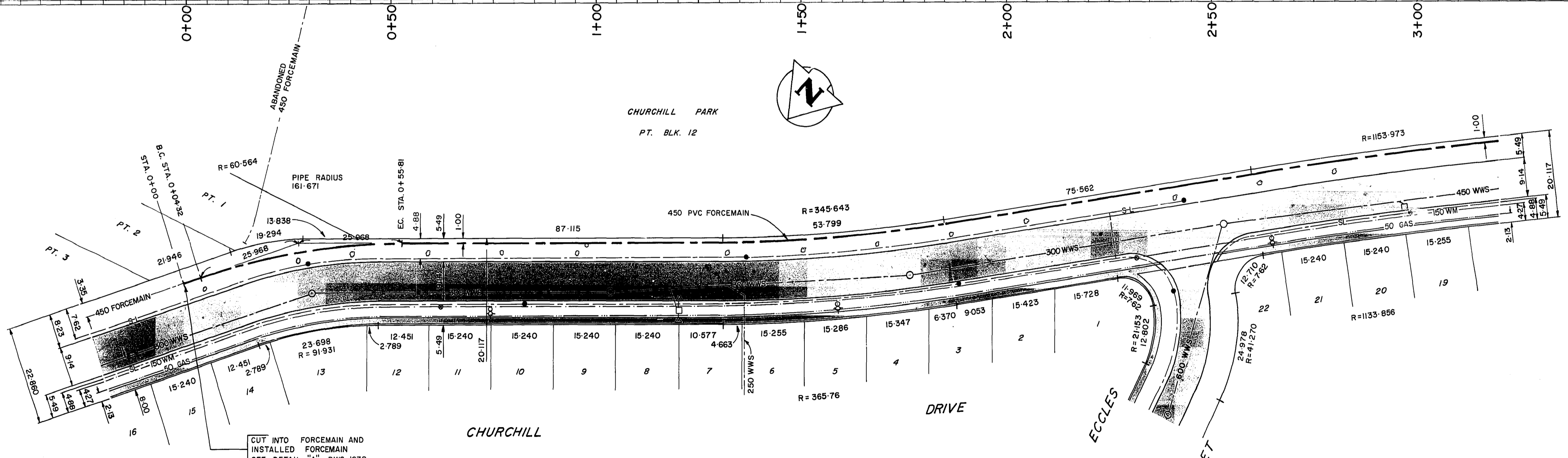
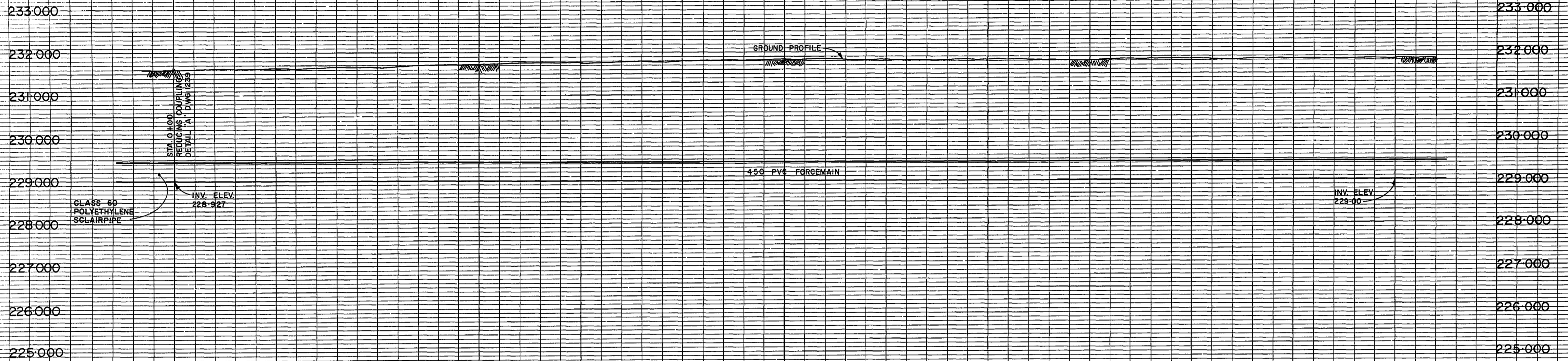


APPENDIX A – DRAWINGS

WO 102-84



CUT INTO FORCEMAIN AND INSTALLED FORCEMAIN SEE DETAIL "A" DWG. 1239

AS-CONSTRUCTED
 R.M. GIRLING
 SURVEY ENGINEERING 88-12-20
 WATERWORKS, WASTE & DISPOSAL DEPARTMENT

*53-037 W. side Osborne St. bet. Churchill Dr. & Montague Ave., 7bt. in Conc. Wall, 6.3 m W. of C.L. of S. traffic lane & 40.9 m S. of C.L. Public Lane N. of Churchill Dr. (Pedestrian Underpass)

NOTE: CHAINAGE ALONG Q. OF FORCEMAIN

150 mm W.M.	WATERMAIN	150 mm W.M.	HYDRO	150 mm W.M.	WATERMAIN
Hydrant	HYDRANT	Hydrant	M.T.S.	Hydrant	HYDRANT
Valve	VALVE	Valve	CONCRETE	Valve	VALVE
300 mm L.D.S.	LAND DRAINAGE SEWER	300 mm L.D.S.	ASPHALT	300 mm L.D.S.	LAND DRAINAGE SEWER
250 mm W.W.S.	WASTE WATER SEWER	250 mm W.W.S.	PROPERTY LINE	250 mm W.W.S.	WASTE WATER SEWER
Manhole	MANHOLE	Manhole	SURVEY BAR	Manhole	MANHOLE
Catch Basin	CATCH BASIN	Catch Basin	PIEZOMETER	Catch Basin	CATCH BASIN
Curb Inlet	CURB INLET	Curb Inlet		Curb Inlet	CURB INLET
Junctions	JUNCTIONS	Junctions		Junctions	JUNCTIONS
Culvert	CULVERT	Culvert		Culvert	CULVERT
Gas	GAS	Gas		Gas	GAS
EXISTING	LEGEND-PLAN	PROPOSED	LEGEND-PLAN	PROPOSED	LEGEND-PROFILE

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. 53-037	FIELD BOOK F-656
ELEV. 232.792	
1 REV'D TO AS CONSTRUCTED	12-1988 EN
NO REVISIONS	DATE BY

DESIGNED BY	JE	CHECKED BY	RMG
DRAWN BY	EN	APPROVED BY	RmG
HOR. SCALE:	1:500	RELEASED FOR CONSTRUCTION	R.M. GIRLING
VERTICAL:	1:50	DATE	88-06-29
AUGUST 1987		DATE	

ENGINEER'S SEAL
 R.M. GIRLING
 REGISTERED ENGINEER
 CONSULTANT DRAWING NO.

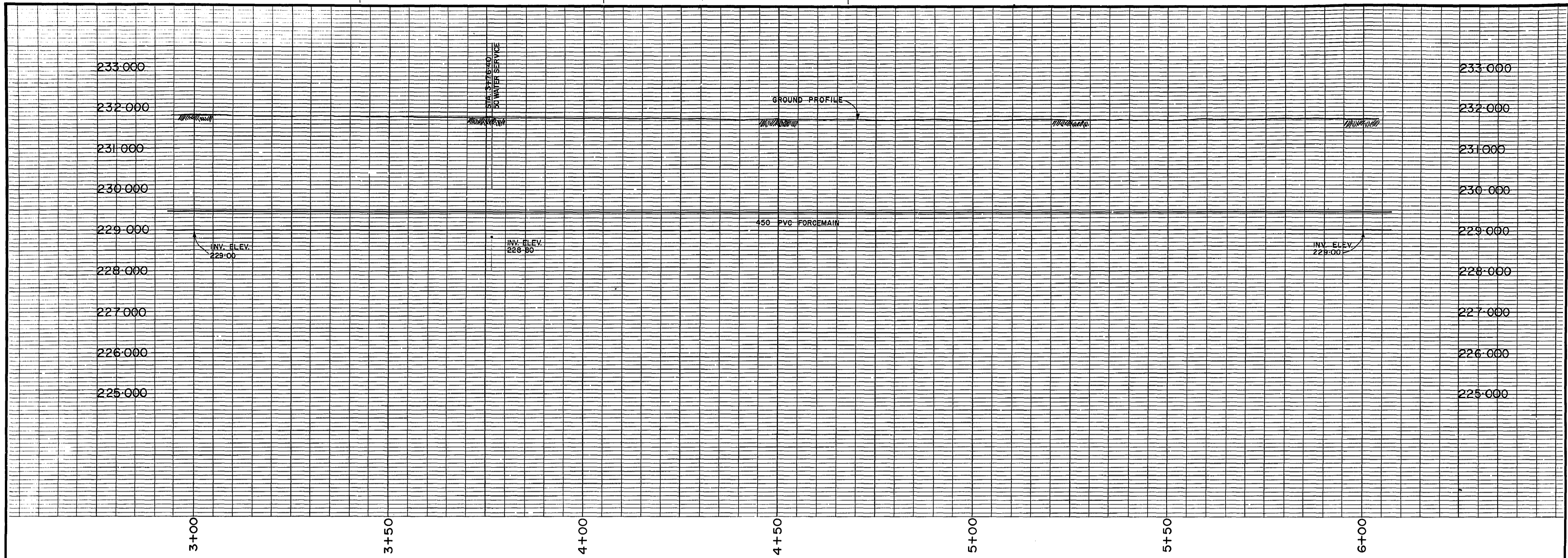
THE CITY OF WINNIPEG
 WORKS AND OPERATIONS DIVISION

BALTIMORE FORCEMAIN
 STA. 0+00 TO STA. 3+00

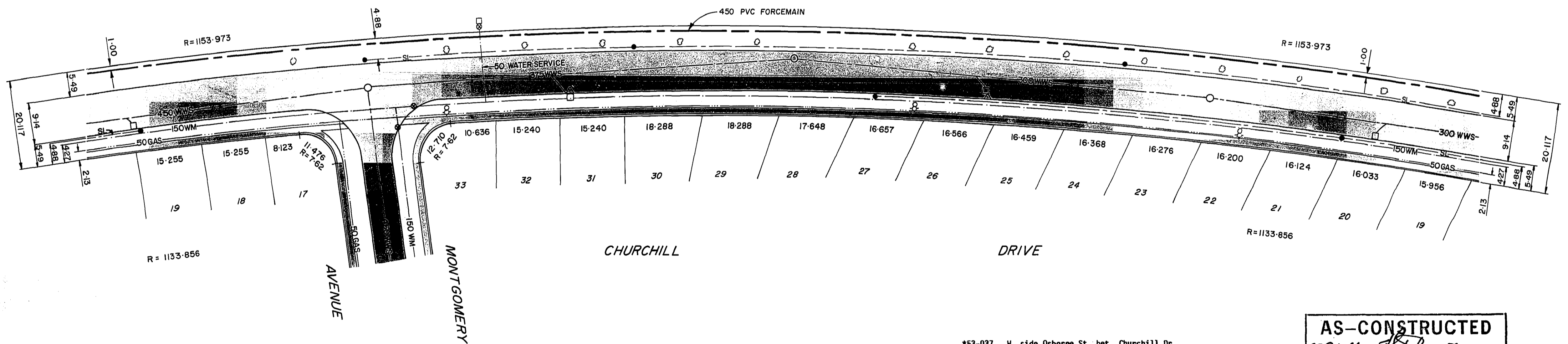
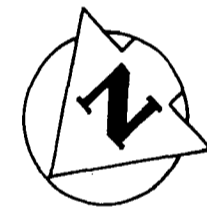
CITY DRAWING NUMBER
 SHEET 1 OF 6
 1234

file # FM10096

WO 102-84



CHURCHILL PARK
PT. BLK. 12



AS-CONSTRUCTED
 12-20-20
 SURVEY ENGINEERING DATE
 WATERWORKS, WASTE & DISPOSAL DEPARTMENT

*53-037 W. side Osborne St. bet. Churchill Dr. & Montague Ave., Tblt. in Conc. Wall, 6.3 m N. of C.L. of S. traffic lane & 40.9 m S. of C.L. Public Lane N. of Churchill Dr. (Pedestrian Underpass)

NOTE: CHAINAGE ALONG Q. OF FORCEMAIN

150 mm W.M.	WATERMAIN	150 mm W.M.	HYDRO	150 mm W.M.	WATERMAIN	150 mm W.M.	WATERMAIN
Hydrant	HYDRANT	Hydrant	M.T.S.	Hydrant	HYDRANT	Hydrant	HYDRANT
Valve	VALVE	Valve	CONCRETE	Valve	VALVE	Valve	VALVE
300 mm L.D.S.	LAND DRAINAGE SEWER	300 mm L.D.S.	ASPHALT	300 mm L.D.S.	LAND DRAINAGE SEWER	300 mm L.D.S.	LAND DRAINAGE SEWER
250 mm W.W.S.	WASTE WATER SEWER	250 mm W.W.S.	PROPERTY LINE	250 mm W.W.S.	WASTE WATER SEWER	250 mm W.W.S.	WASTE WATER SEWER
Manhole	MANHOLE	Manhole	SURVEY BAR	Manhole	MANHOLE	Manhole	MANHOLE
Catch Basin	CATCH BASIN	Catch Basin		Catch Basin	CATCH BASIN	Catch Basin	CATCH BASIN
Curb Inlet	CURB INLET	Curb Inlet		Curb Inlet	CURB INLET	Curb Inlet	CURB INLET
Junctions	JUNCTIONS	Junctions		Junctions	JUNCTIONS	Junctions	JUNCTIONS
Culvert	CULVERT	Culvert		Culvert	CULVERT	Culvert	CULVERT
Gas	GAS	Gas		Gas	GAS	Gas	GAS
EXISTING	LEGEND-PLAN	PROPOSED	EXISTING	LEGEND-PLAN	PROPOSED	EXISTING	LEGEND-PROFILE
							PROPOSED

LOCATION APPROVED UNDERGROUND STRUCTURES

B.M. 53-037
ELEV. 232.792

FIELD BOOK: F-656

DESIGNED BY: JE
DRAWN BY: EN
CHECKED BY: RMG
APPROVED BY: [Signature]

HOR. SCALE: 1:500
VERTICAL: 1:50

1 REV'D TO AS CONSTRUCTED 12-1988 EN
NO. REVISIONS DATE BY

DATE AUGUST 1987

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.

WORKS & OPERATIONS DIVISION
WATERWORKS, WASTE & DISPOSAL DEPARTMENT

ENGINEER'S SEAL

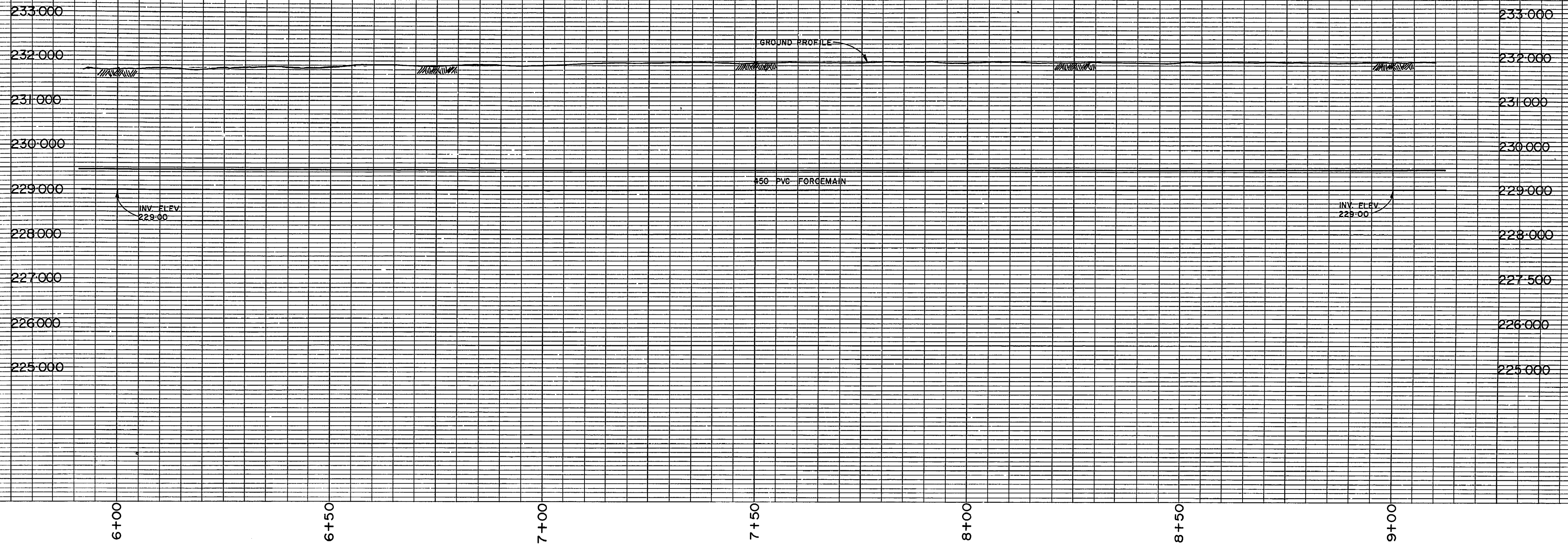
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THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION

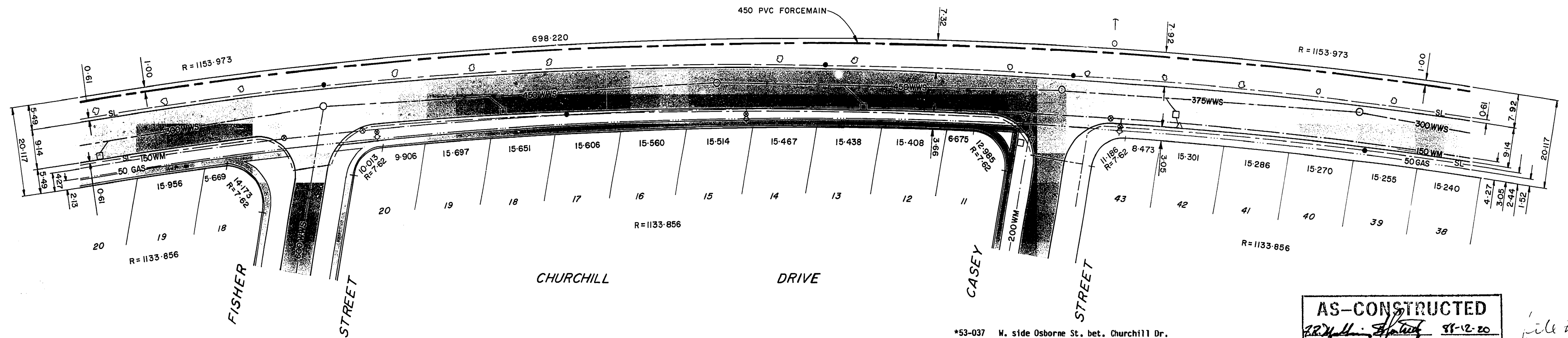
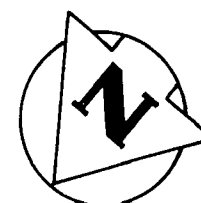
BALTIMORE FORCEMAIN
STA. 3+00 TO STA. 6+00

CITY DRAWING NUMBER
SHEET 2 OF 6
1235

file # SP10362



CHURCHILL PARK
PT. BLK. 12



NOTE: CHAINAGE ALONG C.L. OF FORCEMAIN

*53-037 W. side Osborne St. bet. Churchill Dr. & Montague Ave., Tblc. in Conc. Wall, 6.3 m W. of C.L. of S. traffic lane & 40.9 m S. of C.L. Public Lane N. of Churchill Dr. (Pedestrian Underpass)

AS-CONSTRUCTED
R.M. Giblin 88-12-20
 SURVEY ENGINEERING DATE
 WATERWORKS, WASTE & DISPOSAL DEPARTMENT
 File # FM10097

EXISTING	LEGEND-PLAN	PROPOSED	EXISTING	LEGEND-PLAN	PROPOSED	EXISTING	LEGEND-PROFILE	PROPOSED
	WATERMAIN			WATERMAIN			WATERMAIN	
	HYDRANT			HYDRANT			HYDRANT	
	VALVE			VALVE			VALVE	
	LAND DRAINAGE SEWER			LAND DRAINAGE SEWER			LAND DRAINAGE SEWER	
	WASTE WATER SEWER			WASTE WATER SEWER			WASTE WATER SEWER	
	MANHOLE			MANHOLE			MANHOLE	
	CATCH BASIN			CATCH BASIN			CATCH BASIN	
	CURB INLET			CURB INLET			CURB INLET	
	JUNCTIONS			JUNCTIONS			JUNCTIONS	
	CULVERT			CULVERT			CULVERT	
	GAS			GAS			GAS	
	HYDRO M.T.S.			HYDRO M.T.S.			HYDRO M.T.S.	
	CONCRETE			CONCRETE			CONCRETE	
	ASPHALT			ASPHALT			ASPHALT	
	PROPERTY LINE			PROPERTY LINE			PROPERTY LINE	
	SURVEY BAR			SURVEY BAR			SURVEY BAR	

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. 53-037 ELEV. 232.792	FIELD BOOK F-656
DESIGNED BY JE	CHECKED BY RMG
DRAWN BY EN	APPROVED BY <i>R.M.G.</i>
HOR. SCALE: 1:500	RELEASED FOR CONSTRUCTION
VERTICAL: 1:50	<i>R.M. Giblin</i>
1 REV'D TO AS CONSTRUCTED	12-1988 EN
NO REVISIONS	DATE BY

WORKS & OPERATIONS DIVISION
WATERWORKS, WASTE & DISPOSAL DEPARTMENT

DESIGNED BY: JE
 CHECKED BY: RMG
 DRAWN BY: EN
 APPROVED BY: *R.M.G.*
 HOR. SCALE: 1:500
 VERTICAL: 1:50
 1 REV'D TO AS CONSTRUCTED 12-1988 EN
 NO REVISIONS DATE BY

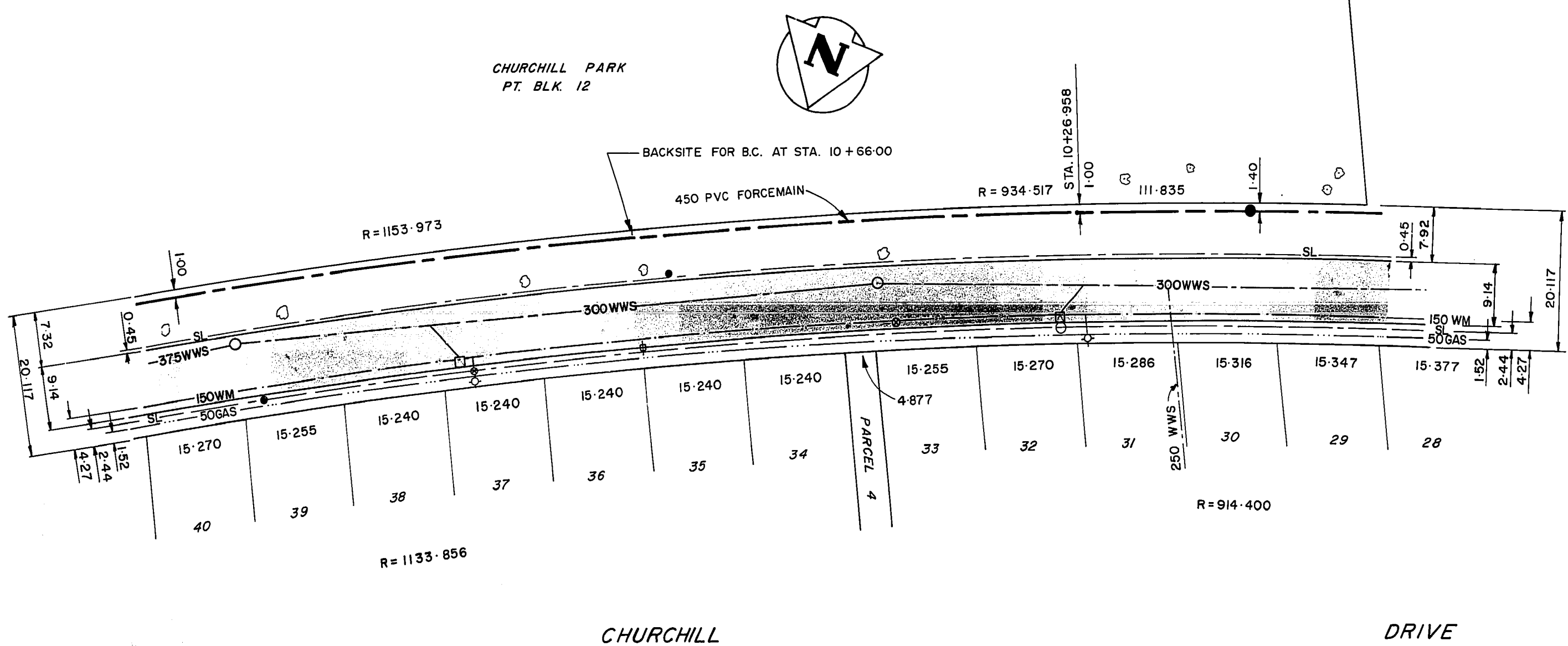
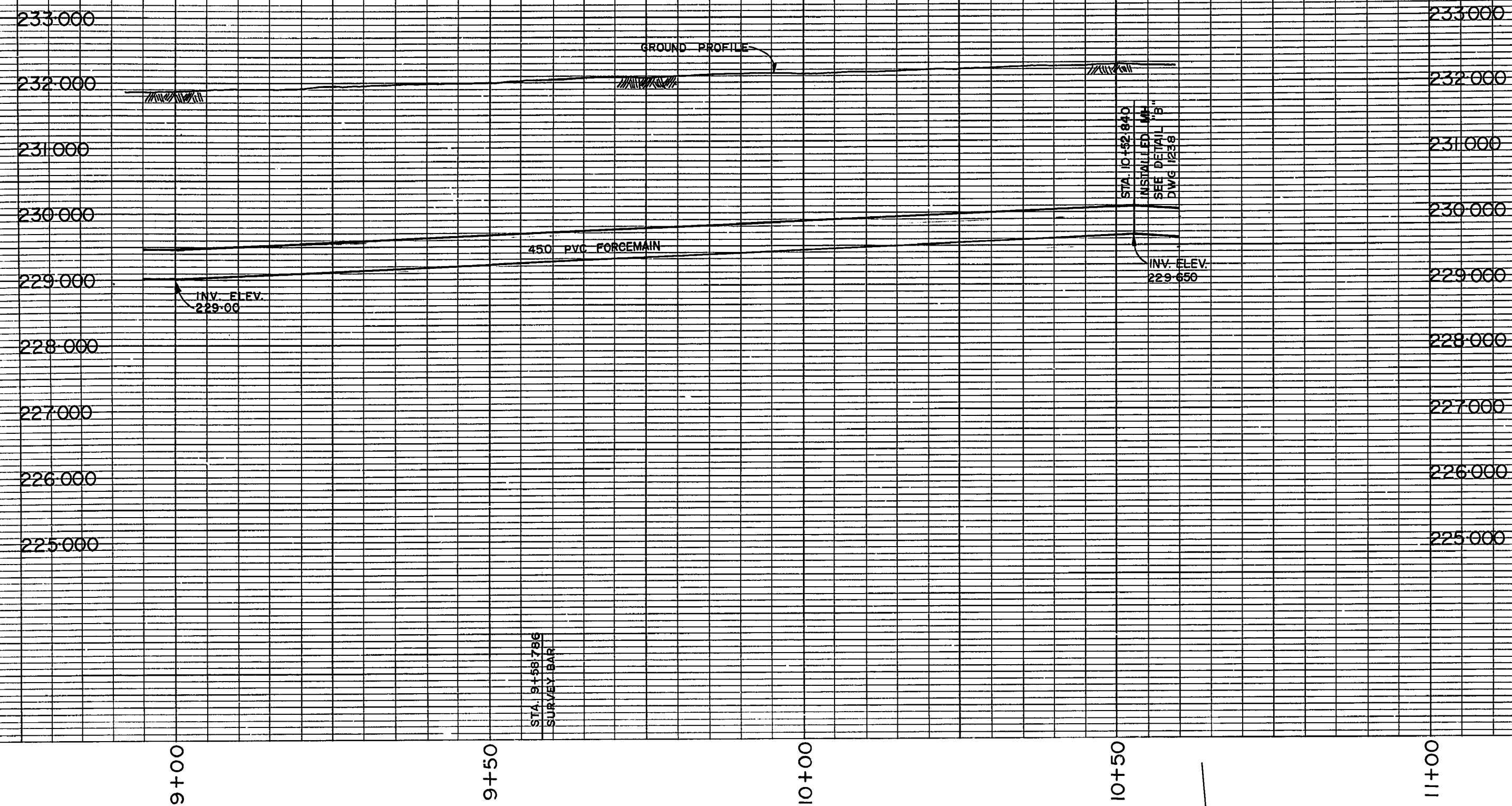
ENGINEER'S SEAL

 CONSULTANT DRAWING NO.

THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION

BALTIMORE FORCEMAIN
 STA. 6+00 TO STA. 9+00

CITY DRAWING NUMBER
 SHEET 3 OF 6
 1236



*53-037 W. side Osborne St. bet. Churchill Dr. & Montague Ave., Tblt. in Conc. Wall, 6.3 m W. of C.L. of S. traffic lane & 40.9 m S. of C.L. Public Lane N. of Churchill Dr. (Pedestrian Underpass)

AS-CONSTRUCTED
 22 July 1987 98-12-20
 SURVEY ENGINEER'S DATE
 WATERWORKS, WASTE & DISPOSAL DEPARTMENT

file #
 FM 10098

NOTE: CHAINAGE ALONG Q. OF FORCEMAIN

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

LOCATION APPROVED UNDERGROUND STRUCTURES

SUPV. U/G STRUCTURES DATE COMMITTEE

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

B.M. 53-037 ELEV. 232.792	FIELD BOOK F-656
DESIGNED BY JE	CHECKED BY RMG
DRAWN BY EN	APPROVED BY <i>Rub</i>
HOR. SCALE: 1:500	RELEASED FOR CONSTRUCTION <i>Rm. Siley</i>
VERTICAL: 1:50	DATE 88-06-29
NO. REVISIONS	DATE BY
1	REV'D TO AS CONSTRUCTED 12-1988 EN
	DATE AUGUST 1987

WORKS & OPERATIONS DIVISION
 WATERWORKS, WASTE & DISPOSAL DEPARTMENT

ENGINEER'S SEAL

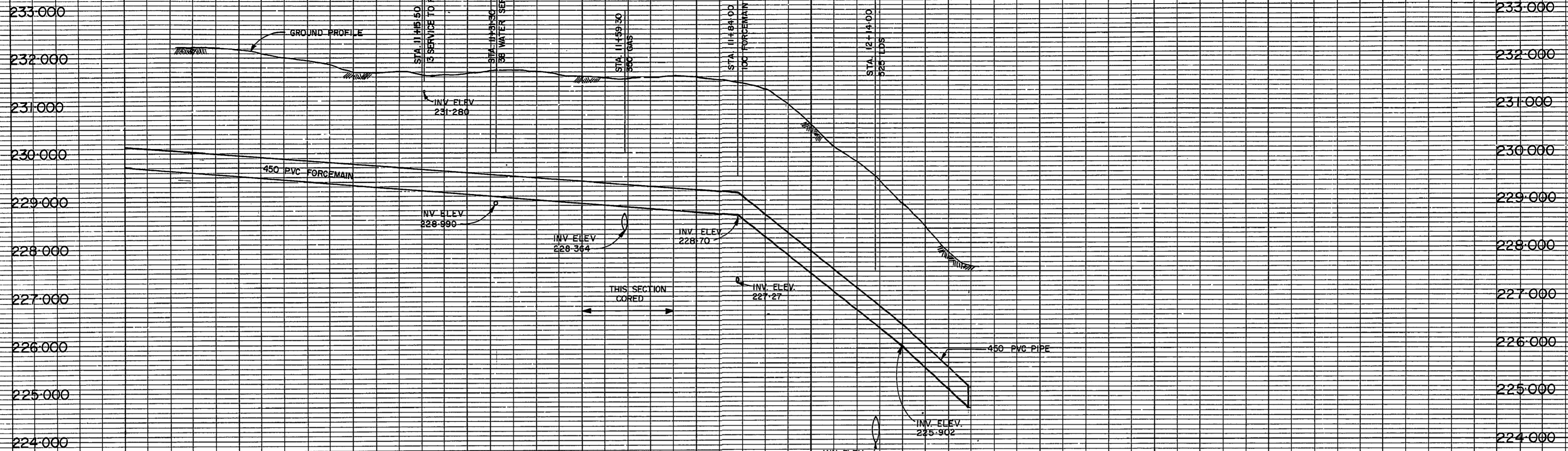
CONSULTANT DRAWING NO.

THE CITY OF WINNIPEG
 WORKS AND OPERATIONS DIVISION

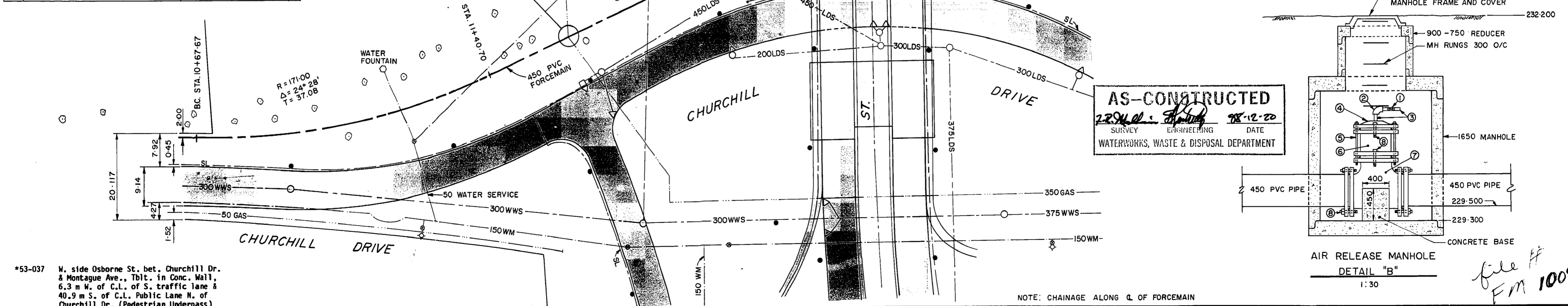
BALTIMORE FORCEMAIN
 STA. 9+00 TO STA. 10+60

CITY DRAWING NUMBER
 SHEET 4 OF 6
 1237

WO 102-84



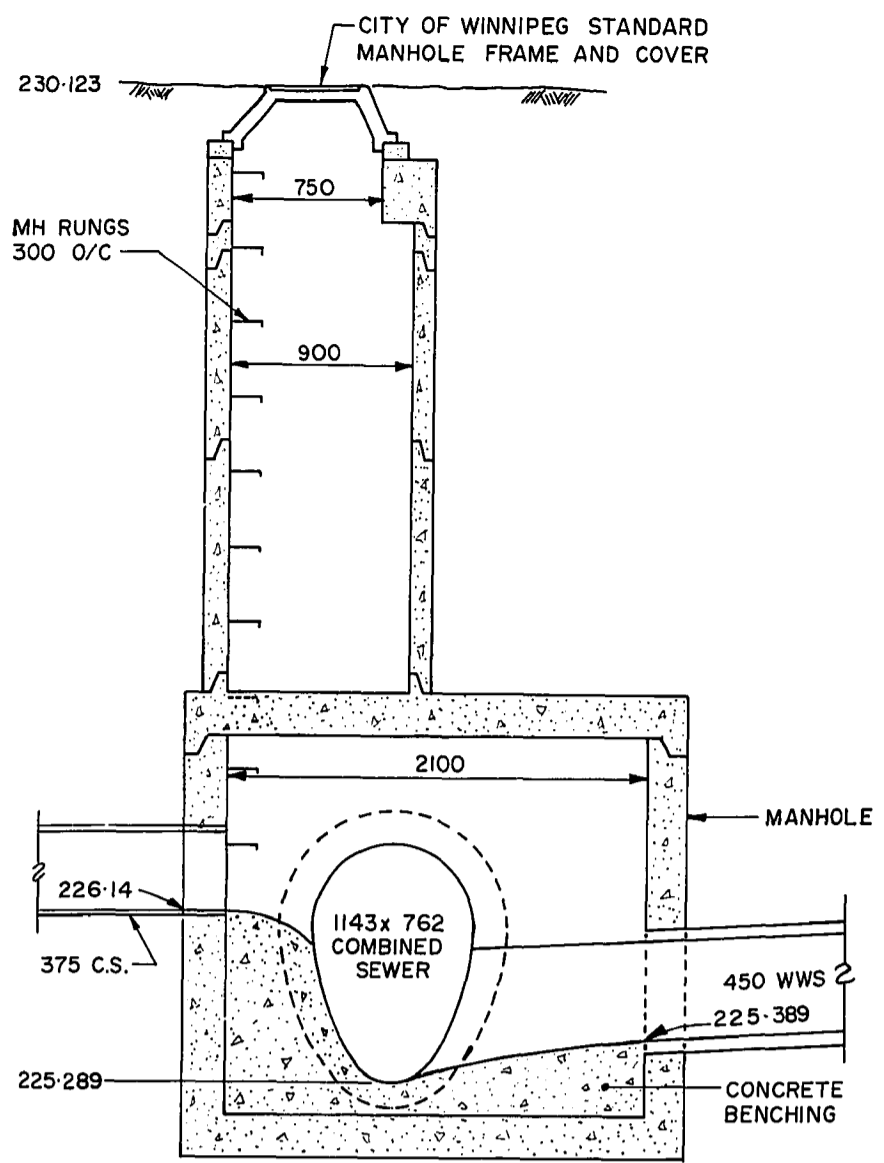
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1	BRONZE GATE VALVE (THREADED)		50	1
2	90° BRONZE OR BRASS ELBOW (THREADED)		50	1
3	BRONZE OR BRASS NIPPLE (THREADED)		50	2
4	MECHANICAL JOINT CAP		450	1
5	3/16 S.S. THREADED ROD C/W NUTS AND WASHERS		19	4
6	PVC PIPE	300	450	1
7	MECHANICAL JOINT TEE	450x450x450	450	1
8	3/16 S.S. BOLTS C/W NUTS & WASHERS	114	19	40



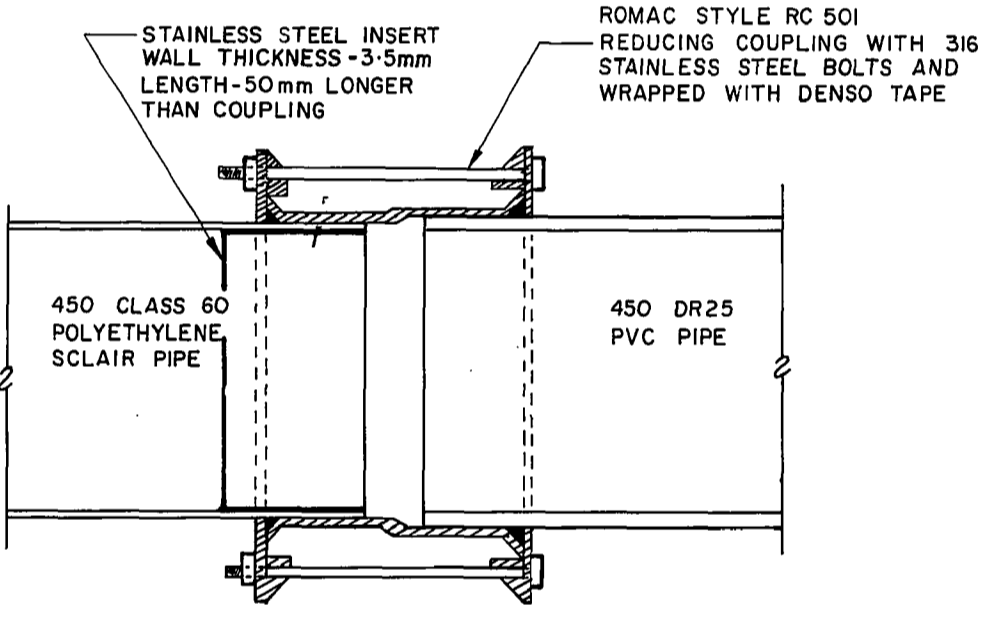
*53-037 W. side Osborne St. bet. Churchill Dr. & Montague Ave., Tblt. in Conc. Wall, 6.3 m W. of C.L. of S. traffic lane & 40.9 m S. of C.L. Public Lane N. of Churchill Dr. (Pedestrian Underpass)

NOTE: CHAINAGE ALONG C. OF FORCEMAIN

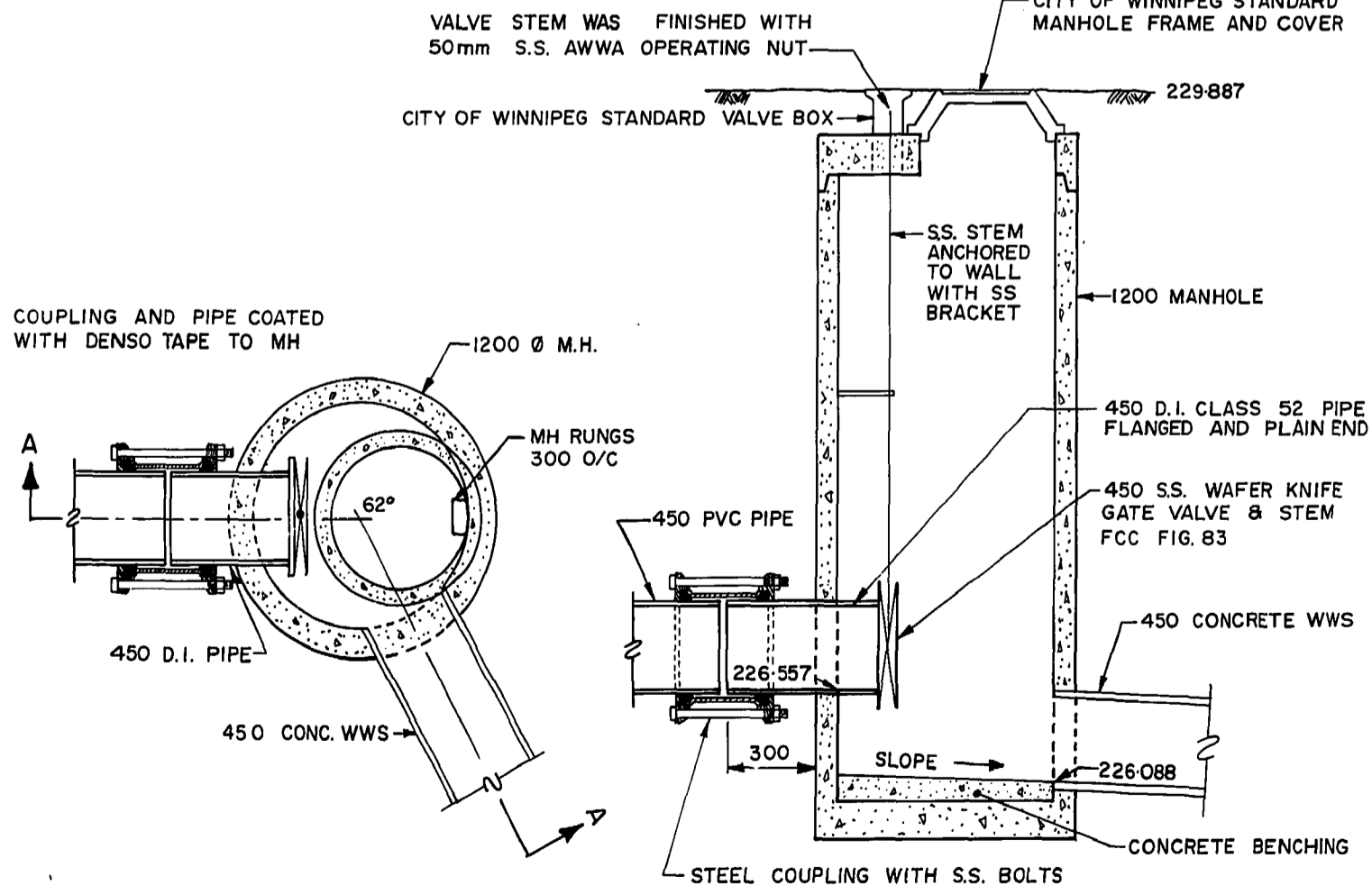
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EXISTING	LEGEND-PLAN	PROPOSED	EXISTING	LEGEND-PLAN	PROPOSED	EXISTING	LEGEND-PROFILE	PROPOSED																																																																																								
150 mm W.M.	WATERMAIN	150 mm W.M.	HYDRO	150 mm W.M.	WATERMAIN	300 mm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



DISCHARGE MANHOLE DETAIL "D" 1:30

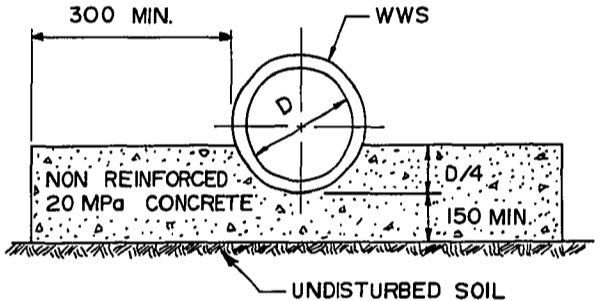
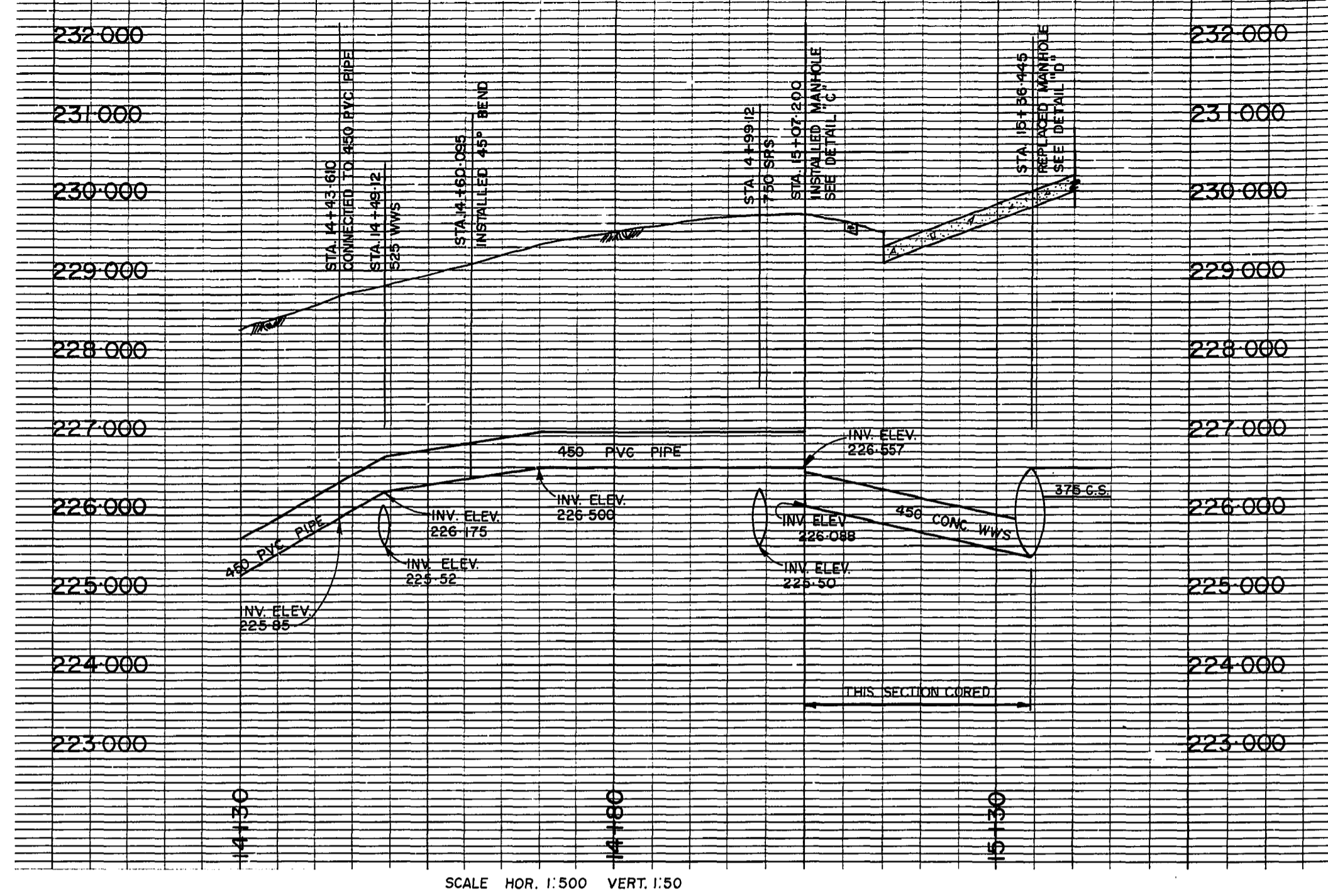
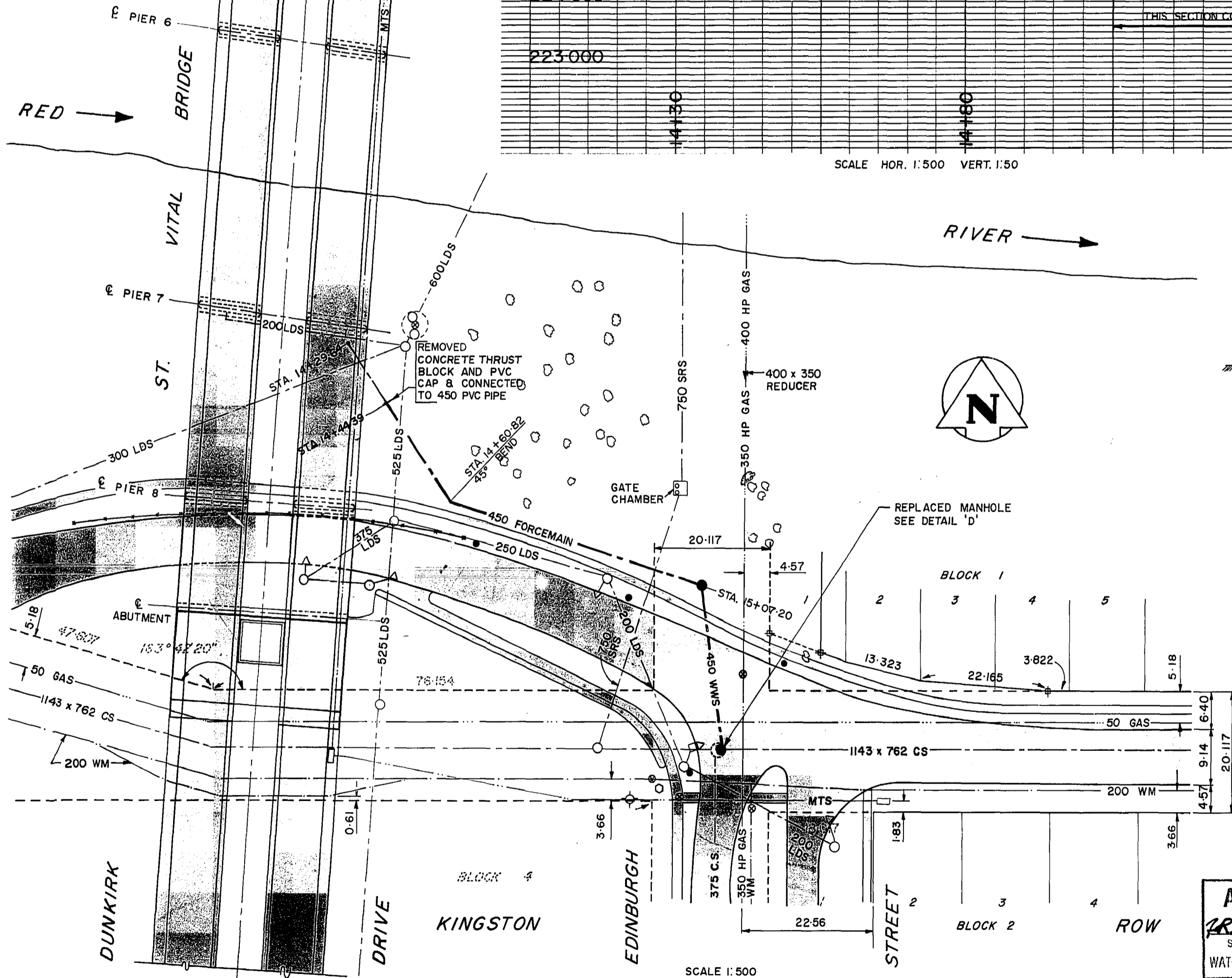
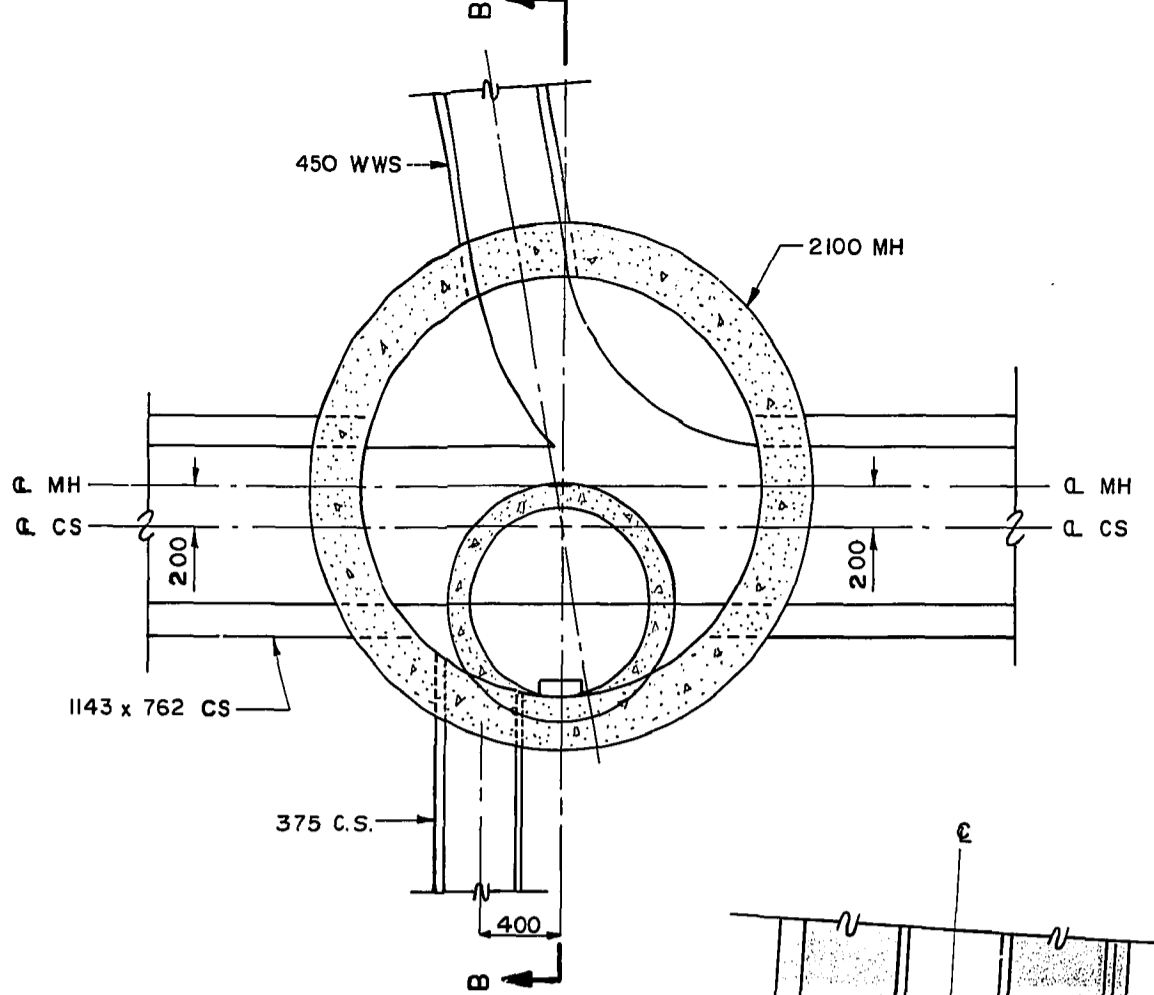


DETAIL "A" NTS



VALVE MANHOLE DETAIL "C" 1:30

54-006 74M511 - 1bt. in S. face of E. Conc. Pier in 1st Row of Conc. Piers N. of S. end of Osborne St. Bridge over Red River, N. of Kingston Row, 5 m W. of E. end of Pier.



CONCRETE CRADLE DETAIL AT SHAFT LOCATIONS NTS

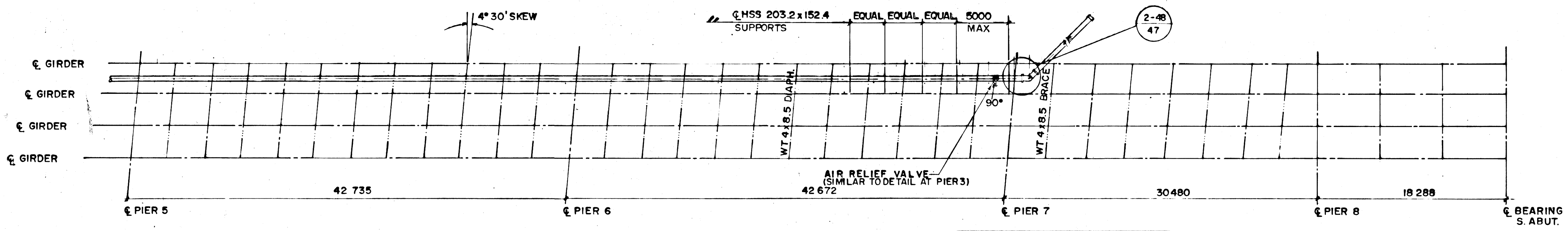
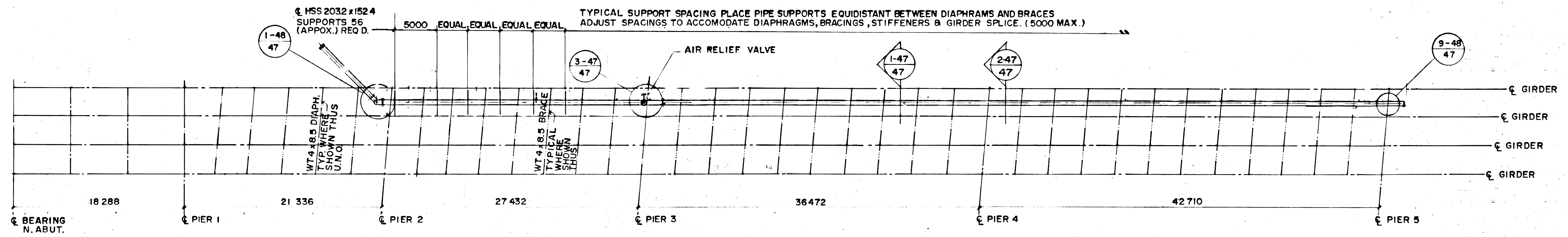
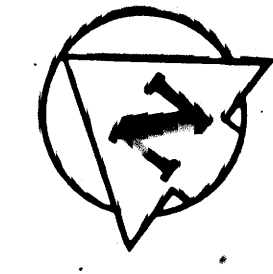
AS-CONSTRUCTED
 R.M. GIDLING 88-12-20
 SURVEY ENGINEERING DATE
 WATERWORKS, WASTE & DISPOSAL DEPARTMENT

B.M. 54-006 ELEV. 228-166	FIELD BOOK F-656			THE CITY OF WINNIPEG WORKS AND OPERATIONS DIVISION		CITY DRAWING NUMBER
DESIGNED BY JE	CHECKED BY RMG			BALTIMORE FORCEMAIN STA. 14+29-64 TO STA. 15+34-50 AND DETAILS		SHEET 6 OF 6
DRAWN BY EN	APPROVED BY [Signature]	HOR. SCALE: AS SHOWN VERTICAL: AS SHOWN		RELEASED FOR CONSTRUCTION R.M. Gidling DATE 88-06-29	CITY DRAWING NUMBER	
NO. REVISIONS	DATE BY	DATE SEPTEMBER 1987	DATE 88-06-29	CONSULTANT DRAWING NO.	1239	

file # FM10100

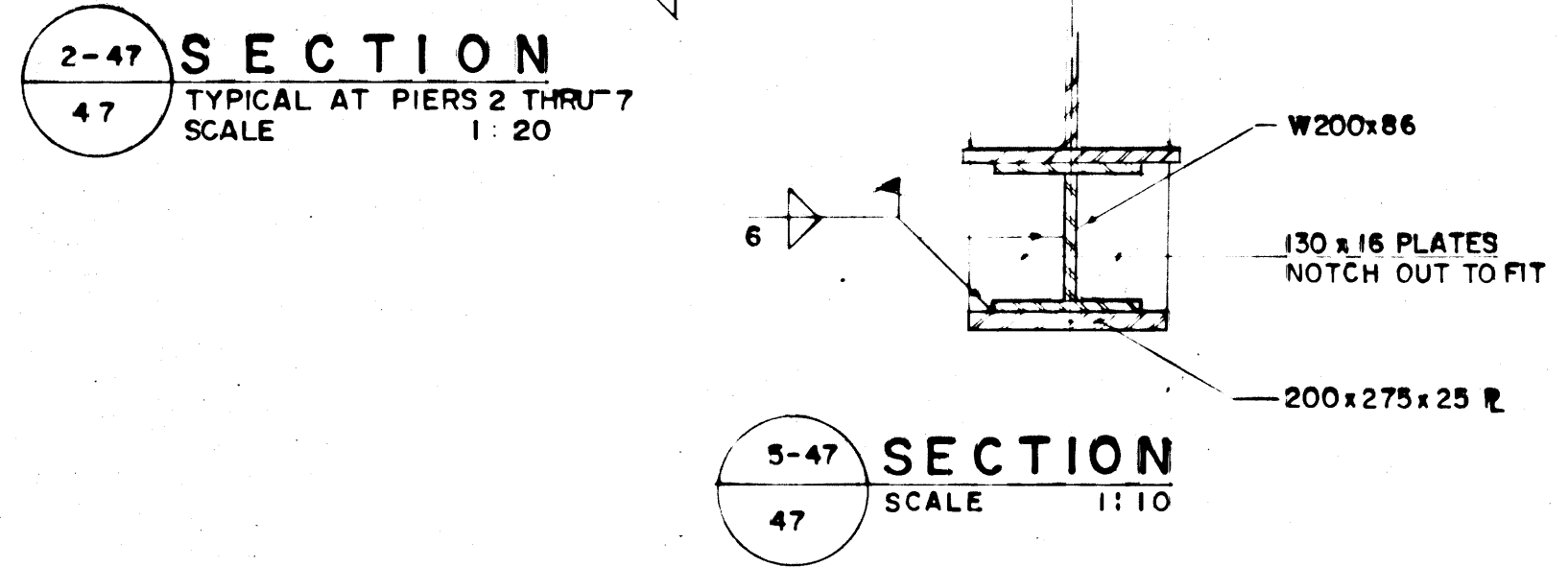
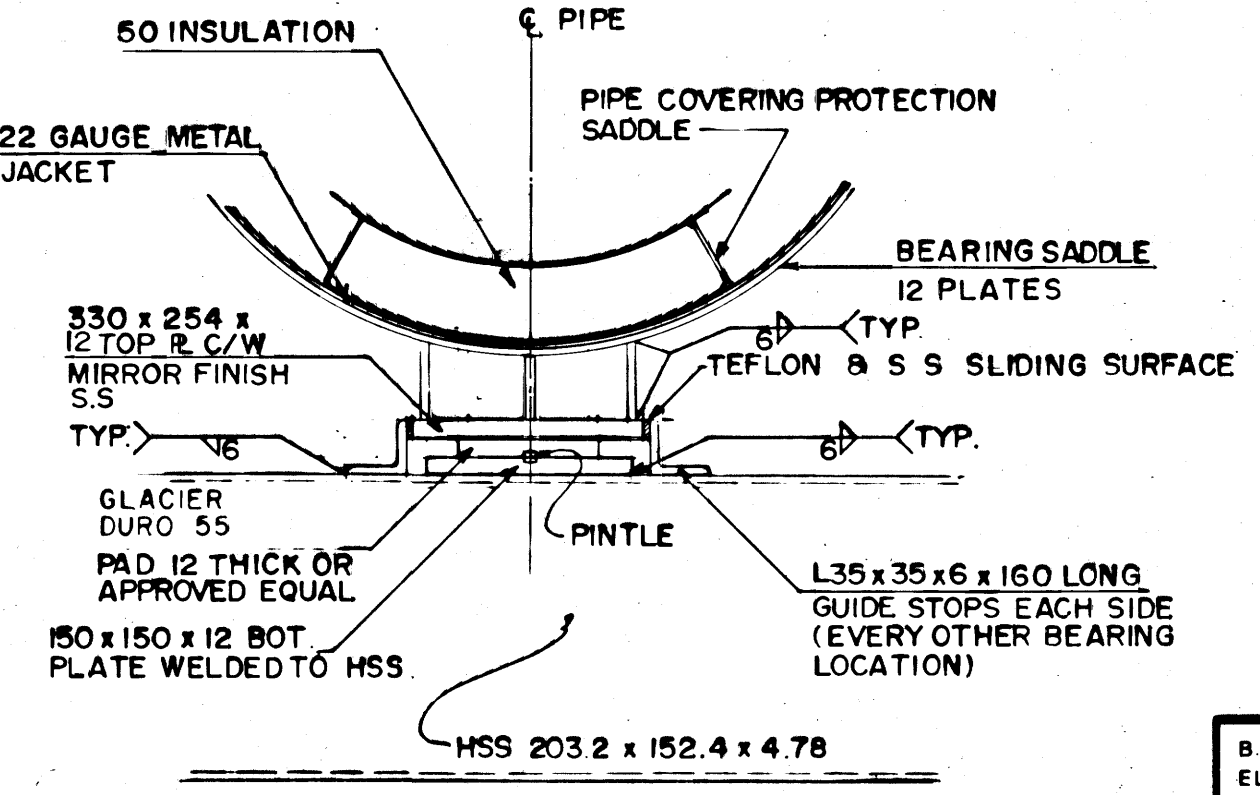
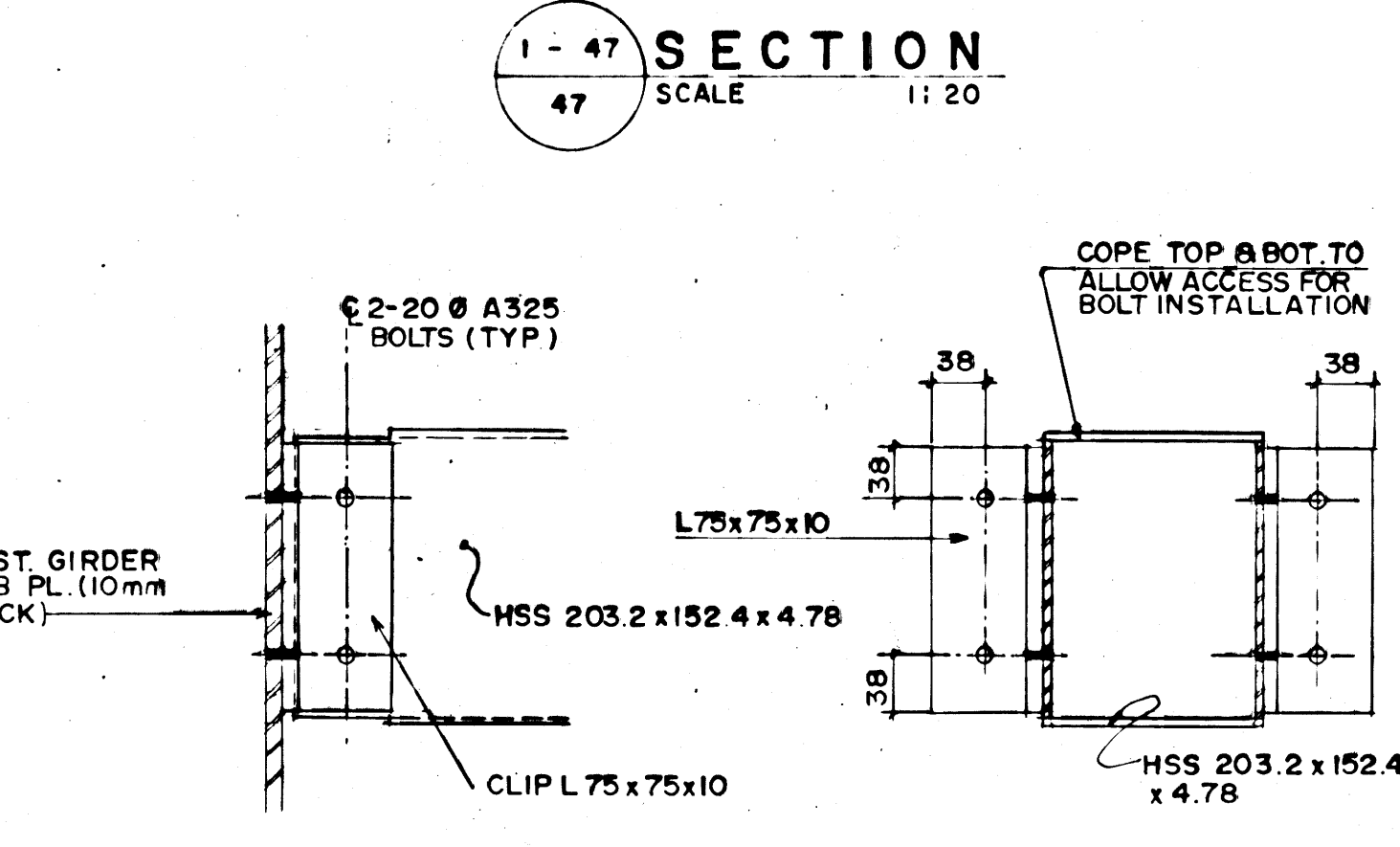
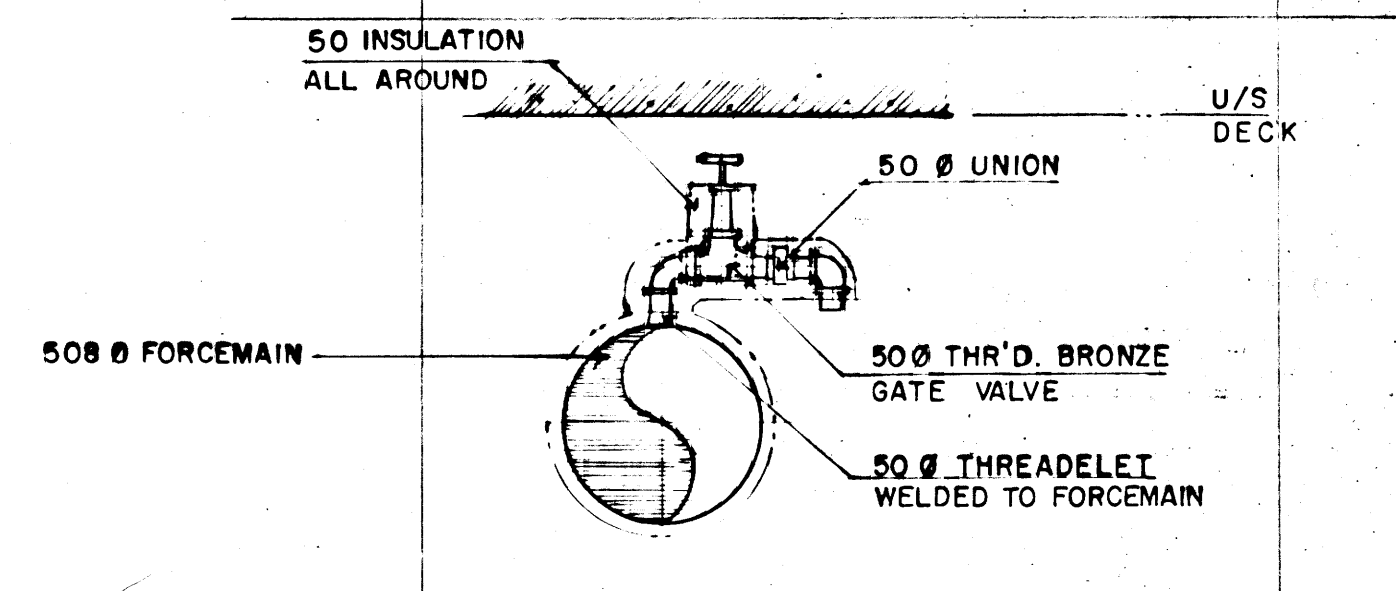
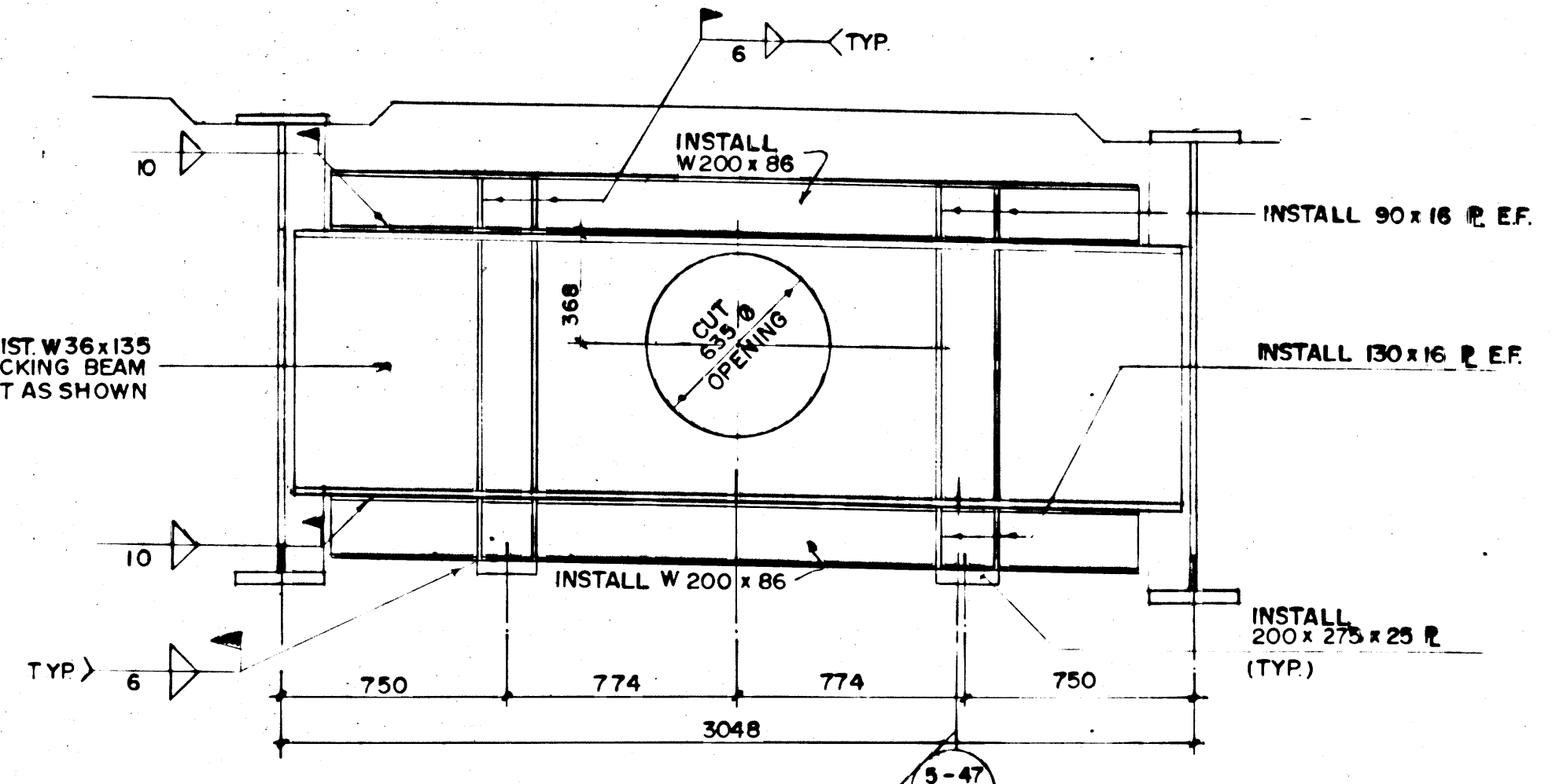
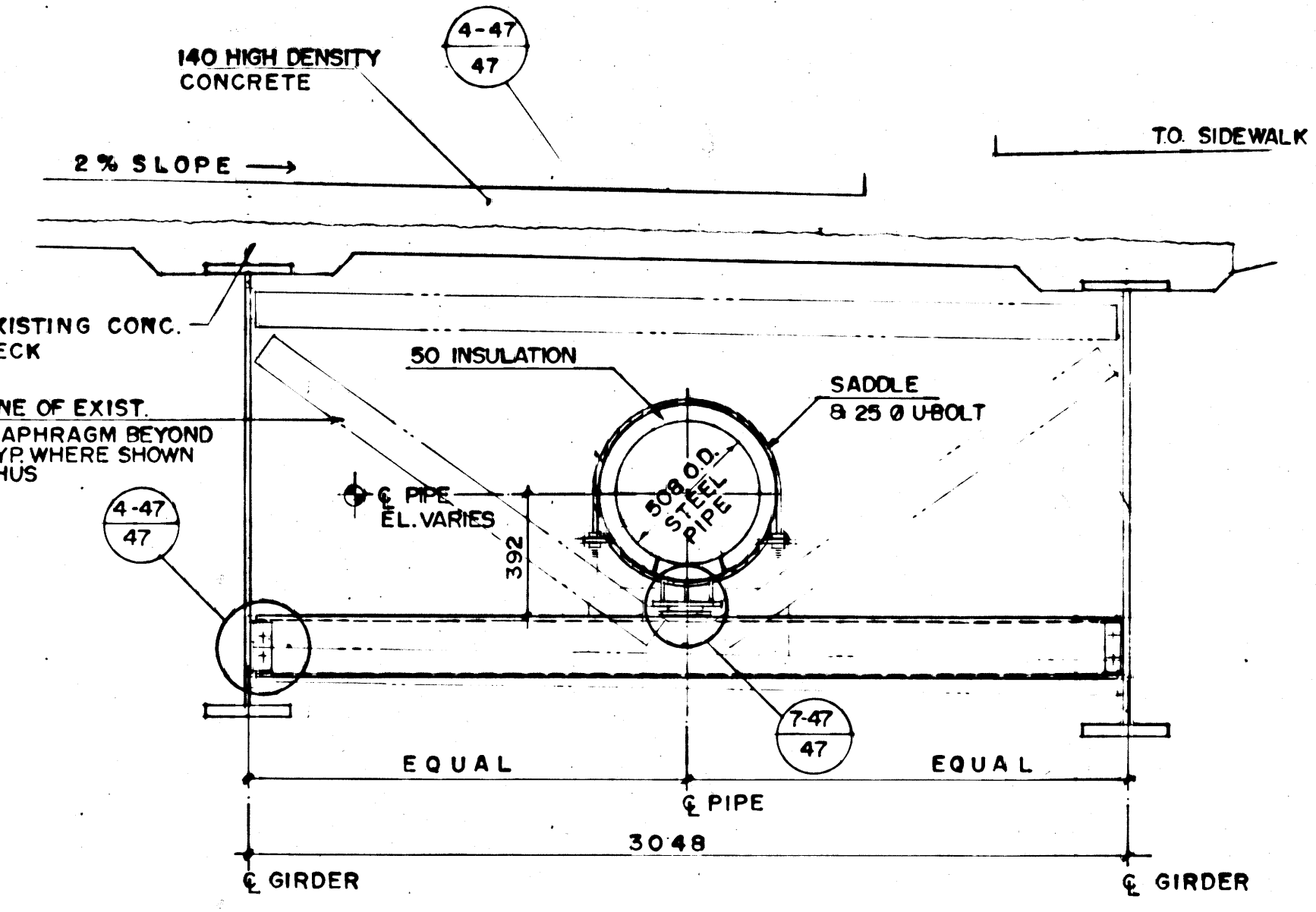
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REF. or DRAWING No. 1328 DETAILS



FOR EXTENSION OF AIR RELEASE VALVE AT PIER 7 SEE DRAWING 1351

SEWAGE FORCEMAIN LAYOUT NORTHBOUND STRUCTURE



REID, CROWTHER & PARTNERS LIMITED WINNIPEG AS CONSTRUCTED DATE: 89-06-14

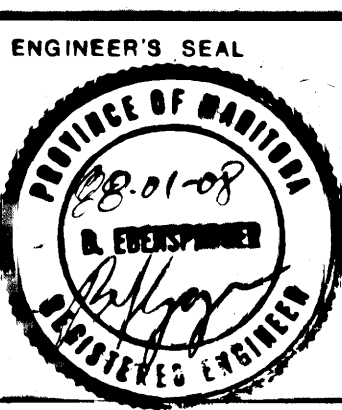
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ELEVATION SECTION DETAIL 4-47 SCALE 1:5

BEARING DETAIL 7-47 SCALE 1:5

NOTE: BEARINGS SUPPLIED BY WG BEARING INC. BURLINGTON ON. PROJECT NO. P1656-87

B.M. ELEV.					
DESIGNED BY	B.E.	CHECKED BY	W.J.M.	REID CROWTHER & PARTNERS LTD. ENGINEERS-PARTNERS-SCANNERS	
DRAWN BY	R.C.S.	APPROVED BY		BALTIMORE	
2	ADDED NOTE	06/92	EN	STREETS & BRIDGE ENGINEER / DATE	
1	AS CONSTRUCTED	89-6-13	KPK	ACCEPTED BY DATE	
NO	REVISIONS	DATE	BY	DATE	BRIDGE ENGINEER



THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
WATERWORKS, WASTE & DISPOSAL DEPT.

ST. VITAL TWIN BRIDGE OVER RED RIVER
STRUCTURE REHABILITATION AND RELATED WORKS

CITY DRAWING NUMBER B116-88-47
SHEET 47 OF 48

BALTIMORE
SEWAGE FORCEMAIN LAYOUT & DETAILS

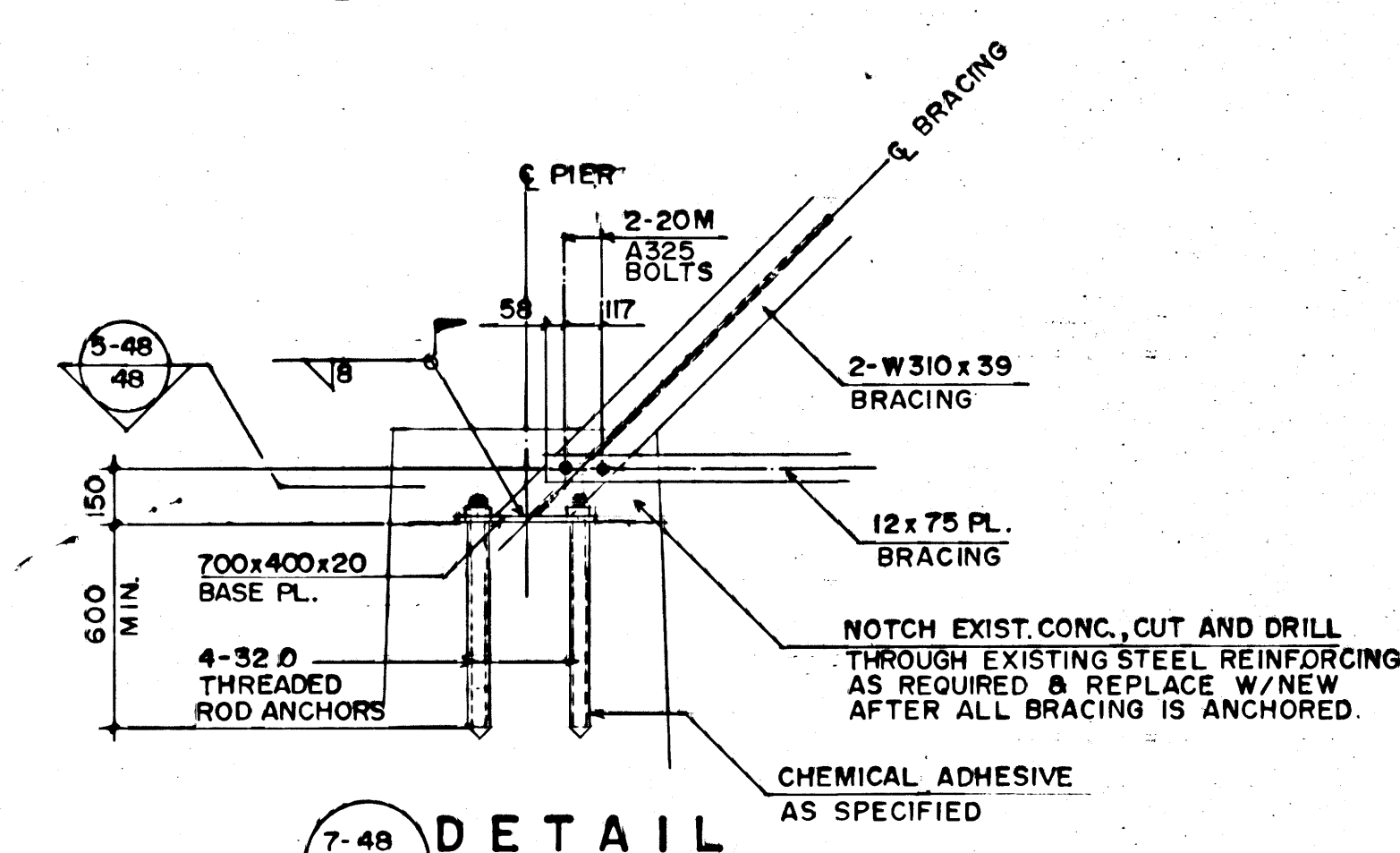
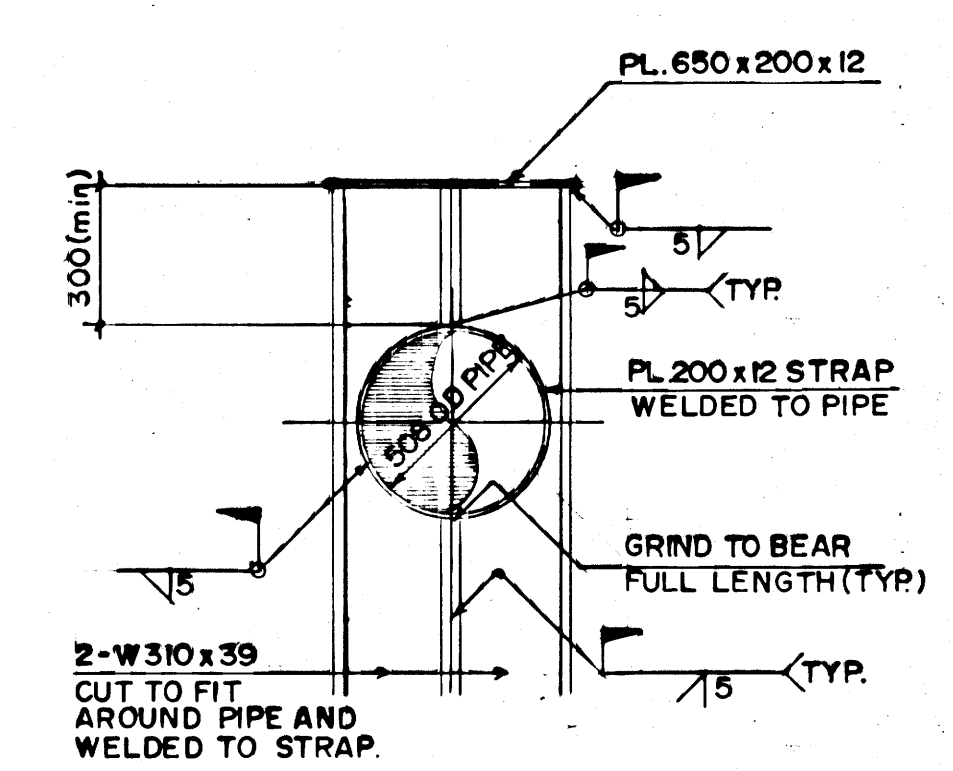
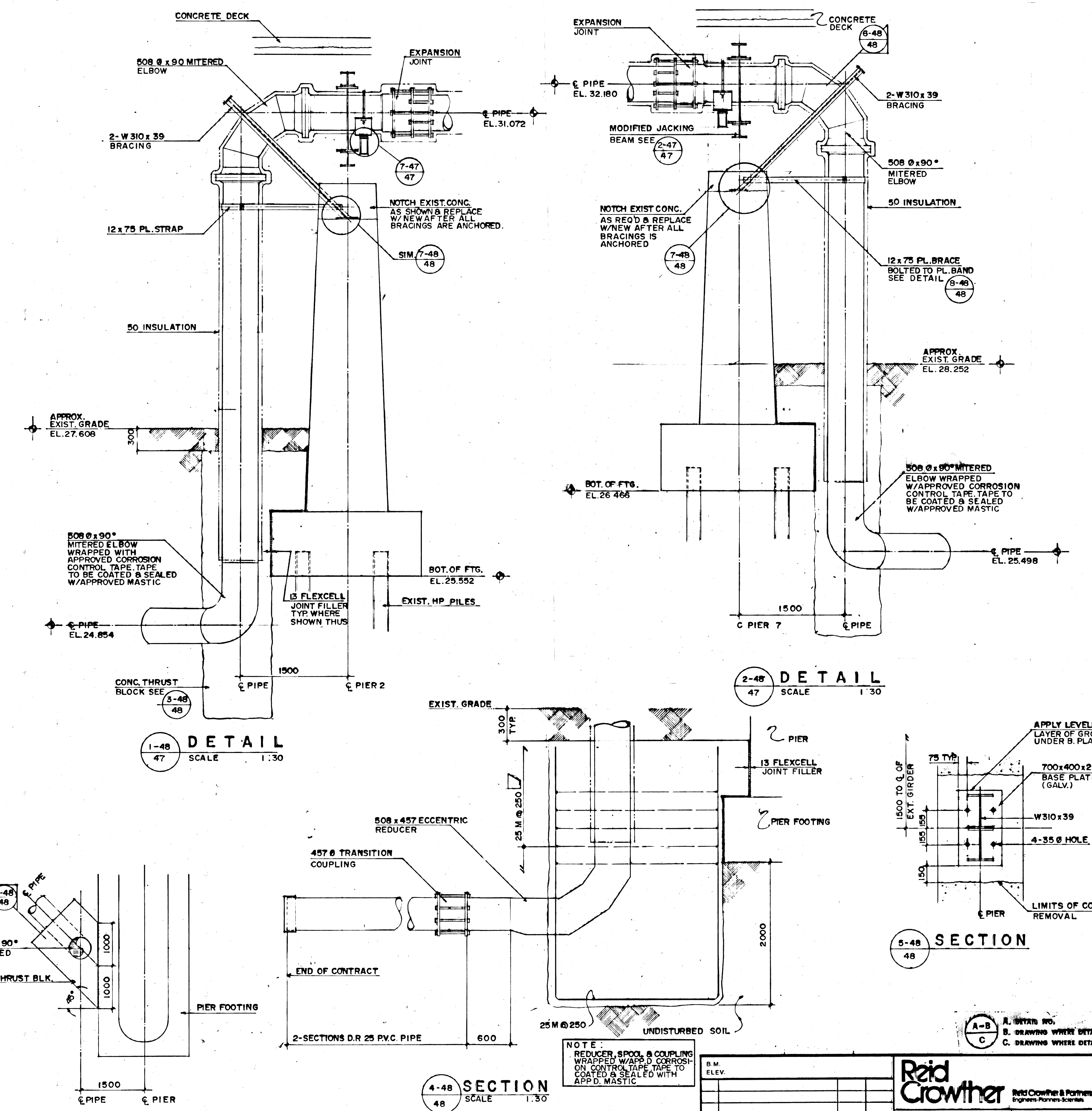
CONSULTANT DRAWING NO. 61056-01

1328

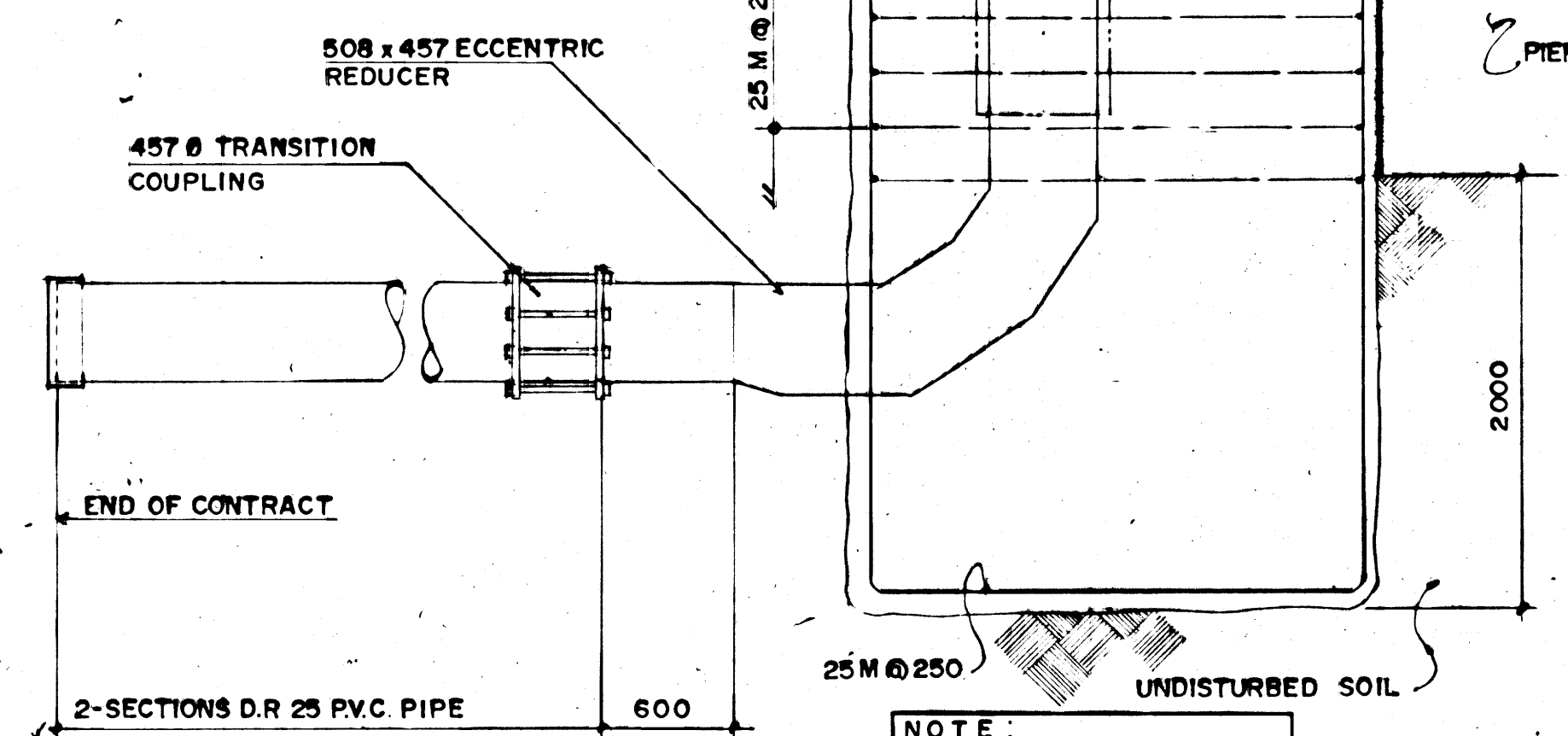
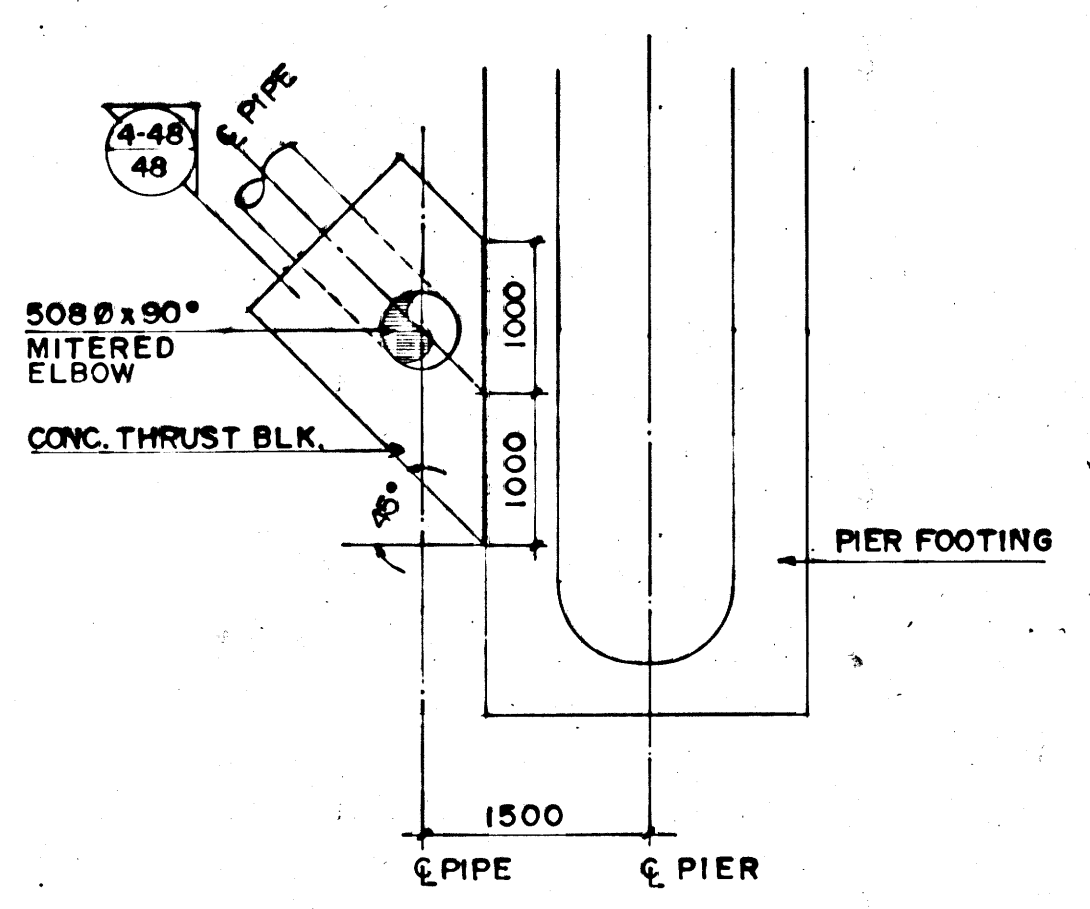
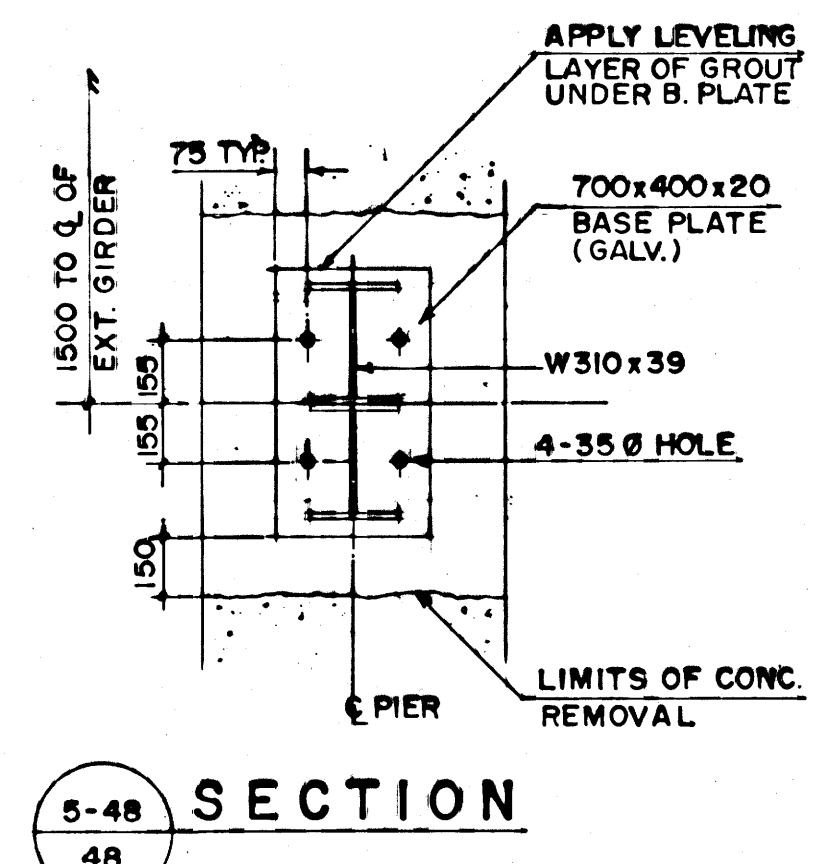
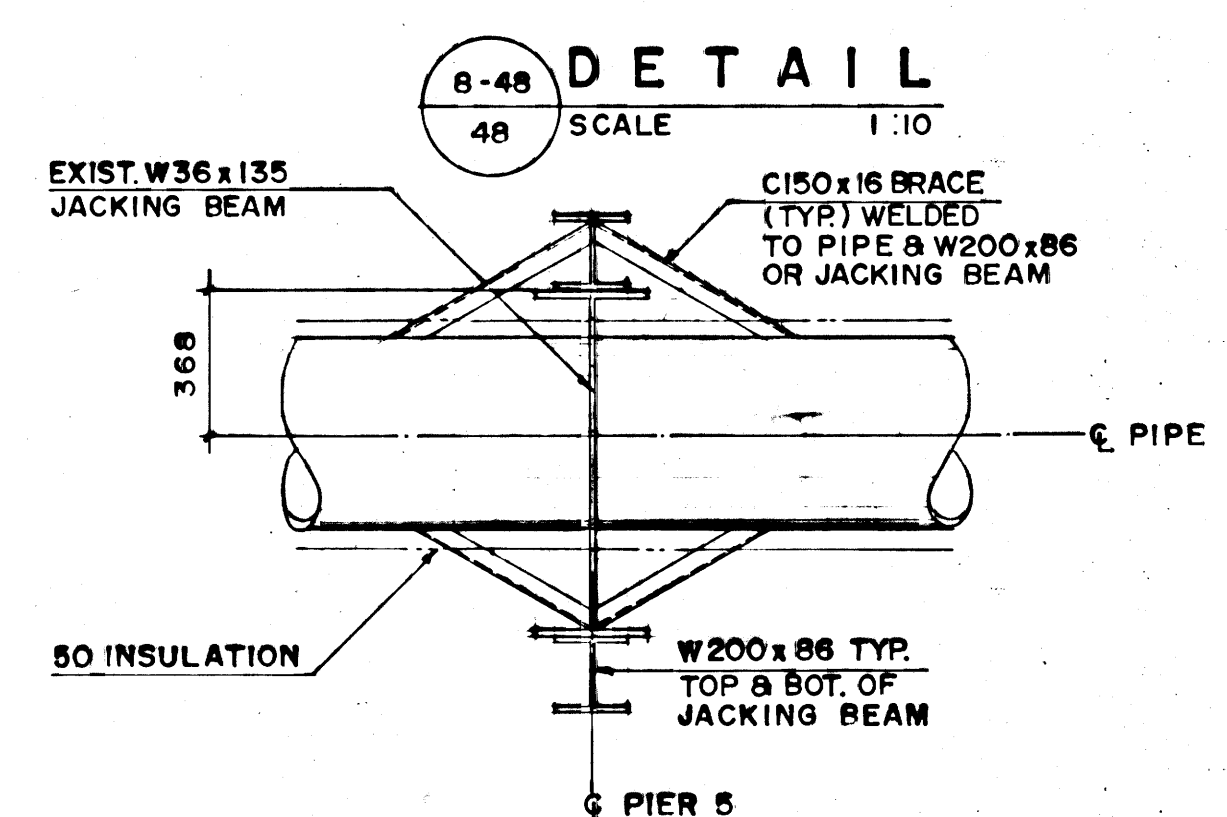
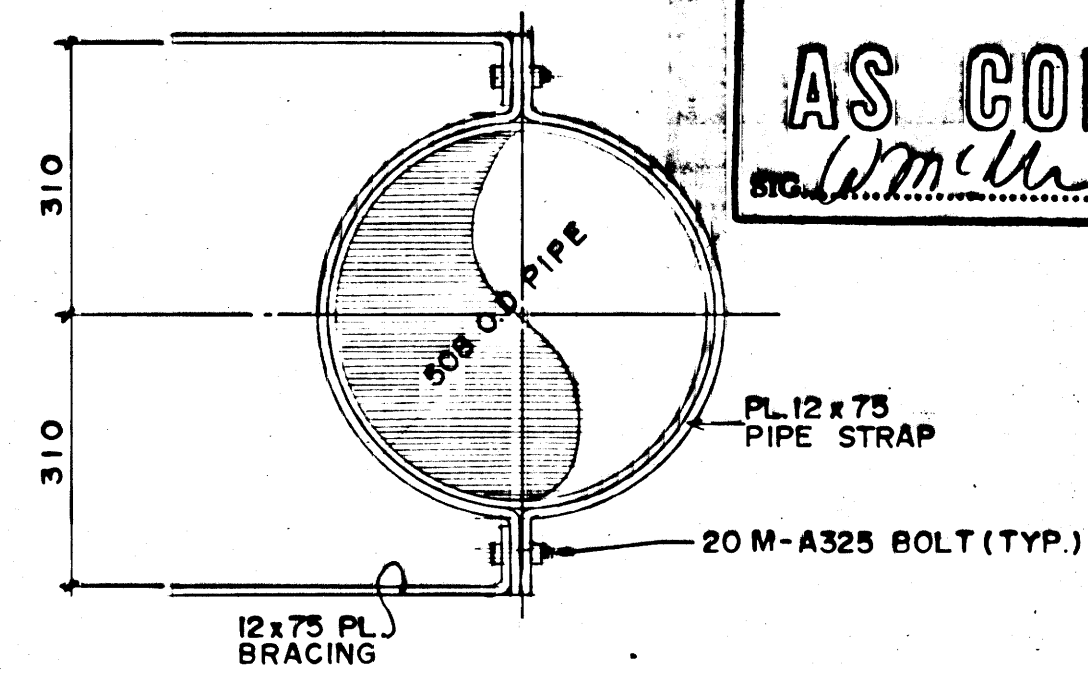
file # FM10115 1328

file # FM 10/16

REF. OF DRAWING NO. 1329 DETAILS



REID, CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
DATE: 89-06-13



NOTE: REDUCER, SPOOL & COUPLING WRAPPED W/APP'D CORROSION CONTROL TAPE TAPE TO BE COATED & SEALED W/APP'D MASTIC

NOTE: ALL SEWAGE FORCEMAIN STRUCTURAL STEEL AND MISCELLANEOUS METAL NOT DIP GALVANIZED EXCEPT PIPE SUPPORT COMPONENTS AND JACKING BEAM MODIFICATIONS TO BE PAINTED.

B.M. ELEV.	
DESIGNED BY	B.E.
CHECKED BY	W.J.M.
DRAWN BY	R.C.S.
HOR. SCALE:	1:20 U.N.O.
VERTICAL:	AS SHOWN
NO. REVISIONS	DATE BY
1	AS CONSTRUCTED 89-6-13 KPK

Reid Crowther Reid Crowther & Partners Ltd. Engineers-Planners-Scientists

DESIGNED BY B.E. CHECKED BY W.J.M.
 DRAWN BY R.C.S. APPROVED BY [Signature]
 AUTHORIZED BY [Signature]
 STREETS & BRIDGE ENGINEER / DATE: 89-06-13
 BRIDGE ENGINEER / DATE: 89-06-13

ENGINEER'S SEAL: PROVINCE OF MANITOBA, B. CROWTHER, REGISTERED ENGINEER

CONSULTANT DRAWING NO. 61056-02

THE CITY OF WINNIPEG
WORKS AND OPERATIONS, DIVISION
WATERWORKS, WASTE & DISPOSAL DEPT.

ST. VITAL TWIN BRIDGE OVER RED RIVER
STRUCTURE REHABILITATION AND RELATED WORKS

BALTIMORE
SEWAGE FORCEMAIN
SECTIONS & DETAILS

CITY DRAWING NUMBER: B116-88-48
SHEET 48 OF 48

1329

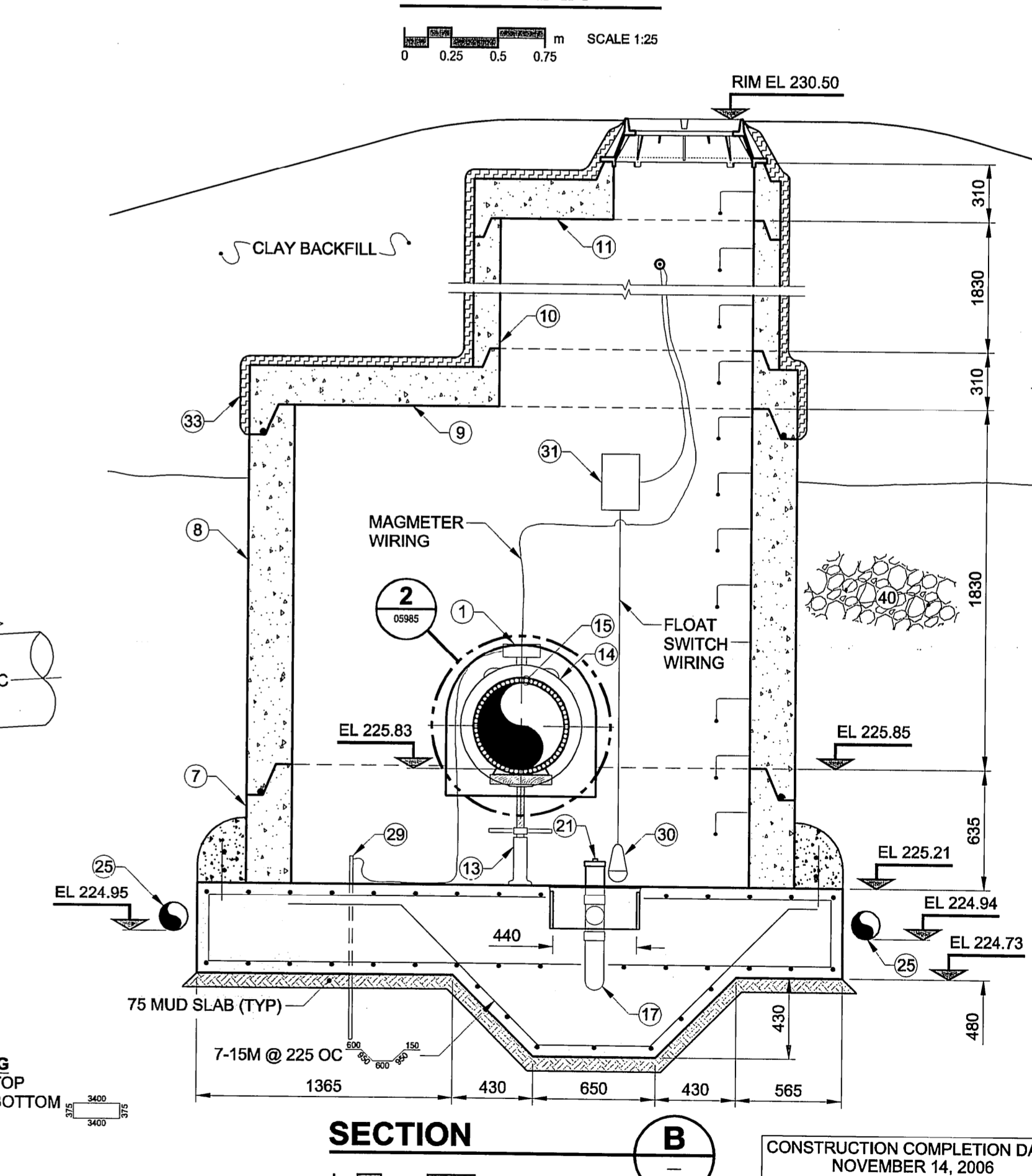
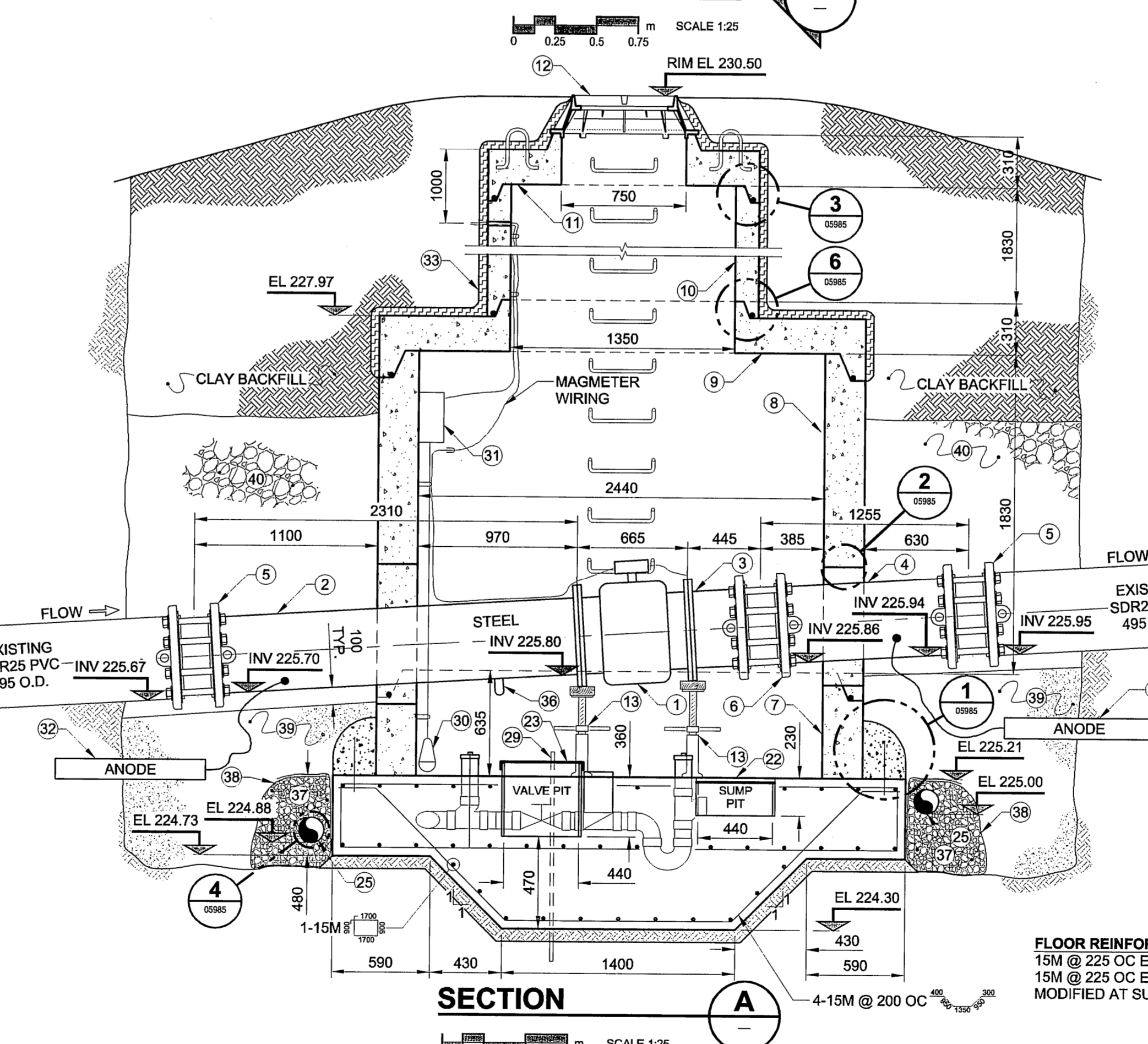
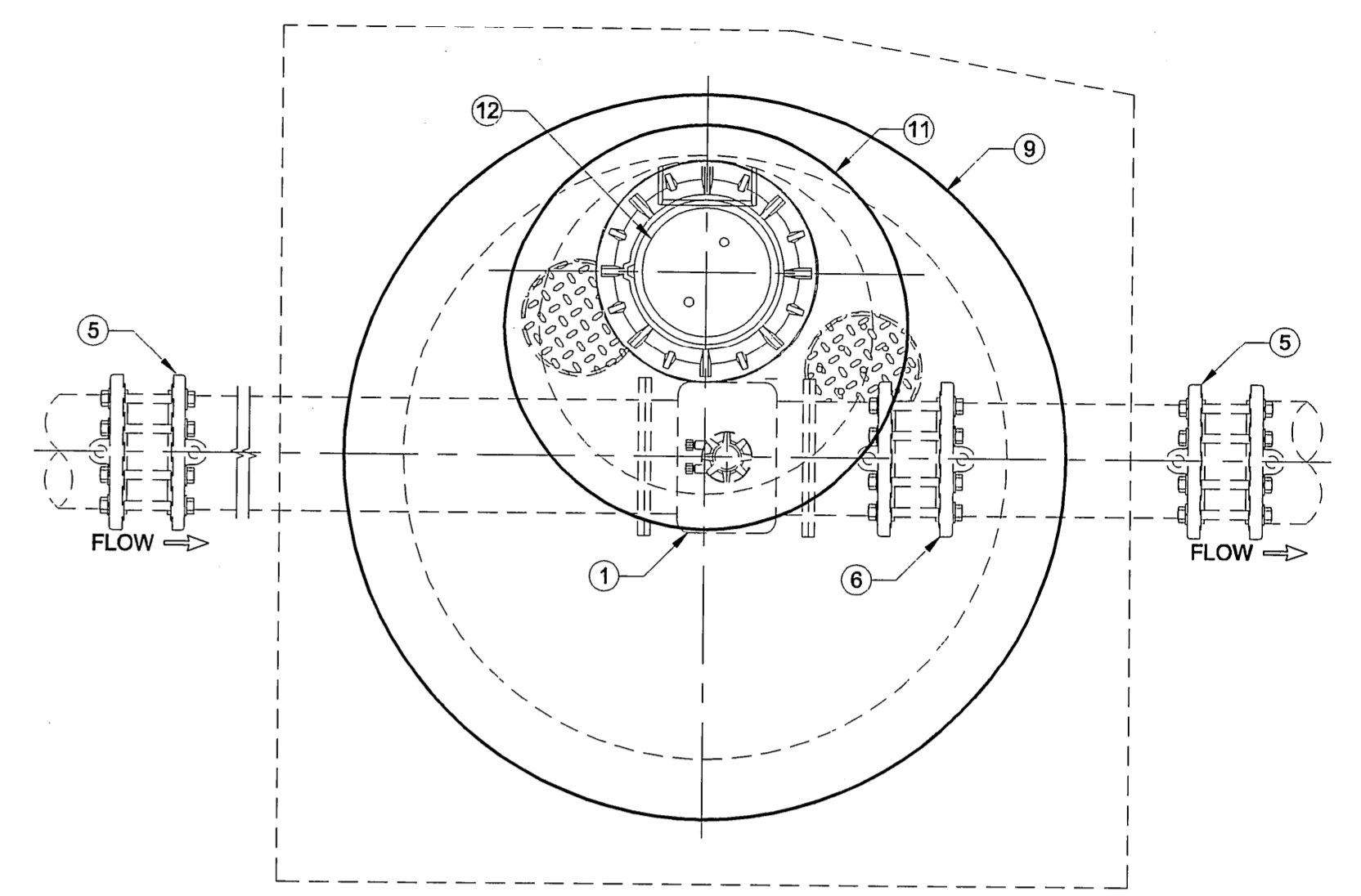
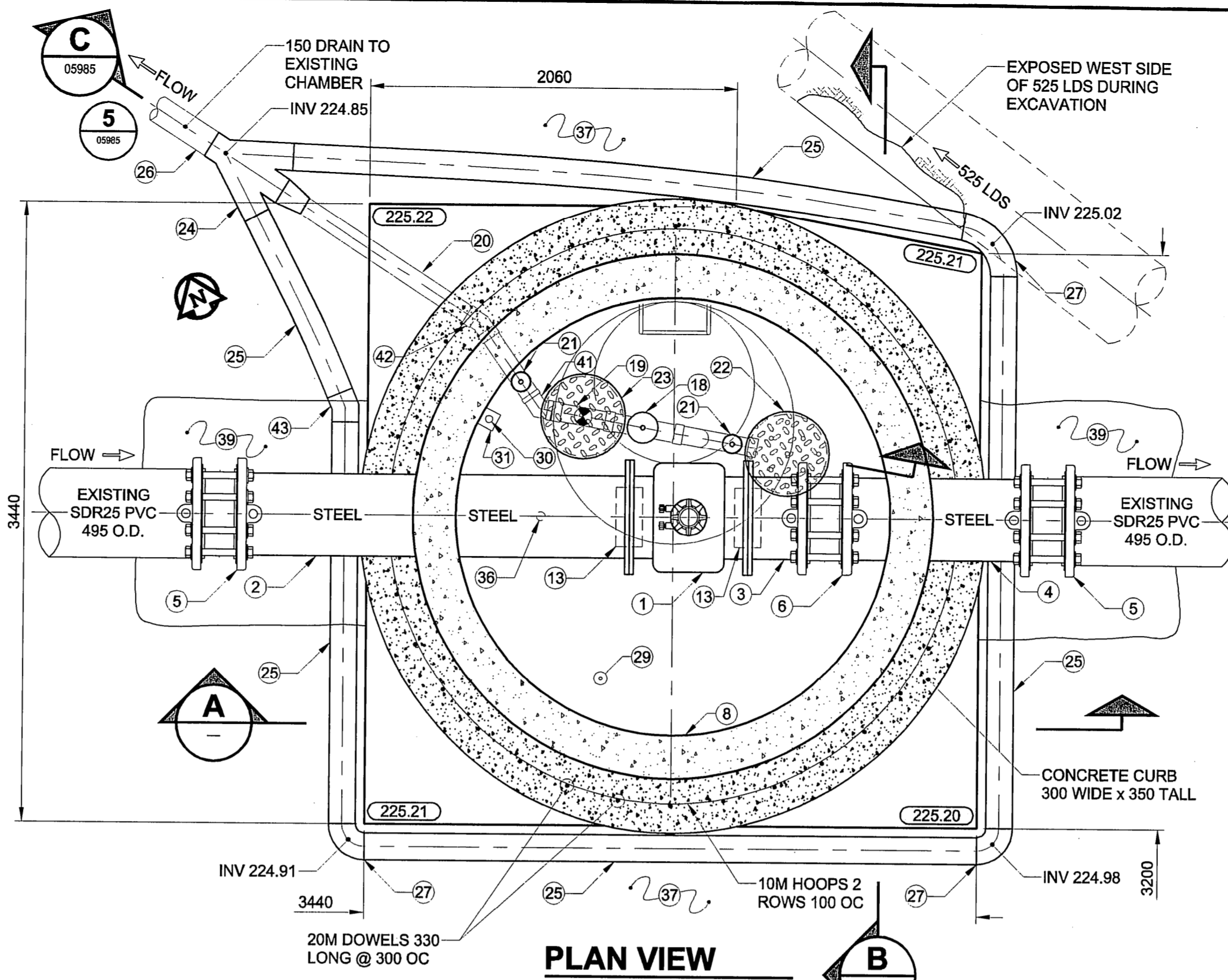
file # FM 10/16 1329

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

PLOT: 07/07/06 11:38:28 AM

UMA/AECOM REVIEW: DRFT CHK: [Signature]

ITEM NUMBER ON DRAWING	ITEM	QUANTITY	LENGTH (mm)	MANUFACTURER	MATERIAL SPECIFICATION	SPECIAL FEATURES
1	450 MAGMETER	1	665	ROSEMOUNT	MAGNETIC FLOW TUBE MODEL: 8705SA180C1W0N0G1D1SC SERIAL NO.: 0870125390	
2	457 X 2310 STEEL SPOOL	1	2310	CITY OF WINNIPEG - WWD	COATING: INTERIOR AND EXTERIOR EPOXY, DEVCOE BAR-RUST 233	SINGLE FLANGE
3	457 X 445 STEEL SPOOL	1	445	CITY OF WINNIPEG - WWD	COATING: INTERIOR AND EXTERIOR EPOXY, DEVCOE BAR-RUST 233	SINGLE FLANGE
4	457 X 1255 STEEL SLEEVE	1	1255	CITY OF WINNIPEG - WWD	COATING: INTERIOR AND EXTERIOR EPOXY, DEVCOE BAR-RUST 233	STRAIGHT PIPE - NO FLANGES
5	450 IRON COUPLINGS - TRANSITION 495 PVC OD TO 457 STEEL OD	2		ROBAR INDUSTRIES LTD.	AWWA C219 AWWA C213 EPOXY COATED TRANSITION COUPLING	D.I. SLEEVE & END RINGS. STAINLESS STEEL BOLTS, NUTS & WASHERS. 300g ZINC BOLT ANODES
6	450 IRON COUPLINGS - STRAIGHT 457 STEEL PIPE OD	1		ROBAR INDUSTRIES LTD.	AWWA C219 AWWA C213 EPOXY COATED STRAIGHT COUPLING	D.I. SLEEVE & END RINGS. STAINLESS STEEL BOLTS, NUTS & WASHERS. 300g ZINC BOLT ANODES
7	2400 X 600 PRECAST CONCRETE MAN-HOLE RISER	1	600	INLAND PIPE LTD.	ASTM C78-CL2 ASTM C-478	PRECAST, STEEL REINFORCED, BOTTOM LIP CUT AND REMOVED ON SITE
8	2400 X 1830 PRECAST CONCRETE MAN-HOLE RISER	1	1830	INLAND PIPE LTD.	ASTM C78-CL2 ASTM C-478	PRECAST, STEEL REINFORCED WITH 800 X 800 U-SHAPED OPENINGS FOR STEEL PIPE
9	2400 X 1350 PRECAST CONCRETE REDUCER	1		INLAND PIPE LTD.	ASTM C78-CL2 ASTM C-478	PRECAST, STEEL REINFORCED
10	1350 X 1830 PRECAST CONCRETE MAN-HOLE RISER	1	1830	INLAND PIPE LTD.	ASTM C78-CL2 ASTM C-478	PRECAST, STEEL REINFORCED
11	1350 X 750 PRECAST CONCRETE REDUCER	1		INLAND PIPE LTD.	ASTM C78-CL2 ASTM C-478	PRECAST, STEEL REINFORCED WITH LIFTING RINGS
12	MANHOLE FRAME AND SOLID COVER	1			ASTM A-48 CLASS 30B	UNDERSIDE OF MANHOLE INSULATED WITH SPRAY-ON INSULATION
13	MAGMETER SUPPORT SCREW JACK	2				TIMBER BLOCK UNDER MAGMETER FLANGE
14	CENTURY-LINE SLEEVES 380 LONG X 540 OD WITH 50 SEEPAGE FIN	2	390	PIPELINE SEAL AND INSULATOR INC.	MODEL: CS - 22	USED WITH LINK SEAL MODULAR SEAL
15	LINK-SEAL MODULAR SEALS	2		PIPELINE SEAL AND INSULATOR INC.	MODEL: LS-340-38, 25mm THICKNESS	
16	100 X 100 X 100 PVC TEE	2				
17	100 PVC 'P' TRAP	1				
18	100 BACKWATER VALVE	1				
19	100 PVC BALL VALVE	1				
20	100 PVC SOLID DRAIN PIPE	TO SUIT				WITH COMPRESSION FITTING ENDS
21	100 PVC CLEANOUT	2				
22	METAL PERFORATED SUMP COVER	1		CITY OF WINNIPEG - PUBLIC WORKS	490 DIAMETER X 5 THICK WITH TREAD	
23	METAL SOLID VALVE PIT COVER	1		CITY OF WINNIPEG - PUBLIC WORKS	500 DIAMETER X 5 THICK WITH TREAD	
24	150 PVC DOUBLE WYE	1				WITH 150 TO 100 REDUCER
25	150 PVC PERFORATED SUBDRAIN	TO SUIT				
26	150 PVC SOLID SUBDRAIN	TO SUIT				
27	150 PVC 90-DEGREE BEND	3				
28	150 PVC FLAP GATE	1				
29	19 DIAMETER GROUND ROD	1	3000			GROUND WIRE ATTACHED WITH EXOTHERMIC WELD
30	FLOAT SWITCH	1		ITT FLYGT	LEVEL REGULATOR MODEL: ENM - 10	
31	FLOAT SWITCH JUNCTION BOX	1		MANCO CONTROL SYSTEMS INC.		
32	ANODES - ZINC	2			ASTM B418-88 - TYPE II	ZINC WEIGHT 10.9 kg
33	SPRAY-ON POLYURETHANE FOAM INSULATION	TO SUIT		BASF CANADA	WALLTITE	
34	STAINLESS STEEL FROST STRAPS	12		CITY OF WINNIPEG - PUBLIC WORKS	75 WIDE X 6 THICK X 600 LONG	ATTACH 19 DIAMETER 316 SS BOLTS
35	WATERPROOF MEMBRANE	TO SUIT		GRACE CONSTRUCTION PRODUCTS	BITUTHENE ORIGINAL	SURFACE PRIMER: MEL-PRIME
36	50 BRASS BALL VALVE	1				MEMBRANE JOINT AND EDGE SEALANT: BITUTHENE MASTIC
37	20 DOWN CLEAN STONE	TO SUIT				FORCEMAIN DRAIN
38	NON-WOVEN GEOTEXTILE	TO SUIT				SUBDRAIN BACKFILL
39	CEMENT STABILIZED FILL	TO SUIT			PER CW2160.1	WRAP SUBDRAIN BACKFILL
40	TYPE I PITRUN GRAVEL	TO SUIT			PER CW2030	PIPE BASE OUTSIDE OF CHAMBER
41	100 PVC 45-DEGREE BEND	1				MAXIMUM SIZE 75mm
42	100 PVC 22.5-DEGREE BEND	1				
43	150 PVC 22.5-DEGREE BEND	1				
44	450 PVC PIPE	2	500			SDR - 35, FORMS WALLS OF SUMP AND VALVE PIT
45	WATER STOP	TO SUIT		CETCO BUILDING MATERIALS GROUP HAMILTON KENT	MODEL: RX - 101T	SEAL BETWEEN FLOOR AND PRECAST RISER
46	KENT - SEAL	TO SUIT				
	REINFORCING STEEL			COWIN STEEL CO. LTD.		



CONTRACTOR: CITY OF WINNIPEG PUBLIC WORKS DEPARTMENT
 CONSTRUCTION PERIOD: OCT. 19, 2006 TO NOV. 14, 2006
 FIELD BOOK No. 06-097

- CONSTRUCTION NOTES:**
- SUPPORTED ALL EXISTING AND NEWLY INSTALLED PIPING DURING CONSTRUCTION
 - INSTALLED FROST STRAPS (34) ACROSS ALL PRECAST MANHOLE BARREL JOINTS. INSTALLED 3 STRAPS PER JOINT WITH EQUIDISTANT SPACING AROUND BARREL.
 - COATED MANHOLE JOINTS WITH WATERPROOF MEMBRANE (35)
 - COATED CONCRETE PATCHES WITH WATERPROOF MEMBRANE (35)
 - WATERPROOF MEMBRANE (35) JOINTS SEALED WITH BITUTHENE MASTIC. MEL-PRIME PRIMER APPLIED TO CONCRETE PRIOR TO APPLYING MEMBRANE.
 - INSULATED UNDERSIDE OF MANHOLE COVER WITH SPRAY-ON FOAM INSULATION (33) WITH CUPS OVER TWO OPENINGS.
 - WELDED ANODE LEADS (32) TO STEEL PIPE EXTERIOR.
 - PLACED NON-WOVEN GEOTEXTILE (38) BENEATH PERFORATED SUBDRAIN (25)
 - SURROUNDED PERFORATED SUBDRAIN WITH 20 CLEAN STONE (37)
 - OVERLAPPED NON-WOVEN GEOTEXTILE (38) BY 300
 - BACKFILLED TO 100 BELOW BOTTOM OF PIPES WITH CEMENT STABILIZED FILL (39)
 - BACKFILLED ABOVE NON-WOVEN GEOTEXTILE (38) AND CEMENT STABILIZED FILL (39) WITH PITRUN GRAVEL (40)
 - CLEAR COVER TO REINFORCING IS 50 ±12 FOR CAST IN PLACE SLAB.
 - REPAIRED DAMAGE TO STEEL PIPE (2), (3), (4) COATING MADE DURING CONSTRUCTION AND AS A RESULT OF ANODE (32) WELDING.
 - INSTALLED POLYETHYLENE SHEETING ON EXTERIOR OF PRECAST CONCRETE RISERS (7), (8), (9), (10), (11), (12) AND SPRAY-ON FOAM INSULATION (33)

LOCATION APPROVED
 UNDERGROUND STRUCTURES

BM 54-006 ELEV 228.166m
 Tblt. in S. face of E. Conc. pier in 1st row of Conc. piers N. of S. and of St. Vital Bridge over Red River, N. of Kingston Row, 8m W. of E. end of Pier.

UMA | AECOM
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DESIGNED BY: DY, GEB
 CHECKED BY: [Signature]
 DRAWN BY: WJd/ADL
 APPROVED BY: [Signature]
 HOR. SCALE: AS NOTED
 VERT. SCALE: AS NOTED
 DATE: [Blank]

RELEASER FOR CONSTRUCTION: [Signature]
 DATE: [Blank]

PROFESSIONAL'S SEAL
 PROVINCE OF MANITOBA
 D. YARECHEWSKI
 July 6, 2007
 REGISTERED PROFESSIONAL ENGINEER

CONSULTANT DRAWING NO. 01
 D265-206-00

NO.	REVISIONS	DATE	BY
1	ISSUED FOR RECORD	07/05/09	ADL
0	ISSUED FOR CONSTRUCTION	06/10/12	ADL

LOCATION APPROVED
 UNDERGROUND STRUCTURES

DATE: [Blank]

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.

UMA Engineering Ltd. (MB)
 Certificate of Authorization
 No. 256 Date: July 6, 2007

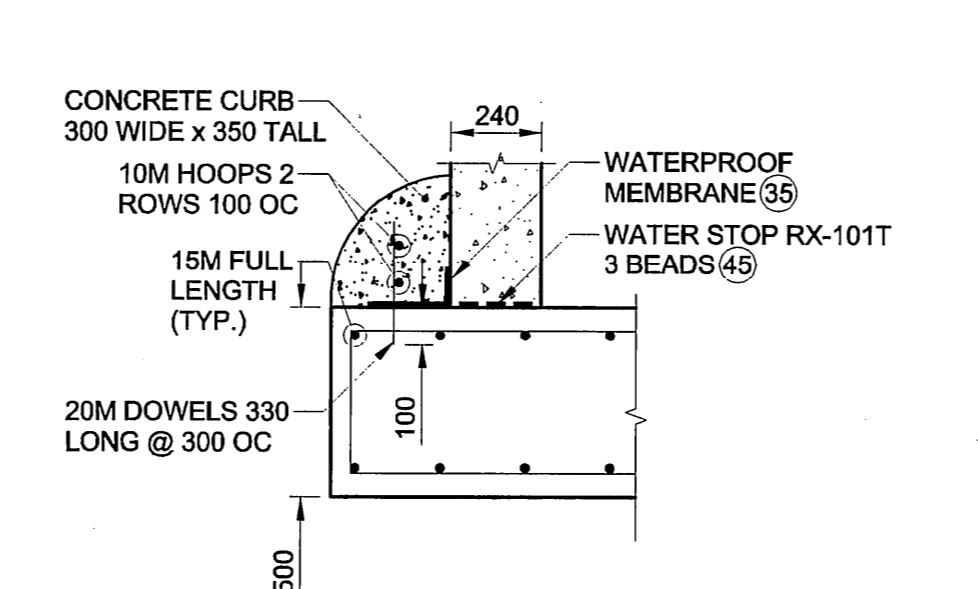
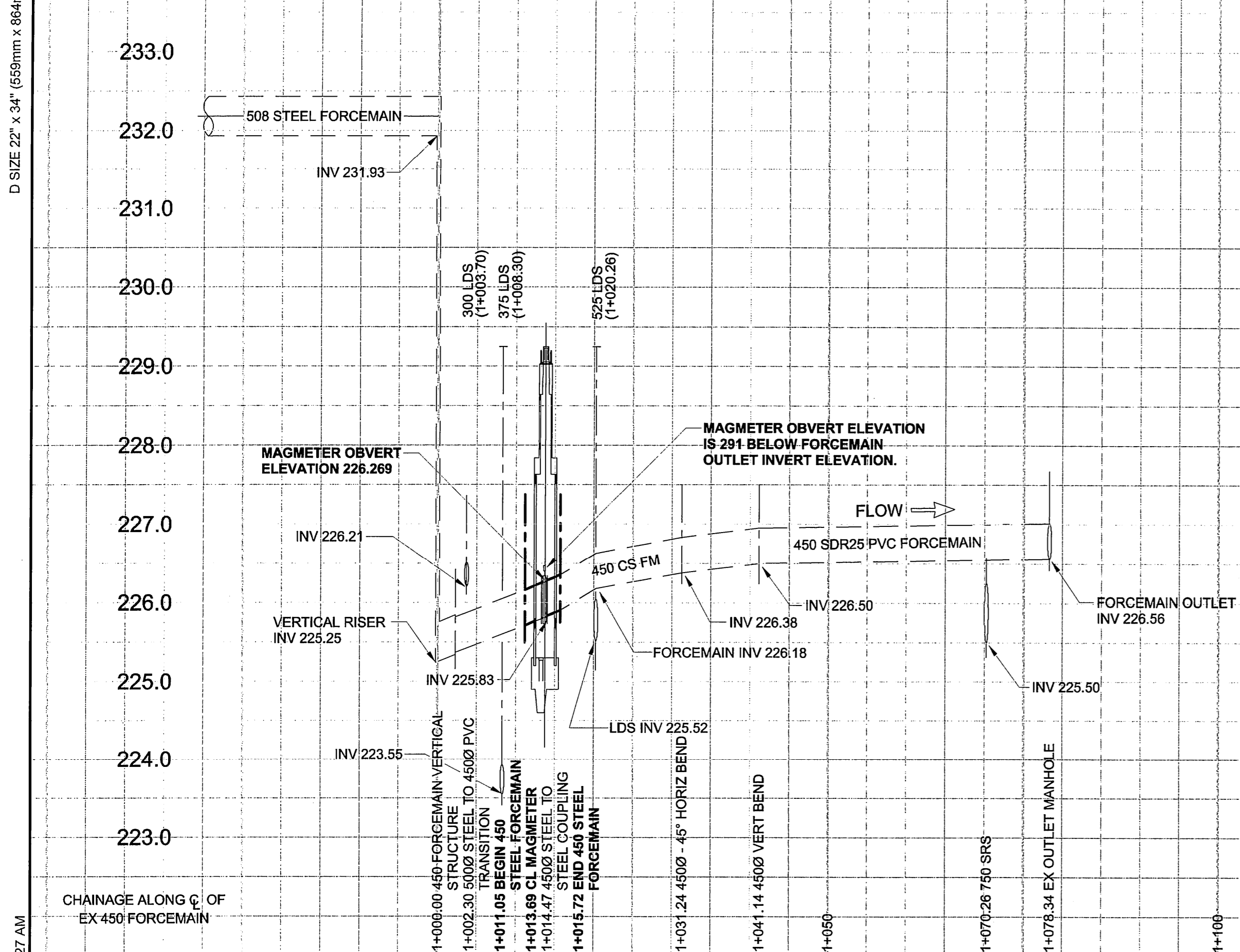
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 CONSTRUCTION COMPLETION DATE: NOVEMBER 14, 2006

THE CITY OF WINNIPEG
 WATER & WASTE DEPARTMENT

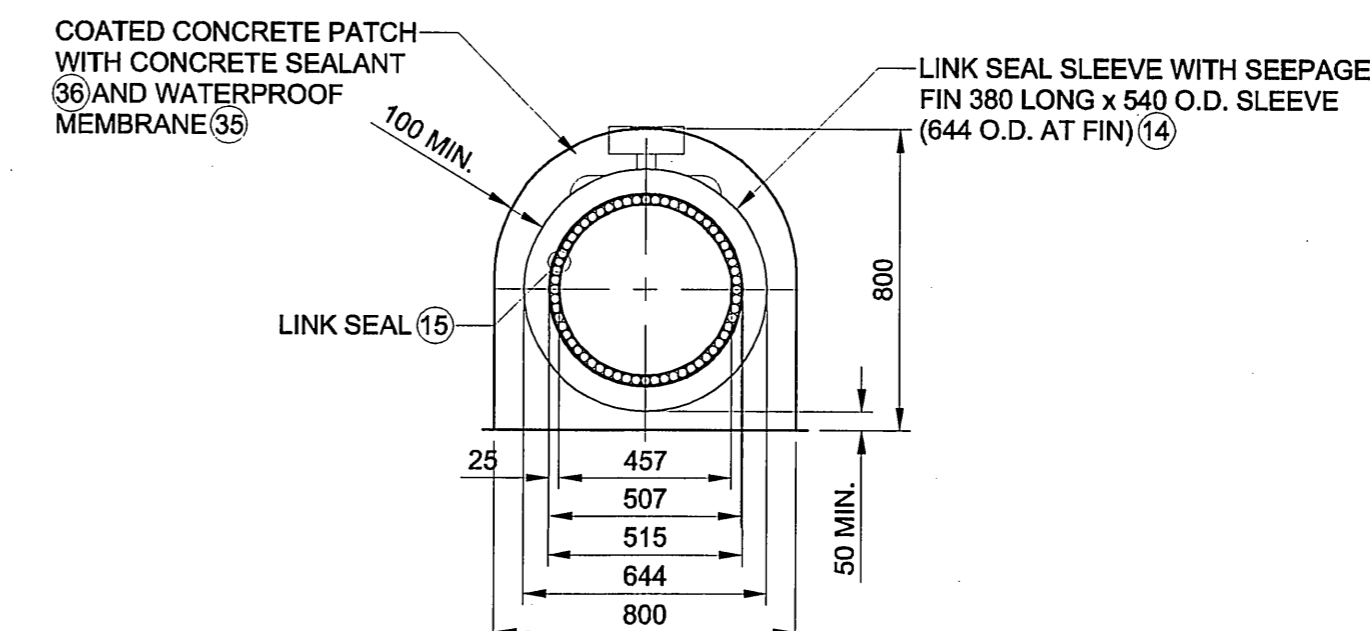
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 LEAK MONITORING

KINGSTON ROW AT ST. VITAL BRIDGE
 OUTLET MAGMETER INSTALLATION
 STRUCTURAL PLANS & SECTIONS

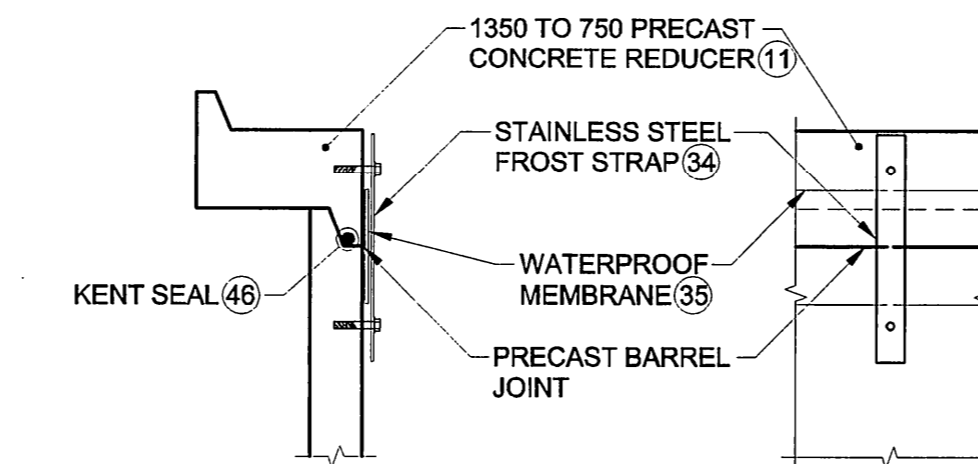
SHEET 1 OF 3
 CITY DRAWING NUMBER: 05984
 REV 1



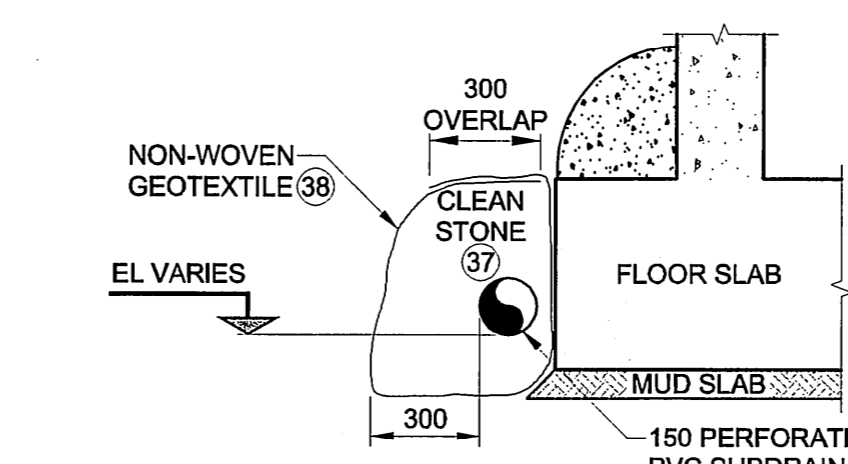
DETAIL 1
REINFORCEMENT AT PRECAST BARREL/CAST-IN-PLACE FLOOR
SCALE 1:20



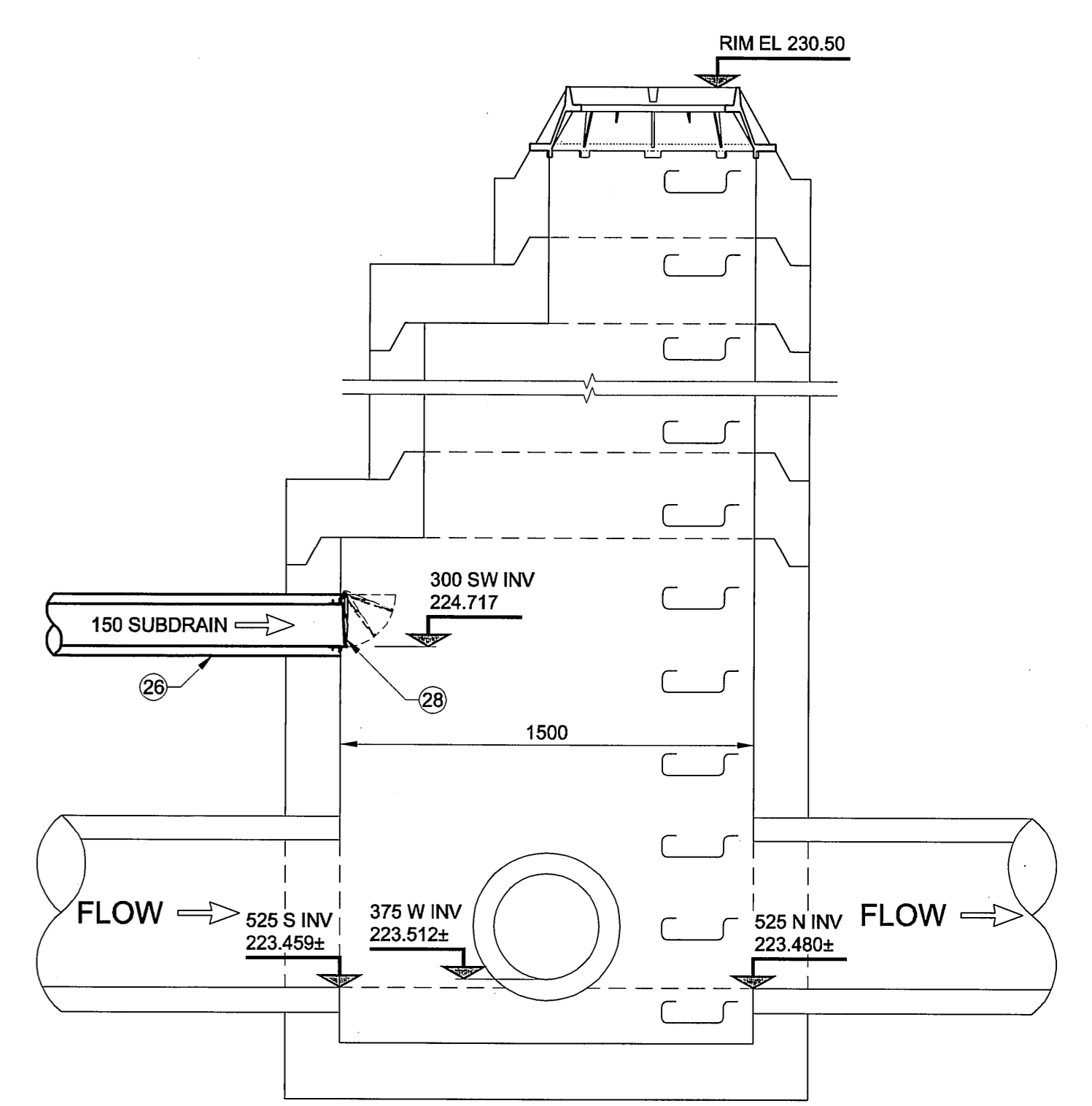
DETAIL 2
JOINT SEAL DETAIL FOR STEEL PIPE THROUGH PRECAST WALL
SCALE 1:20



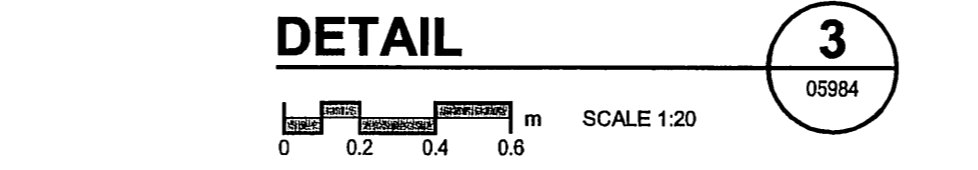
DETAIL 3
BARREL JOINT ELEVATION
SCALE 1:20



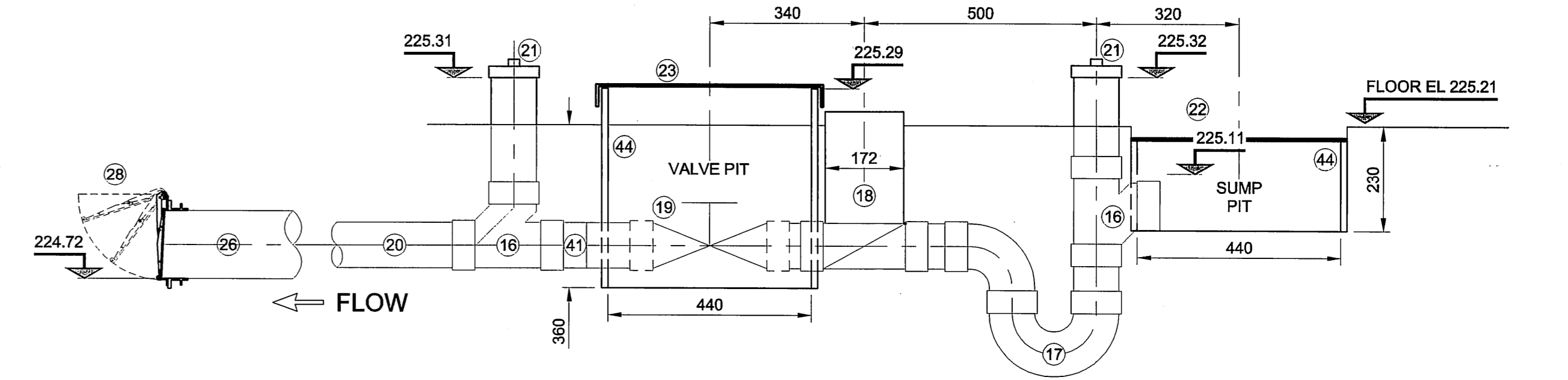
DETAIL 4
PERFORATED SUBDRAIN BACKFILL DETAIL
SCALE 1:20



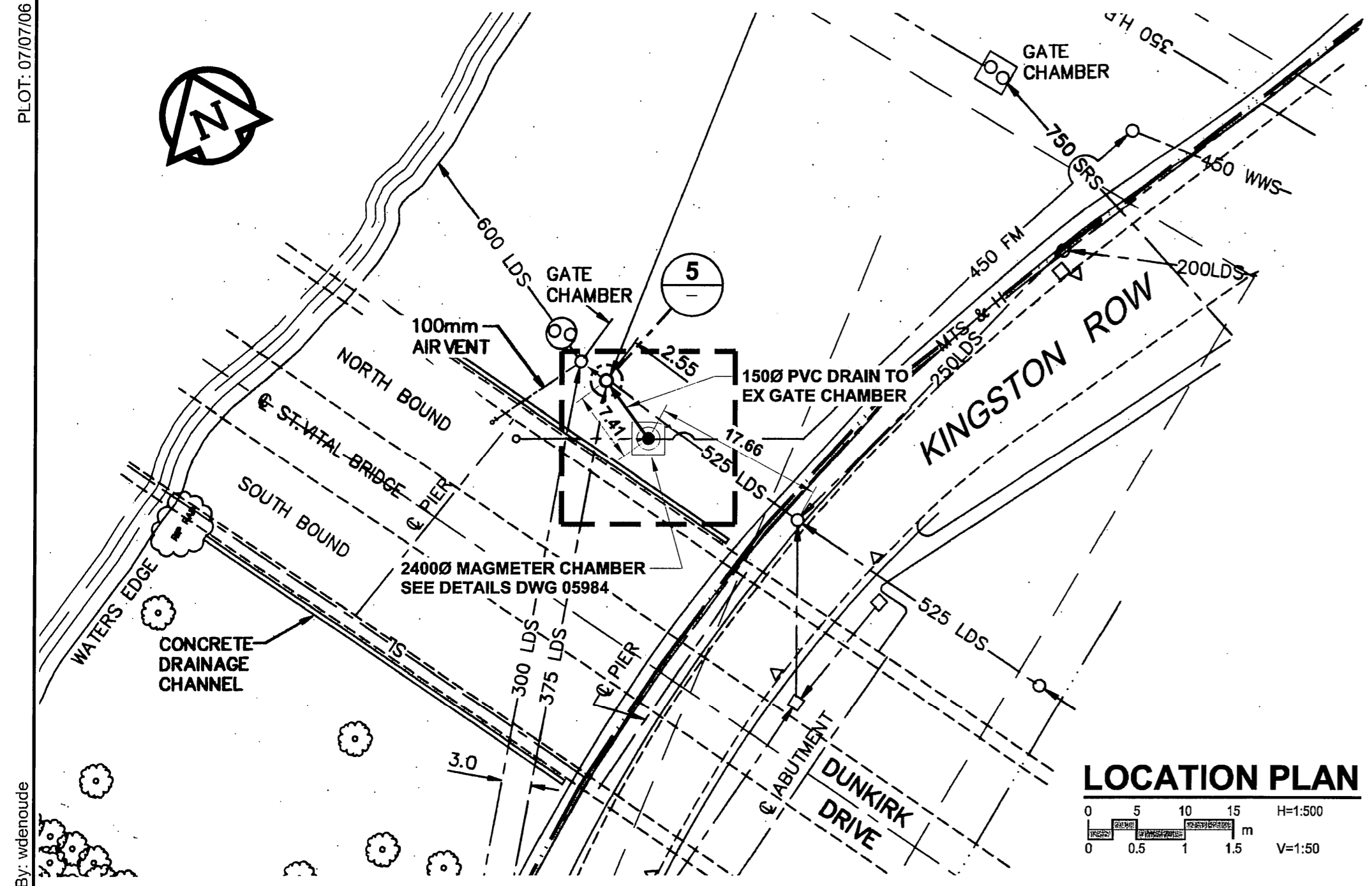
DETAIL 5
OUTLET DETAIL FOR 150 SUBDRAIN
SCALE 1:20



DETAIL 6
BARREL JOINT DETAIL AT UPPER 1350 RISER JOINT
SCALE 1:20



SECTION C
100 DRAIN PROFILE
SCALE 1:10



LOCATION PLAN
SCALE 1:500

APEGM
Certificate of Authorization
UMA Engineering Ltd. (MB)
No. 256 Date: JULY 6, 2007

CONSTRUCTION COMPLETION DATE
NOVEMBER 14, 2006
RECORD DRAWING

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

LOCATION APPROVED UNDERGROUND STRUCTURES			
SUPR. U/G STRUCTURES	DATE	COMMITTEE	
NOTE: LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE. BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.			
1	ISSUED FOR RECORD	07/05/09	ADL
0	ISSUED FOR CONSTRUCTION	06/10/12	ADL
NO.	REVISIONS	YYMMDD	BY

UMA AECOM			
© 2006 UMA ENGINEERING LTD. ALL RIGHTS RESERVED.			
DESIGNED BY	DY, GEB	CHECKED BY	[Signature]
DRAWN BY	WJD/ADL	APPROVED BY	[Signature]
HOR. SCALE	AS NOTED	RELEASED FOR CONSTRUCTION	
VERT. SCALE	AS NOTED	DATE	

PROFESSIONAL'S SEAL
D. YARECHEWSKI
JULY 6, 2007
REGISTERED PROFESSIONAL ENGINEER
CONSULTANT DRAWING NO. 02
D285-206-00

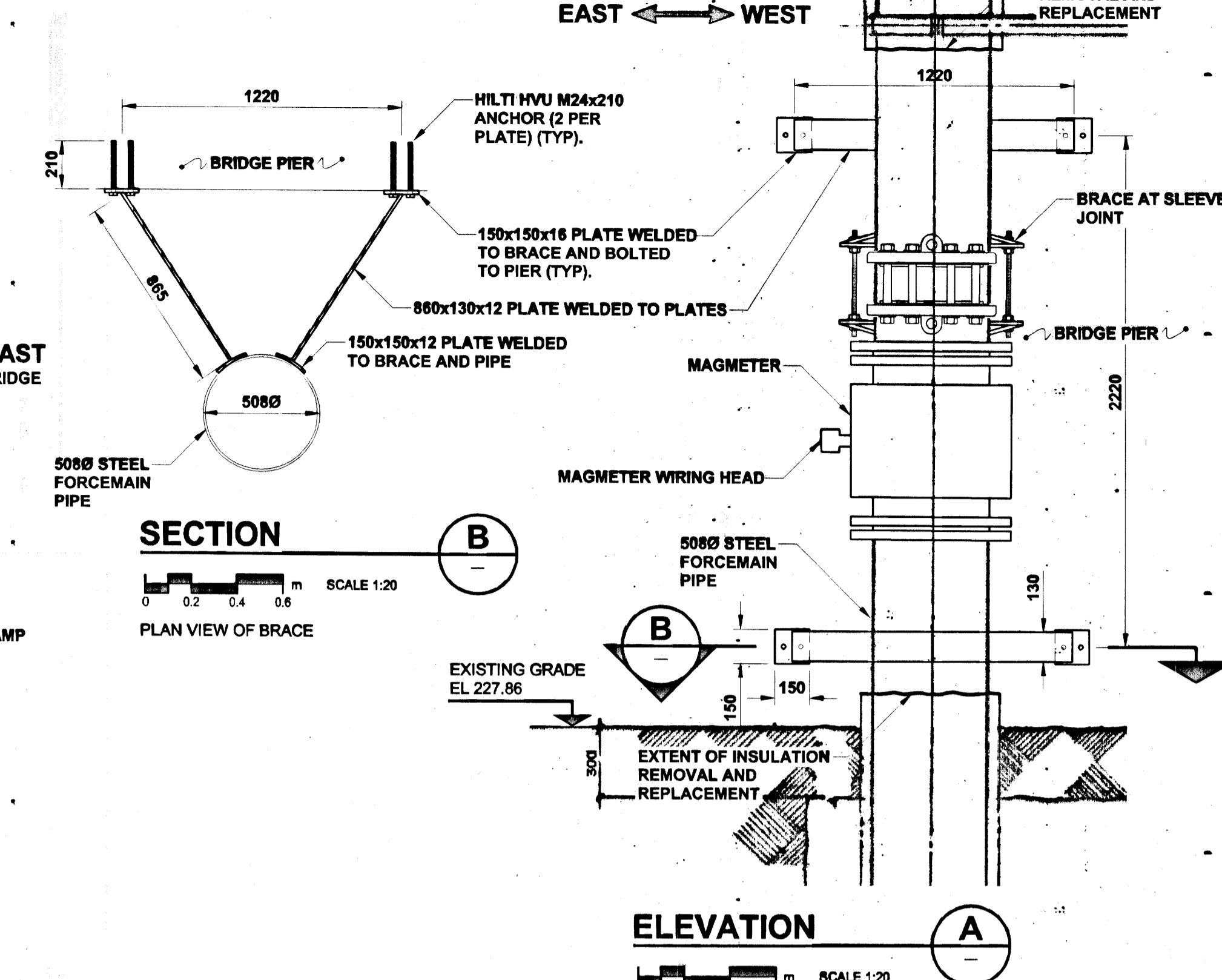
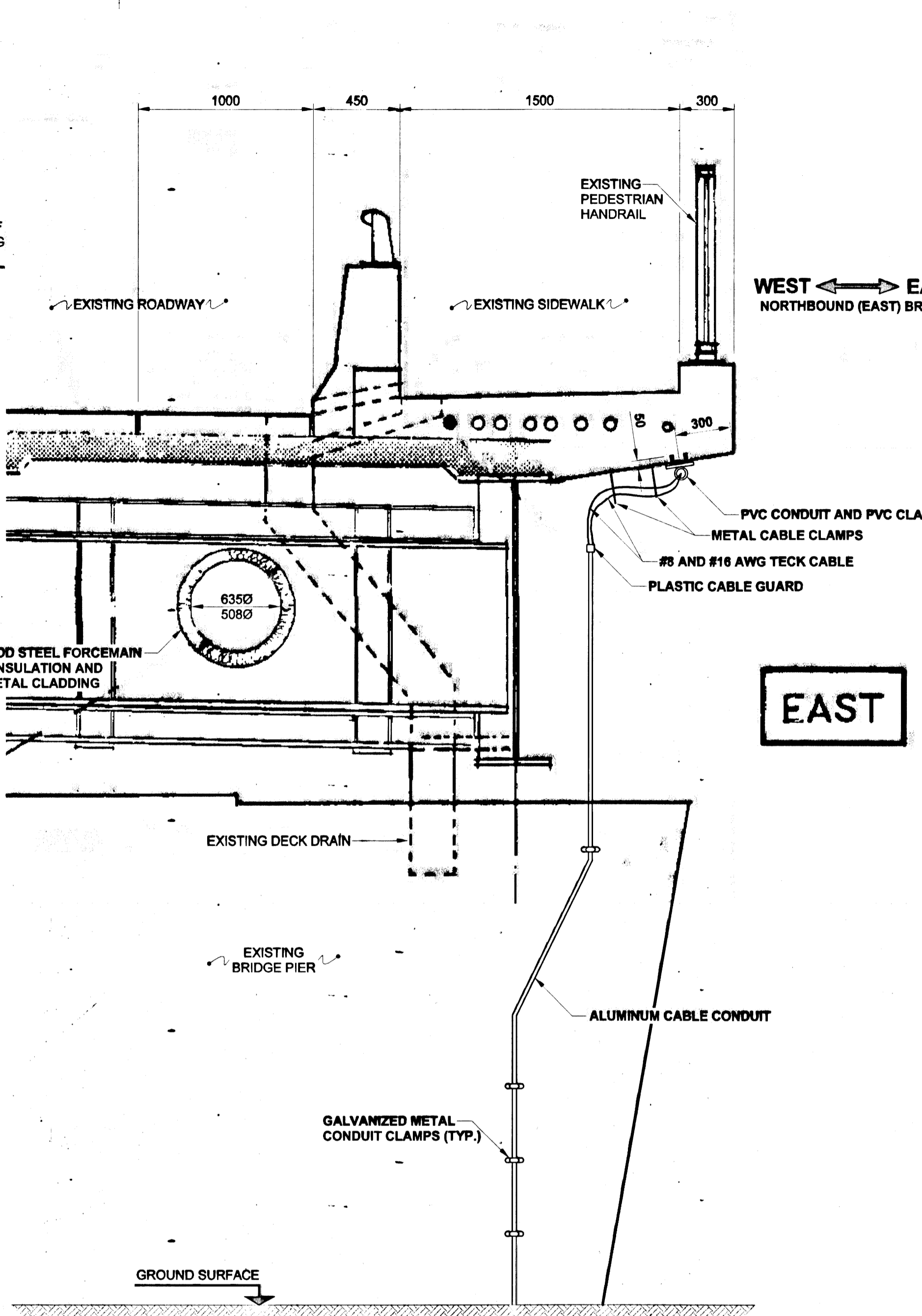
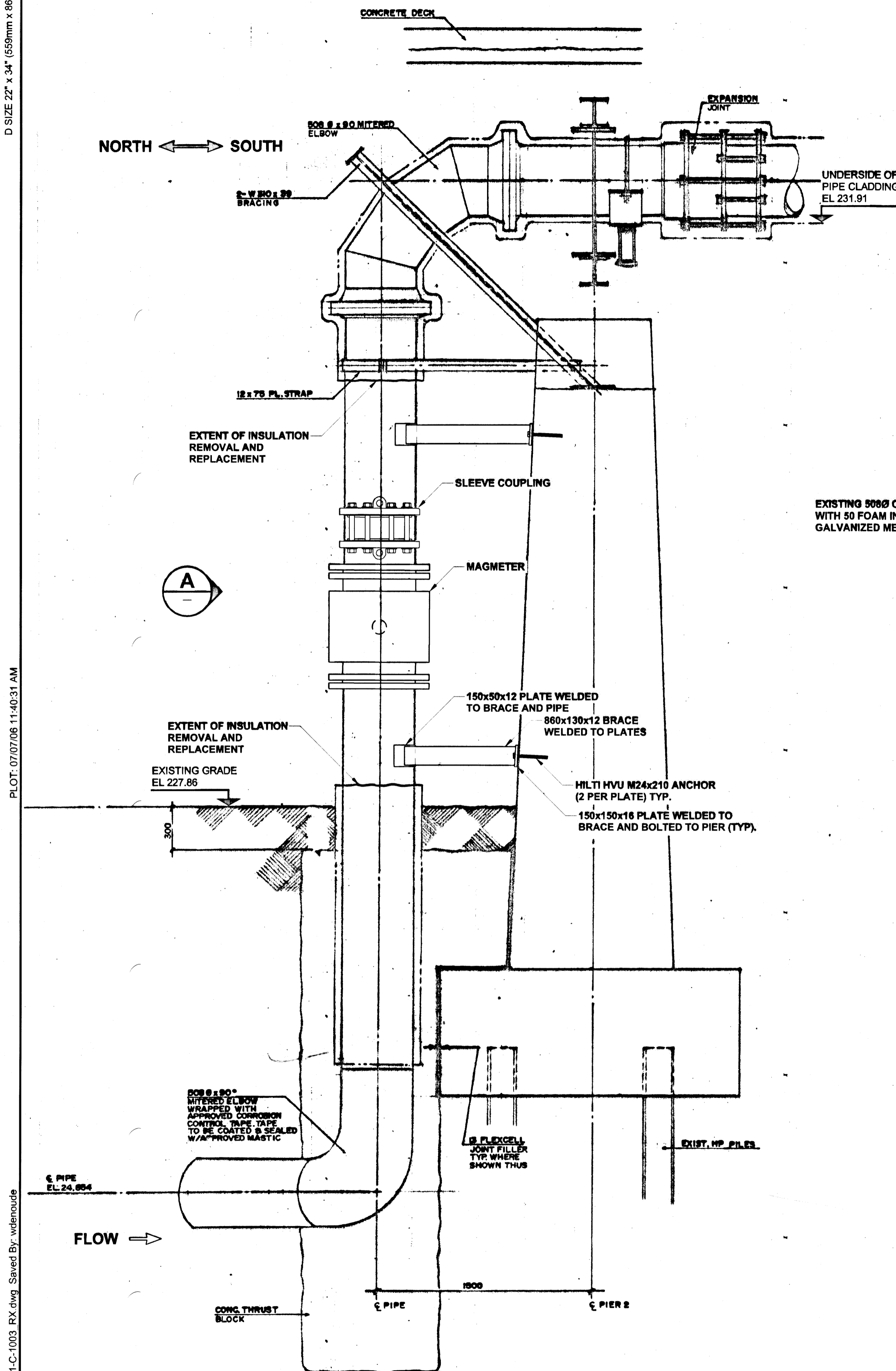
THE CITY OF WINNIPEG
WATER & WASTE DEPARTMENT

WASTEWATER RIVER CROSSING LEAK MONITORING

KINGSTON ROW AT ST. VITAL BRIDGE
OUTLET MAGMETER INSTALLATION
LOCATION PLAN & DETAILS

SHEET 2 OF 3
CITY DRAWING NUMBER
05985
REV 1

UMA AECOM REVIEW DRIFT CHK
UMA FILE NAME: D285-206-00_01-C-1002_RX.dwg Saved By: walenoude
PLOT: 07/07/06 11:39:27 AM



MATERIAL LIST

ITEM	QUANTITY	LENGTH (mm)	MANUFACTURER	MATERIAL SPECIFICATION	SPECIAL FEATURES
508 MAGMETER	1	742	ROSEMOUNT	MAGNETIC FLOW TUBE MODEL: 8705TSA200C1WNOG1D1SC SERIAL NO.: 0670125391	
508 STEEL SPOOL	1	300	CITY OF WINNIPEG - WWD		SINGLE FLANGE - WELDED TO LOWER PIPE END
508 STEEL SPOOL	1	290	CITY OF WINNIPEG - WWD		SINGLE FLANGE - FLANGE BOLTED TO UPPER MAGMETER FLANGE
150 X 150 X 16 STEEL PLATES	4		CITY OF WINNIPEG - WWD		PAINTED FOR RUST PROTECTION
150 X 150 X 12 STEEL PLATES	4		CITY OF WINNIPEG - WWD		PAINTED FOR RUST PROTECTION
880 X 130 X 12 BRACE	4		CITY OF WINNIPEG - WWD		PAINTED FOR RUST PROTECTION
M24 X 210 HILTI HVU ANCHOR	8		HILTI (CANADA) CORPORATION	STAINLESS STEEL	2-PART EPOXY ADHESIVE IN CAPSULE INSERTED INTO DRILL HOLE AND MIXED WITH FEMALE TH-READ INSERT
WELD					
500 IRON COUPLINGS - STRAIGHT	1	200	CITY OF WINNIPEG - WWD ROBAR INDUSTRIES LTD.	AWWA C219 AWWA C213	D.I. SLEEVE & END RINGS.
508 STEEL PIPE OD					STAINLESS STEEL BOLTS
SPRAY-ON POLYURETHANE FOAM INSULATION	TO SUIT		BASF CANADA		EPOXY COATED STRAIGHT COUPLING WALLTITE POLYETHYLENE PLASTIC SHEETING INSTALLED OVER MAGMETER AND PIPE TO ACT AS BOND-BREAK FOR INSULATION REMOVAL
#8 AWG - 3C - TECK CABLE 3 CONDUCTORS	1	400 m	SUPPLIER: WESTBURNE ELECTRIC SUPPLY MIDWEST	TECK8 3LL TECK 3 C 8 CU PVC-1KT 1000V XLL OUTSIDE DIAMETER = 24 mm WEIGHT = 222 kg / 305 m	
#16 AWG - TECK CABLE 2 PAIR ARMOUR CABLE	1	550 m	SUPPLIER: WESTBURNE ELECTRIC SUPPLY MIDWEST	ARM2PR16AL300 ALUMINUM ARMOUR 300V Outside Diameter = 20 mm	TWISTED, INDIVIDUALLY SHIELDED INSTRUMENTATION ARMOUR CABLE
50 PVC RIGID CONDUIT	64	200m	IPEX INC.	Weight = 112 kg / 305 m SCEPTER MODEL: CON10020 3.05 m LENGTHS SCEPTER MODEL: EJ35	INTEGRAL BELL END
50 PVC EXPANSION JOINT	15		IPEX INC.		INSTALLED AT EVERY FOURTH CONDUIT JOINT (12.2m SPACING)
50 PVC CONDUIT CLAMP 6 x 83 - HILTI - KWIK BOLT 3 EXPANSION ANCHOR	129 258		IPEX INC. HILTI (CANADA) CORPORATION	SCEPTER MODEL: CCS35 316 STAINLESS STEEL MODEL: K83 316SS5 ITEM NO. 282568	2 BOLTS PER CLAMP USED WITH PVC AND GALVANIZED STEEL CLAMPS. 2 BOLTS PER CLAMP
HIT RE 500 EPOXY ADHESIVE - HILTI			HILTI (CANADA) CORPORATION	TEMPERATURE RANGE -5C TO 49C. INCLUDE STATIC MIXER WITH CARTRIDGES	INSTALLED IN DRILL HOLES PRIOR TO INSTALLING KWIK BOLTS
50 ALUMINUM ELECTRICAL CONDUIT GALVANIZED STEEL CLAMPS	12m				MOUNTED TO PIER 2 BOLTS PER CLAMP SUPPORT ALUMINUM ELECTRICAL CONDUIT
PIPE BRACES AT SLEEVE JOINT	2		CITY OF WINNIPEG - WWD		

DETAIL
SCALE: N.T.S.
CONDUIT ON BRIDGE PIER AT KINGSTON ROW
(TYPICAL OF INSTALLATION ON CHURCHILL DRIVE PIER)

- NOTES:**
- 50 THICK SPRAY-ON POLYURETHANE FOAM INSULATION APPLIED TO MAGMETER, SLEEVE COUPLING, AND STEEL FORCEMAIN PIPE (WHERE INSULATION REMOVED).
 - CORRUGATED METAL CLADDING SUPPORTED ON PIPE-TO-PIER BRACES INSTALLED FOR PROTECTION.
 - PVC AND GALVANIZED METAL CONDUIT CLAMPS MOUNTED TO CONCRETE WITH 6 x 83 HILTI KWIK BOLT EXPANSION ANCHORS INSTALLED IN PRE-DRILLED HOLES (DEPTH 50) FILLED WITH HILTI RE500 EPOXY ADHESIVE.
 - PVC CONDUIT CLAMPS MOUNTED TO UNDERSIDE OF SIDEWALK OVERHANG OF BRIDGE AT SPACING OF 1525. CONDUIT IN 3050 LENGTHS WITH EXPANSION COUPLING INSTALLED EVERY 12.2m (EVERY 4TH JOINT).
 - TOTAL LENGTH OF PVC CONDUIT 195.0

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

UMA | AECOM

CONTRACTOR: CITY OF WINNIPEG PUBLIC WORKS DEPARTMENT
CONSTRUCTION PERIOD: SEPT. 5, 2006 TO DEC. 16, 2006
FIELD BOOK NO: 06-097

RECORD DRAWING
CONSTRUCTION COMPLETION DATE
NOVEMBER 14, 2006

No. 256 Date: July 6, 2007

LOCATION APPROVED UNDERGROUND STRUCTURES

SUPR. 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	YYMMDD	BY	DATE
0	ISSUED FOR RECORD	07/05/09	ADL	

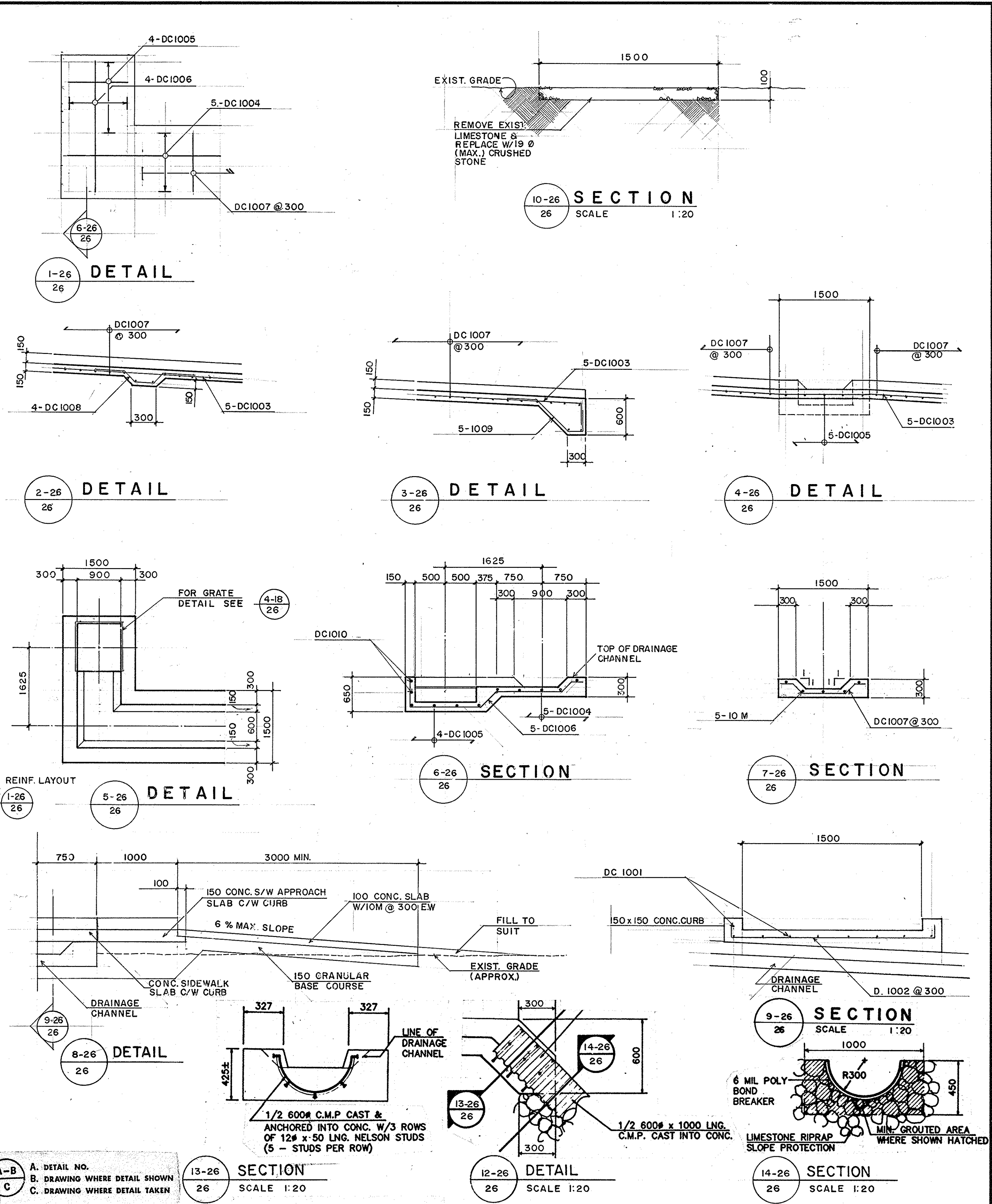
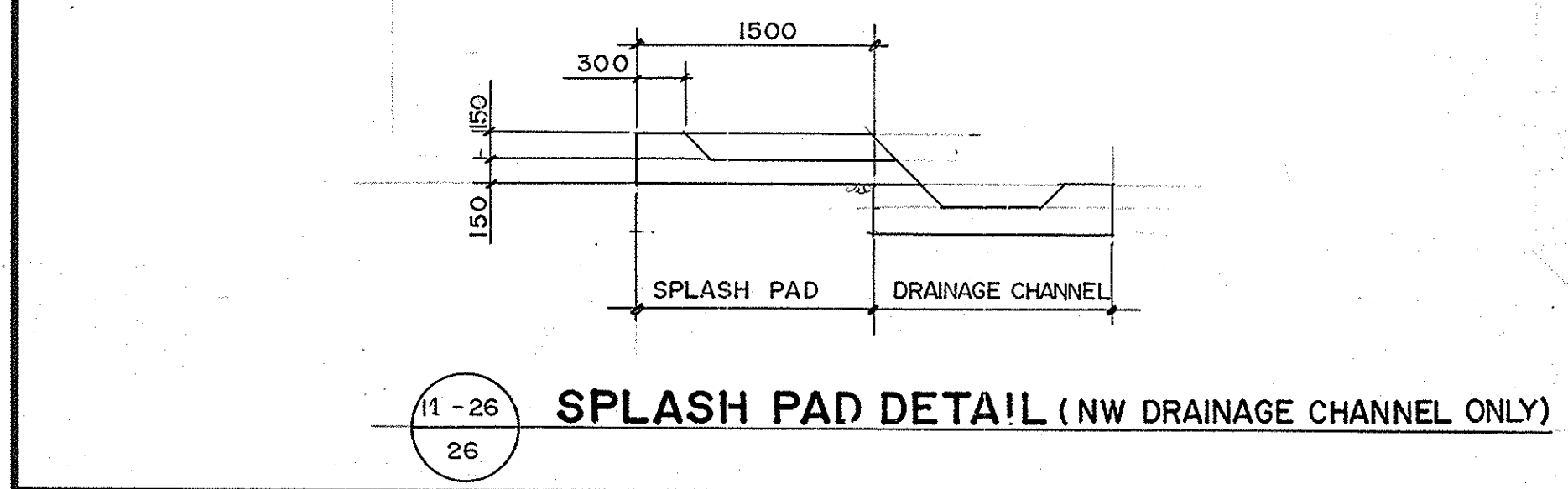
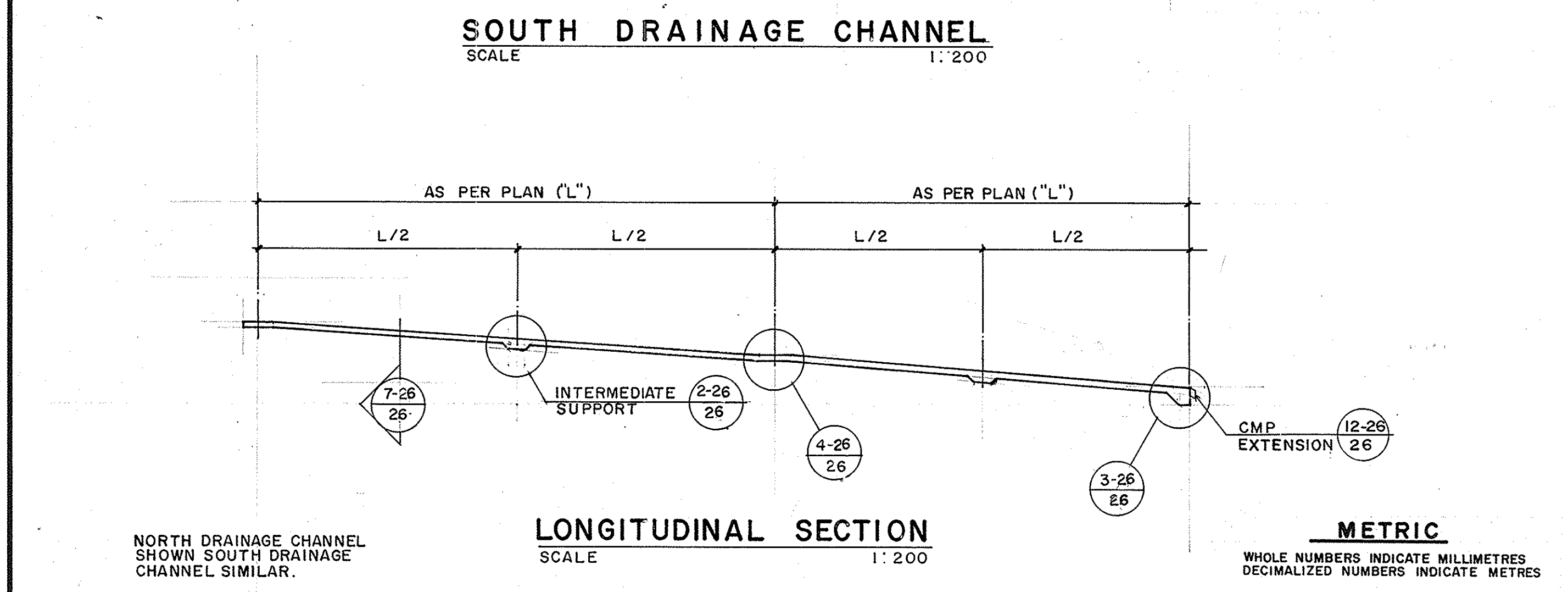
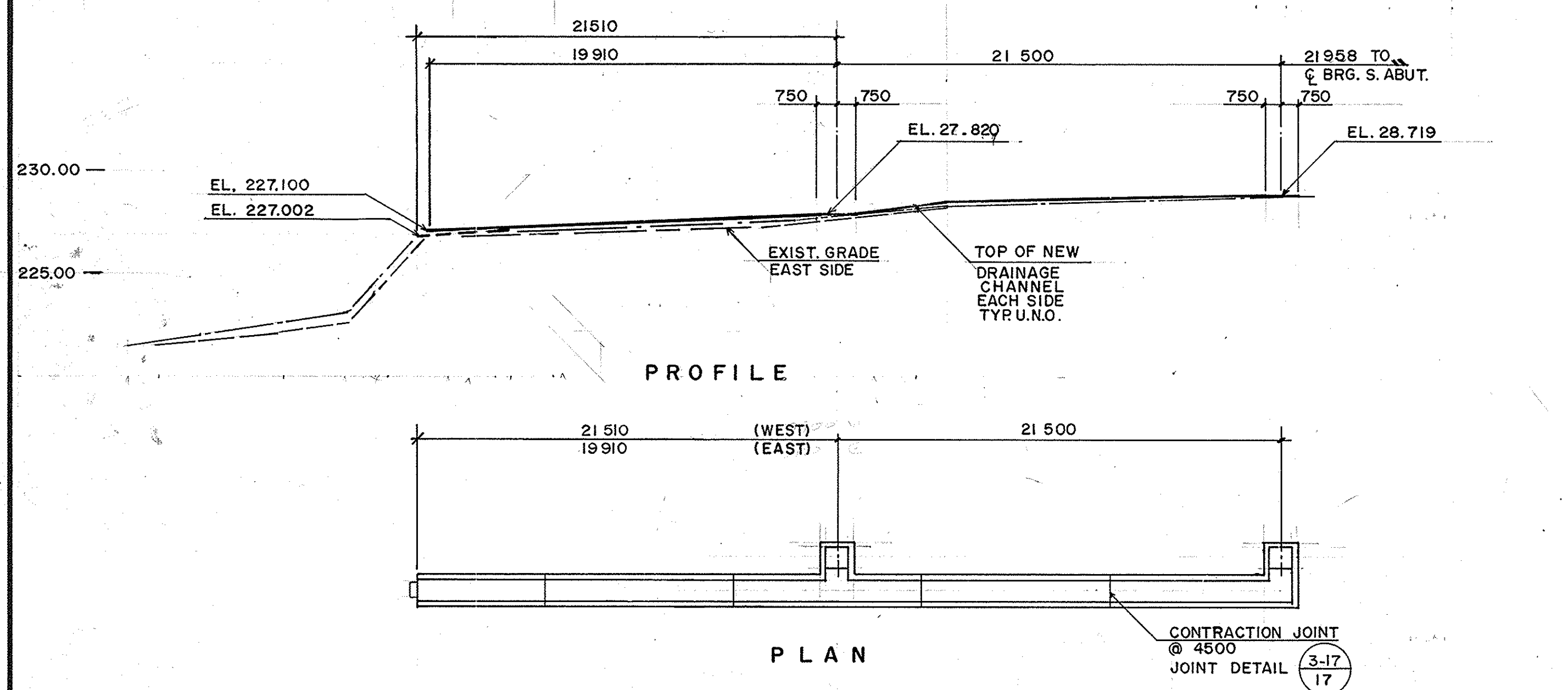
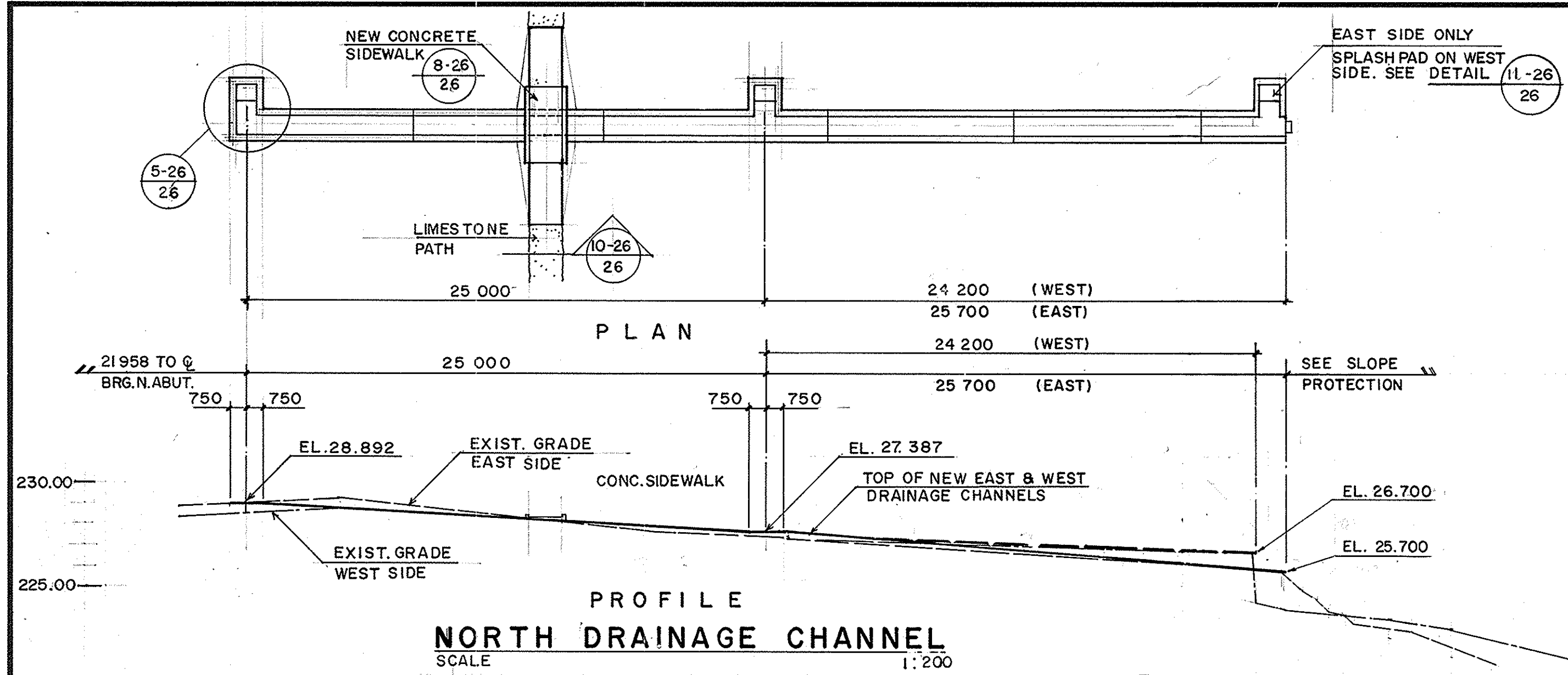
PROFESSIONAL'S SEAL
D. YARECHEWSKI
REGISTERED PROFESSIONAL ENGINEER
JULY 6, 2007

THE CITY OF WINNIPEG WATER & WASTE DEPARTMENT

WASTEWATER RIVER CROSSING LEAK MONITORING
CHURCHILL DRIVE AT ST. VITAL BRIDGE
INLET MAGMETER INSTALLATION & CABLE CONDUIT INSTALLATION

SHEET 3 OF 3
CITY DRAWING NUMBER
06019
REV 0

PLOT: 07/07/08 11:40:31 AM
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 UMA FILE NAME: D265-206-00_01-C-1003_RX.dwg Saved By: vandenoude



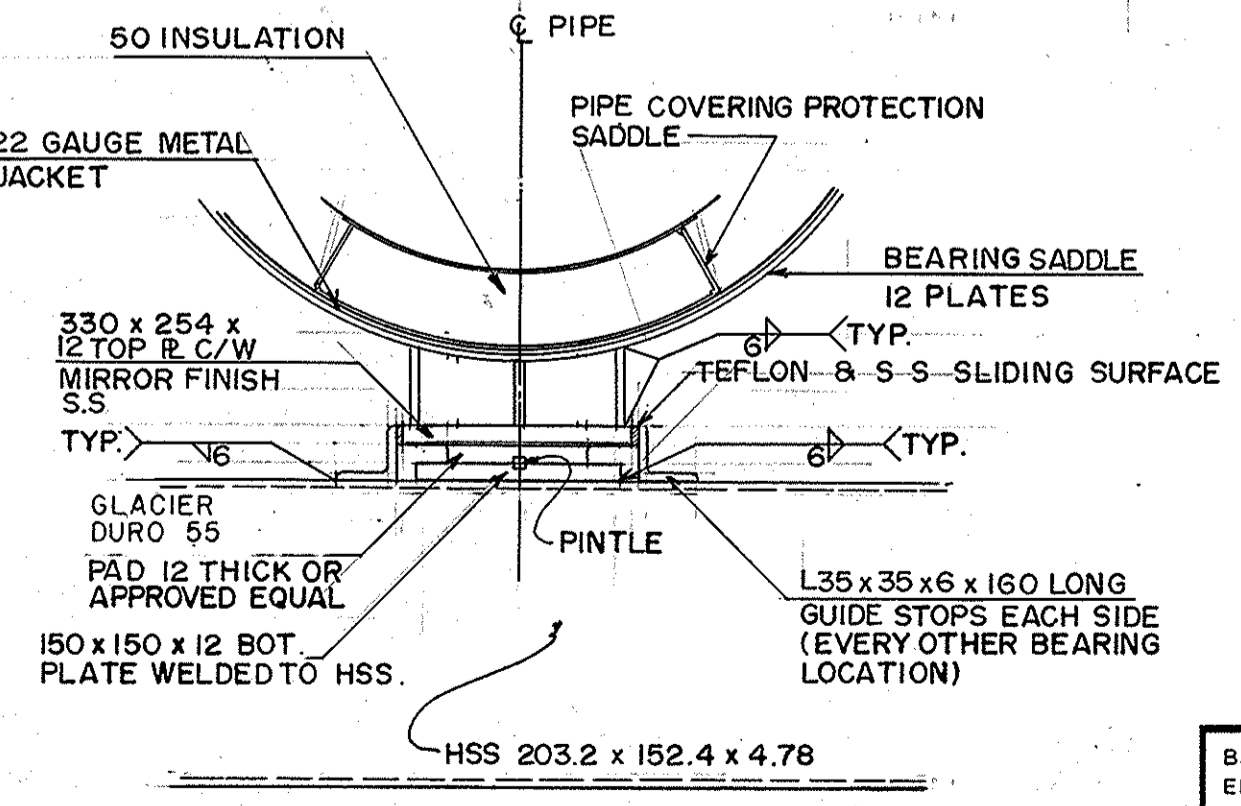
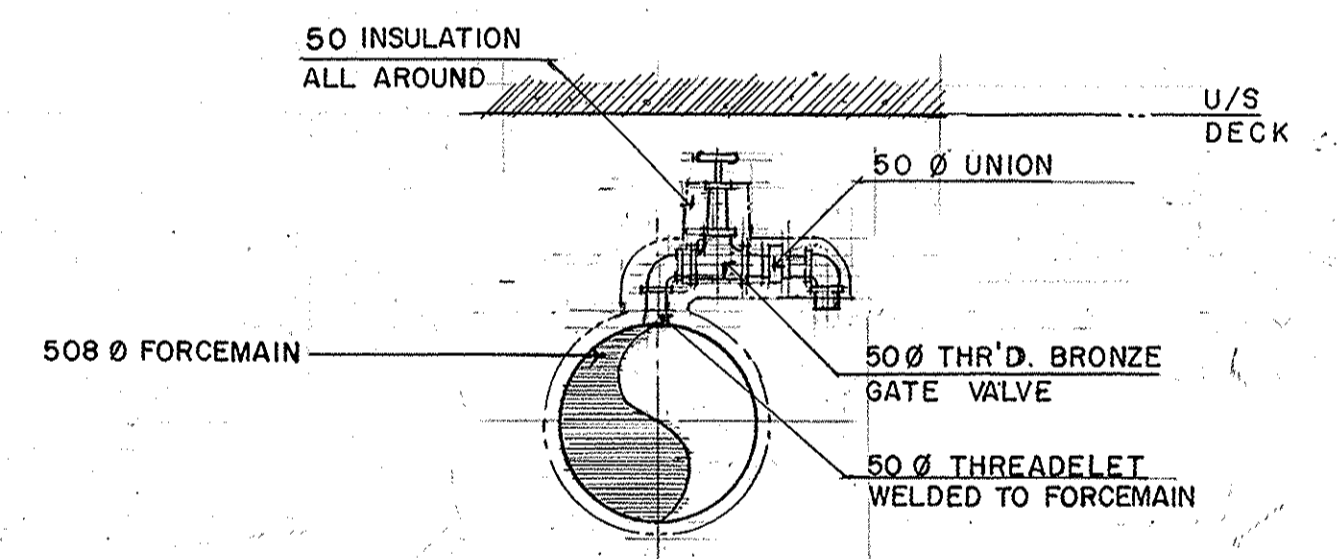
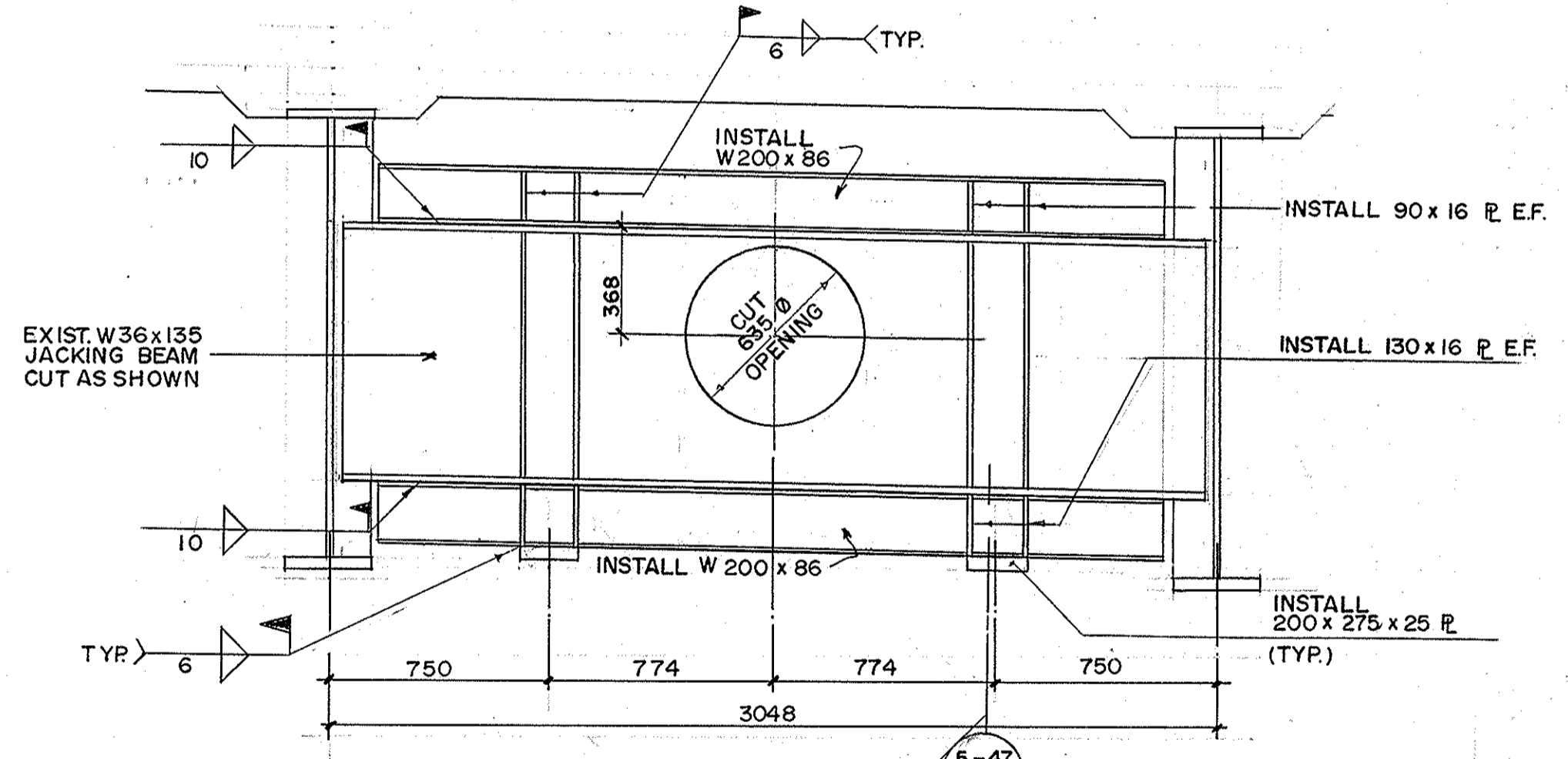
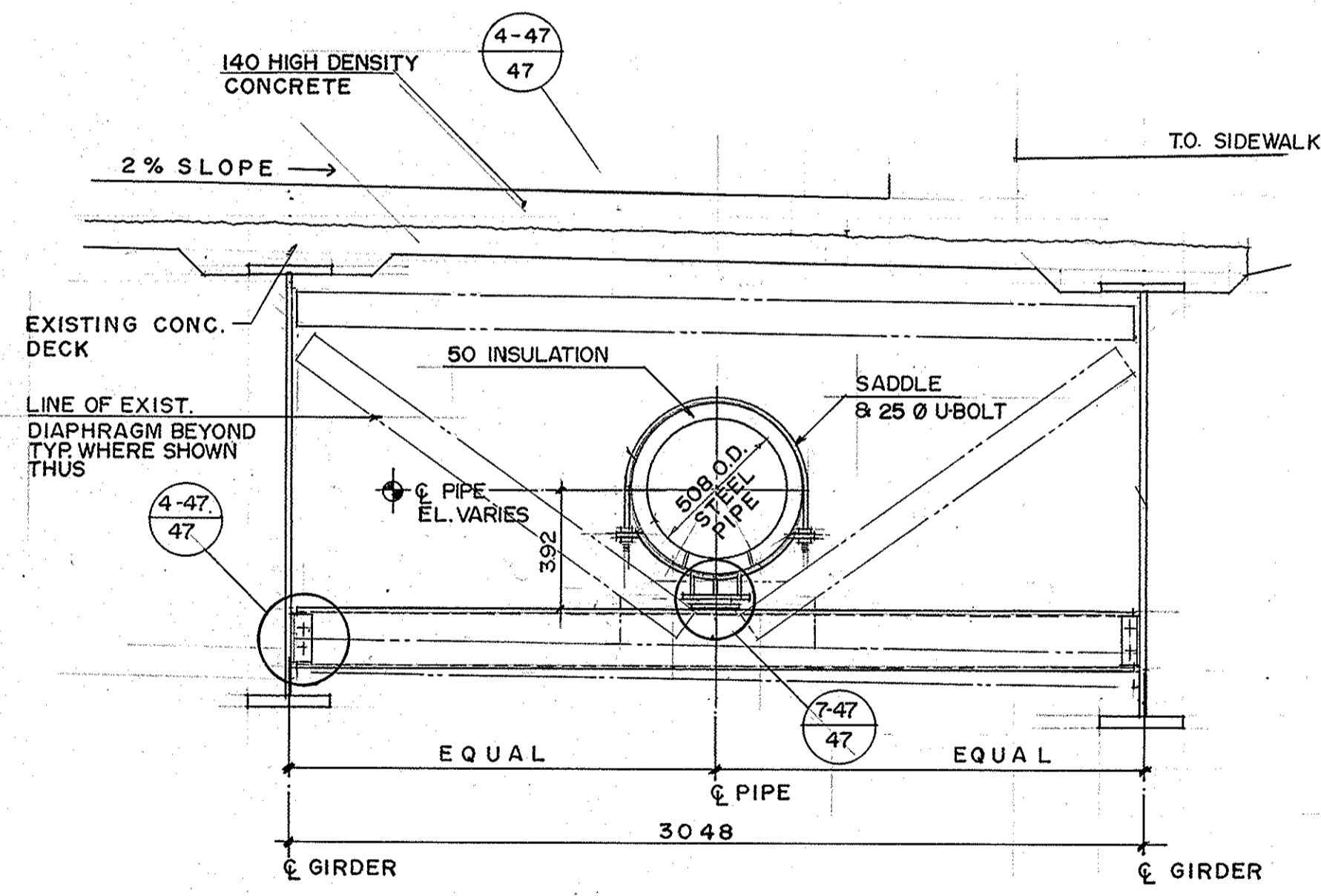
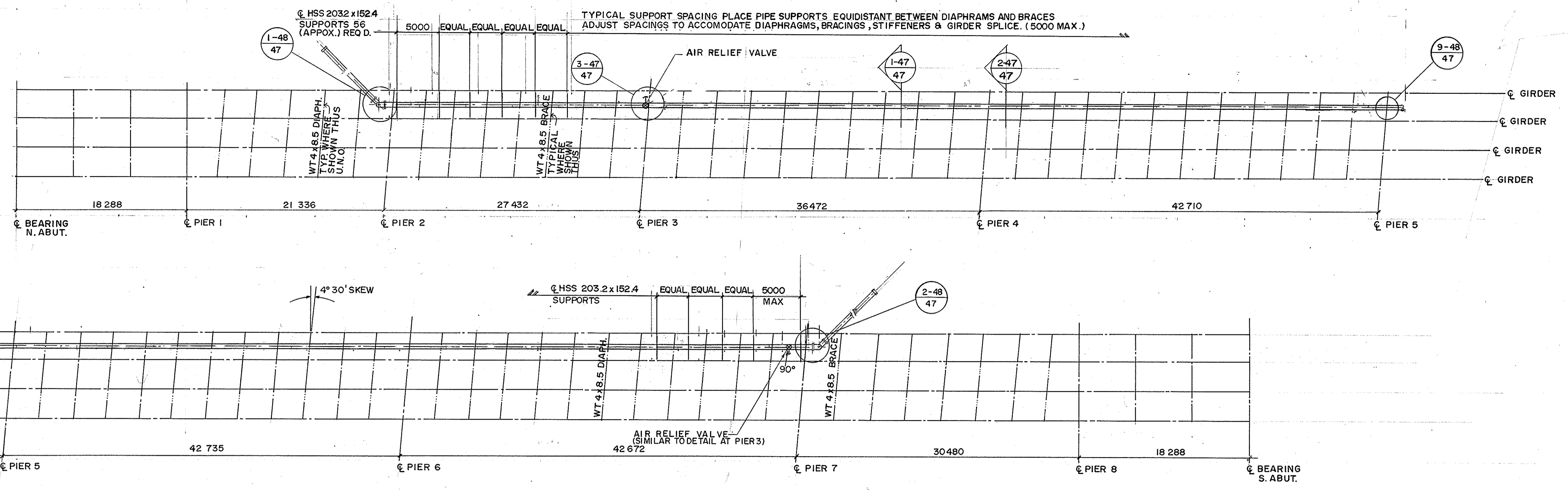
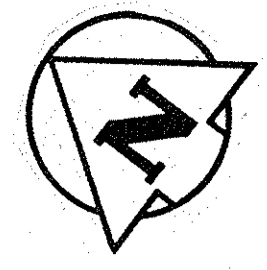
REID, CROWTHER & PARTNERS LIMITED
WINNIPEG

AS CONSTRUCTED

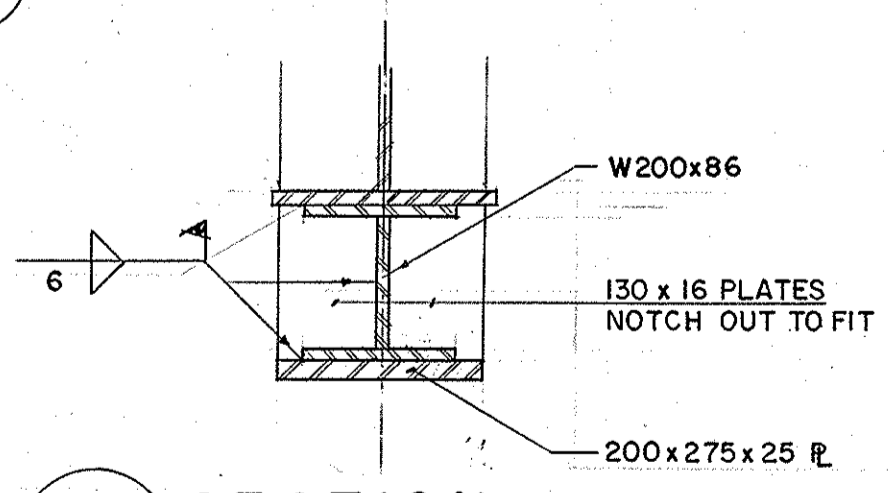
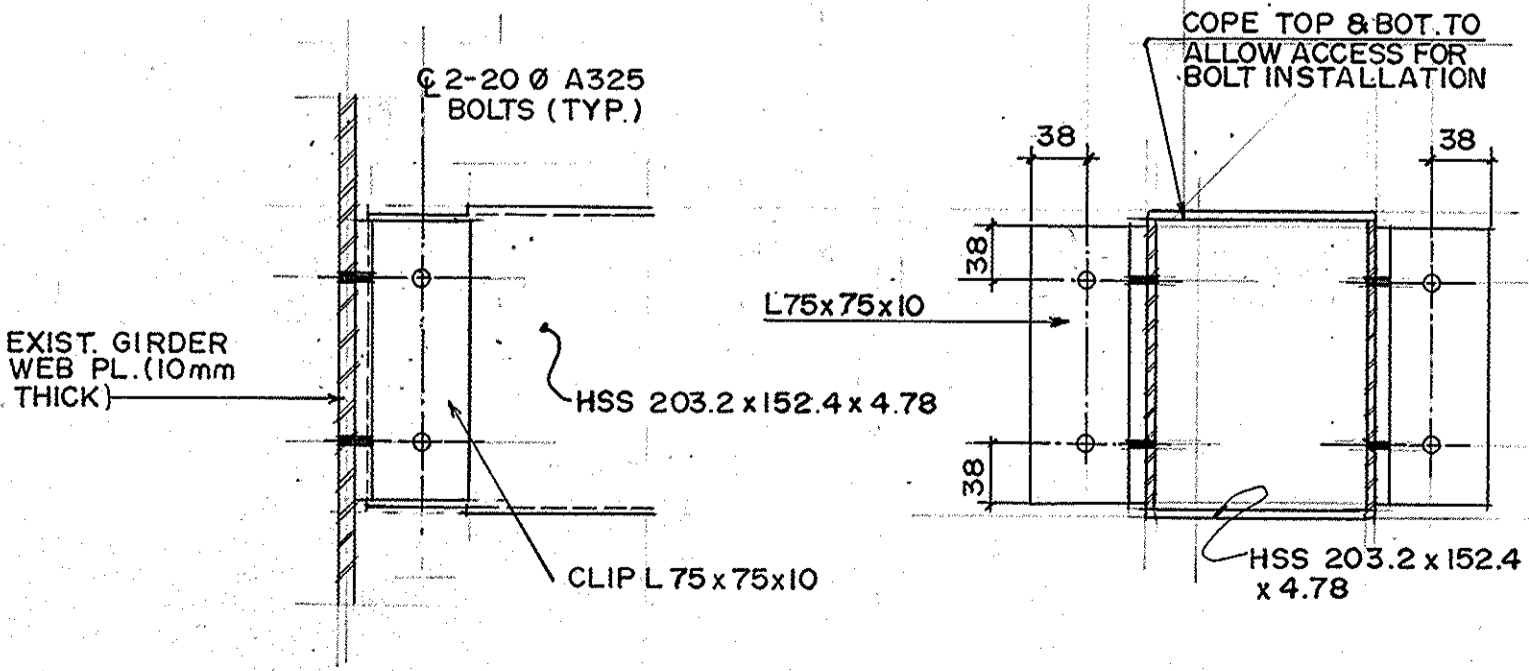
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⚠ THESE REVISIONS ARE TO SUPPLEMENT OR CLARIFY THE CONTRACT DOCUMENTS. NEITHER THE CONTRACT PRICE NOR THE CONTRACT TIME ARE AFFECTED

A. DETAIL NO. B. DRAWING WHERE DETAIL SHOWN C. DRAWING WHERE DETAIL TAKEN		13-26 SECTION SCALE 1:20
REid Crowther Reid Crowther & Partners Ltd. Engineers-Planners-Scientists		12-26 DETAIL SCALE 1:20
DESIGNED BY: B.E. CHECKED BY: W.J.M. DRAWN BY: R.C.S. APPROVED BY: <i>[Signature]</i> AUTHORIZED BY: <i>[Signature]</i> STREETS & BRIDGE ENGINEER / DATE: 1588-08-08 ACCEPTED BY: <i>[Signature]</i> BRIDGE ENGINEER / DATE: 11/01/08	THE CITY OF WINNIPEG WORKS AND OPERATIONS DIVISION STREETS AND TRANSPORTATION DEPARTMENT ST. VITAL TWIN BRIDGE OVER RED RIVER STRUCTURE REHABILITATION AND RELATED WORKS	CITY DRAWING NUMBER: B116-88-25 SHEET 26 OF 48 B-5826-26
2 AS CONSTRUCTED 881101 R.C.S. GENERAL REVISIONS 880222 B.E. NO. REVISIONS DATE BY		CONSULTANT DRAWING NO. 60814-26 DRAINAGE CHANNELS



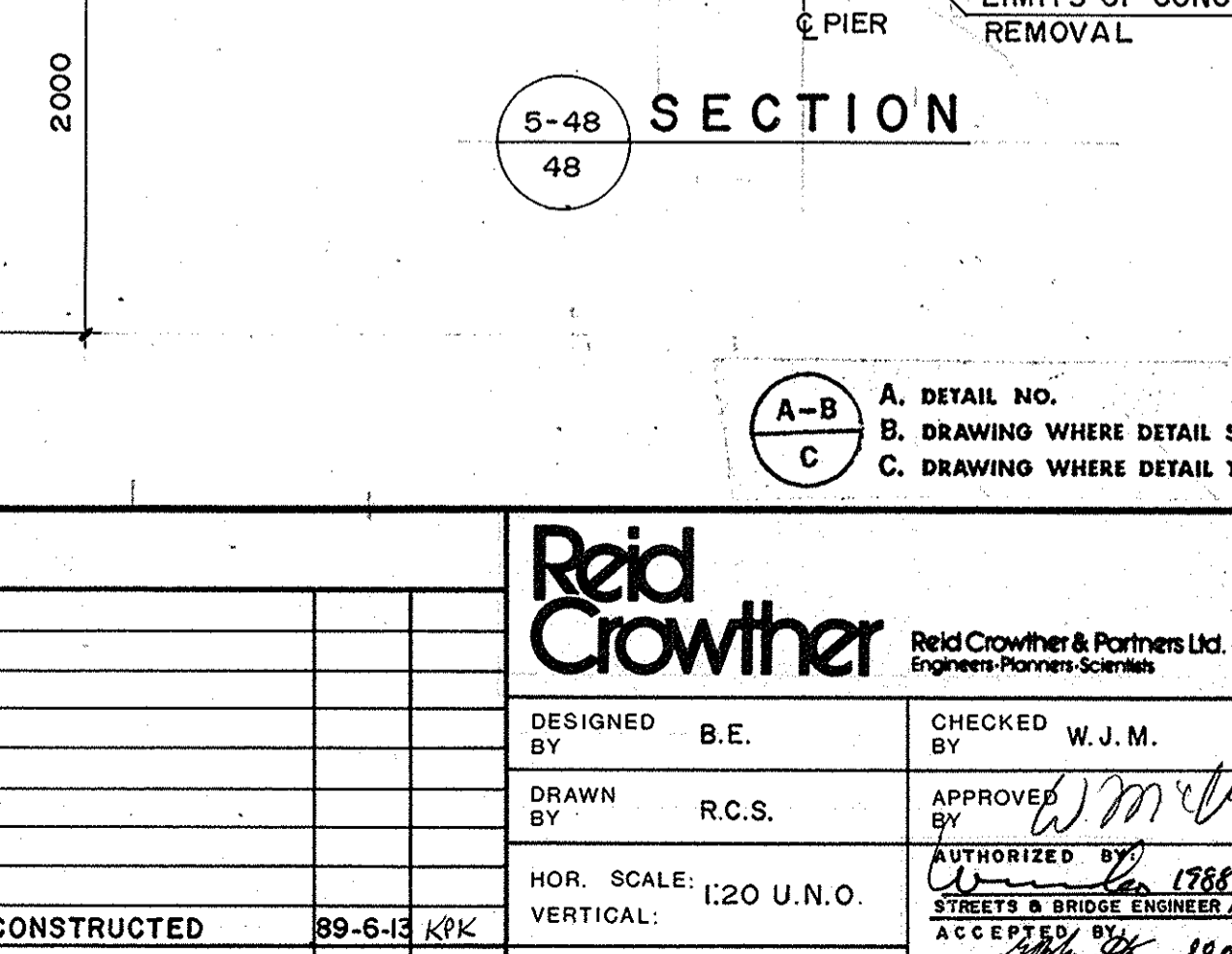
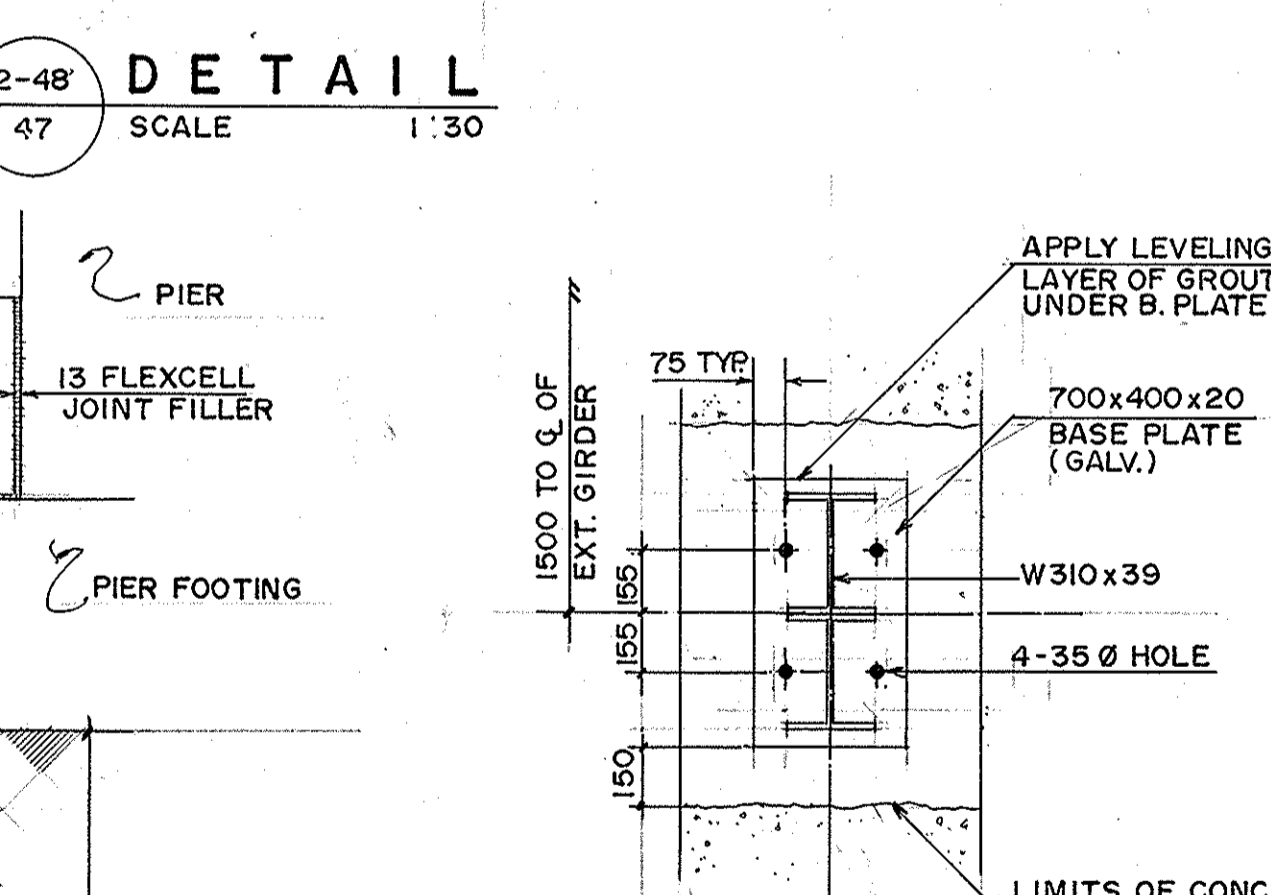
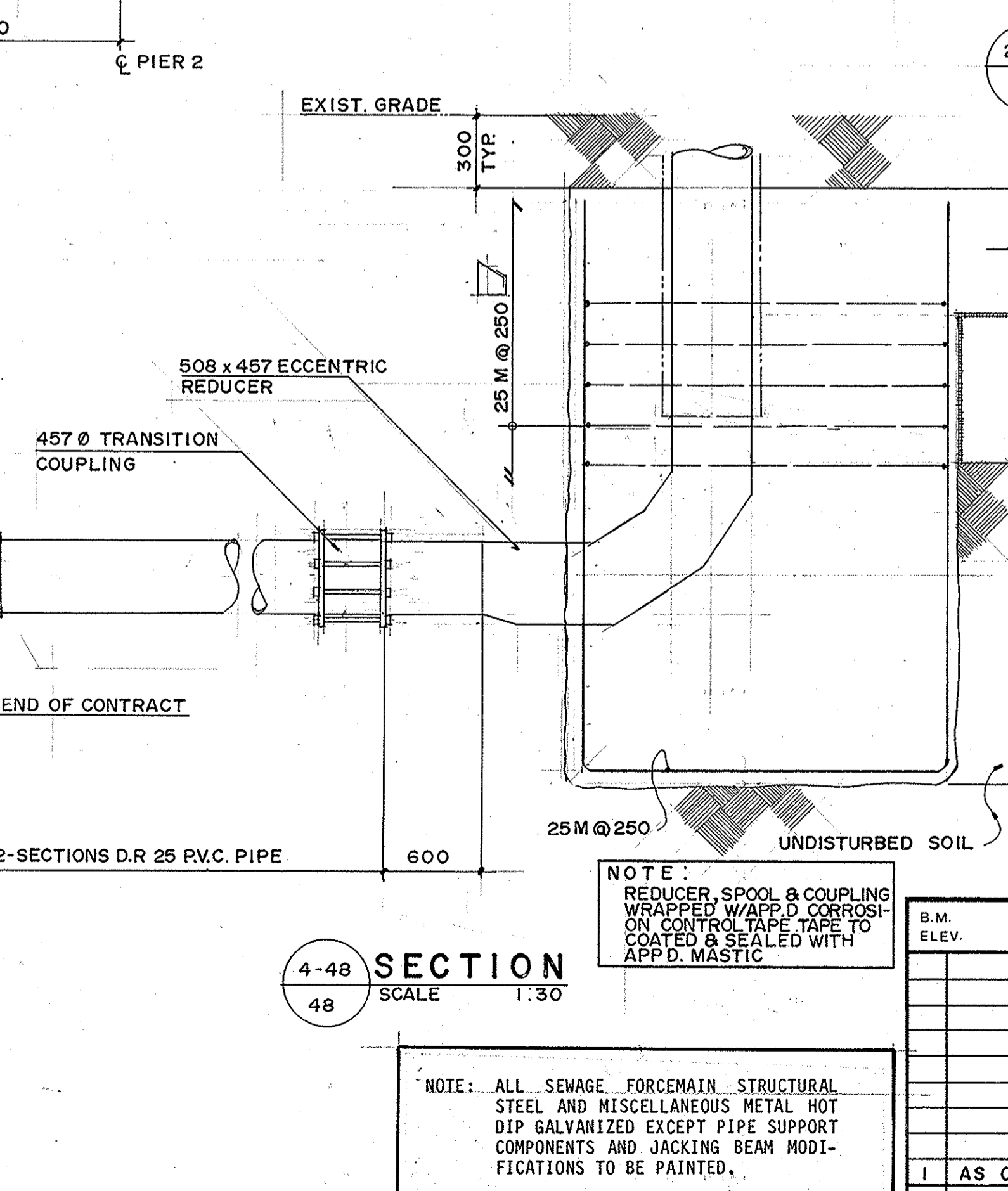
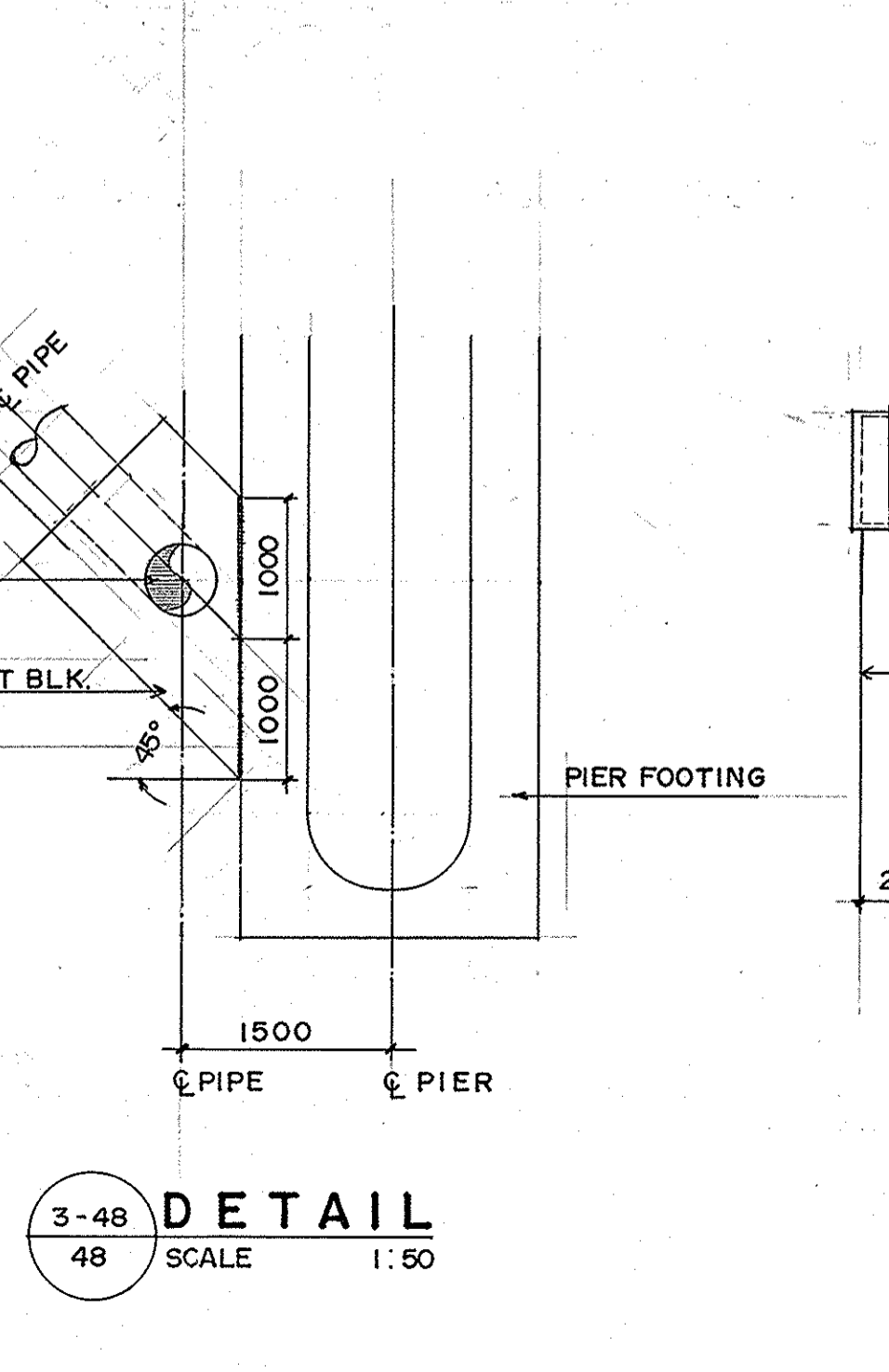
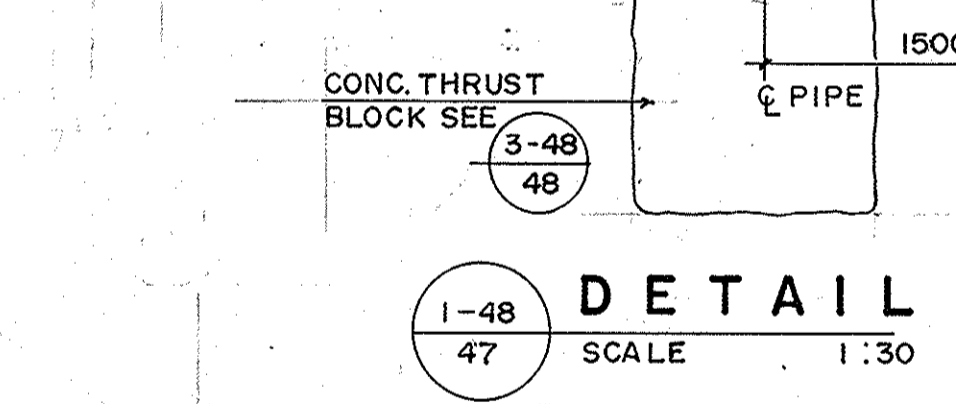
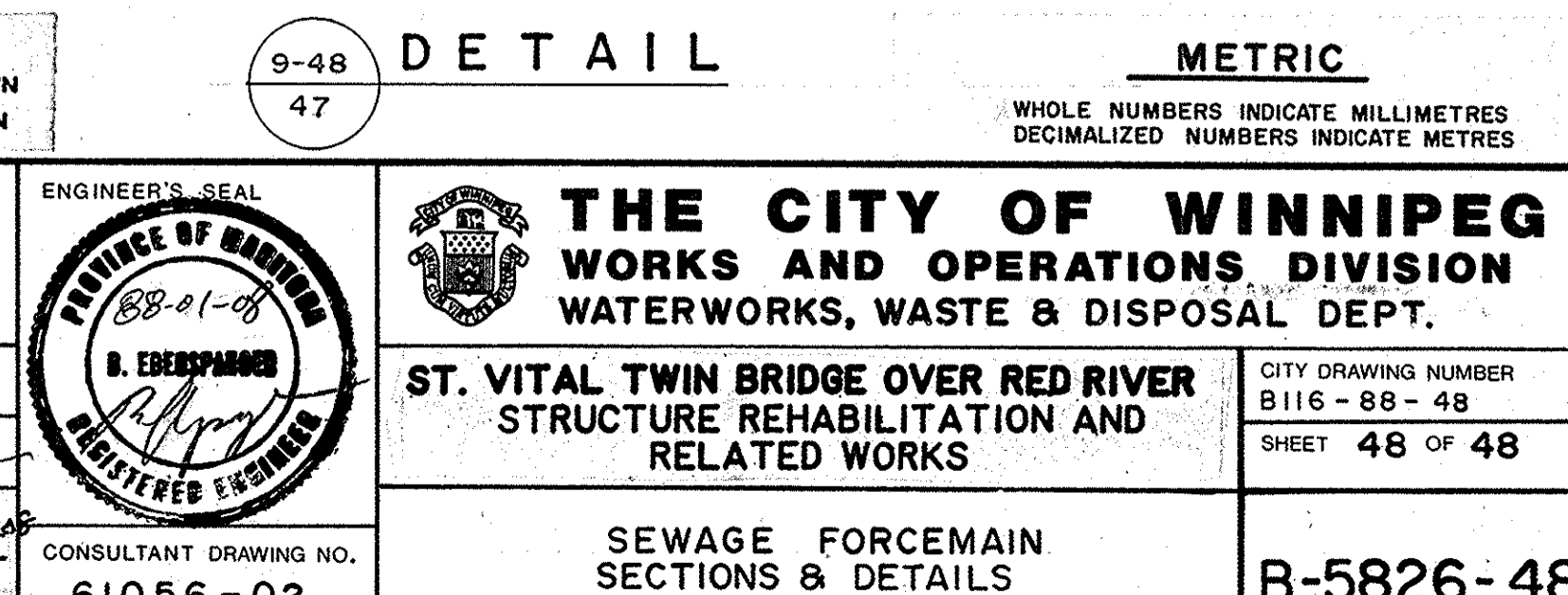
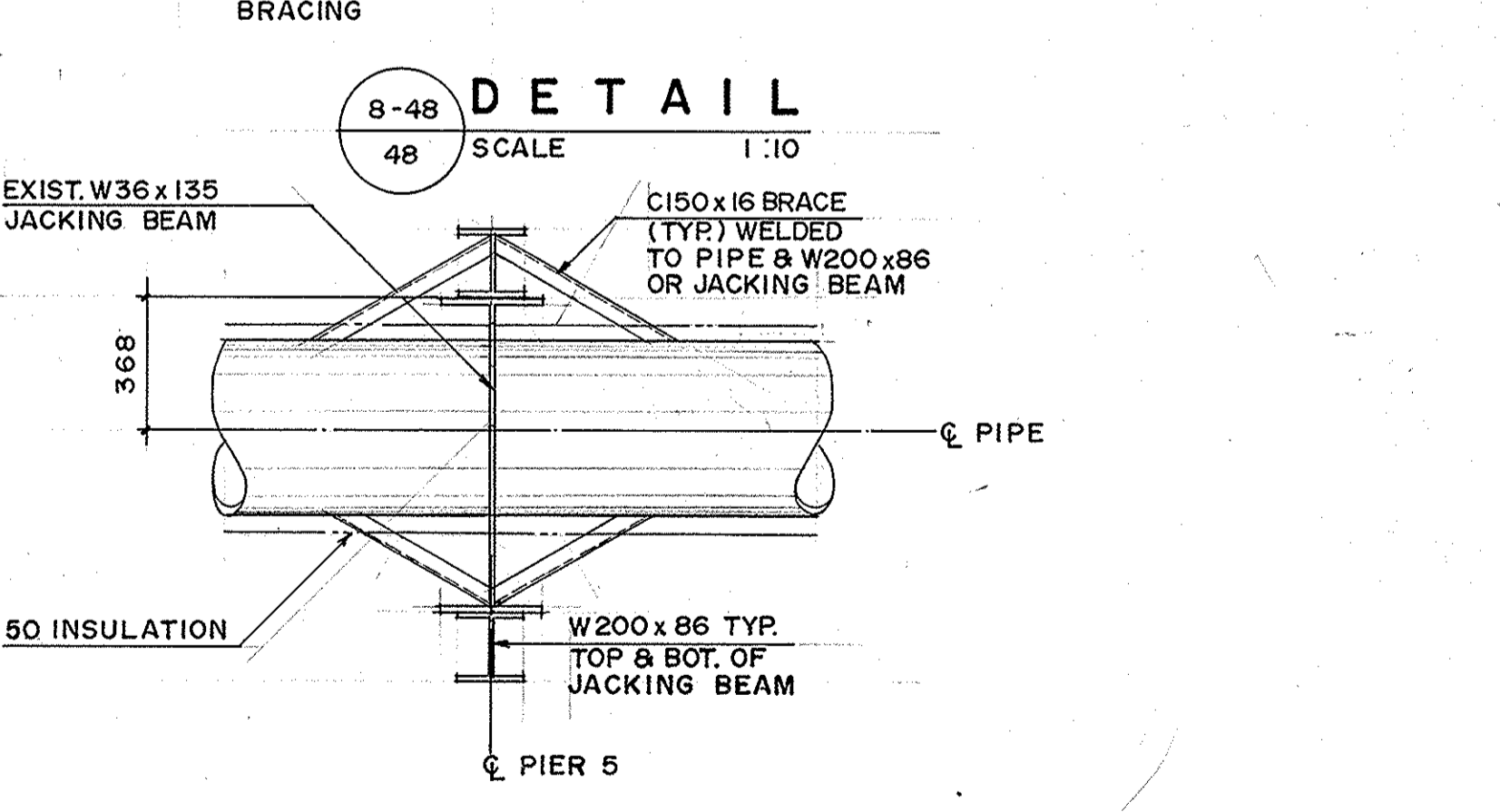
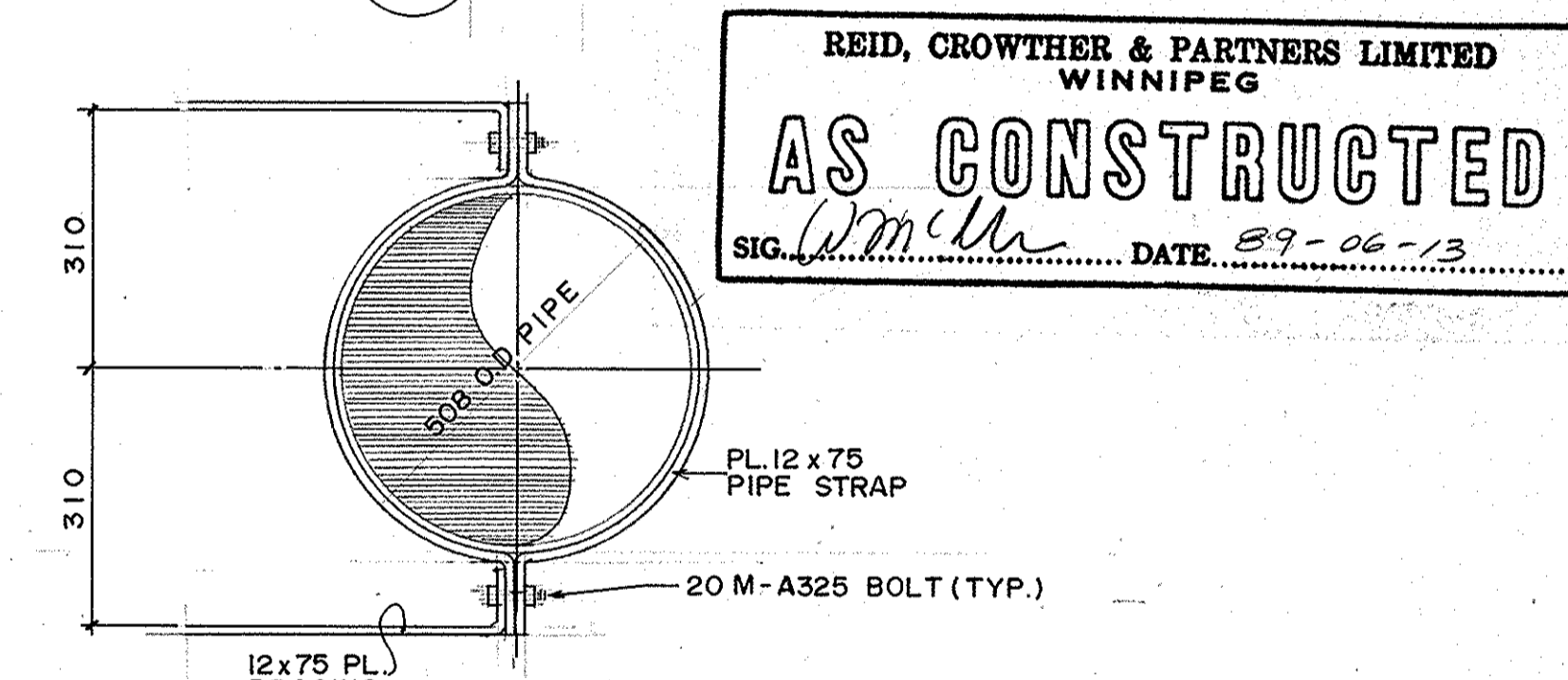
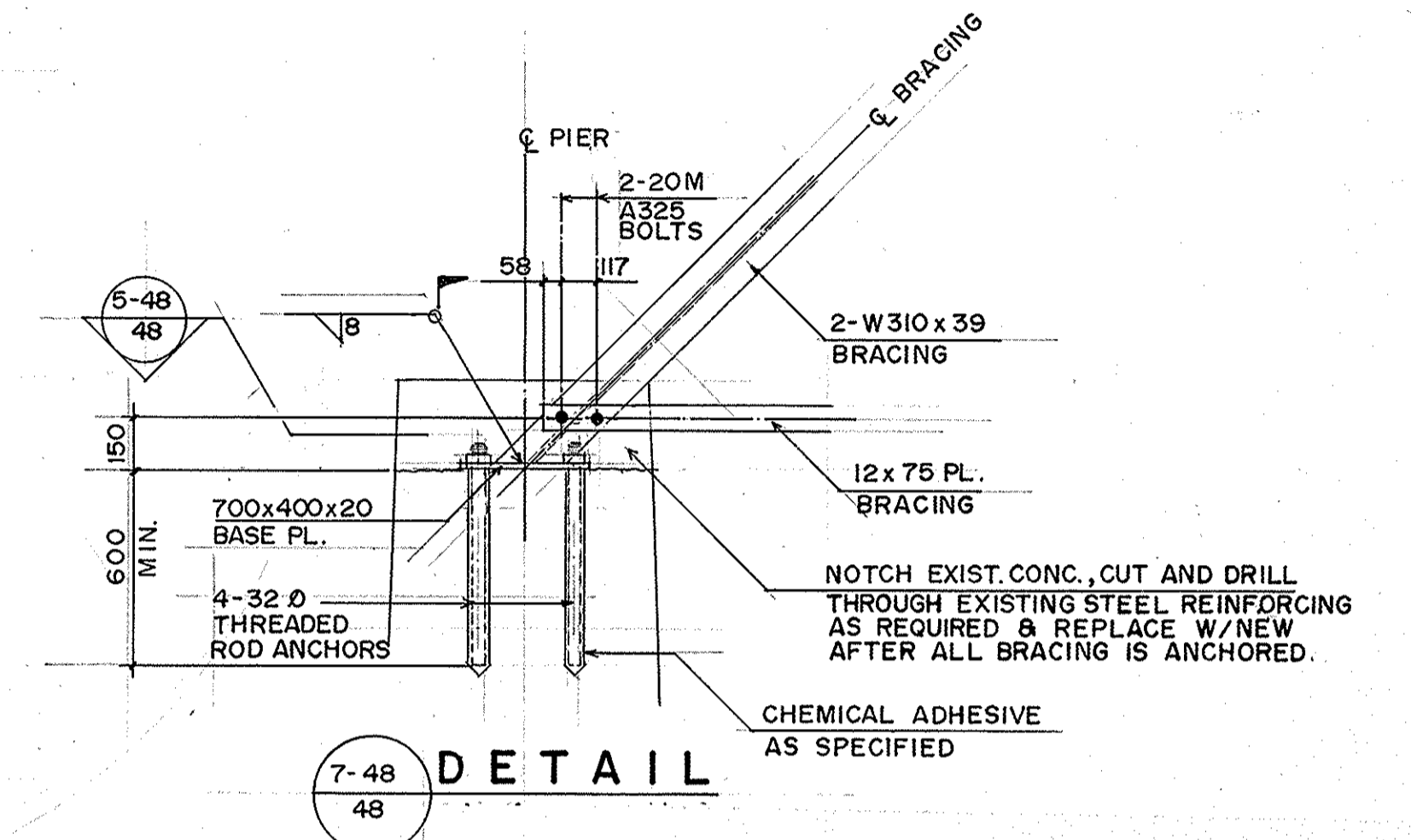
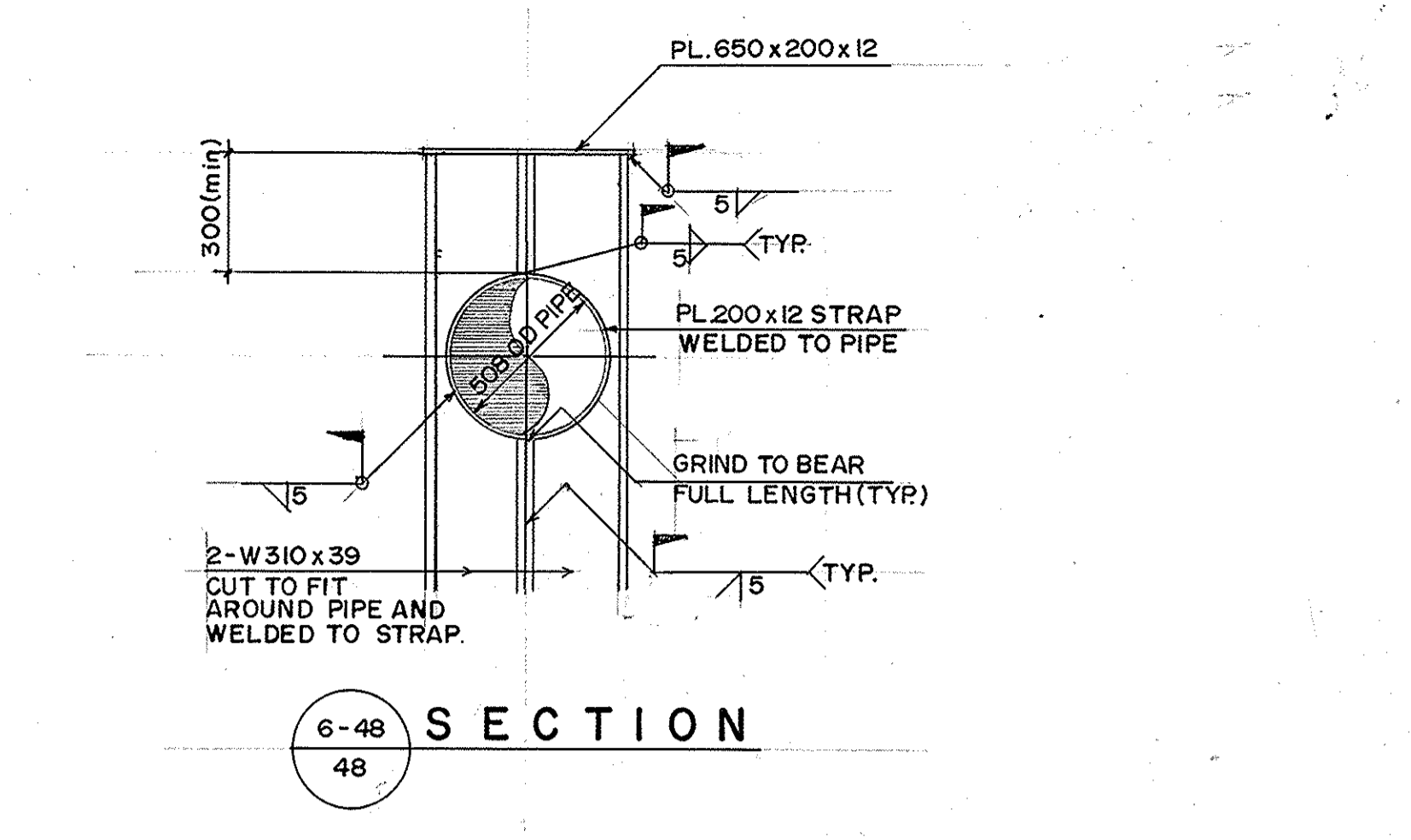
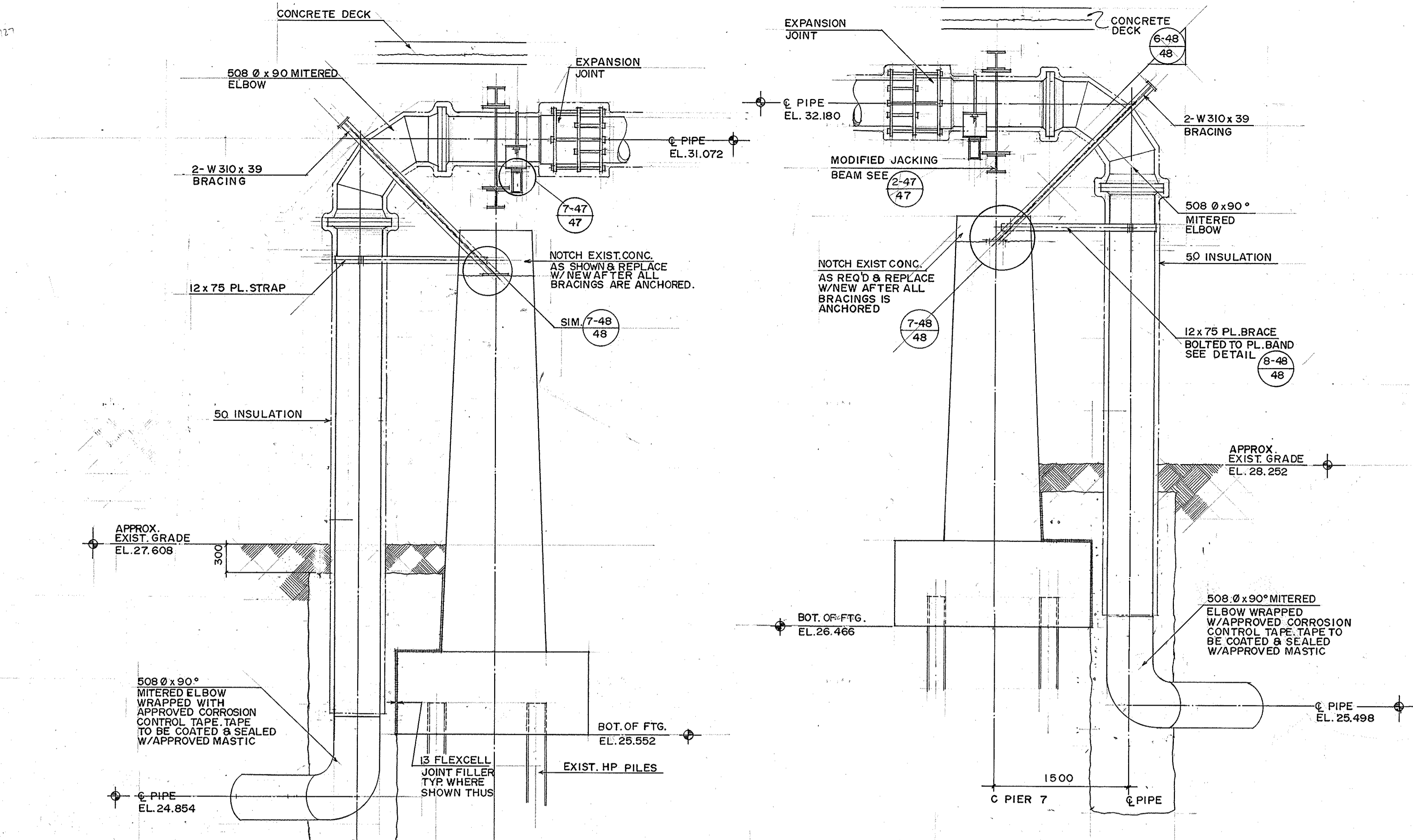
NOTE:
BEARINGS SUPPLIED BY W.G. BEARING INC.
BURLINGTON ON.
PROJECT NO. PI656-87



REID, CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIGNATURE: [Signature] DATE: 89-06-14

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

B.M. ELEV.			REID, CROWTHER & PARTNERS LIMITED ENGINEERS-PLANNERS-SCIENTISTS		THE CITY OF WINNIPEG WORKS AND OPERATIONS DIVISION WATERWORKS, WASTE & DISPOSAL DEPT.	CITY DRAWING NUMBER B.116-88-47
DESIGNED BY	B.E.					
DRAWN BY	R.C.S.	APPROVED BY	[Signature]	CONSULTANT DRAWING NO. 61056-01	SEWAGE FORCEMAIN LAYOUT & DETAILS	B-5826-47
HOR. SCALE:	AS SHOWN	AUTHORIZED BY	[Signature]			
VERTICAL:	AS SHOWN	ACCEPTED BY	[Signature]			
NO. REVISIONS		DATE	JAN. 88			

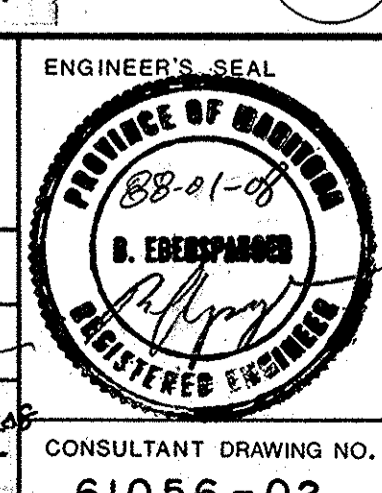


REID, CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG. *Wm M...* DATE 89-06-13

NOTE: REDUCER, SPOOL & COUPLING WRAPPED W/APPROVED CORROSION CONTROL TAPE TAPE TO BE COATED & SEALED WITH APP'D. MASTIC

NOTE: ALL SEWAGE FORCEMAIN STRUCTURAL STEEL AND MISCELLANEOUS METAL HOT DIP GALVANIZED EXCEPT PIPE SUPPORT COMPONENTS AND JACKING BEAM MODIFICATIONS TO BE PAINTED.

B.M. ELEV.					
DESIGNED BY	B.E.	CHECKED BY	W.J.M.		
DRAWN BY	R.C.S.	APPROVED BY	<i>Wm M...</i>		
HOR. SCALE:	1:20 U.N.O.	AUTHORIZED BY	<i>Wm M...</i>		
VERTICAL:	1:20 U.N.O.	ACCEPTED BY	<i>Wm M...</i>		
NO. REVISIONS		DATE	JAN. 88		
DATE		BY			



THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
WATERWORKS, WASTE & DISPOSAL DEPT.

ST. VITAL TWIN BRIDGE OVER RED RIVER
STRUCTURE REHABILITATION AND RELATED WORKS

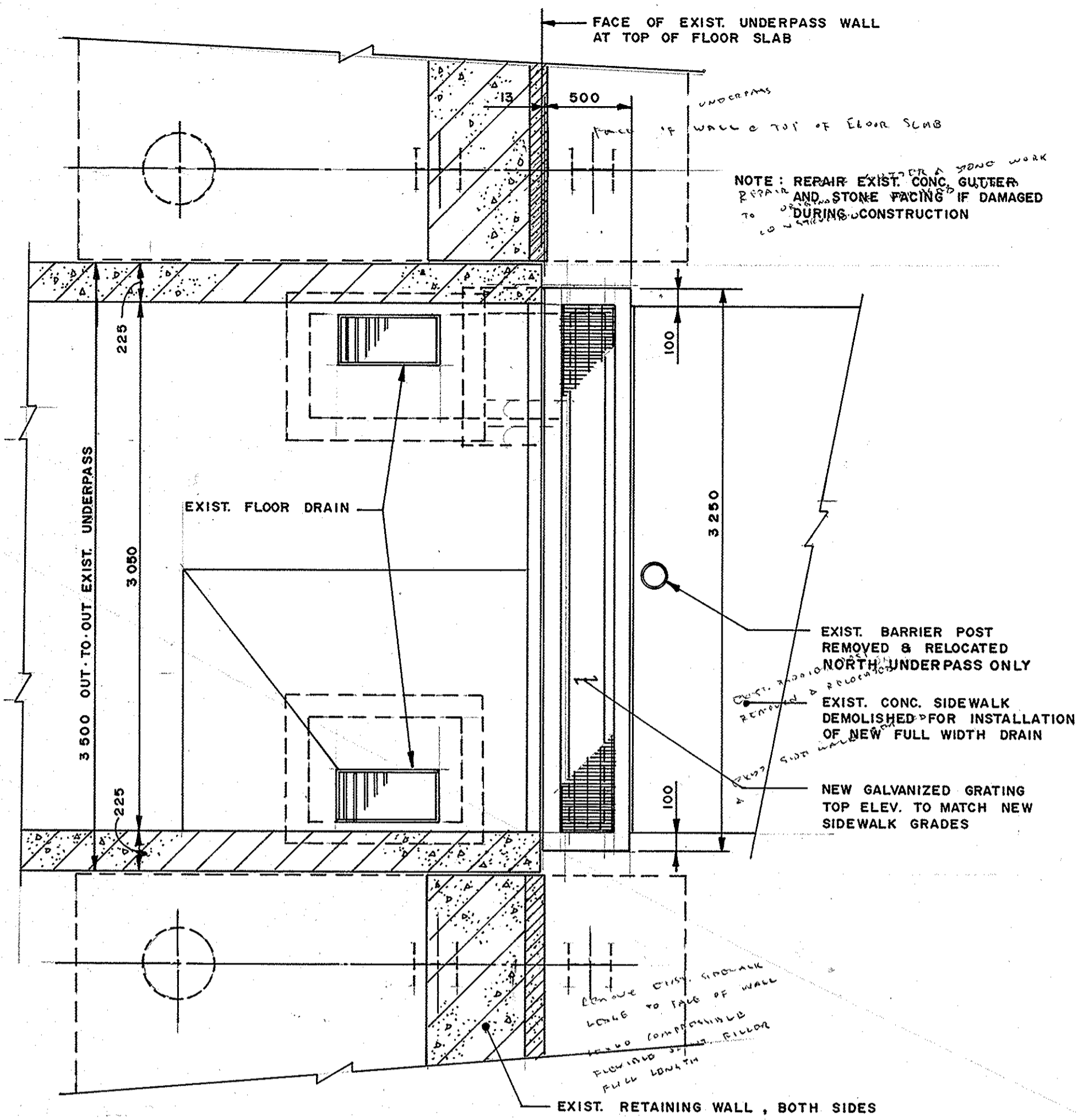
SEWAGE FORCEMAIN SECTIONS & DETAILS

CITY DRAWING NUMBER: 8116-88-48
SHEET 48 OF 48

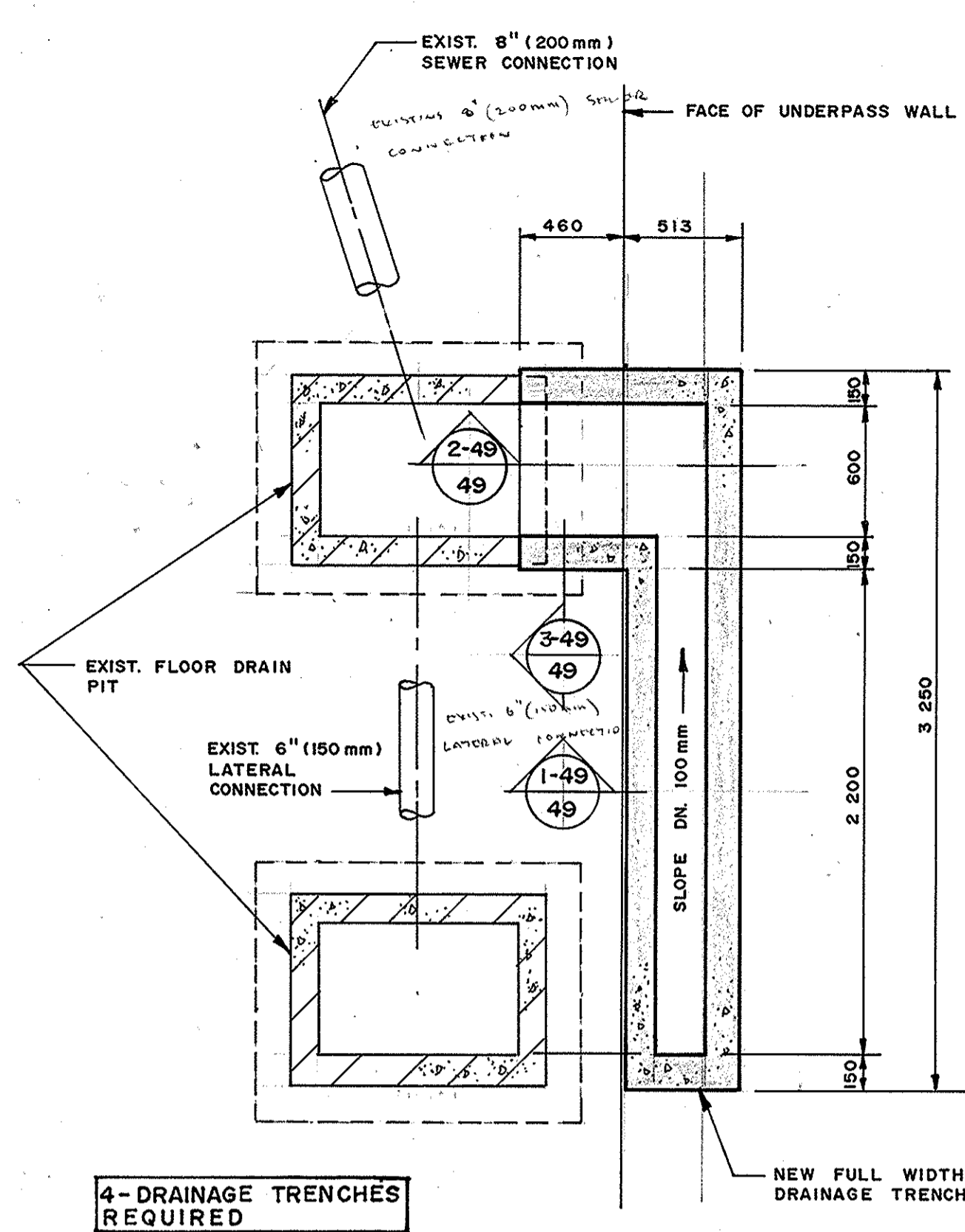
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B-5826-48

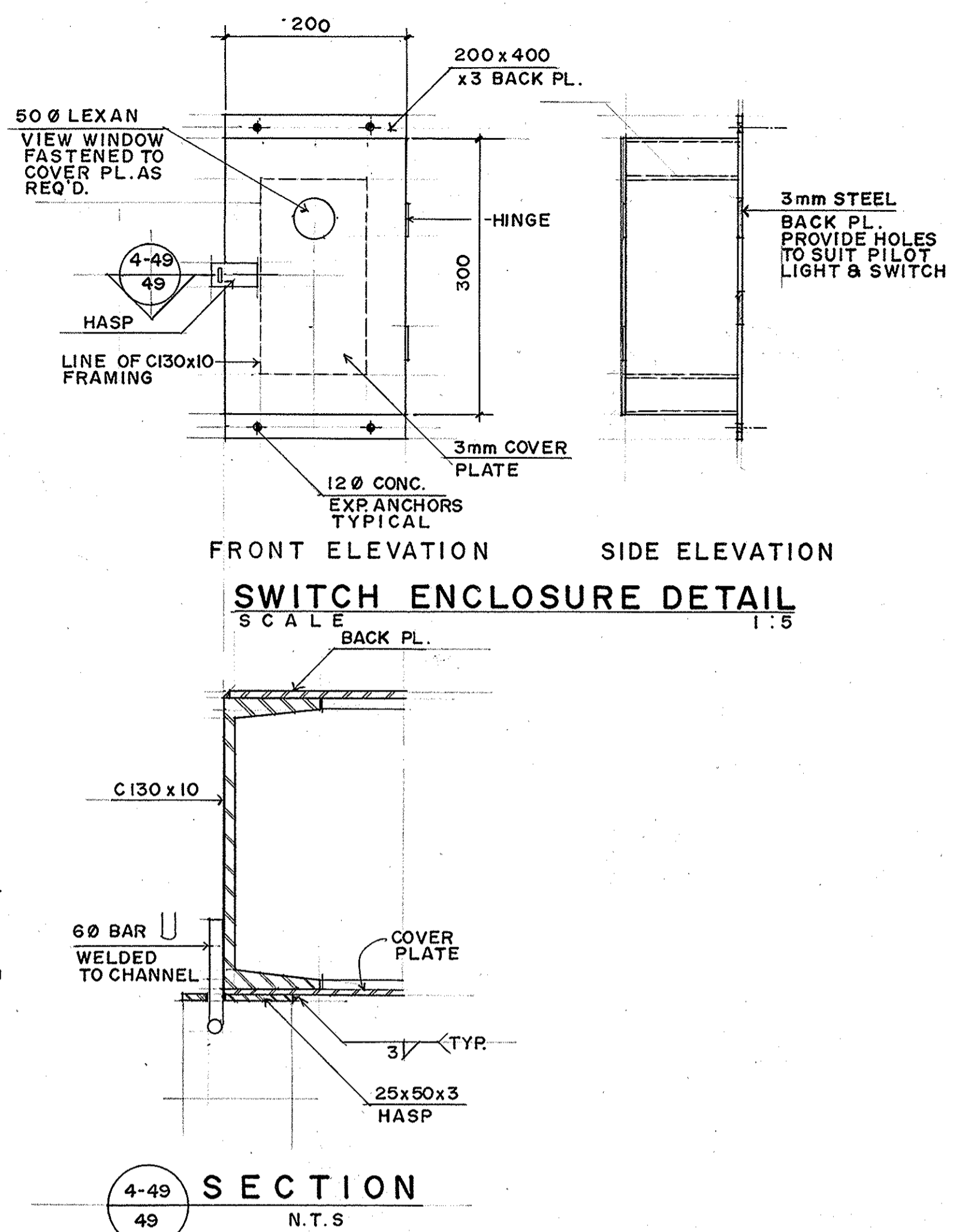
METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES



PLAN ABOVE UNDERPASS FLOOR SLAB
SCALE 1:25

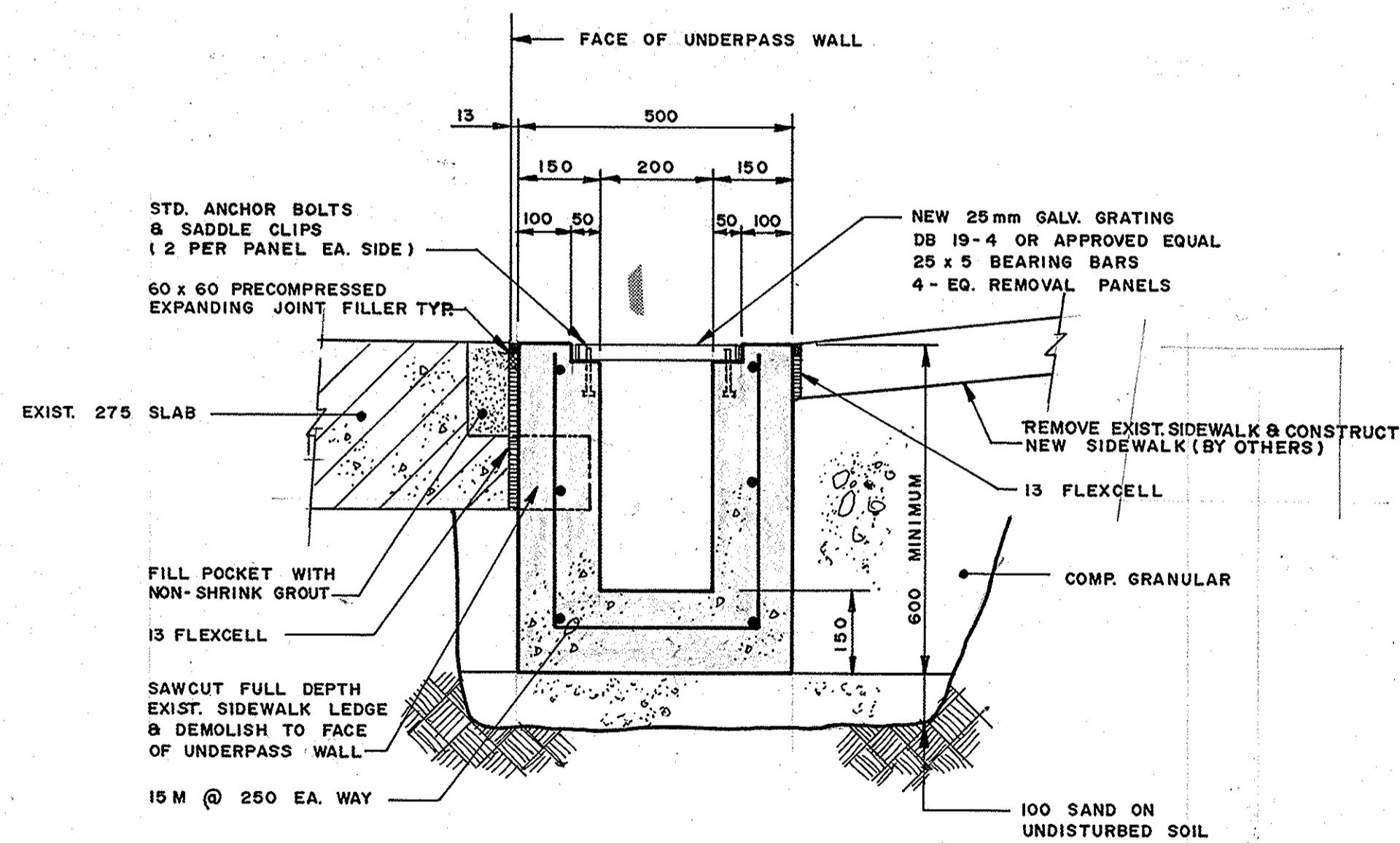


SECTIONAL PLAN OF NEW DRAINAGE TRENCH
SCALE 1:25

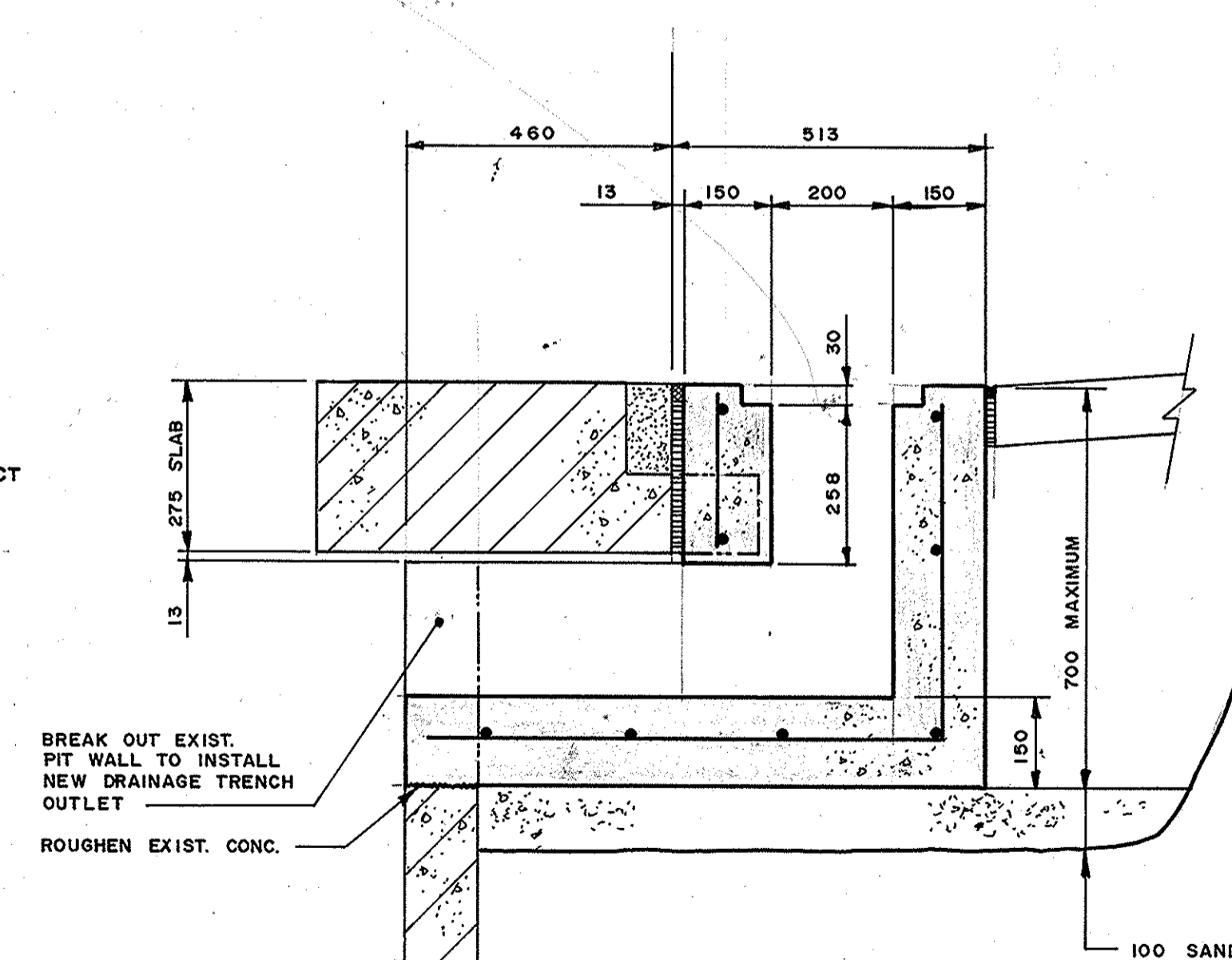


FRONT ELEVATION SIDE ELEVATION
SWITCH ENCLOSURE DETAIL
SCALE 1:5

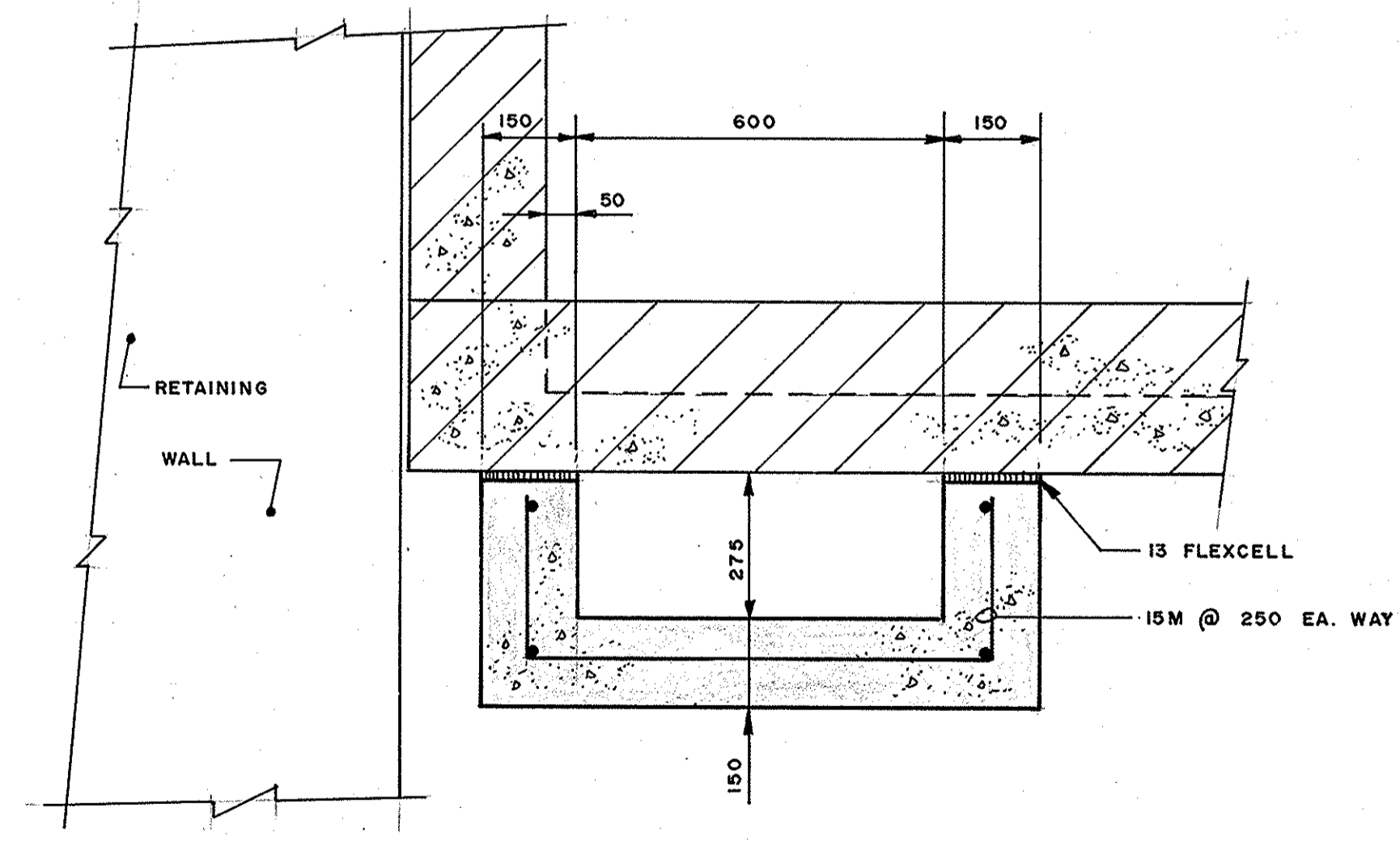
- General**
- Perform all work and supply all material as specified in Tender No. P.D. 88-1 unless noted otherwise.
 - Heating cable shall be Raychem Electric Melt Heating cable or an approved equal installed in accordance to the manufacturer's instructions and subject to the approval of the Engineer. (Operating at 50 Watts/ft.² of 29" spacing). The heating cable shall be installed in the new drainage trenches, through the entire length of each 9" sewer entering the existing floor drains, and in the existing floor drain system.
 - Grating shall be galvanized standard Dominion Bridge grating or an approved equal with a 25 mm x 5 mm bearing size.
 - Obtain and pay for all permits and inspection fees.
 - Examine the site and verify all existing conditions that might affect the work.
 - Confirm all mounting heights prior to installation.
 - The locations of the drain inlet modifications are shown as revision 2 on Drawings B116-88-30, B116-88-32, B116-88-35, B116-88-39 and B116-88-40.
- Electrical**
- Comply with the latest edition of the Canadian Electrical Code and all provincial and local codes.
 - Wire all systems in conduit, use rigid steel c/w Thomas & Betts connectors "Bullet Hub" 370 Series.
 - Do not use wire smaller than No. 12 AWG for circuits. No. 14 may be used for control. All wire to be copper x-link insulation unless otherwise noted.
 - Test all circuits for continuity and insulation resistance and correct if necessary.
 - Ground systems in accordance with the applicable codes.
 - Connect new duplex receptacle to disconnect power source provided by others. Include all wire, conduit, back boxes and connections.
 - The power source to the switch box is a 15 amp circuit breaker to be supplied and installed by others.
 - The two switch enclosures (one required per underpass) shall be secure and installed complete with locks, switch, operating light and duplex plug as shown. The locations for mounting the two switch enclosures on the inside under-pass walls shall be given by the Engineer.
 - The Contractor shall submit switch enclosure shop drawings to the engineer for approval prior to fabrication.



1-49 SECTION
49 1:10



2-49 SECTION
49 1:10



3-49 SECTION
49 1:10

REID, CROWTHER & PARTNERS LIMITED
WINNIPEG
AS CONSTRUCTED
SIG. *W. Langdon* DATE: 28/02/20

B.M. ELEV.				
DESIGNED BY	J. L.			
DRAWN BY	G. M.	APPROVED BY	<i>W. Langdon</i>	THE CITY OF WINNIPEG WORKS AND OPERATIONS DIVISION STREETS AND TRANSPORTATION DEPARTMENT ST. VITAL TWIN BRIDGE OVER RED RIVER STRUCTURE REHABILITATION AND RELATED WORKS
HOR. SCALE:		AUTHORIZED BY STREETS & BRIDGE ENGINEER / DATE ACCEPTED BY BRIDGE ENGINEER / DATE		
NO. REVISIONS		DATE	DATE	CONSULTANT DRAWING NO. 60814-49 DRAIN INLET MODIFICATIONS
				CITY DRAWING NUMBER B116-88-49 SHEET 49 OF 49 B-5826-49