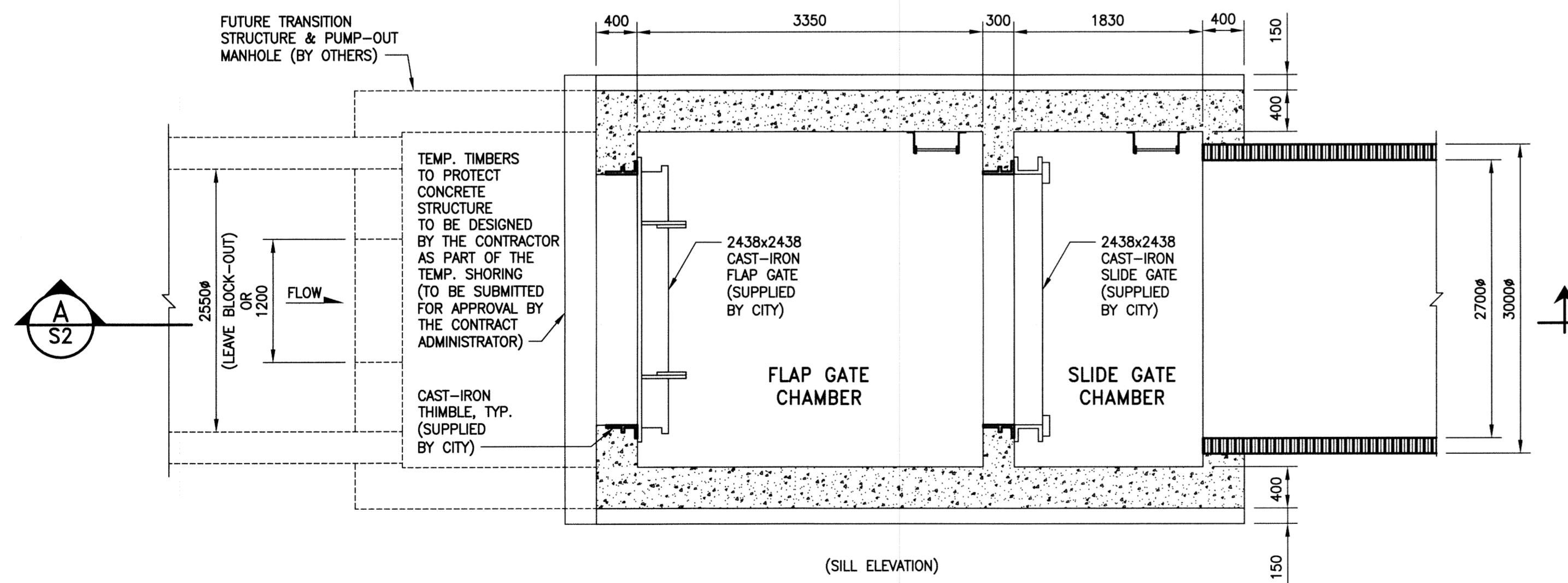
PLAN - EL. 231.907

SCALE: 1:40



PLAN - EL. 229.180

SCALE: 1:40



PLAN - EL. 222.712

SCALE: 1:40

GENERAL NOTES:

- 1. THIS STRUCTURE HAS BEEN DESIGNED AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF PART 9 OF THE NATIONAL BUILDING CODE (LATEST).
2. ALL SPECIFICATIONS AND CODES SPECIFIED SHALL BE THE LATEST REVISION AVAILABLE.
...
12. DESIGN FLOOD LEVEL 1/700 YEAR EVENT: 230.810m.

SURVEY NOTES:

- 1. REFER TO MUNICIPAL DWG LD-7231 FOR SURVEY DETAILS.

REINFORCING STEEL:

- 1. REINFORCING STEEL TO BE NEW DEFORMED BILLET STEEL BARS CONFORMING TO CSA G30.18 (LATEST). GRADE TO BE 400 MPa.
2. REINFORCING STEEL SHALL BE CLEAN, FREE OF RUST, DIRT, LOOSE SCALE, OIL, GREASE OR ANY OTHER MATERIAL WHICH WOULD REDUCE BOND WITH THE CONCRETE.
...
6. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW PRIOR TO FABRICATION.

STRUCTURAL AND MISCELLANEOUS STEEL:

- 1. STRUCTURAL AND MISCELLANEOUS STEEL FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH CAN/CSA S16 (LATEST).
2. STRUCTURAL STEEL SHALL MEET THE REQUIREMENTS OF CAN/CSA G40.20/G40.21 (LATEST).
...
6. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW PRIOR TO FABRICATION.

CONCRETE:

- 1. CONCRETE MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH CSA A23.1 (LATEST). SEE BELOW FOR MIX REQUIREMENTS.
2. ADMIXTURES SHALL NOT BE USED UNLESS SPECIFIED HEREIN OR APPROVED BY THE DESIGN ENGINEER. CALCIUM CHLORIDE SHALL NOT BE USED.
...
15. THE CONCRETE SUPPLIER SHALL SUBMIT CONCRETE MIX DATA SUBMISSION FORMS FOR EACH TYPE OF CONCRETE SPECIFIED FOR REVIEW PRIOR TO BATCHING ANY CONCRETE.

CONCRETE MIX DESIGNS:

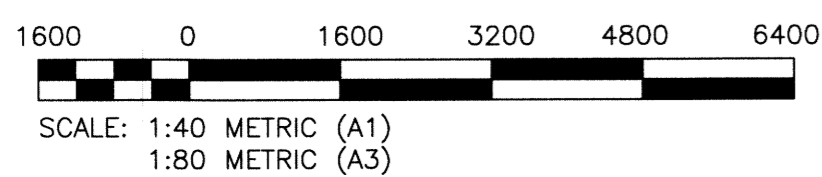
Table with 2 columns: EXPOSURE CLASS, MIN. 28 DAY COMP. STRENGTH, CEMENT TYPE, MAX. W/C RATIO, MAX. AGGREGATE SIZE, ENTRAINED AIR CONTENT, MAXIMUM SLUMP. Values include S-1, 35 MPa, TYPE 50 (HS), 0.40, 20mm, 5% TO 8%, 80mm±20mm.

ALUMINUM:

- 1. ALUMINUM SHALL BE IN ACCORDANCE WITH CAN/CSA S517 AND THE ALUMINUM ASSOCIATION "SPECIFICATION FOR ALUMINUM STRUCTURES". ALUMINUM FOR PLATES AND EXTRUDED SHAPES SHALL BE TYPE 6061-T651.
2. ALUMINUM WELDING SHALL BE IN ACCORDANCE WITH CSA W59.2 (LATEST) BY WELDERS CERTIFIED AND QUALIFIED IN ACCORDANCE WITH CSA W47.2 (LATEST). ALL WELDS TO BE 6mm UNLESS OTHERWISE NOTED.
...
5. ALL NUTS, BOLTS AND WASHERS SHALL BE STAINLESS STEEL & TYPE 316. MEETING ASTM F593/F738M.

METRIC

DECIMALIZED NUMBERS INDICATE METRES WHOLE NUMBERS INDICATE MILLIMETRES



LOCATION APPROVED UNDERGROUND STRUCTURES
SUPV. U/G STRUCTURES COMMITTEE DATE
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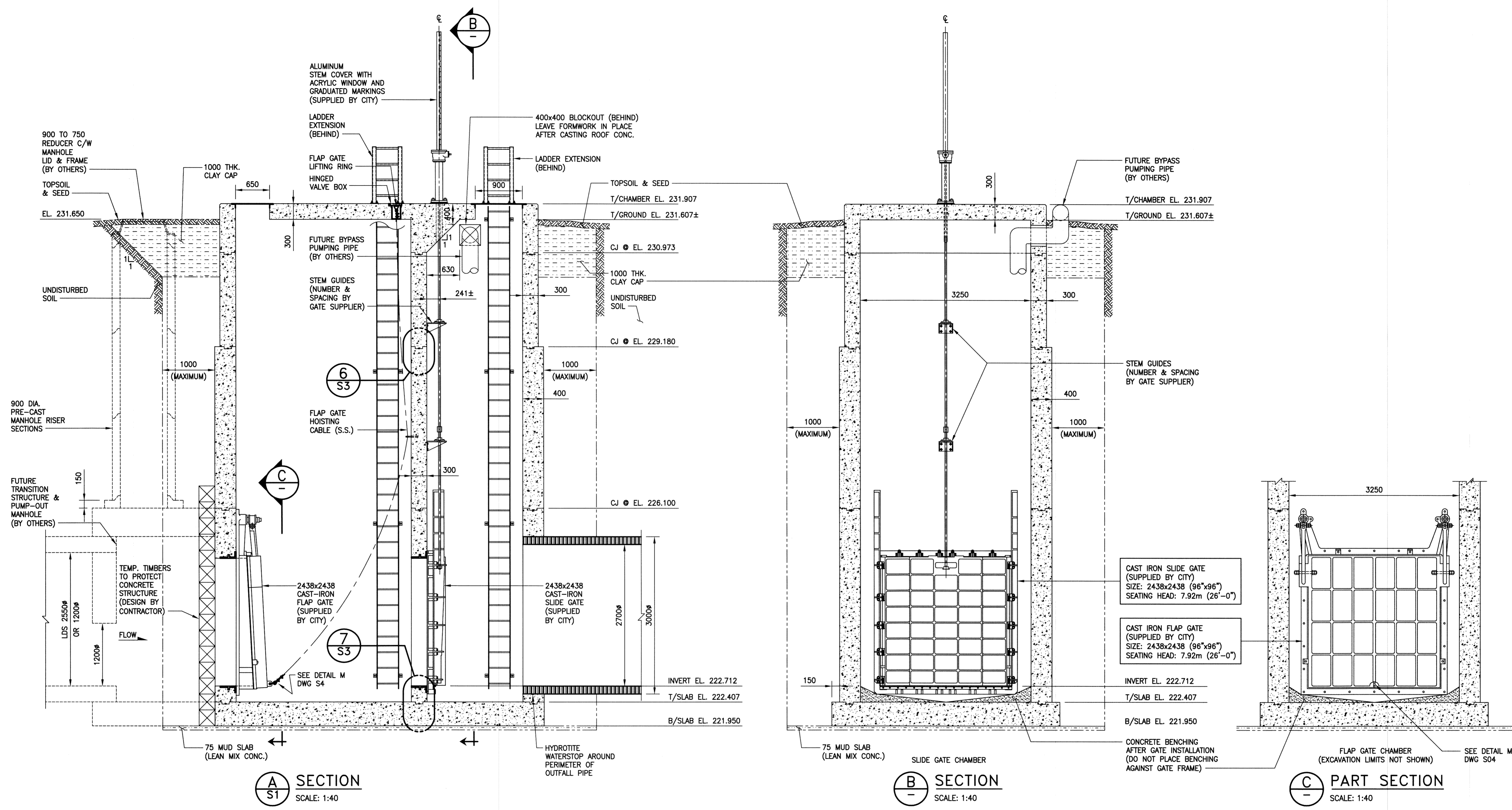
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Table with columns: DESIGNED BY, DRAWN BY, SCALE, CHECKED BY, APPROVED BY, RELEASED FOR CONSTRUCTION. Includes KRD, FBV, AS NOTED, CMS, and date 13/10/16.

KGS GROUP CONSULTING ENGINEERS logo and seal.

THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT logo and project information: COCKBURN/CALROSSIE COMBINED SEWER RELIEF WORKS, NEW BNYG PLACE GATE CHAMBER (RR37B), STRUCTURAL PLANS, SHEET 01 OF 01, COMPUTER FILE NAME 11-0107-18_S1, CITY DRAWING NUMBER LD-7236.

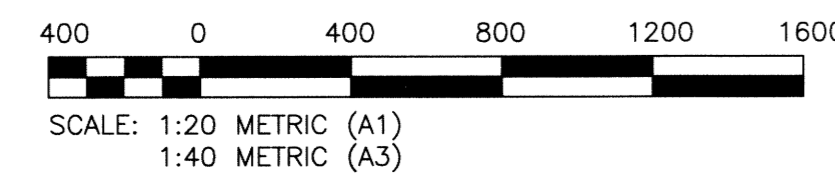
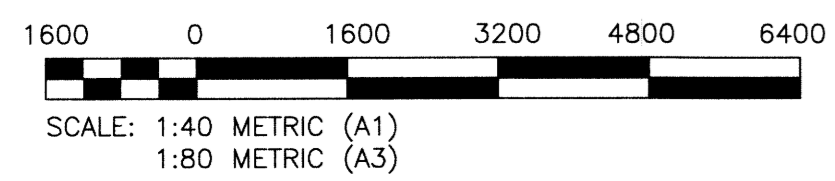
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A SECTION
SCALE: 1:40

B SECTION
SCALE: 1:40

C PART SECTION
SCALE: 1:40



LOCATION APPROVED UNDERGROUND STRUCTURES		B.M. KGS BASE ELEV. -	DWGS BASED ON C.S.R.S. NAD 83 SYSTEM, UTM GRID
SUPV. U/G STRUCTURES COMMITTEE	DATE		
NOTE: LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.			
0	ISSUED FOR TENDER	13/11/08	OKS
NO.	REVISIONS	DATE	BY

		DESIGNED BY	KRD	CHECKED BY	CMS
		DRAWN BY	FBV	APPROVED BY	
SCALE:		AS NOTED		RELEASED FOR CONSTRUCTION:	
		DATE	13/10/16	DATE	

ENGINEER'S SEAL
CONSULTANT DRAWING NO.
11-0107-18_S2

THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT	
PROJECT TITLE	COCKBURN/CALROSSIE COMBINED SEWER RELIEF WORKS NEW BNYG PLACE GATE CHAMBER (RR37B) STRUCTURAL SECTIONS
SHEET OF	01 OF 01
COMPUTER FILE NAME	11-0107-18_S2
CITY DRAWING NUMBER	LD-7237

METRIC
DECIMALIZED NUMBERS INDICATE METRES