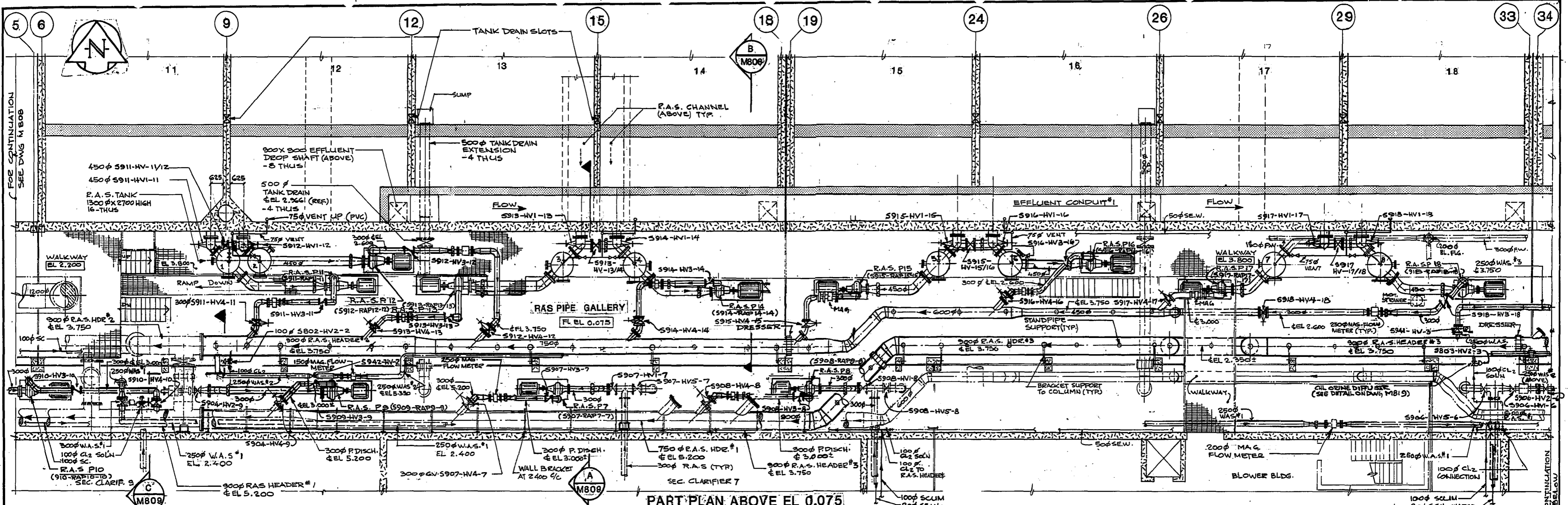
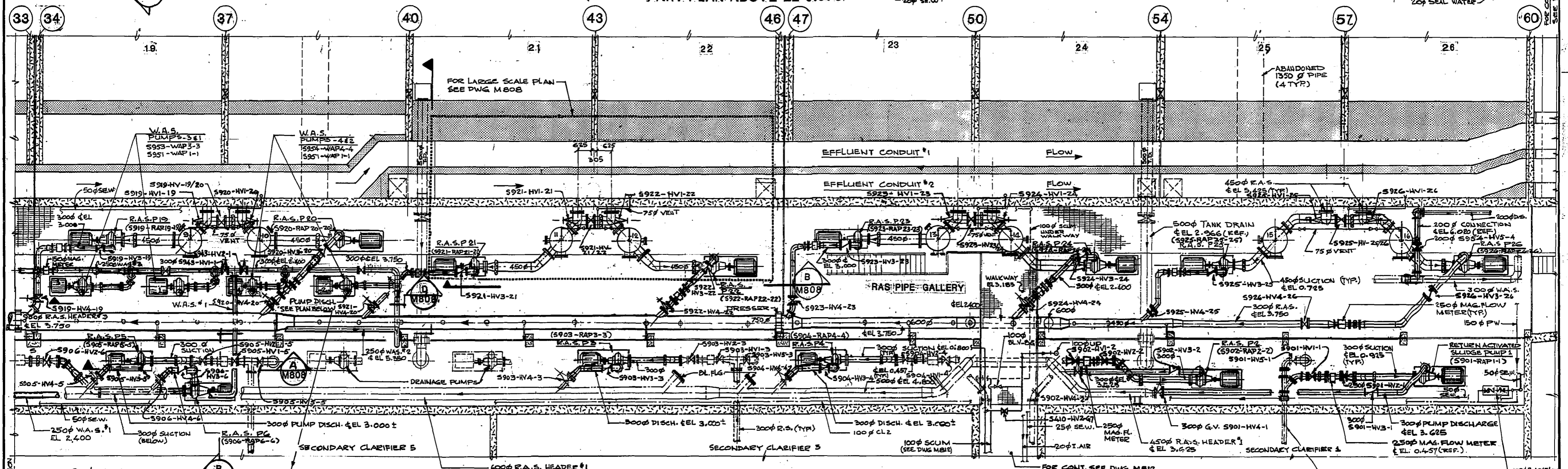


APPENDIX A – DRAWINGS

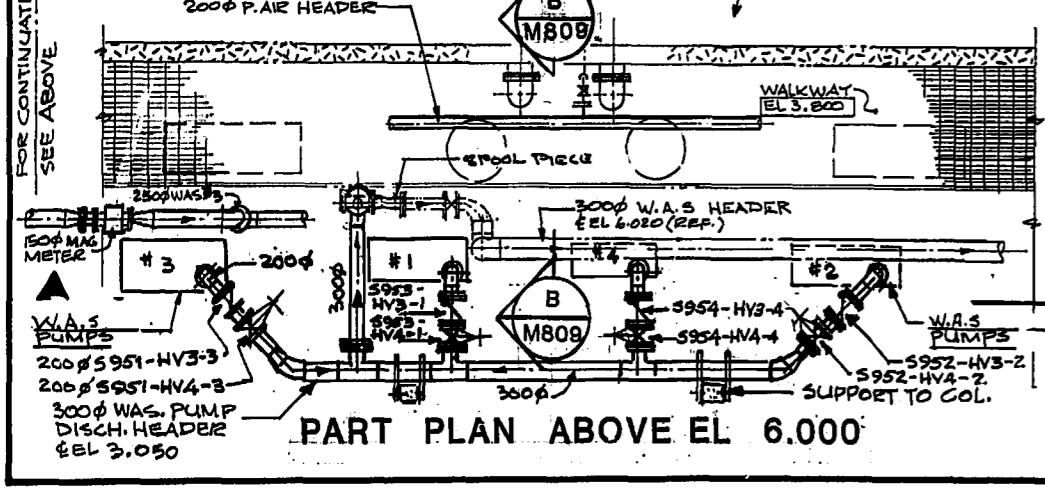
Item No.	Drawing Number	Drawing Title
1	NEP-1080-R02	Secondary Treatment Expansion, Oxygen Reactor tanks, Mechanical East-West Gallery, Plans Above EI 2.200 & Sections
2	NEP-1413-R04	Secondary Treatment Expansion, Secondary Clarifiers - Mechanical, RAS Pipe Gallery, Plan Above EI 0.075
3	NEP-1414-R04	Secondary Treatment Expansion, Secondary Clarifiers - Mechanical, RAS Pipe Gallery, Part Plan Above EI 0.075 & Sections
4	NEP-1416-R02	Secondary Treatment Expansion, Secondary Clarifiers - Mechanical, Scum Gallery, Plan Above EI 3.300
5	NEP-1423-R04	Secondary Treatment Expansion, Secondary Clarifiers - Mechanical, Process Schematic
6	1-0101A-A0001_Sht001-R07	NEWPCC, P&ID Legend and Details
7	1-0101A-A0001_Sht002-R07	NEWPCC, P&ID Legend and Details
8	1-0101A-A0001_Sht003-R07	NEWPCC, P&ID Legend and Details
9	1-0101R-A0094_Sht001-R03	NEWPCC Oxygen Reactors P&ID, RAS Flow, Reactor Train 1
10	1-0101R-A0095_Sht001-R03	NEWPCC Oxygen Reactors P&ID, RAS Flow, Reactor Train 2
11	1-0101R-A0096_Sht001-R03	NEWPCC Oxygen Reactors P&ID, RAS Flow, Reactor Train 3
12	1-0101S-A0140_Sht001-R03	NEWPCC Secondary Clarifiers, P&ID, RAS Sludge Pumps, S901-RAP1 & S902-RAP2
13	1-0101S-A0141_Sht001-R03	NEWPCC Secondary Clarifiers, P&ID, RAS Sludge Pumps, S903-RAP3 & S904-RAP4
14	1-0101S-A0142_Sht001-R03	NEWPCC Secondary Clarifiers, P&ID, RAS Sludge Pumps, S905-RAP5 & S906-RAP6
15	1-0101S-A0143_Sht001-R03	NEWPCC Secondary Clarifiers, P&ID, RAS Sludge Pumps, S907-RAP7 & S908-RAP8
16	1-0101S-A0144_Sht001-R03	NEWPCC Secondary Clarifiers, P&ID, RAS Sludge Pumps, S909-RAP9 & S910-RAP10
17	1-0101S-A0145_Sht001-R03	NEWPCC Secondary Clarifiers, P&ID, RAS Sludge Pumps, S911-RAP11 & S912-RAP12
18	1-0101S-A0146_Sht001-R03	NEWPCC Secondary Clarifiers, P&ID, RAS Sludge Pumps, S913-RAP13 & S914-RAP14
19	1-0101S-A0147_Sht001-R03	NEWPCC Secondary Clarifiers, P&ID, RAS Sludge Pumps, S915-RAP15 & S916-RAP16
20	1-0101S-A0148_Sht001-R03	NEWPCC Secondary Clarifiers, P&ID, RAS Sludge Pumps, S917-RAP17 & S918-RAP18
21	1-0101S-A0149_Sht001-R03	NEWPCC Secondary Clarifiers, P&ID, RAS Sludge Pumps, S919-RAP19 & S920-RAP20
22	1-0101S-A0150_Sht001-R03	NEWPCC Secondary Clarifiers, P&ID, RAS Sludge Pumps, S921-RAP21 & S922-RAP22
23	1-0101S-A0151_Sht001-R03	NEWPCC Secondary Clarifiers, P&ID, RAS Sludge Pumps, S923-RAP23 & S924-RAP24
24	1-0101S-A0152_Sht001-R03	NEWPCC Secondary Clarifiers, P&ID, RAS Sludge Pumps, S925-RAP25 & S926-RAP26
25	1-0101S-A0153_Sht001-R03	NEWPCC Secondary Clarifiers, P&ID, RAS Flow Summation
26	1-0101S-A0154_Sht001-R03	NEWPCC Secondary Clarifiers, P&ID, RAS Pump Discharge Piping



PART PLAN ABOVE EL 0.075



PART PLAN ABOVE EL 0.075



PART PLAN ABOVE EL 6.000

AS - BUILT		
DATE	FB. NO.	PAGE
MAR. 88		

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

NO.	REVISIONS	DATE	APP.
4	AS CONSTRUCTED	MAR 88	HR
3	ISSUED FOR TENDER	SEPT 85	GM
2	-	MAR 85	H.S.
1	FINAL REVIEW	27/11/84	FB

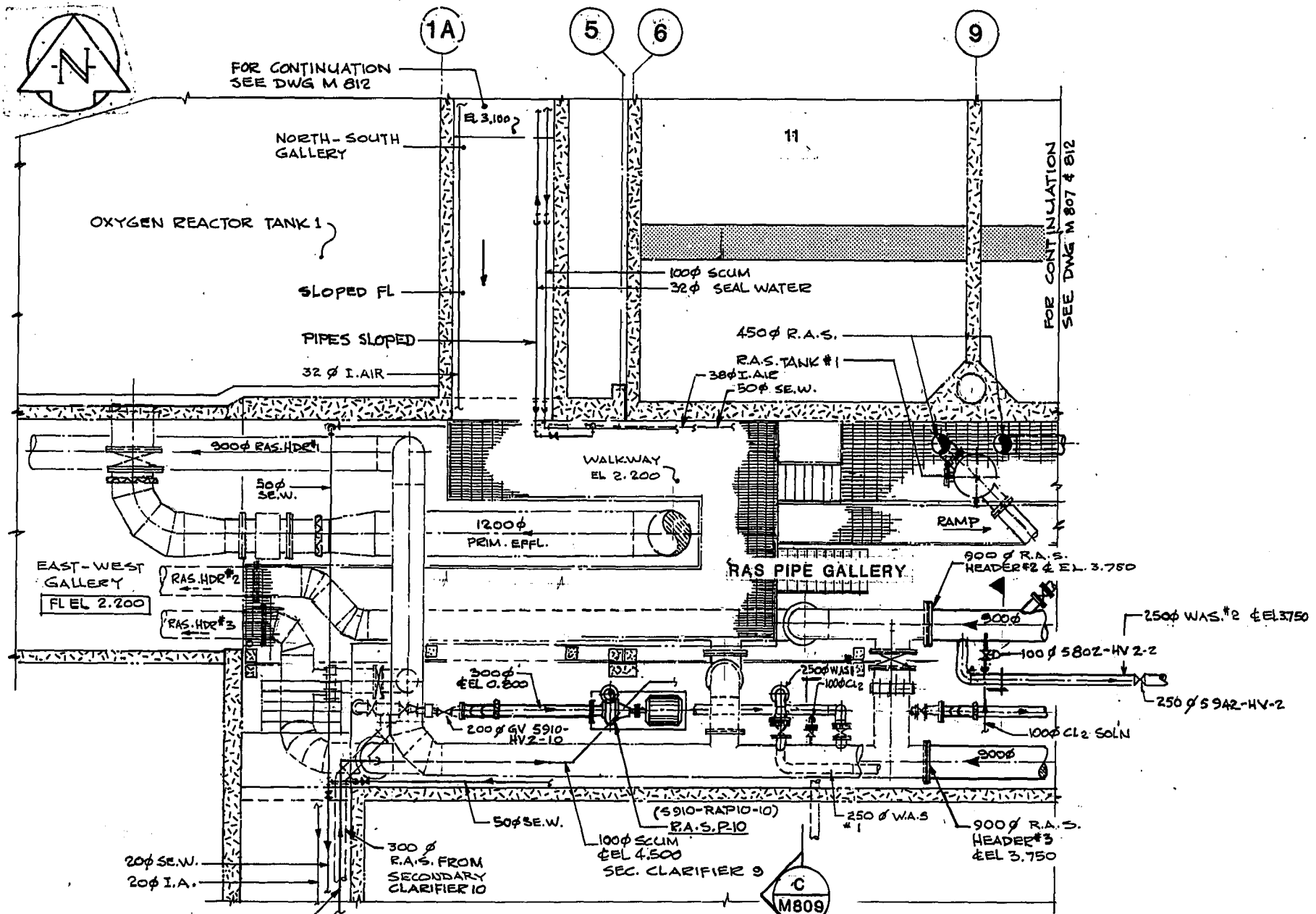


W.L. WARDROP & ASSOCIATES LTD. MacLAREN ENGINEERS INC.	
DESIGNED BY: VM/RDJ	DRAWN BY: HS.
CHECKED BY: RD	DATE: SEPT/1985
APPROVED BY: <i>[Signature]</i>	DATE: Sept 85

THE CITY OF WINNIPEG
WORKS & OPERATIONS DIVISION
WATERWORKS, WASTE & DISPOSAL DEPARTMENT

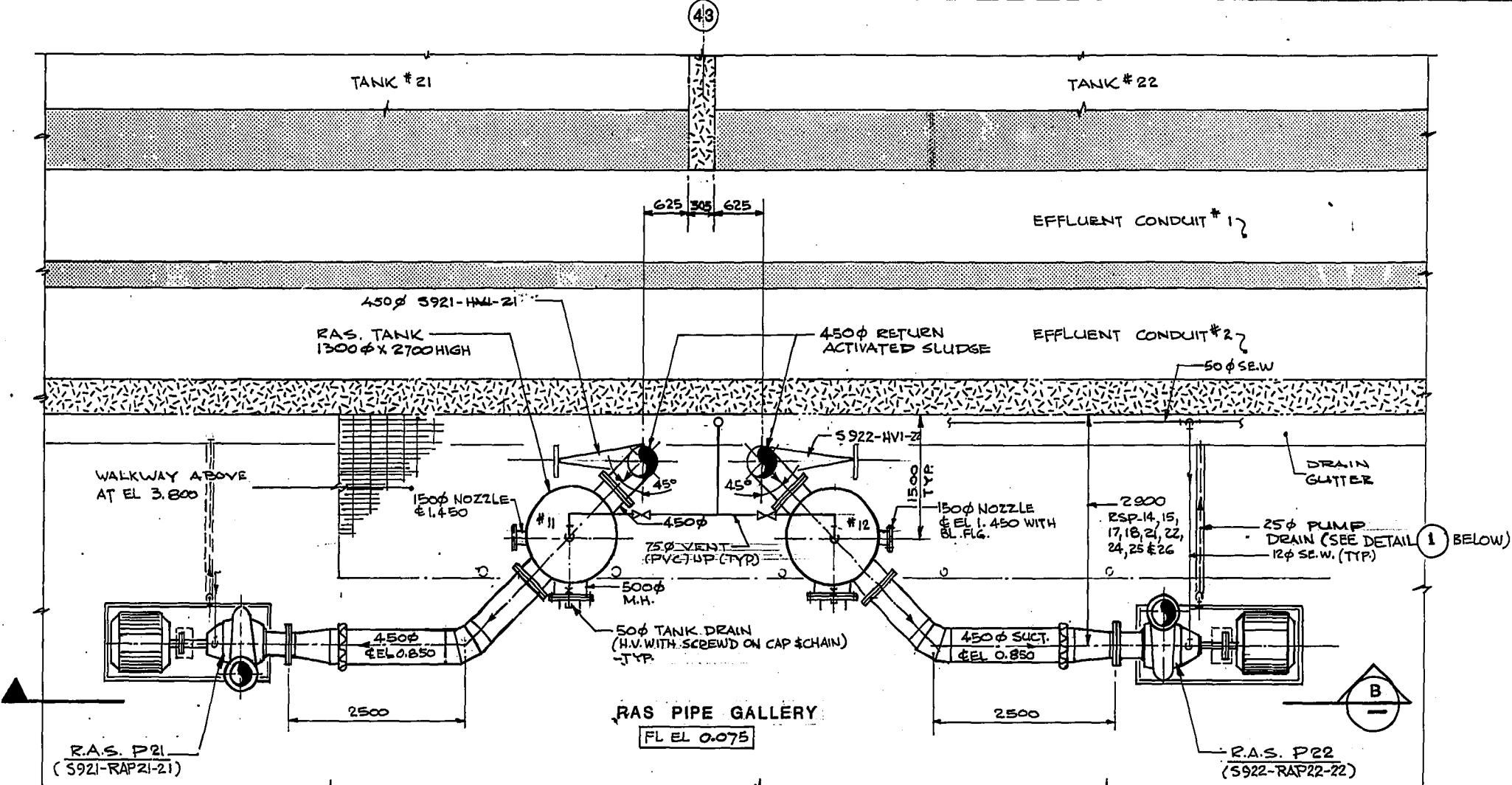
**NORTH END WATER POLLUTION CONTROL CENTRE
SECONDARY TREATMENT EXPANSION
SECONDARY CLARIFIERS-MECHANICAL
RAS PIPE GALLERY
PLAN ABOVE EL 0.075**

RELEASED FOR CONSTRUCTION: *[Signature]* DATE: 1985 09 12
SCALE: 1:100 DRAWING NO: NEP 14 13



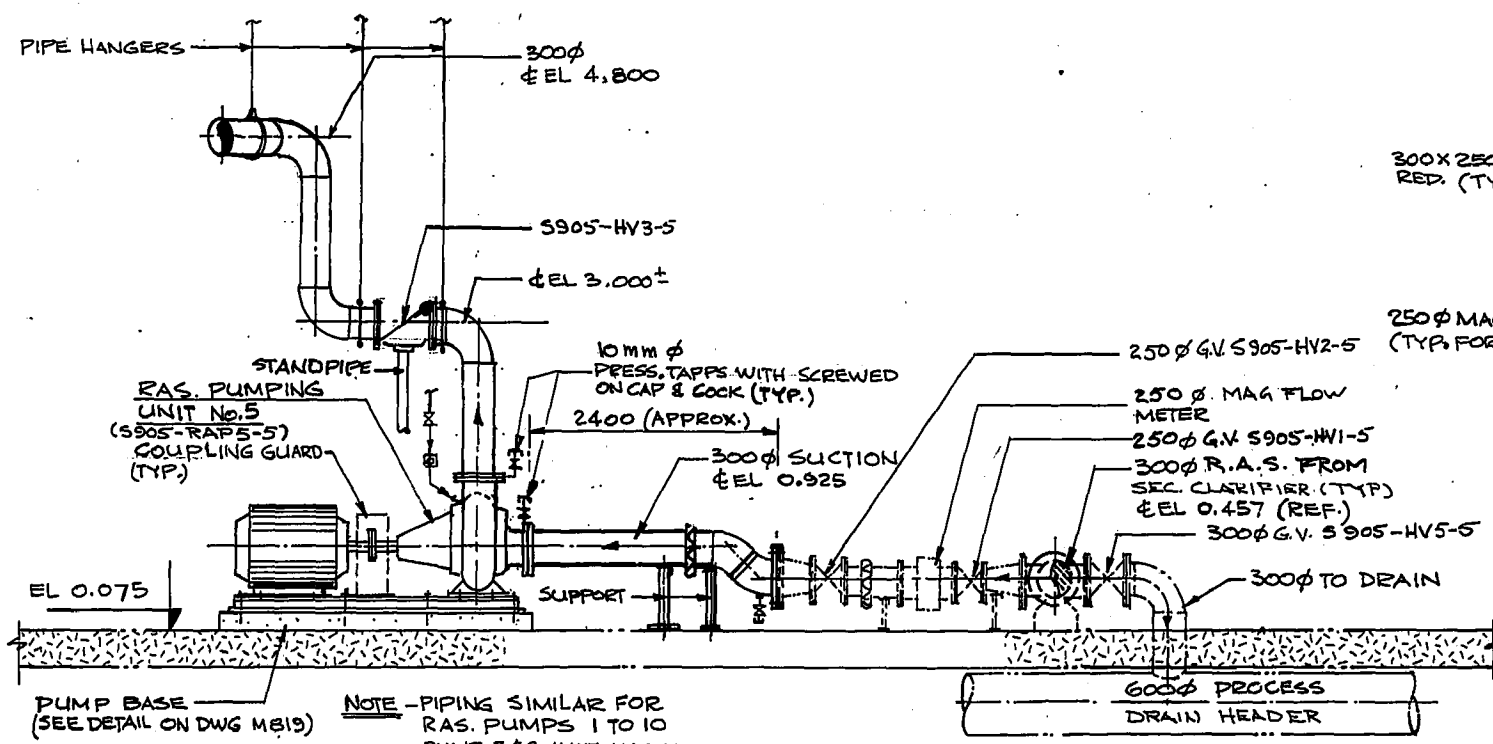
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1:100



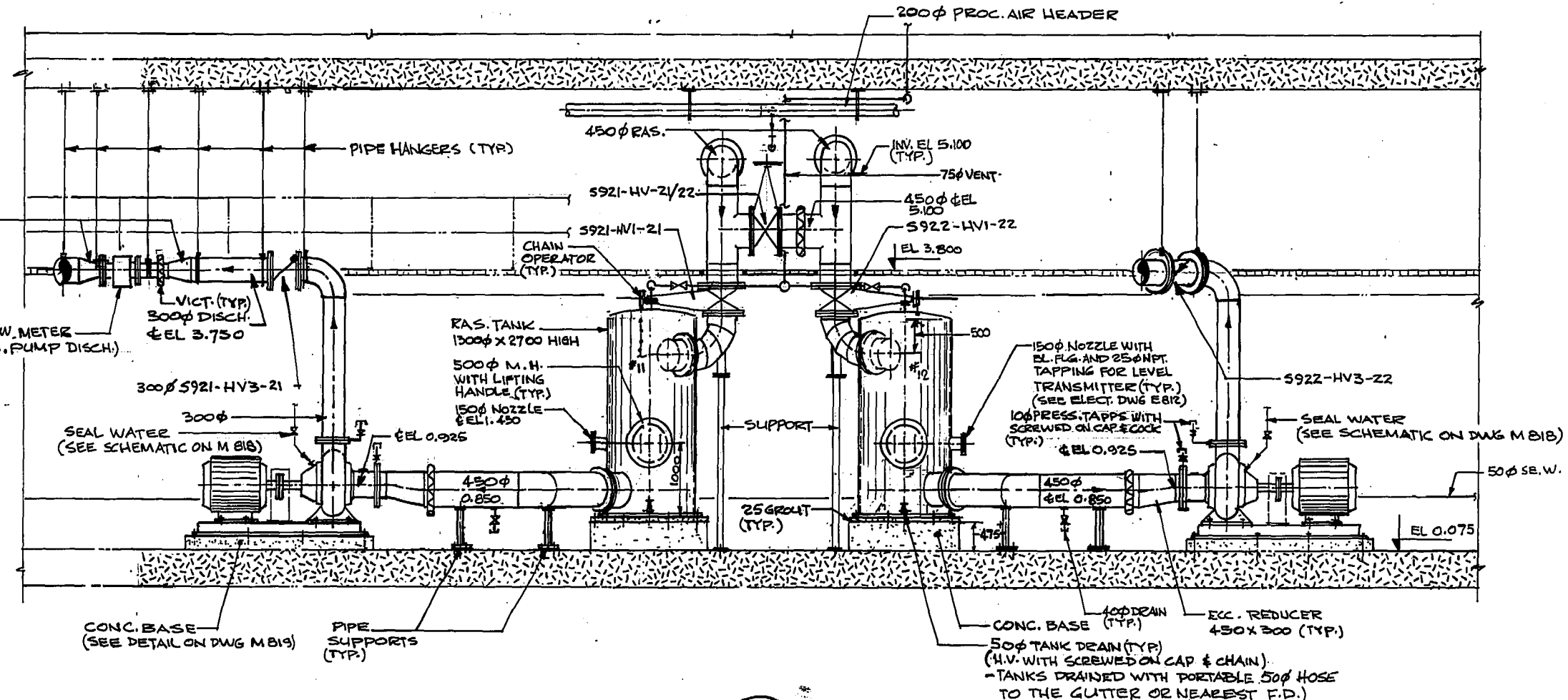
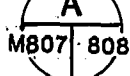
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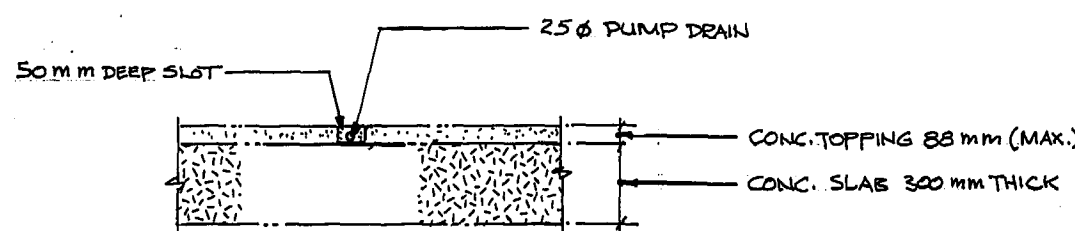
SECTION A

1:50



SECTION B

1:50



DETAIL 1

NTS



TYPICAL FOR ALL RAS. & WAS. PUMPS

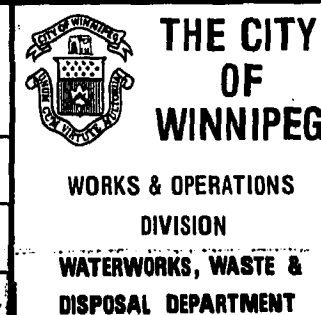
AS - BUILT		
DATE	FB. NO.	PAGE
MAR. 88		

NO.	REVISIONS	DATE	APP.
4	AS CONSTRUCTED	MAR/88	[Signature]
3	ISSUED FOR TENDER	SEPT/85	GJM
2	"	MAR/85	H.S.
1	FINAL REVIEW	22/1/84	F.B.



W.L. WARDROP & ASSOCIATES LTD.
MacLAREN ENGINEERS INC.

DESIGNED BY: RDI/VJM
DRAWN BY: H.S.
CHECKED BY: GAA
DATE: SEPT/1985
APPROVED BY: [Signature]
DATE: Sept/85

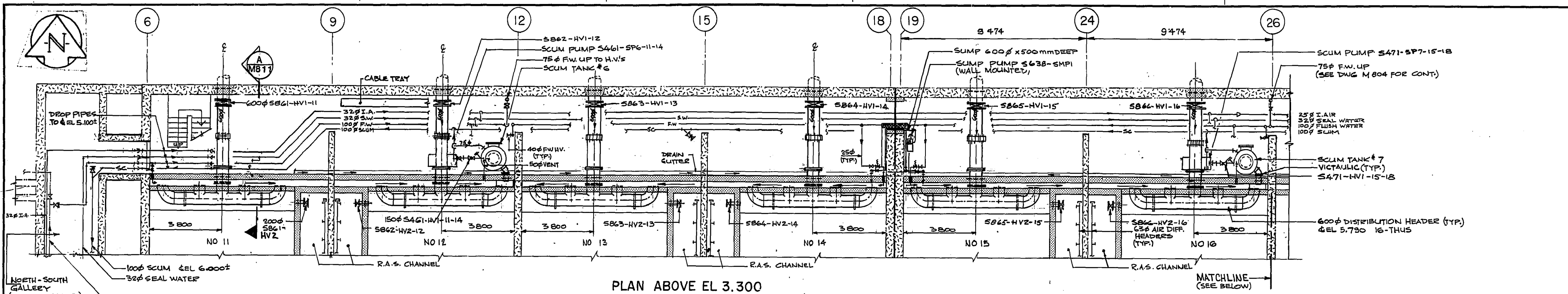


METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

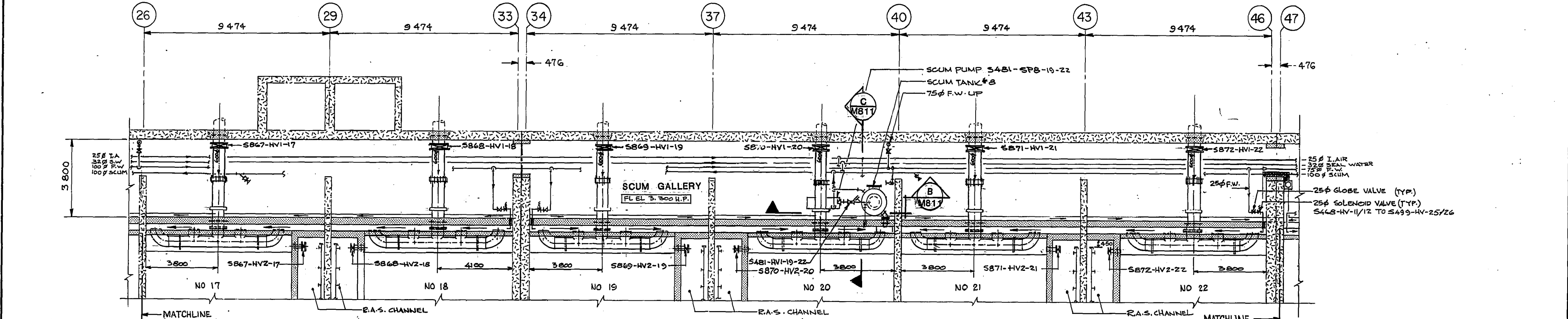
**NORTH END WATER POLLUTION CONTROL CENTRE
SECONDARY TREATMENT EXPANSION
SECONDARY CLARIFIERS-MECHANICAL
RAS PIPE GALLERY
PART PLAN ABOVE EL 0.075
& SECTIONS**

RELEASED FOR CONSTRUCTION: [Signature]
DATE: 1985 09 12

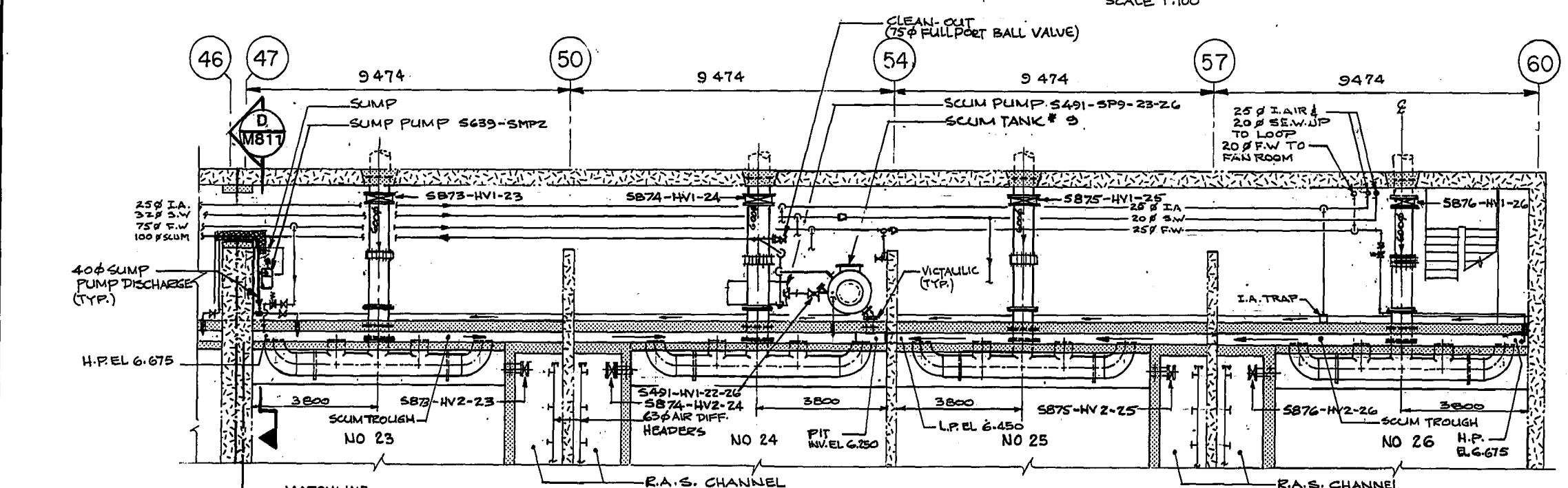
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PLAN ABOVE EL 3.300
SCALE 1:100



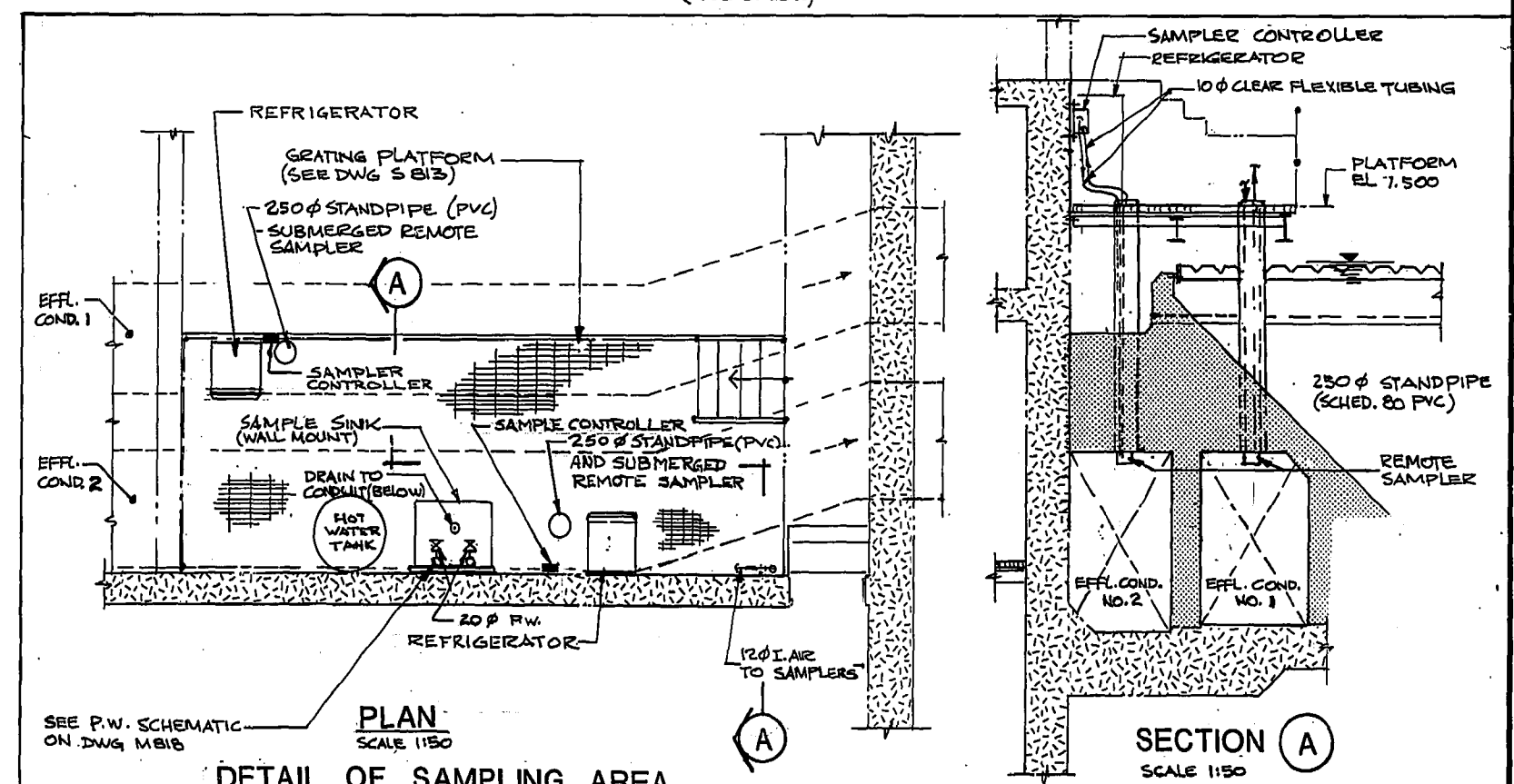
PLAN ABOVE EL 3.300
SCALE 1:100



PLAN ABOVE EL 3.300
SCALE 1:100

NOTE
-SEE SCUM SCHEMATIC ON DWG M 816
-SEE LEGEND ON DWG M 817

NOTE
LEGEND SHOWN ON DWG M 817

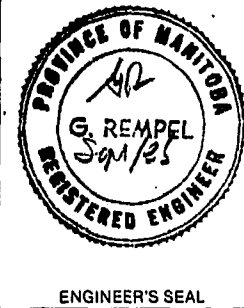


DETAIL OF SAMPLING AREA
SCALE 1:50

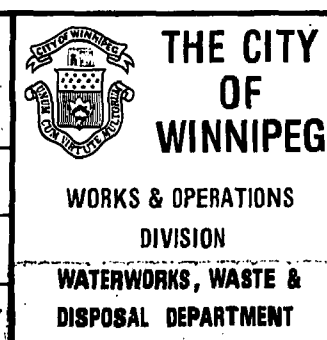
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DATE	FB. NO.	PAGE
MAR, 88		

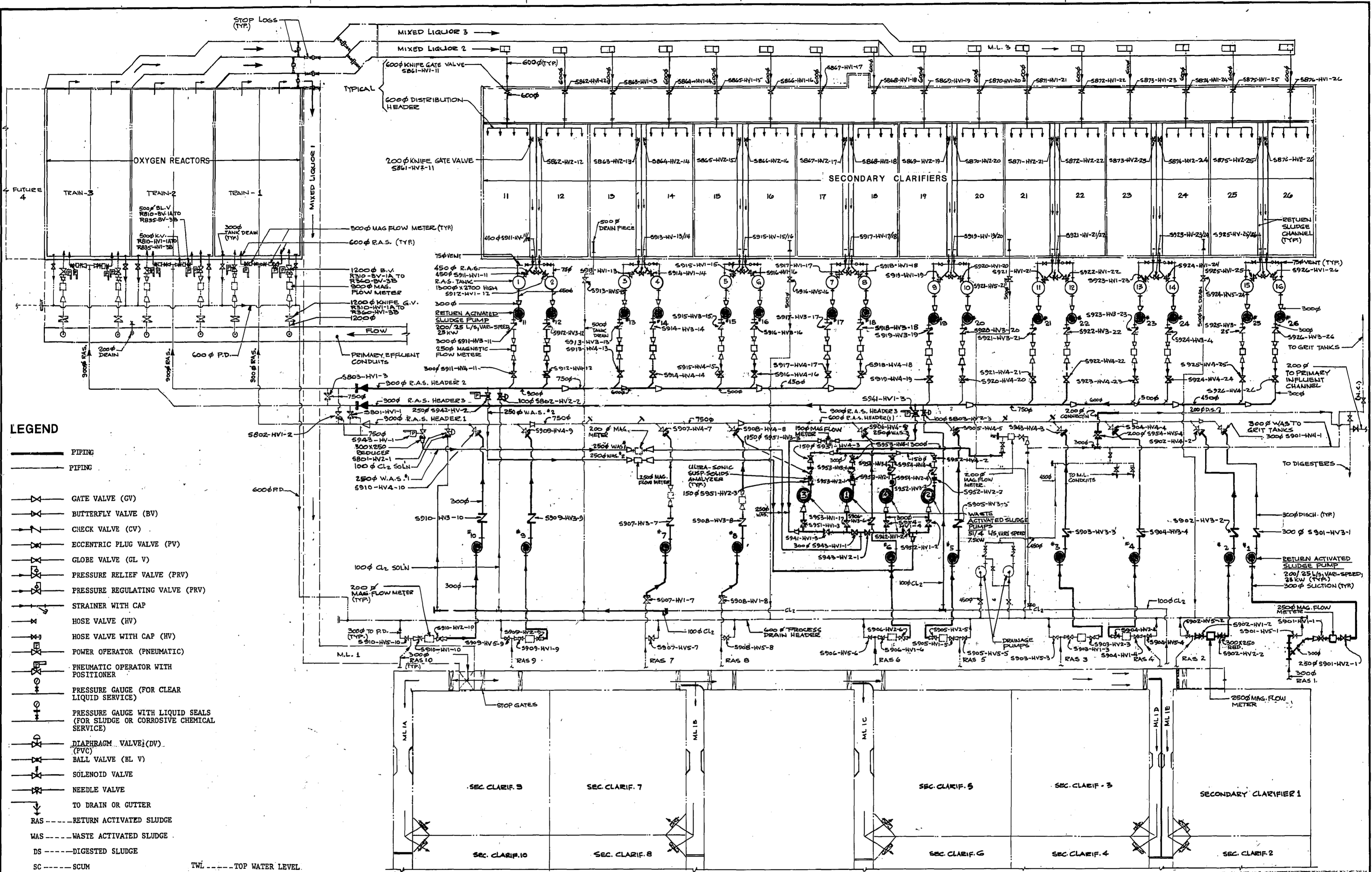
NO.	REVISIONS	DATE	APP.
2	A/S CONSTRUCTED	MAR/88	[Signature]
1	ISSUE FOR TENDER	SEPT/85	GJM
0	ISSUE FOR CLIENT REVIEW	FEB/85	FB



W.L. WARDROP & ASSOCIATES LTD. MacLAREN ENGINEERS INC.	
DESIGNED BY: EDJ/VM	DRAWN BY: HS/CVC
CHECKED BY: GAA	DATE: SEPT/1985
APPROVED BY: [Signature]	DATE: Sept/85



NORTH END WATER POLLUTION CONTROL CENTRE SECONDARY TREATMENT EXPANSION SECONDARY CLARIFIERS-MECHANICAL SCUM GALLERY PLAN ABOVE EL 3.300	
RELEASED FOR CONSTRUCTION: [Signature]	DATE: 1985 09 12
SCALE: AS SHOWN	DRAWING NO.: NEP 1416



- LEGEND**
- PIPING
 - PIPING
 - GATE VALVE (GV)
 - BUTTERFLY VALVE (BV)
 - CHECK VALVE (CV)
 - ECCENTRIC PLUG VALVE (PV)
 - GLOBE VALVE (GL V)
 - PRESSURE RELIEF VALVE (PRV)
 - PRESSURE REGULATING VALVE (PRV)
 - STRAINER WITH CAP
 - HOSE VALVE (HV)
 - HOSE VALVE WITH CAP (HV)
 - POWER OPERATOR (PNEUMATIC)
 - PNEUMATIC OPERATOR WITH POSITIONER
 - PRESSURE GAUGE (FOR CLEAR LIQUID SERVICE)
 - PRESSURE GAUGE WITH LIQUID SEALS (FOR SLUDGE OR CORROSIVE CHEMICAL SERVICE)
 - DIAPHRAGM VALVE (DV) (PVC)
 - BALL VALVE (BL V)
 - SOLENOID VALVE
 - NEEDLE VALVE
 - TO DRAIN OR GUTTER
 - RAS --- RETURN ACTIVATED SLUDGE
 - WAS --- WASTE ACTIVATED SLUDGE
 - DS --- DIGESTED SLUDGE
 - SC --- SCUM
 - TWL --- TOP WATER LEVEL
 - FW --- FLUSHING WATER
 - PW --- POTABLE WATER
 - SEW --- SEAL WATER
 - PA --- PROCESS AIR
 - IA --- INSTRUMENT AIR
 - PD --- PROCESS DRAIN
 - CL₂ --- CHLORINE SOLUTION
 - ML --- MIXED LIQUOR
 - HP --- HIGH POINT
 - INV --- INVERT
 - TYP --- TYPICAL
 - FL --- FLOOR
 - C/C --- CENTRES
 - (P) --- PRESSURE SWITCH WITH LIQUID SEALS

RETURN AND WASTE ACTIVATED SLUDGE SCHEMATIC

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES.
DECIMALIZED NUMBERS INDICATE METRES.

AS - BUILT
DATE: MAR. 88
FB. NO. PAGE

NO	REVISIONS	DATE	APP.
4	AS CONSTRUCTED	MAR 20 1988	
3	ISSUED FOR TENDER	SEPT 15 1985	
2	---	MAR 18 1985	
1	FINAL REVIEW	22/11/84	FB



W.L. WARDROP & ASSOCIATES LTD.
MacLAREN ENGINEERS INC.

DESIGNED BY: RDJ/VM
DRAWN BY: H.S.

CHECKED BY: GAA
DATE: SEPT 1985

DATE: August 1985

THE CITY OF WINNIPEG
WORKS & OPERATIONS DIVISION
WATERWORKS, WASTE & DISPOSAL DEPARTMENT

NORTH END WATER POLLUTION CONTROL CENTRE: SECONDARY TREATMENT EXPANSION SECONDARY CLARIFIERS - MECHANICAL PROCESS SCHEMATIC

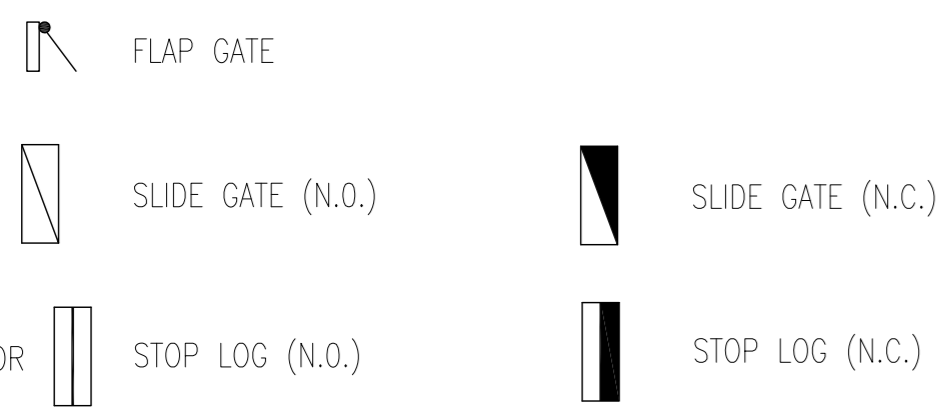
RELEASED FOR CONSTRUCTION: [Signature] DATE: 1985 09 12

SCALE: NTS
DRAWING NO: NEP 1423

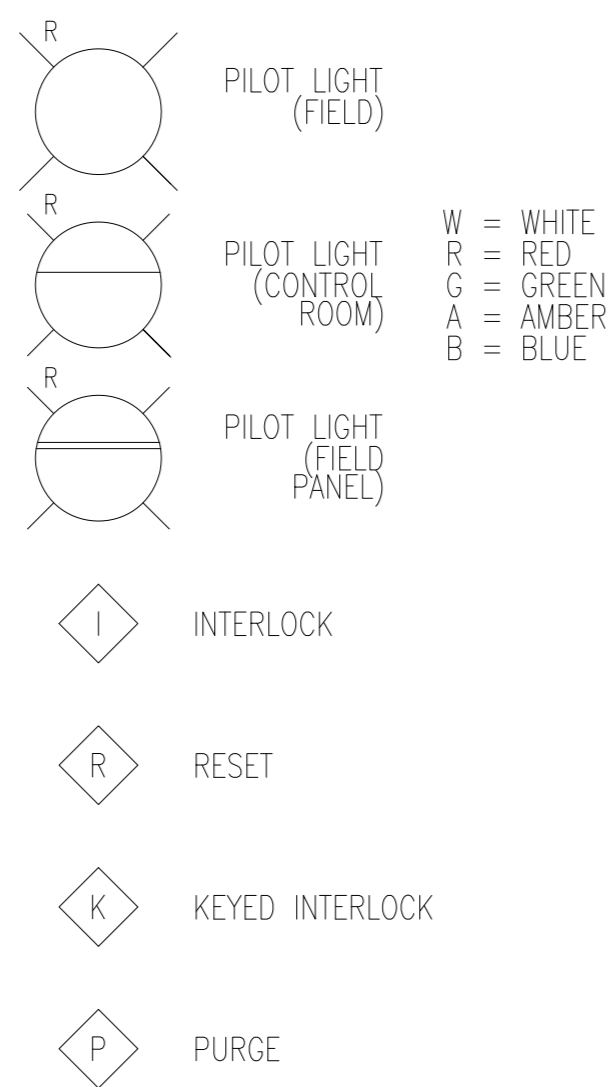
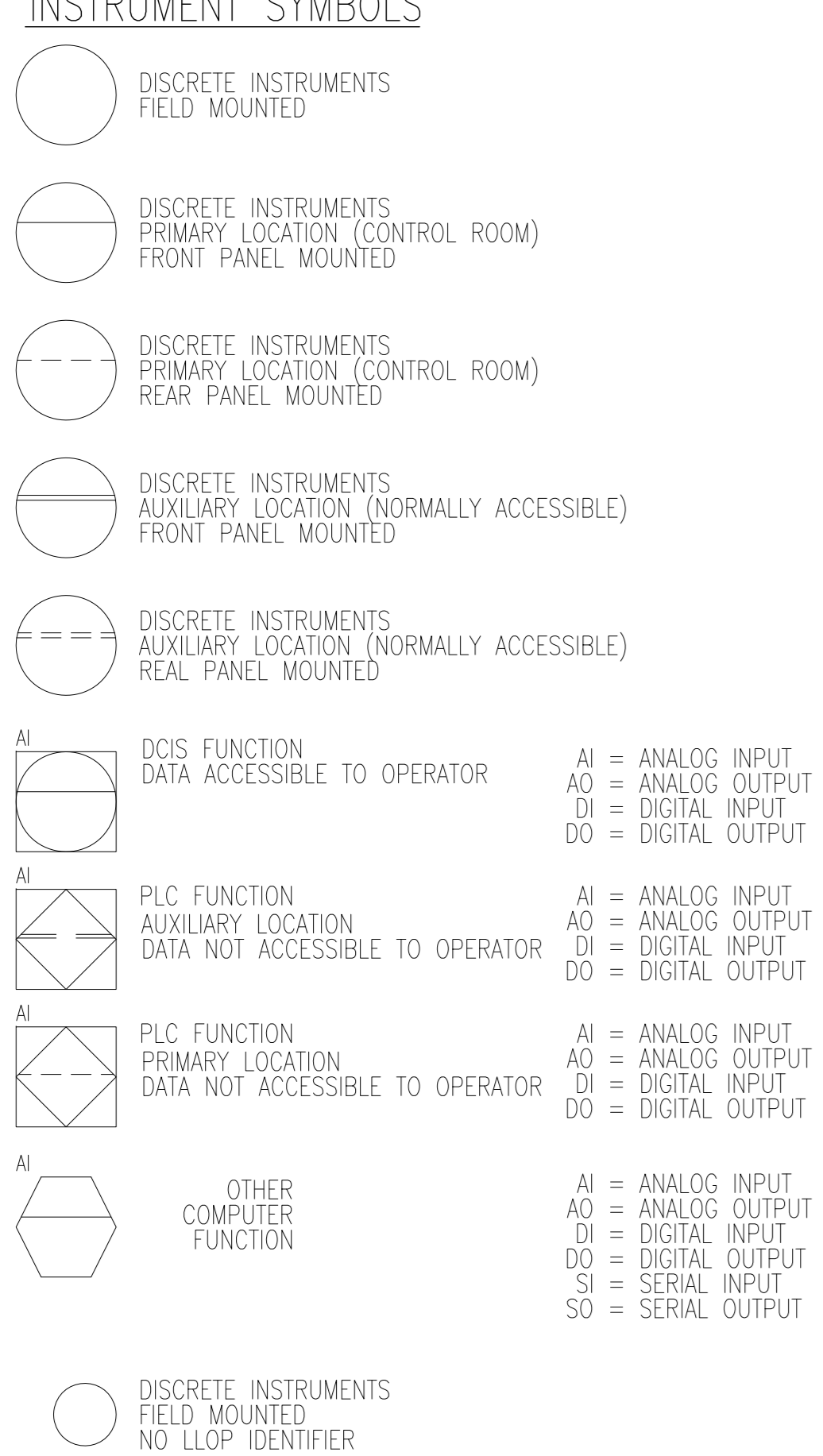
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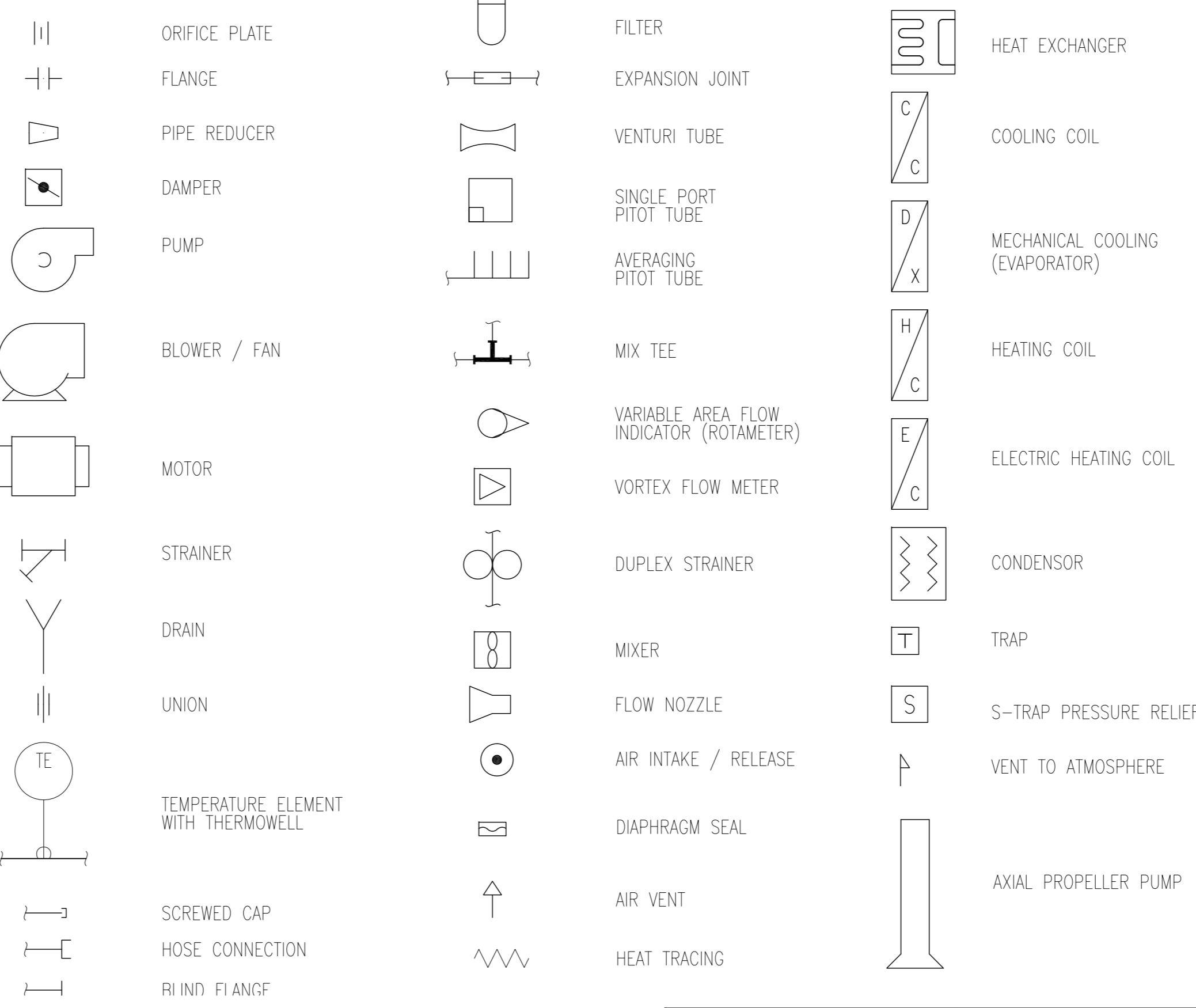
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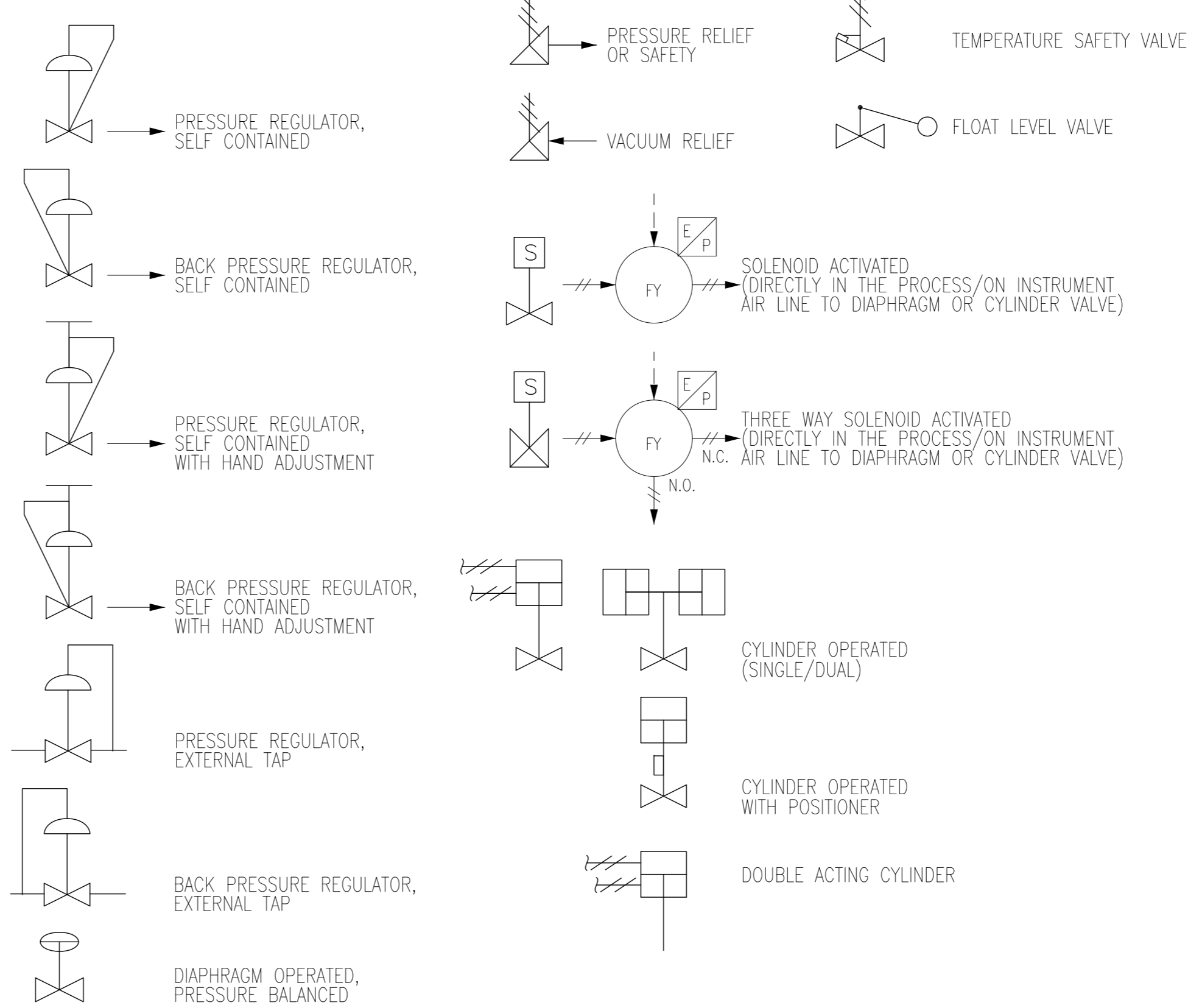
INSTRUMENT SYMBOLS



ACCESSORY DEVICE SYMBOLS



ACTUATOR SYMBOLS



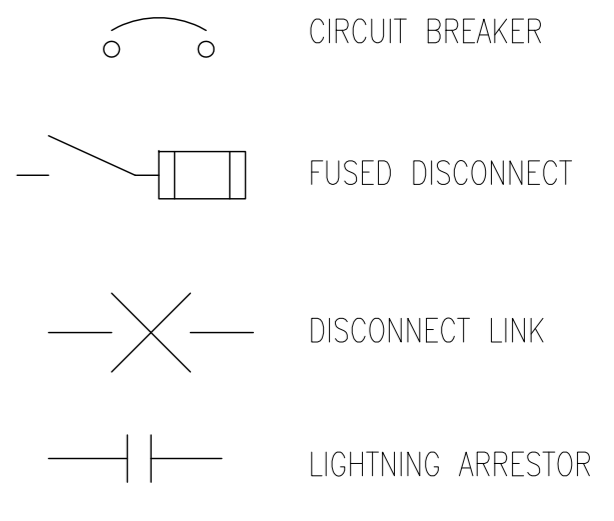
PID STANDARDS

- DRAWINGS UTILIZE CITY OF WINNIPEG STANDARDS FOR BORDER AND TITLE BLOCK. ALL DRAWINGS ARE PRODUCED ON AUTOCAD (LATEST REV., R2000 OR LATER).
- ALL UNITS ARE IN METRIC, EXCEPT AS NOTED OTHERWISE. ALL DIMENSIONS SHOWN ARE IN MILLIMETERS (mm).
- DRAWING CONTENT GENERALLY CONFORMS WITH ISA-5.1 STANDARD. AN EXCEPTION REGARDING EQUIPMENT TAGGING HAS BEEN MADE TO ALLOW BETTER CONFORMITY IN NAMING.
- PID'S INDICATE MAJOR PROCESS PIPING AND EQUIPMENT AND ASSOCIATED LOCAL INSTRUMENTATION, DCS AND OTHER PROCESS I/O.
- EQUIPMENT INCLUDING VESSELS, DRUMS, EXCHANGERS, HEATERS, PUMPS, COMPRESSORS, ETC. ARE ARRANGED IN SEQUENCE WITH PRINCIPLE FUNCTIONS AND FLOWS.
- ALL MAJOR EQUIPMENT INCLUDING PUMPS, COMPRESSORS, TANKS, ETC. ARE LABELED AS TO FUNCTION WITH DESIGN SIZES AND RATINGS.
- ALL PROCESS LINES ARE LABELED ACCORDING TO FUNCTION AND SIZE UTILIZING SYSTEM CODES DEFINED HEREIN.
- EACH SYSTEM INTERCONNECTION POINT BETWEEN DRAWINGS IS LABELED WITH A SOURCE DRAWING NUMBER OR DESTINATION DRAWING NUMBER. ARROWS ON PROCESS PIPING INDICATE DIRECTION OF FLOW BETWEEN DRAWINGS.

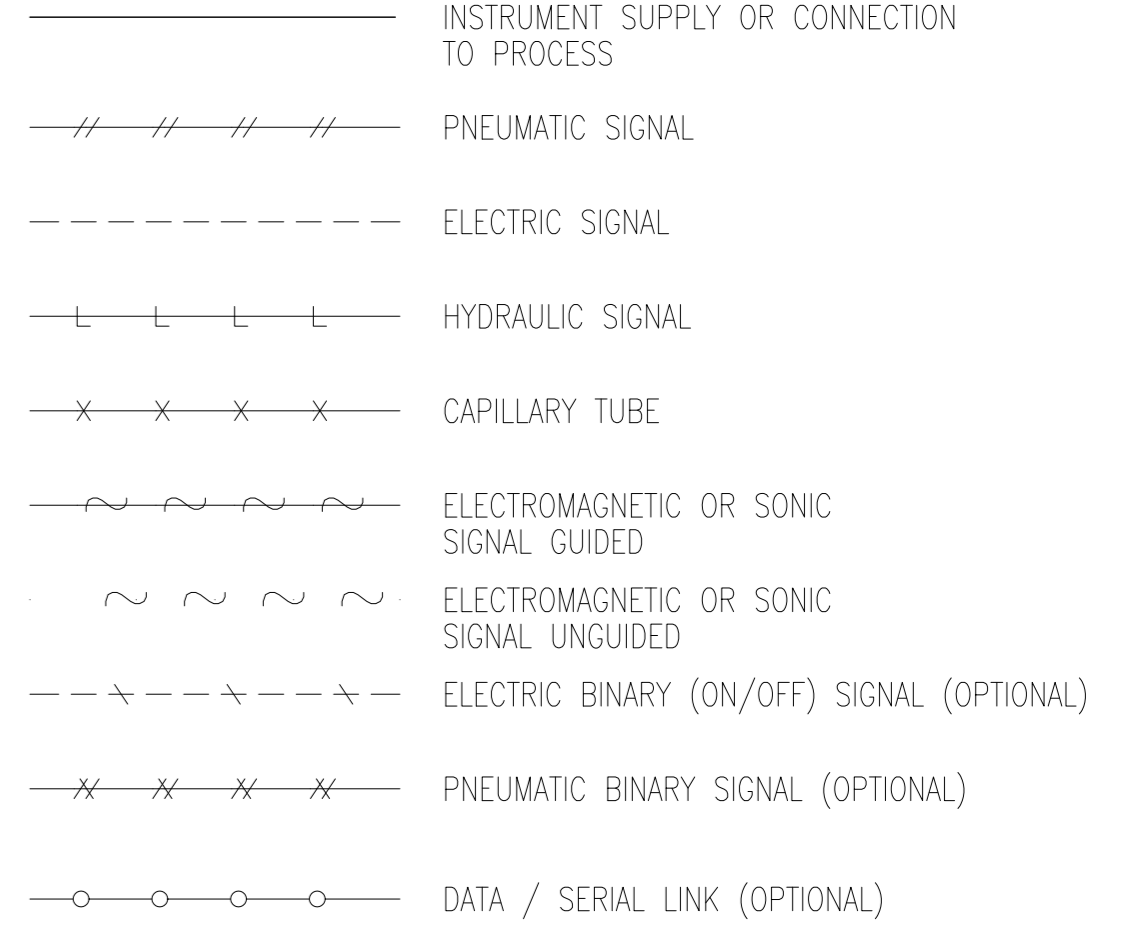
CONNECTING ARROWS



ELECTRICAL SYMBOLS



INSTRUMENT LINE SYMBOLS



B.M. ELEV.	FIELD BOOK #:	SNC-LAVALIN Engineers & Constructors		SNC-LAVALIN 200-1600 Ness Avenue Winnipeg, Manitoba Canada R3J 3W7		ENGINEER'S SEAL	 THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT NORTH END WATER POLLUTION CONTROL CENTRE PROCESS AND INSTRUMENT DIAGRAMS LEGEND AND DETAILS
POSTED TO LBIS		DESIGNED BY	EMR	CHECKED BY	CJR	CITY DRAWING NUMBER 1-0101A-A0001	
07 DWG WAS 1-0101A-A0001-001	2012/06/18	BY		DATE	2004/01/23		
06 RENUMBERED FACILITY CODE	2005/10/06	FILENAME:	1-0101A-A0001-001-060.dwg				
05 ISSUED FOR C.O.W. USE	2005/09/15						
04 RELEASED FOR CUSTOMER REVIEW	2005/08/22						
03 REVISED BY EARTHTECH	2005/01/21						
02 ISSUED FOR REVIEW	2004/11/25						
01 ISSUED FOR REVIEW	2004/10/14						
00 ISSUED FOR REVIEW	2004/06/01						
NO. REVISIONS	DATE	BY					

INSTRUMENT AND DEVICE IDENTIFICATION TABLE				
FIRST-LETTER		SUCCEEDING-LETTERS		
MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS OR SAMPLER	ALARM, TROUBLE		
B	BURNER FLAME			CLOSE, DECREASE (1)
C	CONDUCTIVITY		CONTROL	
D	DENSITY			OPEN, INCREASE (1)
E	VOLTAGE (EMF)	SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)	FAILURE	
G	GAS	GLASS, VIEWING DEVICE, GAUGE (2)	GENERATOR (ULTRASONIC)	
H	HAND (MANUAL)			HIGH
I	CURRENT (ELECTRICAL)		INDICATE	
J	POWER	SCAN		
K	TIME	TIME RATE OF CHANGE		CONTROL STATION
L	LEVEL		LIGHT (3)	LOW
M	MOTOR	MOMENTARY	OPERATE, ON/OFF	MIDDLE, INTERMEDIATE
N	MOISTURE			START
O	TORQUE		ORIFACE, RESTRICTION	STOP, OVERLOAD
P	PRESSURE, VACUUM		POINT (TEST CONNECTION)	
Q	COMMON, QUANTITY	INTEGRATE, TOTALIZE		
R	RADIOACTIVITY		RECORD	
S	SPEED, FREQUENCY	SAFETY		SWITCH
T	TEMPERATURE		TRANSMITTER	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS, VALVE, DAMPER (4)			VALVE, DAMPER, LOUVER
W	WEIGHT, FORCE		WELL	
X	UNCLASSIFIED (5)	X AXIS	UNCLASSIFIED (5)	UNCLASSIFIED (5)
Y	EVENT, STATE, OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT
Z	POSITION	Z AXIS		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT

NOTES FOR INSTRUMENT AND DEVICE IDENTIFICATION TABLE:

- WHEN THE B AND D LETTERS ARE TO REPRESENT AN OPEN AND CLOSED COMMAND OR POSITION, THEY ARE CURRENTLY OFTEN USED NOT AS A MODIFIER, BUT RATHER AS A READOUT OR OUTPUT FUNCTION. FOR EXAMPLE, SB RATHER THAN SCB.
- IN CURRENT DRAWINGS, THE LETTER G IS OFTEN USED TO REPRESENT A GAUGE AS IN TG (TEMPERATURE GAUGE). HOWEVER, SINCE A TEMPERATURE GAUGE USUALLY HAS A SCALE TO READ A SPECIFIC TEMPERATURE, IT WOULD MORE CORRECTLY BE CALLED AN INDICATOR (TI). GAUGE IS INCLUDED FOR HISTORICAL REASONS.
- ON CURRENT NEWPCC P&ID DRAWINGS, THE PILOT LIGHTS USUALLY OMIT THE L DESIGNATION. FOR EXAMPLE, A VALVE OPEN PILOT LIGHT IS DESIGNATED AS ZD. TECHNICALLY, THE APPROPRIATE IDENTIFIER IS ZLD, BUT ZD HAS BEEN MAINTAINED FOR HISTORICAL REASONS.
- THE USE OF V AS AN INITIAL LETTER HAS BEEN INCORRECTLY USED IN THE PAST TO REPRESENT A VALVE OR A DAMPER, AND IS MAINTAINED IN THE IDENTIFICATION TABLE DUE TO ITS COMMON USE AS SUCH. HOWEVER, THESE INSTRUMENTS SHOULD IDEALLY BE RENAMED TO THE APPROPRIATE IDENTIFIERS. FOR EXAMPLE, MOST VY INSTRUMENTS (PNEUMATIC RELAYS) ON THE CURRENT DRAWINGS COULD BE RELABELLED AS HY OR FY INSTRUMENTS.
- THE LETTER X IS TO BE DEFINED AT THE TIME OF USE, AND MAY BE USED FOR MULTIPLE DEFINITIONS WHERE NO OTHER LETTER IS APPLICABLE.

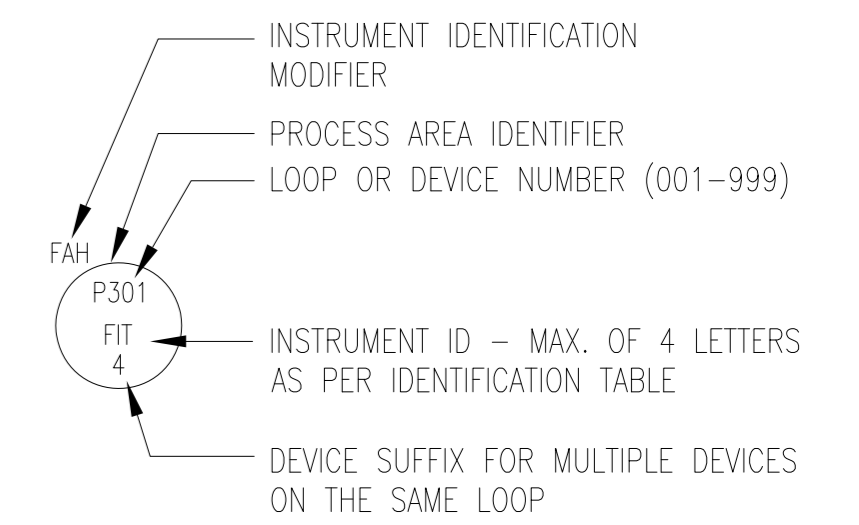
INSTRUMENT FIELD DEVICE IDENTIFIERS			
IDENTIFIER	DEFINITION	IDENTIFIER	DEFINITION
AAH	ANALYSIS ALARM - HIGH	PSHH	PRESSURE SWITCH HIGH (2ND STAGE)
AAHH	ANALYSIS ALARM - HIGH-HIGH	PSL	PRESSURE SWITCH LOW
AE	ANALYSIS ELEMENT	PSV	PRESSURE SAFETY VALVE (RELIEF)
AIT	ANALYSIS INDICATING TRANSMITTER (ANALYTIC INST.)	PT	PRESSURE TRANSMITTER
AK	ANALYSIS (AMPLER) CONTROL STATION	PY	PRESSURE RELAY (I/I CONVERTER)
ASH	ANALYSIS SWITCH - HIGH	SI	SPEED INDICATOR
ASHH	ANALYSIS SWITCH - HIGH-HIGH	SK	SPEED CONTROL STATION
ASY	ANALYSIS SAFETY RELAY	ST	SPEED TRANSMITTER
AT	ANALYSIS TRANSMITTER (ANALYTIC INST.)	TE	TEMPERATURE ELEMENT
BK	BURNER CONTROL STATION	TG	TEMPERATURE GAUGE
BS	BURNER FLAME SWITCH	TI	TEMPERATURE INDICATOR
BV	BURNER VALVE	TIC	TEMPERATURE INDICATING CONTROLLER
DE	DENSITY ELEMENT	TIT	TEMPERATURE INDICATING TRANSMITTER
DR	DENSITY RECORDER	TR	TEMPERATURE RECORDER
DT	DENSITY TRANSMITTER	TSH	TEMPERATURE SWITCH HIGH
DX	DENSITY SOURCE (X = SOURCE)	TSL	TEMPERATURE SWITCH LOW
EE	VOLTAGE ELEMENT/TRANSFORMER	TT	TEMPERATURE TRANSMITTER
EI	VOLTAGE INDICATOR	TV	TEMPERATURE VALVE
ET	VOLTAGE TRANSMITTER	TW	TEMPERATURE THERMOWELL
FE	FLOW ELEMENT	TY	TEMPERATURE RELAY (SOLENOID VALVE OR M/P)
FG	FLOW METER ULTRASONIC GENERATOR	XE	VELOCITY ELEMENT
FI	FLOW INDICATOR	XI	VELOCITY INDICATOR
FIC	FLOW INDICATING CONTROLLER	XK	UNCLASSIFIED CONTROL STATION (X = FIRE)
FIT	FLOW INDICATING TRANSMITTER	XT	POWER FACTOR TRANSMITTER
FQI	FLOW TOTALIZING INDICATOR	XT	VELOCITY TRANSMITTER (X = VELOCITY)
FQY	FLOW TOTALIZING / INTEGRATING RELAY	XX	UNCLASSIFIED (XX = ALARM ANNUNCIATOR)
FR	FLOW RECORDER	YS	COMPUTER SWITCH
FRC	FLOW RECORDING CONTROLLER	YSA	STATE SAFETY ALARM
FRQ	FLOW RECORDING TOTALIZER	YSL	STATE SAFETY LIGHT
FSL	FLOW SWITCH LOW	ZI	POSITION INDICATOR
FT	FLOW TRANSMITTER	ZS	POSITION SWITCH
FV	FLOW VALVE	ZSB	POSITION SWITCH CLOSED (LIMIT SWITCH)
FY	FLOW COMPUTER / RELAY	ZSDL	POSITION SWITCH OPEN (LIMIT SWITCH)
GE	GAS ELEMENT	ZSH	POSITION SWITCH HIGH
GS	GAS SWITCH MODULE	ZSL	POSITION SWITCH LOW
HK	HAND CONTROL STATION	ZT	POSITION TRANSMITTER
HS	HAND SWITCH		
HSS	HAND SAFETY SWITCH		
HV	HAND VALVE		
IS	CURRENT SWITCH		
IE	CURRENT ELEMENT/TRANSFORMER		
II	CURRENT INDICATOR		
IY	CURRENT RELAY		
KY	TIMER RELAY		
LCV	LEVEL CONTROL VALVE		
LE	LEVEL ELEMENT		
LI	LEVEL INDICATOR		
LIC	LEVEL INDICATING CONTROLLER		
LIT	LEVEL INDICATING TRANSMITTER		
LR	LEVEL RECORDER		
LSL	LEVEL SWITCH LOW		
LSH	LEVEL SWITCH HIGH		
LSHL	LEVEL SWITCH HIGH/LOW		
LT	LEVEL TRANSMITTER		
LV	LEVEL VALVE		
LY	LEVEL RELAY (I/I CONVERTER)		
MB	MOTOR DECREASE OR REVERSE		
MD	MOTOR INCREASE OR FORWARD		
MF	MOTOR FAILURE		
MM	MOTOR RUN		
NS	MOISTURE SWITCH		
PCV	PRESSURE CONTROL VALVE		
PE	PRESSURE ELEMENT		
PG	PRESSURE GAUGE		
PI	PRESSURE INDICATOR		
PIC	PRESSURE INDICATING CONTROLLER		
PIT	PRESSURE INDICATING TRANSMITTER		
PR	PRESSURE RECORDER		
PS	PRESSURE SWITCH		
PSH	PRESSURE SWITCH HIGH		

NOTES FOR INSTRUMENT FIELD DEVICE IDENTIFIERS:

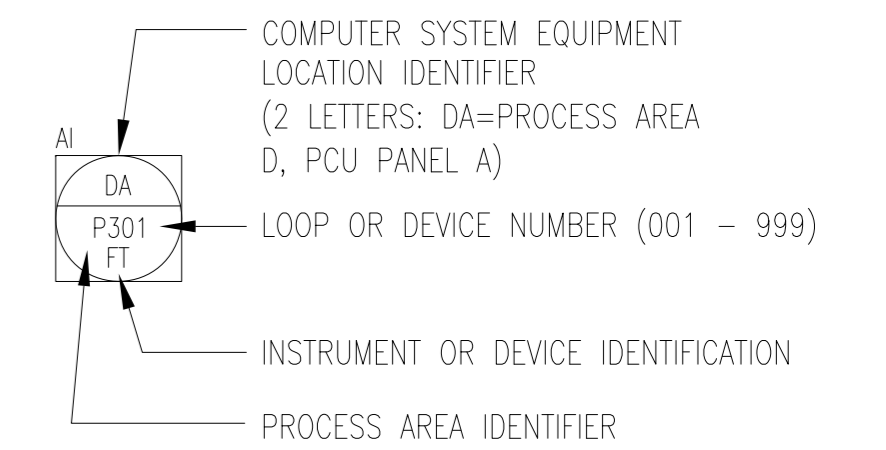
- THE LAST IDENTIFIER LETTER IS IN SOME CASES OPTIONAL (EG. FSL)
- THIS TABLE IS DERIVED FROM THE INSTRUMENT & DEVICE IDENTIFICATION TABLE, AND IS NOT EXHAUSTIVE.

INSTRUMENT IDENTIFICATION MODIFIER	
IDENTIFIER	DEFINITION
(N)	N MULTIPLE INSTRUMENTS
AA	AUDIBLE ALARM
A/M	AUTO / MANUAL
C/L	COMPUTER / LOCAL
CLS	CLOSE
C/O	COMPUTER / OFF
COB	COMPUTER / OFF / BYPASS
COH	COMPUTER / OFF / HAND
COT	COMPUTER / OFF / TIME
DCS	DISTRIBUTED CONTROL SYSTEM
DS	DECREASE SPEED
E/S	EMERGENCY STOP
FOR	FORWARD / OFF / REVERSE
H/A	HAND / AUTO
HOA	HAND / OFF / AUTO
HOR	HAND / OFF / REMOTE
I/D	INCREASE / DECREASE
INT/EXT	INTERNAL / EXTERNAL
IS	INCREASE SPEED
LCP	LOCAL CONTROL PANEL
LD	LOCKABLE DISCONNECT
LJB	LOCAL JUNCTION BOX
L/O	LOCAL / OFF
LOR	LOCAL / OFF / REMOTE
LOS	LOCK OFF STOP
L/R	LOCAL / REMOTE
LSR	LOCAL / STOP / REMOTE
MCC	MOTOR CONTROL CENTER
O/A	OFF / AUTO
O/C	OPEN / CLOSE
O/M	OFF / MAINTENANCE
O/O	OFF / ON
OPN	OPEN
RST	RESET
RTD	RESISTIVE TEMPERATURE DEVICE
SEL	SELECTOR
S/F	SLOW / FAST
SOF	SLOW / OFF / FAST
SOL	SOLENOID
S/S	START / STOP
S/W	SUMMER / WINTER
TAH	TEMPERATURE ALARM HIGH
TAL	TEMPERATURE ALARM LOW
TSH	TEMPERATURE SWITCH HIGH
TSL	TEMPERATURE SWITCH LOW
T/C	THERMOCOUPLE
VIB	VIBRATION

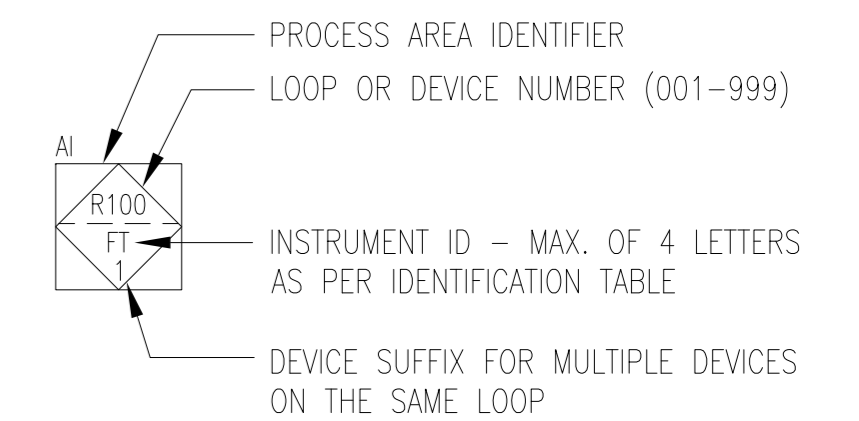
INSTRUMENT FIELD DEVICE NUMBERING



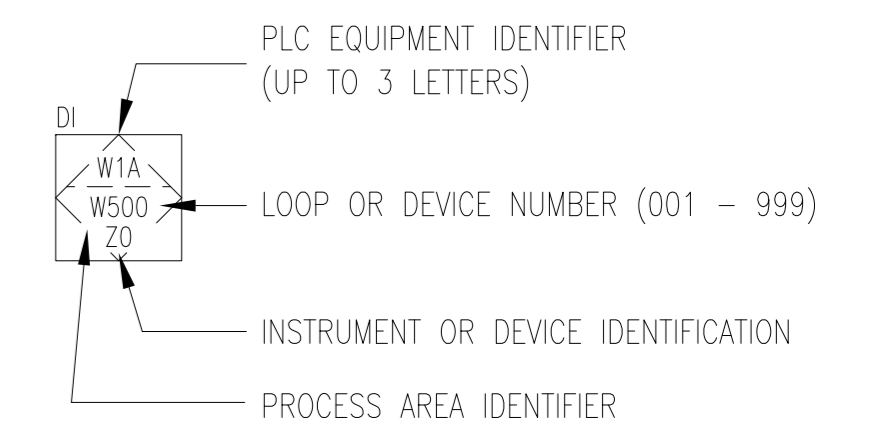
CONTROL SYSTEM (DCS) POINT TAG NUMBERING



PLC POINT TAG NUMBERING



OR



B.M. ELEV.	FIELD BOOK #:	SNC-LAVALIN Engineers & Constructors 200-1600 Ness Avenue Winnipeg, Manitoba Canada R3J 3W7		ENGINEER'S SEAL
POSTED TO LBIS		DESIGNED BY	EMR	CHECKED BY
07	DWG NUMBER WAS 1-0101A-D-A001-002	2012/06/18	SW	CJR
06	RENUMBERED FACILITY CODE	2005/10/06	CJR	CJR
05	ISSUED FOR C.O.W. USE	2005/09/15	CJR	
04	RELEASED FOR CUSTOMER REVIEW	2005/08/22	CJR	
03	REVISED BY EARTHTECH	2005/01/21	DL	
02	ISSUED FOR REVIEW	2004/11/25	CJR	
01	ISSUED FOR REVIEW	2004/10/14	CJR	
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NO.	REVISIONS	DATE	BY	FILENAME: 1-0101A-A001-002-060.dwg

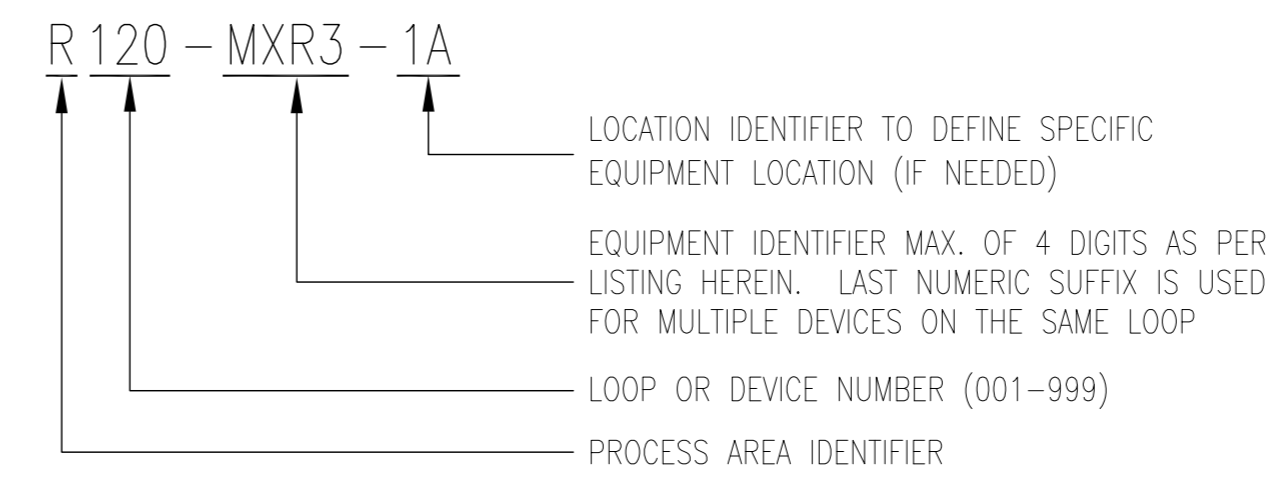
THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT			
NORTH END WATER POLLUTION CONTROL CENTRE			
PROCESS AND INSTRUMENT DIAGRAMS LEGEND AND DETAILS			
CITY DRAWING NUMBER	SHEET	REV.	SIZE
1-0101A-A001	002	07	

INSTRUMENT SIGNAL IDENTIFIERS		
IDENTIFIER	DEFINITION	SIGNAL TYPE
AA	ANALYSIS ALARM (1ST STAGE)	DIGITAL INPUT
AF	ANALYSIS (SAMPLER) FAIL	DIGITAL INPUT
AH	ANALYSIS HIGH ALARM (1ST OR 2ND STAGE)	DIGITAL INPUT
AM	ANALYSIS (SAMPLER) ON/OFF STATUS	DIGITAL INPUT
AN	ANALYSIS (SAMPLER) START	DIGITAL OUTPUT
AT	ANALYSIS TRANSMIT (APPLIED TO ALL TYPES OF ANALYTICAL MEASUREMENTS)	ANALOG INPUT
AU	ANALYSIS MULTIFUNCTION (USED FOR COMMON ANALYTICAL POINT)	DIGITAL INPUT
BF	BURNER FLAME FAILURE	DIGITAL INPUT
BL	BOILER LOW FIRE	DIGITAL INPUT
BH	BOILER HIGH FIRE	DIGITAL INPUT
BM	BURNER FLAME STATUS ON	DIGITAL INPUT
BS	BOILER SAFETY (BOILER FIRE ENABLED)	DIGITAL INPUT
DT	DENSITY TRANSMIT	ANALOG INPUT
ET	VOLTAGE TRANSMIT	ANALOG INPUT
FL	FLOW RATE LOW	DIGITAL INPUT
FT	FLOW TRANSMIT	ANALOG INPUT
GA	GAS ALARM	DIGITAL INPUT
HM	MANUAL STATUS ON	DIGITAL INPUT
LH	LEVEL HIGH	DIGITAL INPUT
LL	LEVEL LOW	DIGITAL INPUT
LT	LEVEL TRANSMIT	ANALOG INPUT
MF	MOTOR FAILURE	DIGITAL READOUT
MM	MOTOR ON/OFF STATUS	DIGITAL INPUT
MN	MOTOR START	DIGITAL OUTPUT
MO	MOTOR STOP	DIGITAL OUTPUT
MX	MOTOR UNCLASSIFIED (X = RESET)	DIGITAL OUTPUT
NA	HUMIDITY ALARM	DIGITAL INPUT
PA	PRESSURE ALARM (1ST STAGE)	DIGITAL INPUT
PH	PRESSURE HIGH ALARM (1ST OR 2ND STAGE)	DIGITAL INPUT
PL	PRESSURE LOW	DIGITAL INPUT
PT	PRESSURE TRANSMIT	ANALOG INPUT
QA	COMMON ALARM (OR TROUBLE)	DIGITAL INPUT
QF	COMMON FAIL ALARM	DIGITAL INPUT
SB	SPEED DECREASE	MODULATING OUTPUT
SD	SPEED INCREASE	MODULATING OUTPUT
SM	SPEED CONTROLLER STATUS	DIGITAL INPUT
ST	SPEED TRANSMIT	ANALOG INPUT
TH	TEMPERATURE HIGH	DIGITAL INPUT
TT	TEMPERATURE TRANSMIT	ANALOG INPUT
UA	MULTIFUNCTION ALARM (MULTIPLE SYSTEM ALARM-ALTERNATE SYMBOL = QA)	DIGITAL INPUT
VB	VALVE CLOSE (OR DECREASE)	DIGITAL OR MODULATING OUTPUT
VD	VALVE OPEN (OR INCREASE)	DIGITAL OR MODULATING OUTPUT
XA	UNCLASSIFIED ALARM (X = FIRE)	DIGITAL INPUT
XT	UNCLASSIFIED TRANSMIT (X = POWER FACTOR)	ANALOG INPUT
YK	COMPUTER/LOCAL STATION	DIGITAL INPUT
YM	COMPUTER OPERATIONAL	DIGITAL INPUT
YS	COMPUTER SWITCH STATUS	DIGITAL INPUT
YX	COMPUTER UNCLASSIFIED (STATUS ON)	DIGITAL INPUT
ZB	POSITION CLOSED (LIMIT SWITCH)	ANALOG INPUT
ZD	POSITION OPEN (LIMIT SWITCH)	DIGITAL INPUT
ZL	POSITION LOW (BELT TENSION)	DIGITAL INPUT
ZT	POSITION TRANSMIT	ANALOG INPUT

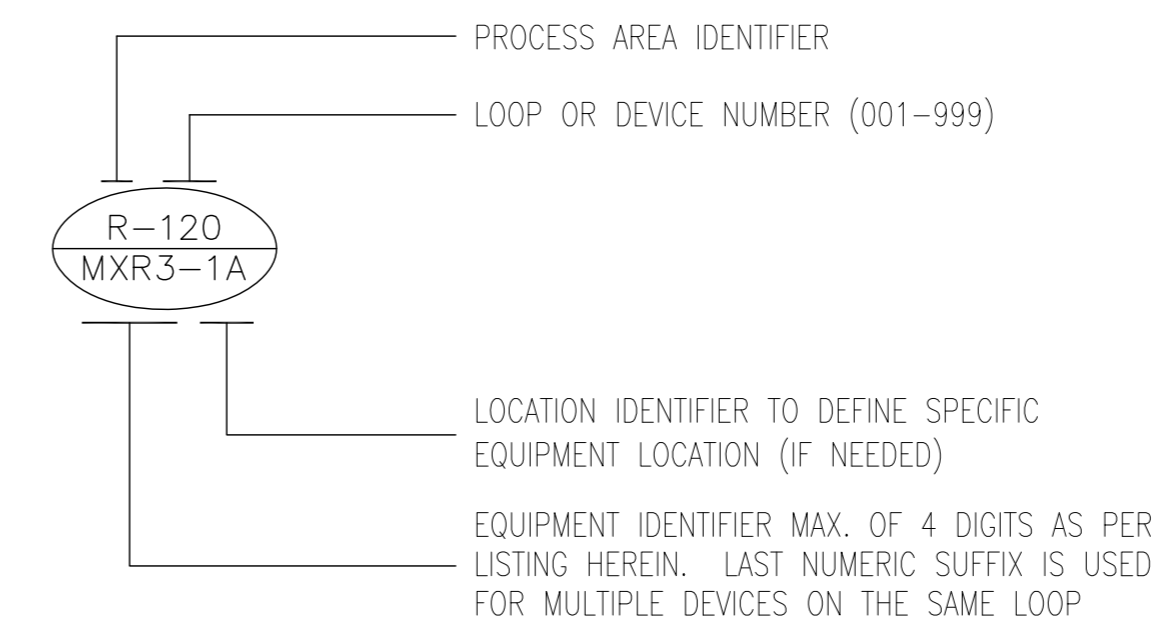
EQUIPMENT IDENTIFIERS	
IDENTIFIER	DEFINITION
AB	AIR BLOWER
AC	AIR COMPRESSOR
ACU	AIR CONDITIONING UNIT
AD	AIR DRYER
AF	AERATION FAN (EXISTING OR NEW)
AHU	AIR HANDLING UNIT
BD	BACK DRIVE
BF	BOILER FAN (EXISTING OR NEW)
BP	BOILER PUMP (EXISTING OR NEW)
CA	CAKE AGITATOR
CAP	CAKE PUMP
CC	COOLING COIL
CE	CENTRIFUGE
CM	CLARIFIER MECHANISM
CMP	COMPRESSOR
CON	CONVEYOR
CP	CIRCULATING PUMP
CU	CONDENSING UNIT
DC	DRAG CONVEYOR
DF	DIGESTER FAN (EXISTING OR NEW)
DP	DIGESTER PUMP (EXISTING OR NEW)
DR	DIGESTER COMPRESSOR (EXISTING OR NEW)
DU	DIGESTER UNIT HEATER (EXISTING OR NEW)
DWP	DEWATERING PUMP
EF	EXHAUST FAN
EW	EYE WASH
EXH	HEATER EXCHANGER
F OR FN	FAN
FG	FLAP GATE
GB	GRIT BLOWER
GP	GLYCOL PUMP
HC	HEAT COIL
HRC	HEAT RECOVERY COIL
HWP	HOT WATER PUMP
HWT	HOT WATER TANK
LOP	LUBE OIL PUMP
MAU	MAKE-UP AIR UNIT
M	MOTOR
MXR	MIXER MOTOR
P	PUMP
PB	PURGE BLOWER
PF	PRIMARY FAN (EXISTING OR NEW)
PM	PRIMARY MOTOR
POD	POLYMER BLOWER
POF	POLYMER FED PUMP
POM	POLYMER MIXER
PP	PRIMARY PUMP (EXISTING OR NEW)
PR	PRIMARY AIR COMPRESSOR
PSF	POLYMER SCREW FEEDER
PU	PRIMARY UNIT HEATER (EXISTING OR NEW)
R	COMPRESSOR (REFRIGERANT)
RAP	RAS PUMP
RH	RADIANT HEATER
SC	SLUDGE COLLECTOR (TRAVELING BRIDGE)
SCA	SLUDGE CAKE AUGER
SE	SAMPLER ELEMENT
SFP	SLUDGE FEED PUMP
SG	SLUICE GATE
SL	STOP LOG
SLP	PRIMARY SLUDGE PUMP
SMP	SUMP PUMP
SP	SCUM PUMP
STP	SLUDGE TRANSFER PUMP
SWP	SWASH PLATE
TD	TRUCK DOOR
UPS	UNINTERRUPTIBLE POWER SUPPLY
UH	UNIT HEATER
UV	ULTRAVIOLET LAMP ASSEMBLY
VFD	VARIABLE FREQUENCY DRIVE
WAP	WAS PUMP
WP	WELL PUMP
W	WEIR
WG	WEIR GATE

EQUIPMENT IDENTIFICATION

THE EQUIPMENT IDENTIFICATION MAY BE IN EITHER TEXT OR EQUIPMENT TAG FORMAT.



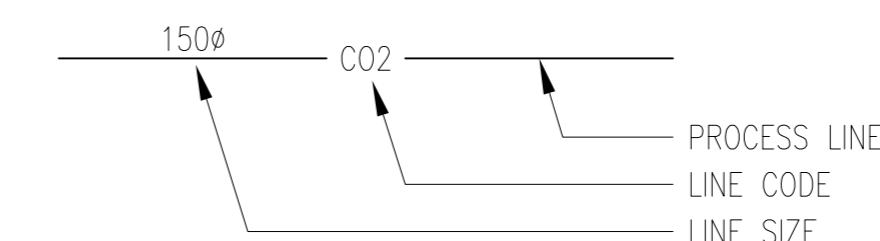
OR



IMPERIAL PIPE SIZE CHART (METRIC EQUIVALENT)

IN	MM	IN	MM
1/8	= 3	14	= 350
1/4	= 6	16	= 400
3/8	= 10	18	= 450
1/2	= 12	20	= 500
3/4	= 20	22	= 550
1	= 25	24	= 600
1 1/4	= 32	26	= 650
1 1/2	= 38	28	= 700
2	= 50	30	= 750
2 1/2	= 65	32	= 800
3	= 75	34	= 850
3 1/2	= 90	36	= 900
4	= 100	38	= 950
4 1/2	= 112	40	= 1000
5	= 125	42	= 1050
6	= 150	44	= 1100
7	= 175	46	= 1150
8	= 200	48	= 1200
9	= 225	50	= 1250
10	= 250	52	= 1300
11	= 275	54	= 1350
12	= 300		

PROCESS LINE DESIGNATION



PROCESS AREA IDENTIFIERS	
IDENTIFIER	DEFINITION
M	MAIN BUILDING
G	PRE-AERATION AND GRIT REMOVAL
P	PRIMARY CLARIFIERS
R	OXYGEN REACTORS
S	SECONDARY CLARIFIERS
T	WAS SLUDGE THICKENING
D	DIGESTERS
B	BOILERS
H	SLUDGE GAS
W	SLUDGE DEWATERING
U	UV DISINFECTION

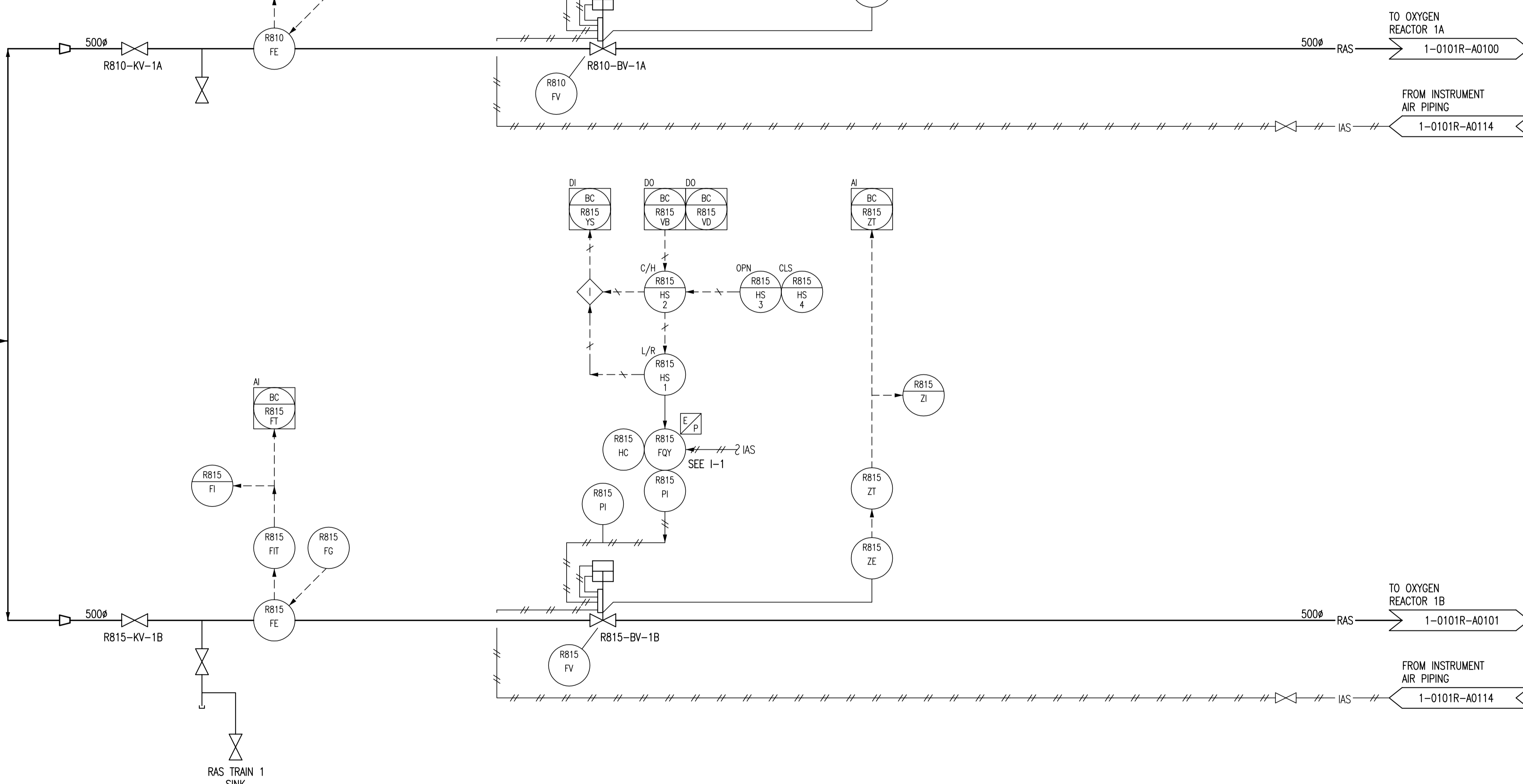
PROCESS LINE CODES	
IDENTIFIER	DEFINITION
AC	ALTERNATING CURRENT (ELECTRICAL)
CCW	CIRCULATING COOLING WATER
CE	CENTRATE
CL	CHLORINE
CLR	COMPRESSED LIQUEFIED REFRIGERANT
CO2	CARBON DIOXIDE
CON	CONDENSATE
CS	SLUDGE CAKE
CWR	COLD WATER RETURN
CWS	COLD WATER SUPPLY
DG	DIGESTER GAS
DGH	HIGH PRESSURE DIGESTER GAS
DL	DECANT LIQUOR
DS	DIGESTED SLUDGE
DP	DRY POLYMER
EDR	EVAPORATED REFRIGERANT
ES	ELECTROLYTE SOLUTION
FC	FERRIC CHLORIDE
FE	FINAL EFFLUENT
FW	FLUSHING WATER
GE	GRIT EFFLUENT
GR	GLYCOL RETURN
GS	GLYCOL SUPPLY
HCO	HYDRAULIC OIL
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
HYD	HYDROGEN
IAS	INSTRUMENT AIR SUPPLY
LCP	LIQUID CONCENTRATED POLYMER
LGO	LUBRICATING OIL
ML	MIXED LIQUOR
MP	MIXED POLYMER
N2	NITROGEN
NLG	NATURAL GAS
O2	OXYGEN
PD	PROCESS DRAIN
PE	PRIMARY EFFLUENT
PO	PROCESS OVERFLOW
PS	PRIMARY SLUDGE
PV	PROCESS VENT
PW	POTABLE WATER
RAS	RETURN ACTIVATED SLUDGE
RW	RECIRCULATED WATER
RS	RAW SEWAGE
SE	SECONDARY EFFLUENT
SEA	SERVICE AIR
SC	SCUM
SW	SEAL WATER
TS	THIN SLUDGE
VMA	VACUUM AIR
VTA	VENT TO ATMOSPHERE
W	WATER
WAS	WASTE ACTIVATED SLUDGE

NO.	REVISIONS	DATE	BY
08	DWG NUMBER WAS 1-0101A-D-A0001-003	2012/06/18	SW

B.M. ELEV.		FIELD BOOK #:	
POSTED TO LBIS			
07	REVISED BY EARTHTECH	2005/11/10	LAE
06	RENUMBERED FACILITY CODE	2005/10/06	CJR
05	ISSUED FOR C.O.W. USE	2005/09/15	CJR
04	RELEASED FOR CUSTOMER REVIEW	2005/08/22	CJR
03	REVISED BY EARTHTECH	2005/01/21	DL
02	ISSUED FOR REVIEW	2004/11/25	CJR
01	ISSUED FOR REVIEW	2004/10/14	CJR
00	ISSUED FOR REVIEW	2004/06/01	CJR

SNC-LAVALIN Engineers & Constructors		SNC-LAVALIN 200-1600 Nest Avenue Winnipeg, Manitoba Canada R3J 3W7		ENGINEER'S SEAL
THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT				
NORTH END WATER POLLUTION CONTROL CENTRE PROCESS AND INSTRUMENT DIAGRAMS LEGEND AND DETAILS				
CITY DRAWING NUMBER		SHEET REV.		SIZE
1-0101A-A0001		003 08		
FILENAME: 1-0101A-A0001-003-08.dwg				

FROM SECONDARY CLARIFIERS 1-10
 1-0101S-A0154 RAS 900Ø



INCONSISTENCIES:
 I-1 R810-FQY AND R815-FQY ARE CURRENTLY DESIGNATED AS R810-MP AND R815-MP RESPECTIVELY.

NOTES:
 1. ALL INSTRUMENTS SHOWN IN A PRIMARY LOCATION ARE IN THE SECONDARY CLARIFIER CONTROL ROOM.

1-0101A-A0001	PROCESS AND INSTRUMENT DIAGRAMS LEGEND AND DETAILS
DRAWING NUMBER	REFERENCE DRAWINGS

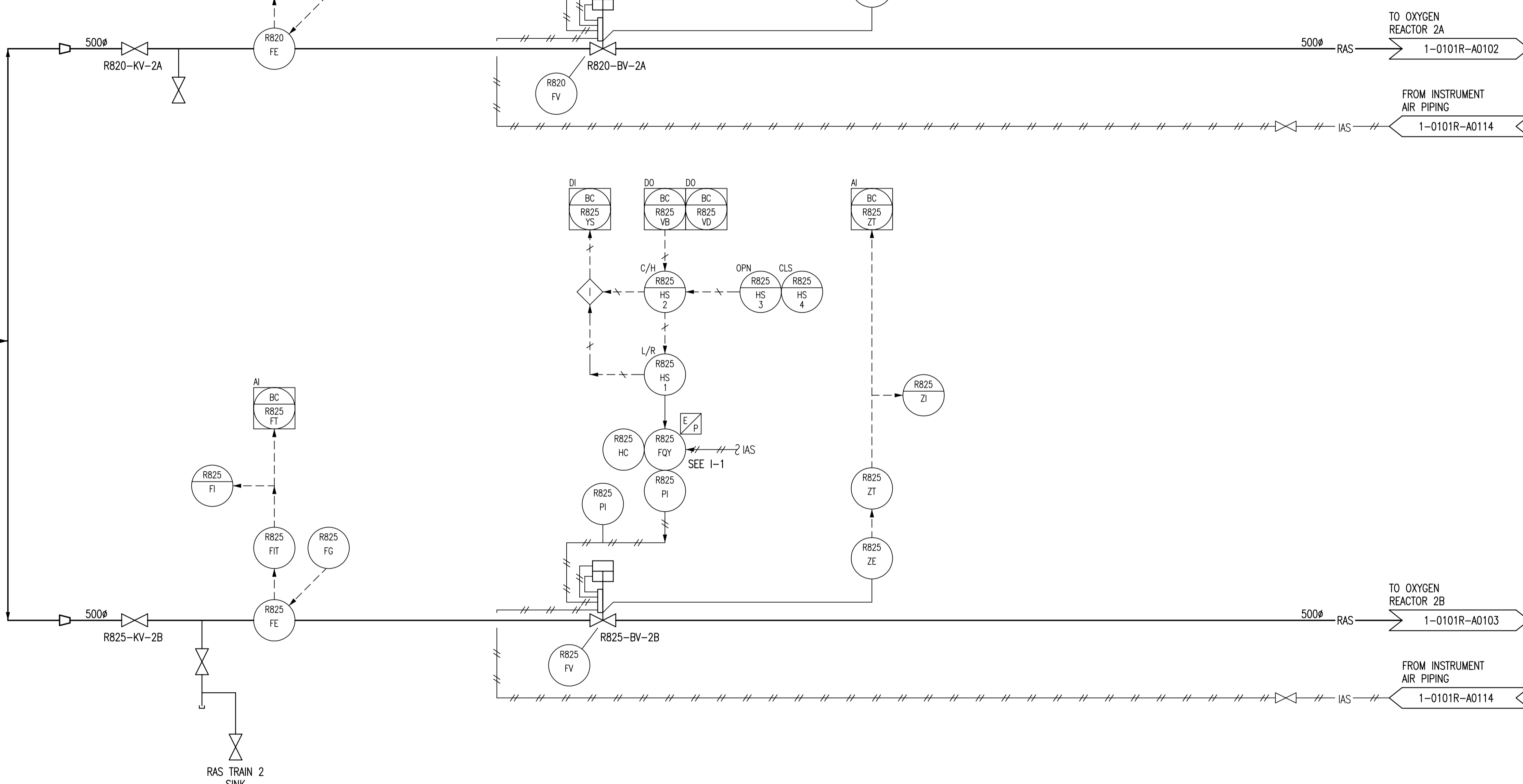
B.M. ELEV.	FIELD BOOK #:	SNC • LAVALIN Engineers & Constructors		ENGINEER'S SEAL
POSTED TO LBIS		DESIGNED BY	EXISTING	CHECKED BY
		DRAWN BY	KPP	APPROVED BY
03	RENUMBERED DRAWING, WAS 1-0101R-G-A0094	2010/08/04	SLC	DATE
02	RENUMBERED FACILITY CODE	2005/10/06	CJR	DATE
01	ISSUED FOR C.O.W. USE	2005/09/15	CJR	DATE
00	RELEASED FOR CUSTOMER REVIEW.	2004/11/23	CJR	DATE
NO. REVISIONS	DATE	BY	FILENAME: 1-0101R-A0094-001-03.dwg	

THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT

NORTH END WATER POLLUTION CONTROL CENTRE
 OXYGEN REACTORS
 PROCESS & INSTRUMENTATION DIAGRAM
 RAS FLOW
 REACTOR TRAIN 1

CITY DRAWING NUMBER: 1-0101R-A0094
 SHEET: 001
 REV: 03
 SIZE: D

FROM SECONDARY CLARIFIERS 11-18
 1-0101S-A0154 RAS 900Ø



INCONSISTENCIES:
 I-1 R820-FQY AND R825-FQY ARE CURRENTLY DESIGNATED AS R820-MP AND R825-MP RESPECTIVELY.

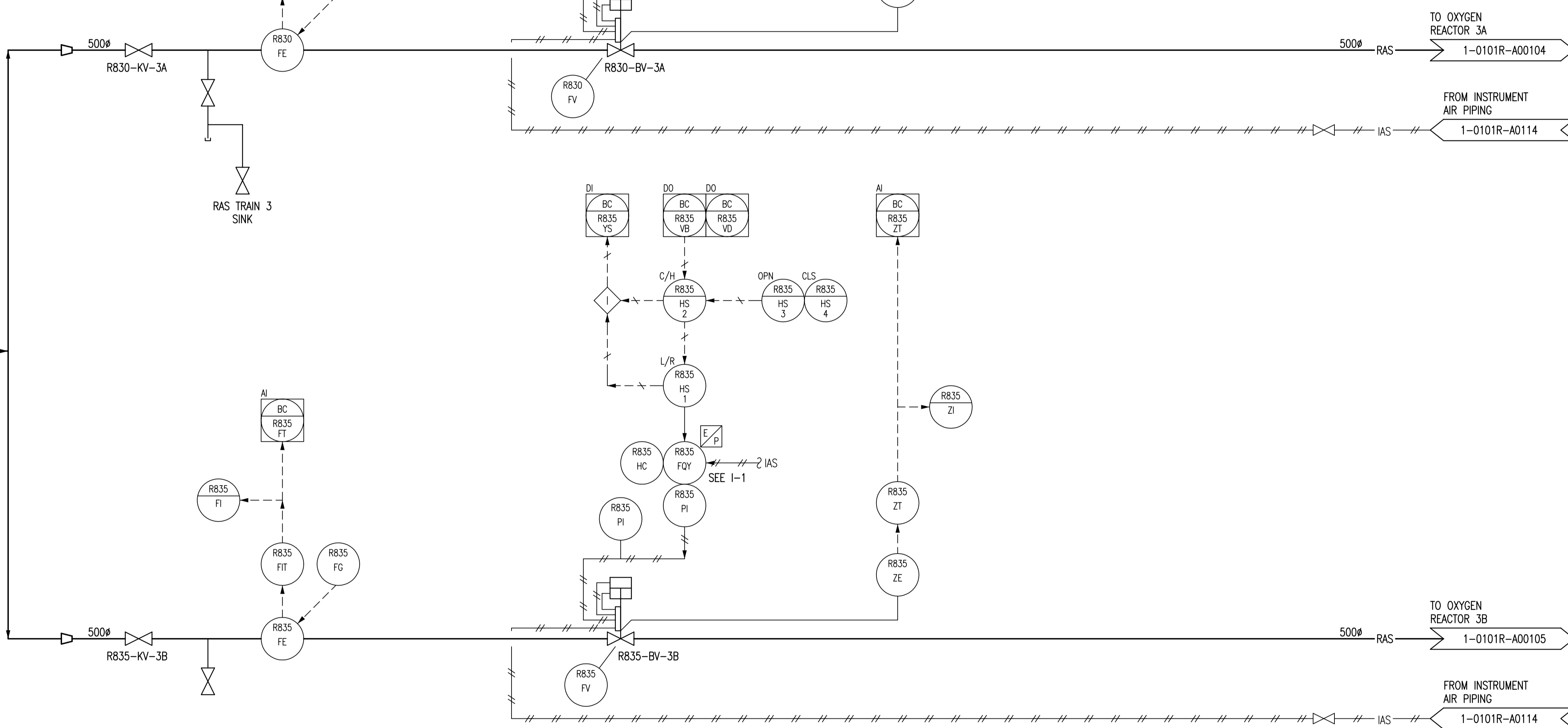
NOTES:
 1. ALL INSTRUMENTS SHOWN IN A PRIMARY LOCATION ARE IN THE SECONDARY CLARIFIER CONTROL ROOM.

1-0101A-A0001	PROCESS AND INSTRUMENT DIAGRAMS LEGEND AND DETAILS
DRAWING NUMBER	REFERENCE DRAWINGS

B.M. ELEV.	FIELD BOOK #:			ENGINEER'S SEAL
POSTED TO LBIS		DESIGNED BY	EXISTING	CHECKED BY
		DRAWN BY	KPP	APPROVED BY
03	RENUMBERED DRAWING, WAS 1-0101R-G-A0095	2010/08/04	SLC	RELEASED FOR CONSTRUCTION
02	RENUMBERED FACILITY CODE	2005/10/06	CJR	
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00	RELEASED FOR CUSTOMER REVIEW.	2004/11/23	CJR	
NO. REVISIONS	DATE	BY	FILENAME: 1-0101R-A0095-001-03.dwg	

THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT
 NORTH END WATER POLLUTION CONTROL CENTRE
 OXYGEN REACTORS
 PROCESS & INSTRUMENTATION DIAGRAM
 RAS FLOW
 REACTOR TRAIN 2
 CITY DRAWING NUMBER: 1-0101R-A0095
 SHEET: 001 REV: 03 SIZE: D

FROM SECONDARY CLARIFIERS 19-26
 1-0101S-A0154 RAS 900Ø



INCONSISTENCIES:
 I-1 R830-FQY AND R835-FQY ARE CURRENTLY DESIGNATED AS R830-MP AND R835-MP RESPECTIVELY.

NOTES:
 1. ALL INSTRUMENTS SHOWN IN A PRIMARY LOCATION ARE IN THE SECONDARY CLARIFIER CONTROL ROOM.

1-0101A-A0001	PROCESS AND INSTRUMENT DIAGRAMS LEGEND AND DETAILS
DRAWING NUMBER	REFERENCE DRAWINGS

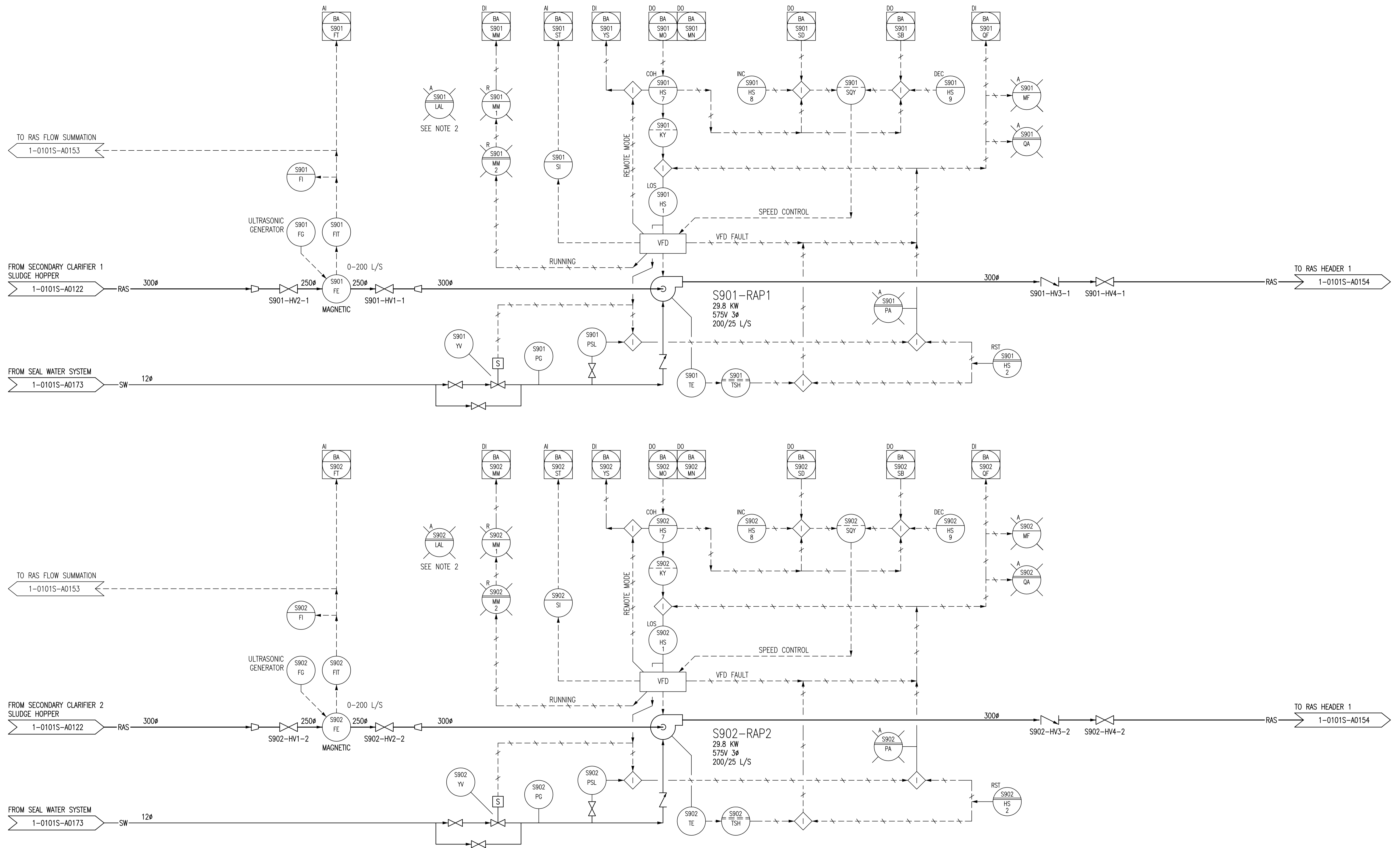
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02	RENUMBERED FACILITY CODE	2005/10/06	CJR	VERTICAL	RELEASED FOR CONSTRUCTION
01	ISSUED FOR C.O.W. USE	2005/09/15	CJR	DATE	2004/08/10
00	RELEASED FOR CUSTOMER REVIEW.	2004/11/23	CJR	DATE	
NO.	REVISIONS	DATE	BY	FILENAME:	1-0101R-A0096-001-03.dwg

ENGINEER'S SEAL

THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT

NORTH END WATER POLLUTION CONTROL CENTRE
 OXYGEN REACTORS
 PROCESS & INSTRUMENTATION DIAGRAM
 RAS FLOW
 REACTOR TRAIN 3

CITY DRAWING NUMBER	SHEET	REV.	SIZE
1-0101R-A0096	001	03	D



NOTES:

1. ALL INSTRUMENTS SHOWN IN AN AUXILIARY LOCATION ARE IN THE CORRESPONDING VFD PANEL IN THE ELECTRICAL ROOM.
2. ALL LAL LIGHTS ON THIS DRAWING ARE PRESENT, BUT NOT CONNECTED.

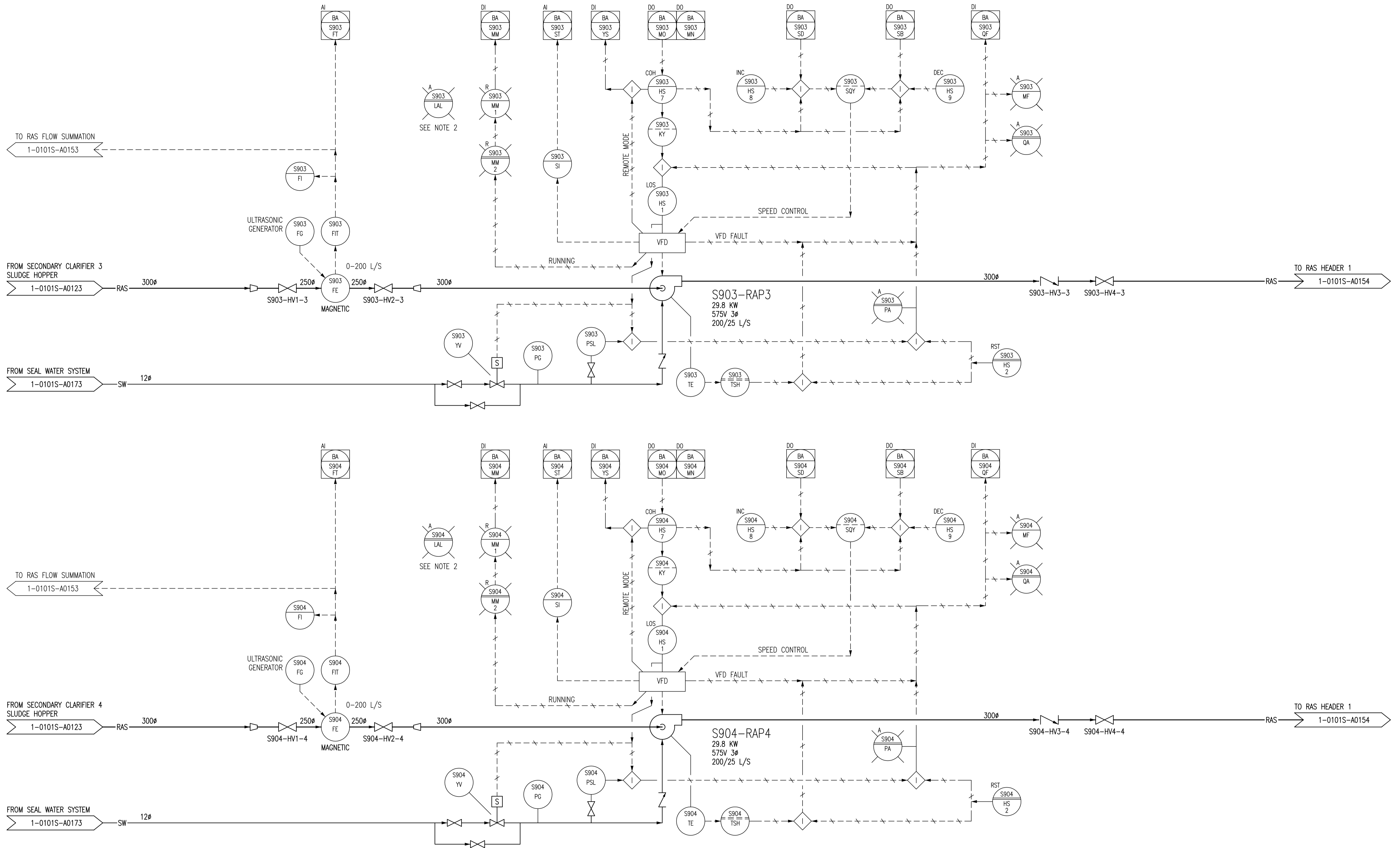
B.M. ELEV.	FIELD BOOK #:	SNC • LAVALIN Engineers & Constructors		SNC • LAVALIN 200-1600 Ness Avenue Winnipeg, Manitoba Canada R3C 3W7	
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		DRAWN BY	KPP	APPROVED BY	EMR
03	RENUMBERED DRAWING, WAS 1-0101S-G-A0140	2010/08/04	SLC	HOR. SCALE	NTS
02	RENUMBERED FACILITY CODE	2005/10/06	CJR	RELEASED FOR CONSTRUCTION	
01	ISSUED FOR C.O.W. USE	2005/09/15	CJR		
00	RELEASED FOR CUSTOMER REVIEW.	2004/11/23	CJR	DATE	2004/08/10
NO.	REVISIONS	DATE	BY	FILENAME:	1-0101S-A0140-001-03.dwg

ENGINEER'S SEAL

THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT

NORTH END WATER POLLUTION CONTROL CENTRE
 SECONDARY CLARIFIERS
 PROCESS & INSTRUMENTATION DIAGRAM
 RETURN ACTIVATED SLUDGE PUMPS
 S901-RAP1 & S902-RAP2

CITY DRAWING NUMBER	SHEET	REV.	SIZE
1-0101S-A0140	001	03	D



LAST SW: 2010/07/28 - 11:35am
 PATH: M:\503464\ENGIN\40EN0\DD - General DWG\S - Secondary Clarifiers\1-0101S-A0141-001-03.dwg

- NOTES:**
- ALL INSTRUMENTS SHOWN IN AN AUXILIARY LOCATION ARE IN THE CORRESPONDING VFD PANEL IN THE ELECTRICAL ROOM.
 - ALL LAL LIGHTS ON THIS DRAWING ARE PRESENT, BUT NOT CONNECTED.

1-0101A-A0001	PROCESS AND INSTRUMENT DIAGRAMS LEGEND AND DETAILS
DRAWING NUMBER	REFERENCE DRAWINGS

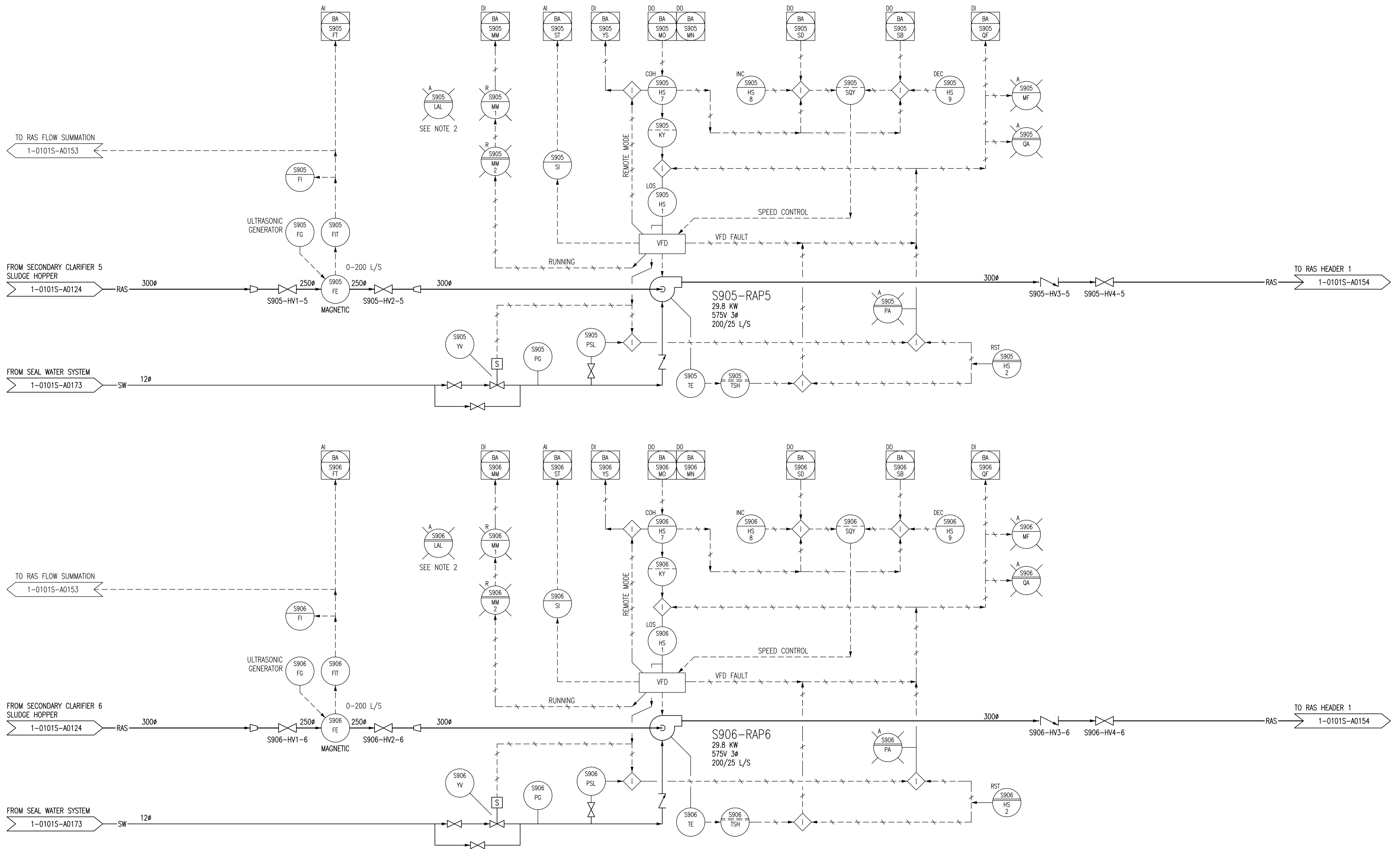
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POSTED TO LBIS		DESIGNED BY	EXISTING	CHECKED BY	CJR
		DRAWN BY	CJR	APPROVED BY	EMR
03	RENUMBERED DRAWING, WAS 1-0101S-G-A0141	2010/08/04	SLC	HOR. SCALE	NTS
02	RENUMBERED FACILITY CODE	2005/10/06	CJR	RELEASED FOR CONSTRUCTION	
01	ISSUED FOR C.O.W. USE	2005/09/15	CJR	DATE	2004/09/22
00	RELEASED FOR CUSTOMER REVIEW.	2004/11/23	CJR	DATE	
NO.	REVISIONS	DATE	BY	FILENAME:	1-0101S-A0141-001-03.dwg

ENGINEER'S SEAL

THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT

NORTH END WATER POLLUTION CONTROL CENTRE
 SECONDARY CLARIFIERS
 PROCESS & INSTRUMENTATION DIAGRAM
 RETURN ACTIVATED SLUDGE PUMPS
 S903-RAP3 & S904-RAP4

CITY DRAWING NUMBER: 1-0101S-A0141
 SHEET: 001
 REV: 03
 SIZE: D



- NOTES:**
- ALL INSTRUMENTS SHOWN IN AN AUXILIARY LOCATION ARE IN THE CORRESPONDING VFD PANEL IN THE ELECTRICAL ROOM.
 - ALL LAL LIGHTS ON THIS DRAWING ARE PRESENT, BUT NOT CONNECTED.

1-0101A-A0001	PROCESS AND INSTRUMENT DIAGRAMS LEGEND AND DETAILS
DRAWING NUMBER	REFERENCE DRAWINGS

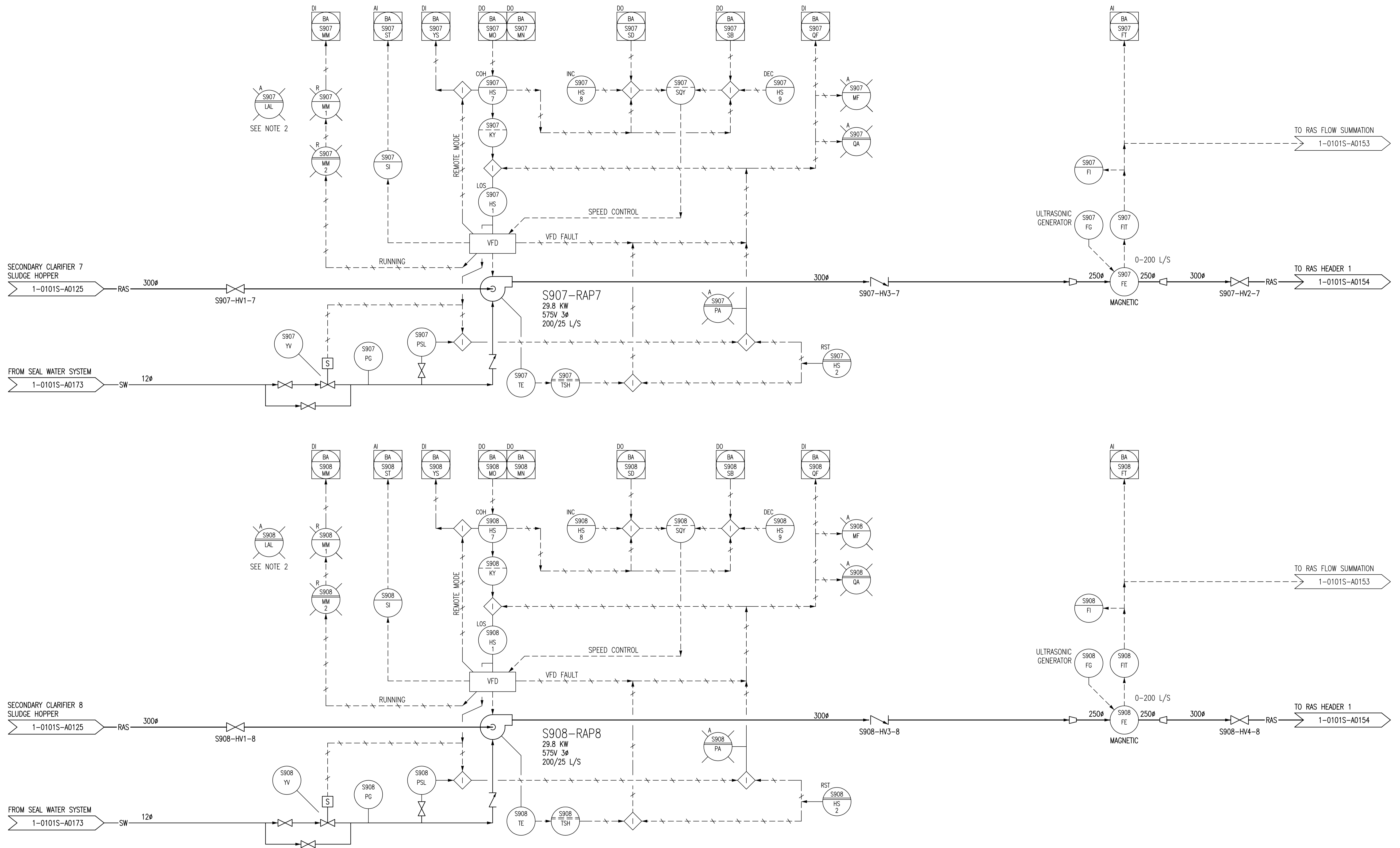
B.M. ELEV.	FIELD BOOK #:	SNC • LAVALIN Engineers & Constructors		SNC • LAVALIN 200-1600 Ness Avenue Winnipeg, Manitoba Canada R3C 3W7	
POSTED TO LBIS		DESIGNED BY	EXISTING	CHECKED BY	CJR
		DRAWN BY	CJR	APPROVED BY	EMR
03	RENUMBERED DRAWING, WAS 1-0101S-G-A0142	2010/08/04	SLC	HOR. SCALE	NTS
02	RENUMBERED FACILITY CODE	2005/10/06	CJR	RELEASED FOR CONSTRUCTION	
01	ISSUED FOR C.O.W. USE	2005/09/15	CJR	DATE	2004/09/22
00	RELEASED FOR CUSTOMER REVIEW.	2004/11/23	CJR	DATE	
NO.	REVISIONS	DATE	BY	FILENAME:	1-0101S-A0142-001-03.dwg

ENGINEER'S SEAL

THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

NORTH END WATER POLLUTION CONTROL CENTRE
SECONDARY CLARIFIERS
PROCESS & INSTRUMENTATION DIAGRAM
RETURN ACTIVATED SLUDGE PUMPS
S905-RAP5 & S906-RAP6

CITY DRAWING NUMBER: 1-0101S-A0142 | SHEET: 001 | REV: 03 | SIZE: D

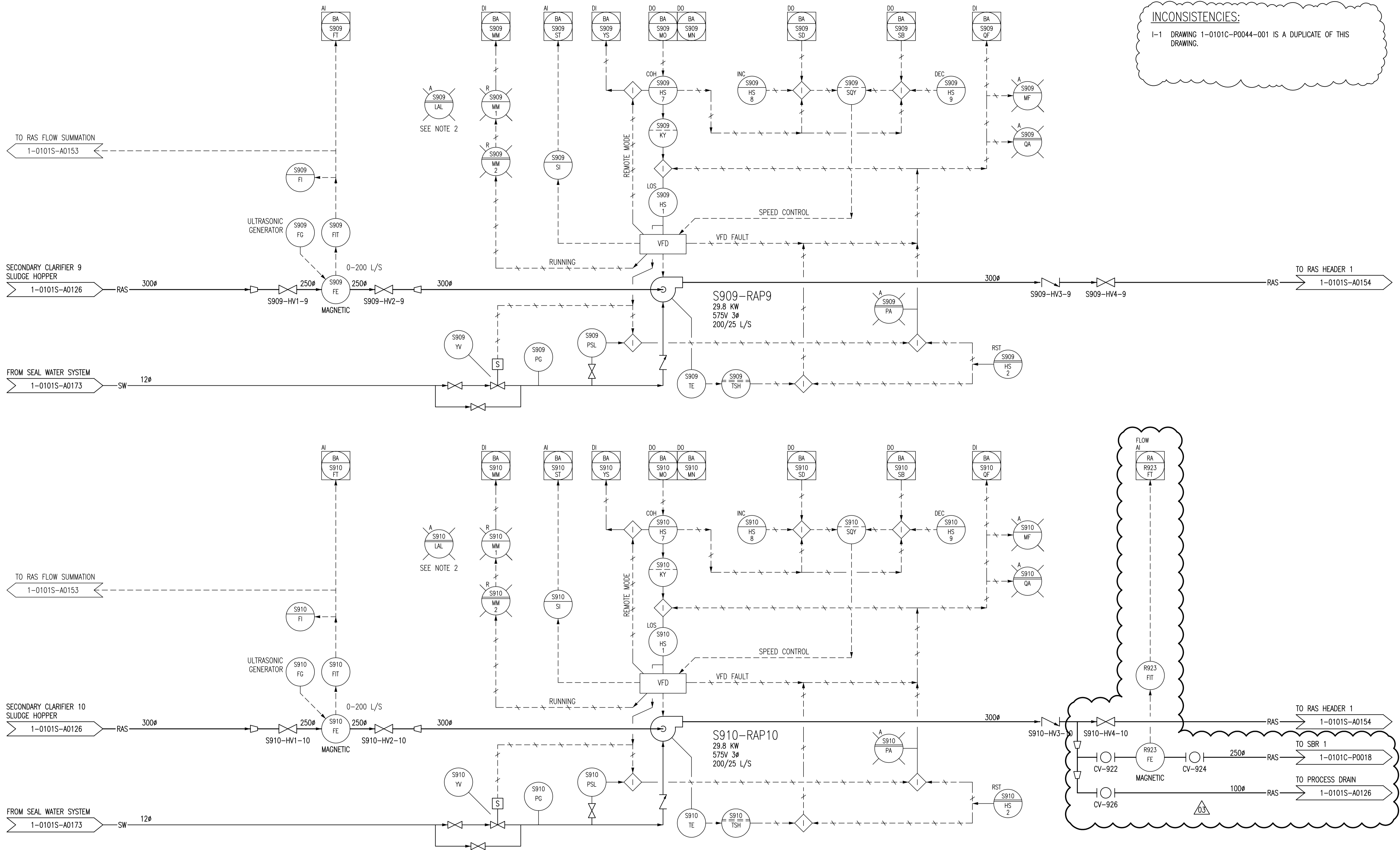


- NOTES:**
1. ALL INSTRUMENTS SHOWN IN AN AUXILIARY LOCATION ARE IN THE CORRESPONDING VFD PANEL IN THE ELECTRICAL ROOM.
 2. ALL LAL LIGHTS ON THIS DRAWING ARE PRESENT, BUT NOT CONNECTED.

1-0101A-A0001	PROCESS AND INSTRUMENT DIAGRAMS LEGEND AND DETAILS
DRAWING NUMBER	REFERENCE DRAWINGS

B.M. ELEV.	FIELD BOOK #:			ENGINEER'S SEAL
POSTED TO LBIS		DESIGNED BY	EXISTING	CHECKED BY
		DRAWN BY	CJR	APPROVED BY
03	RENUMBERED DRAWING, WAS 1-0101S-G-A0143	2010/08/04	SLC	RELEASSED FOR CONSTRUCTION
02	RENUMBERED FACILITY CODE	2005/10/06	CJR	
01	ISSUED FOR C.O.W. USE	2005/09/15	CJR	
00	RELEASED FOR CUSTOMER REVIEW.	2004/11/23	CJR	
NO.	REVISIONS	DATE	BY	DATE
				FILENAME: 1-0101S-A0143-001-03.dwg

THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT
 NORTH END WATER POLLUTION CONTROL CENTRE
 SECONDARY CLARIFIERS
 PROCESS & INSTRUMENTATION DIAGRAM
 RETURN ACTIVATED SLUDGE PUMPS
 S907-RAP7 & S908-RAP8
 CITY DRAWING NUMBER: 1-0101S-A0143 | SHEET: 001 | REV: 03 | SIZE: D



- NOTES:**
- ALL INSTRUMENTS SHOWN IN AN AUXILIARY LOCATION ARE IN THE CORRESPONDING VFD PANEL IN THE ELECTRICAL ROOM.
 - ALL LAL LIGHTS ON THIS DRAWING ARE PRESENT, BUT NOT CONNECTED.

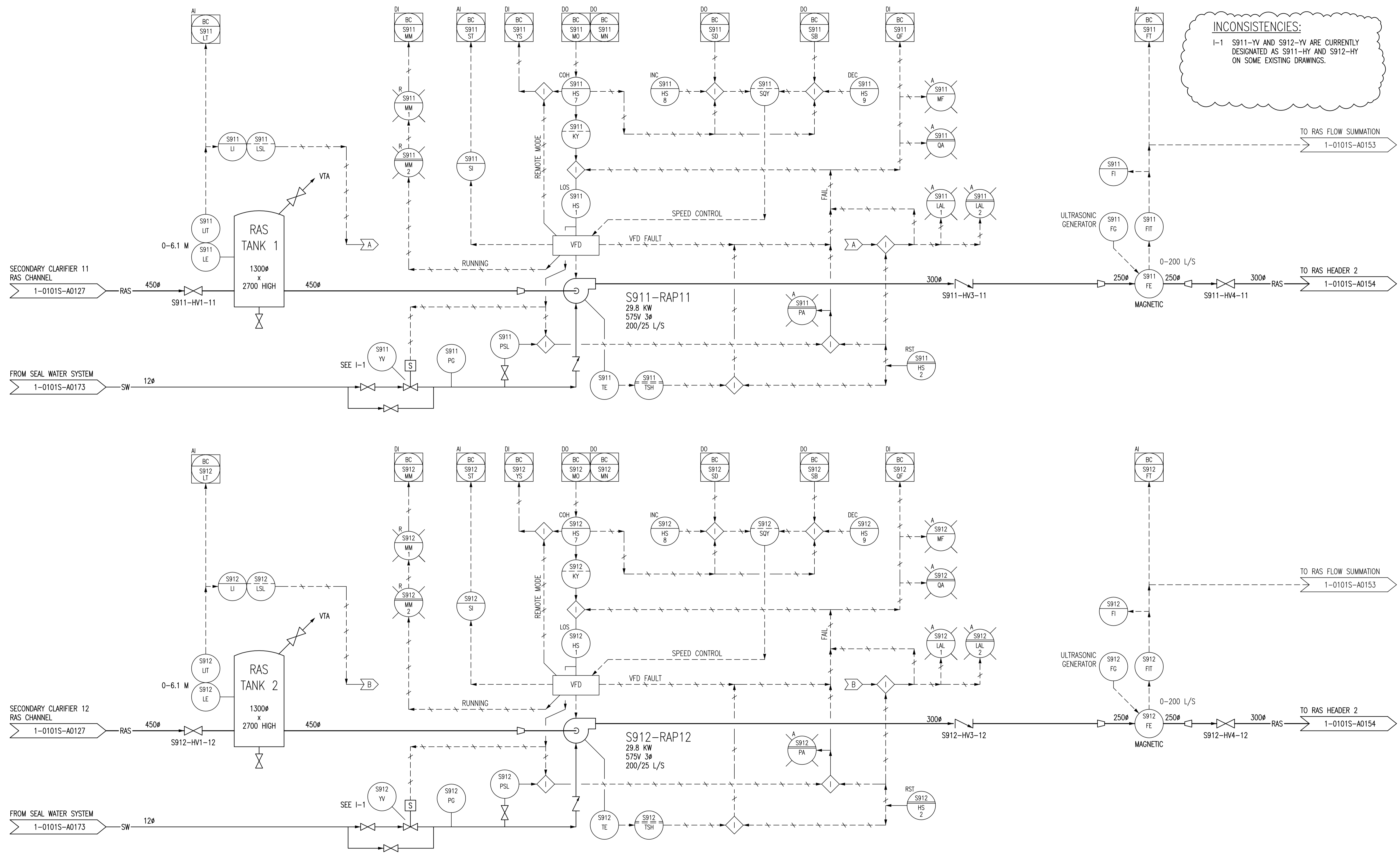
B.M. ELEV.	FIELD BOOK #:	SNC • LAVALIN Engineers & Constructors		SNC • LAVALIN 200-1600 Ness Avenue Winnipeg, Manitoba Canada R3Z 3W7	
POSTED TO LBIS		DESIGNED BY	EXISTING	CHECKED BY	CJR
		DRAWN BY	CJR	APPROVED BY	EMR
03	RENUMBERED DRAWING, WAS 1-0101S-G-A0144. REVISED PER NITROGEN REMOVAL FACILITY	2010/08/04	SLC	HOR. SCALE	NTS
02	RENUMBERED FACILITY CODE	2005/10/06	CJR	RELEASED FOR CONSTRUCTION	
01	ISSUED FOR C.O.W. USE	2005/09/15	CJR	DATE	2004/09/22
00	RELEASED FOR CUSTOMER REVIEW.	2004/11/23	CJR	DATE	
NO.	REVISIONS	DATE	BY	FILENAME:	1-0101S-A0144-001-03.dwg

ENGINEER'S SEAL

THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

NORTH END WATER POLLUTION CONTROL CENTRE
SECONDARY CLARIFIERS
PROCESS & INSTRUMENTATION DIAGRAM
RETURN ACTIVATED SLUDGE PUMPS
S909-RAP9 & S910-RAP10

CITY DRAWING NUMBER: 1-0101S-A0144
SHEET: 001
REV: 03
SIZE: D

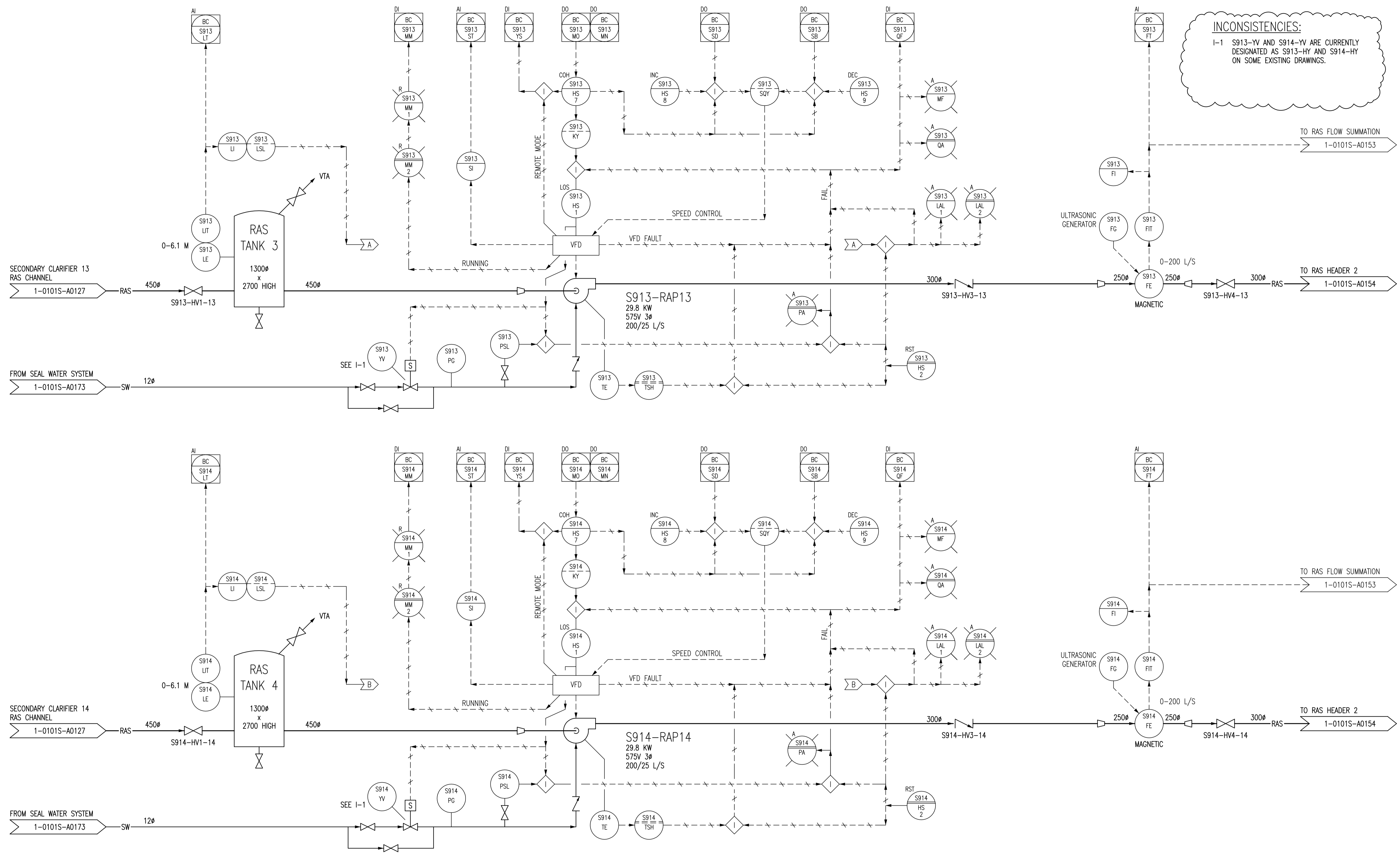


INCONSISTENCIES:
I-1 S911-YV AND S912-YV ARE CURRENTLY DESIGNATED AS S911-HY AND S912-HY ON SOME EXISTING DRAWINGS.

NOTES:
1. ALL INSTRUMENTS SHOWN IN AN AUXILIARY LOCATION ARE IN THE CORRESPONDING VFD PANEL, LOCATED IN THE ELECTRICAL ROOM.

1-0101A-A0001	PROCESS AND INSTRUMENT DIAGRAMS LEGEND AND DETAILS
DRAWING NUMBER	REFERENCE DRAWINGS

B.M. ELEV.	FIELD BOOK #:			ENGINEER'S SEAL
POSTED TO LBIS		DESIGNED BY	EXISTING	CHECKED BY
		DRAWN BY	CJR	APPROVED BY
03	RENUMBERED DRAWING, WAS 1-0101S-G-A0145	2010/08/04	SLC	RELEASED FOR CONSTRUCTION
02	RENUMBERED FACILITY CODE	2005/10/06	CJR	
01	ISSUED FOR C.O.W. USE	2005/09/15	CJR	
00	RELEASED FOR CUSTOMER REVIEW.	2004/11/23	CJR	
NO.	REVISIONS	DATE	BY	DATE
		FILENAME: 1-0101S-A0145-001-03.dwg		
NORTH END WATER POLLUTION CONTROL CENTRE SECONDARY CLARIFIERS PROCESS & INSTRUMENTATION DIAGRAM RETURN ACTIVATED SLUDGE PUMPS S911-RAP11 & S912-RAP12				
CITY DRAWING NUMBER		SHEET	REV.	SIZE
1-0101S-A0145		001	03	D

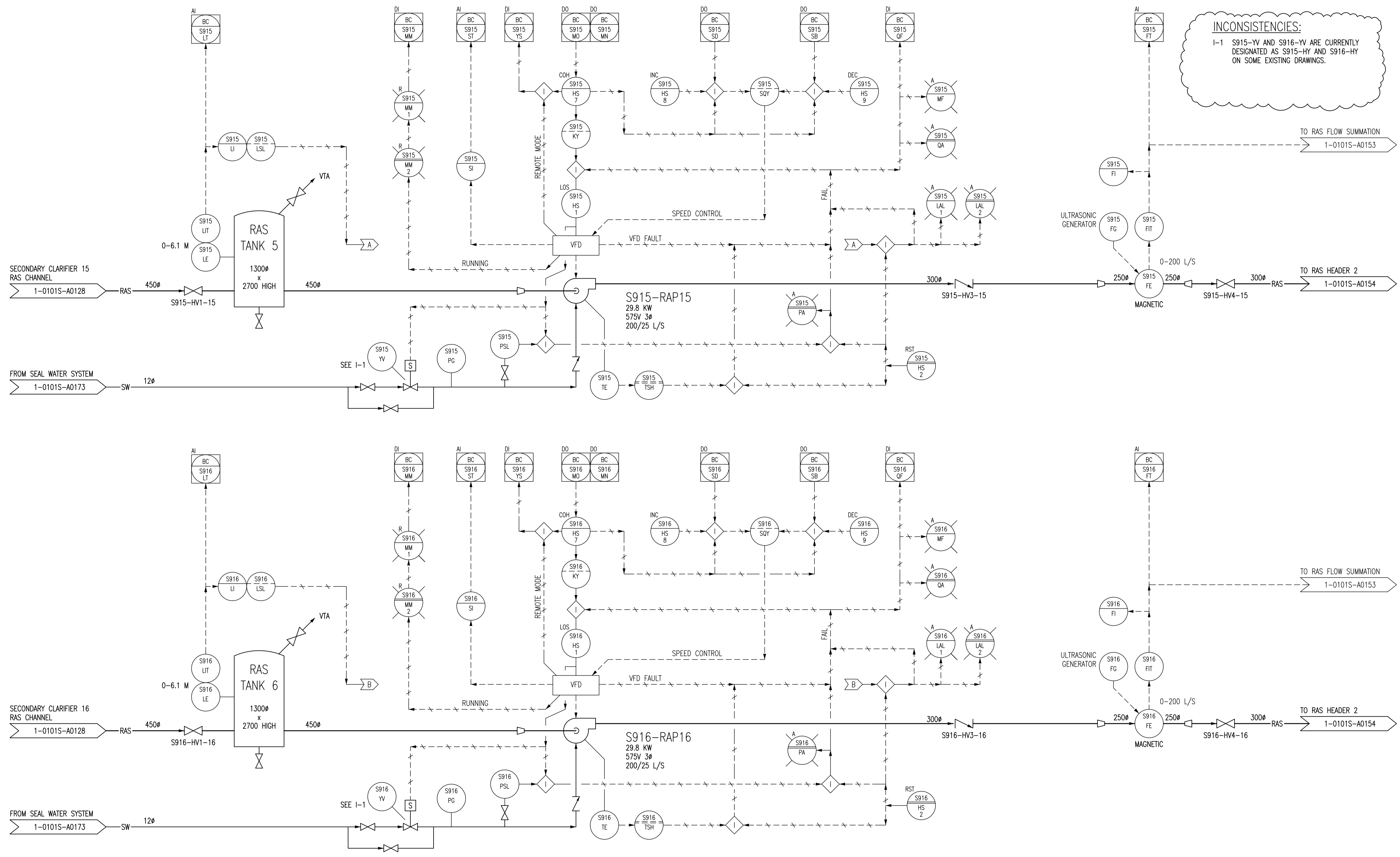


INCONSISTENCIES:
 I-1 S913-YV AND S914-YV ARE CURRENTLY DESIGNATED AS S913-HY AND S914-HY ON SOME EXISTING DRAWINGS.

NOTES:
 1. ALL INSTRUMENTS SHOWN IN AN AUXILIARY LOCATION ARE IN THE CORRESPONDING VFD PANEL, LOCATED IN THE ELECTRICAL ROOM.

1-0101A-A0001	PROCESS AND INSTRUMENT DIAGRAMS LEGEND AND DETAILS
DRAWING NUMBER	REFERENCE DRAWINGS

B.M. ELEV.	FIELD BOOK #:			ENGINEER'S SEAL
POSTED TO LBIS		DESIGNED BY	EXISTING	CHECKED BY
		DRAWN BY	CJR	APPROVED BY
03	RENUMBERED DRAWING, WAS 1-0101S-G-A0146	2010/08/04	SLC	RELEASSED FOR CONSTRUCTION
02	RENUMBERED FACILITY CODE	2005/10/06	CJR	
01	ISSUED FOR C.O.W. USE	2005/09/15	CJR	
00	RELEASED FOR CUSTOMER REVIEW.	2004/11/23	CJR	
NO.	REVISIONS	DATE	BY	DATE
		FILENAME: 1-0101S-A0146-001-03.dwg		
NORTH END WATER POLLUTION CONTROL CENTRE SECONDARY CLARIFIERS PROCESS & INSTRUMENTATION DIAGRAM RETURN ACTIVATED SLUDGE PUMPS S913-RAP13 & S914-RAP14				
CITY DRAWING NUMBER		SHEET	REV.	SIZE
1-0101S-A0146		001	03	D

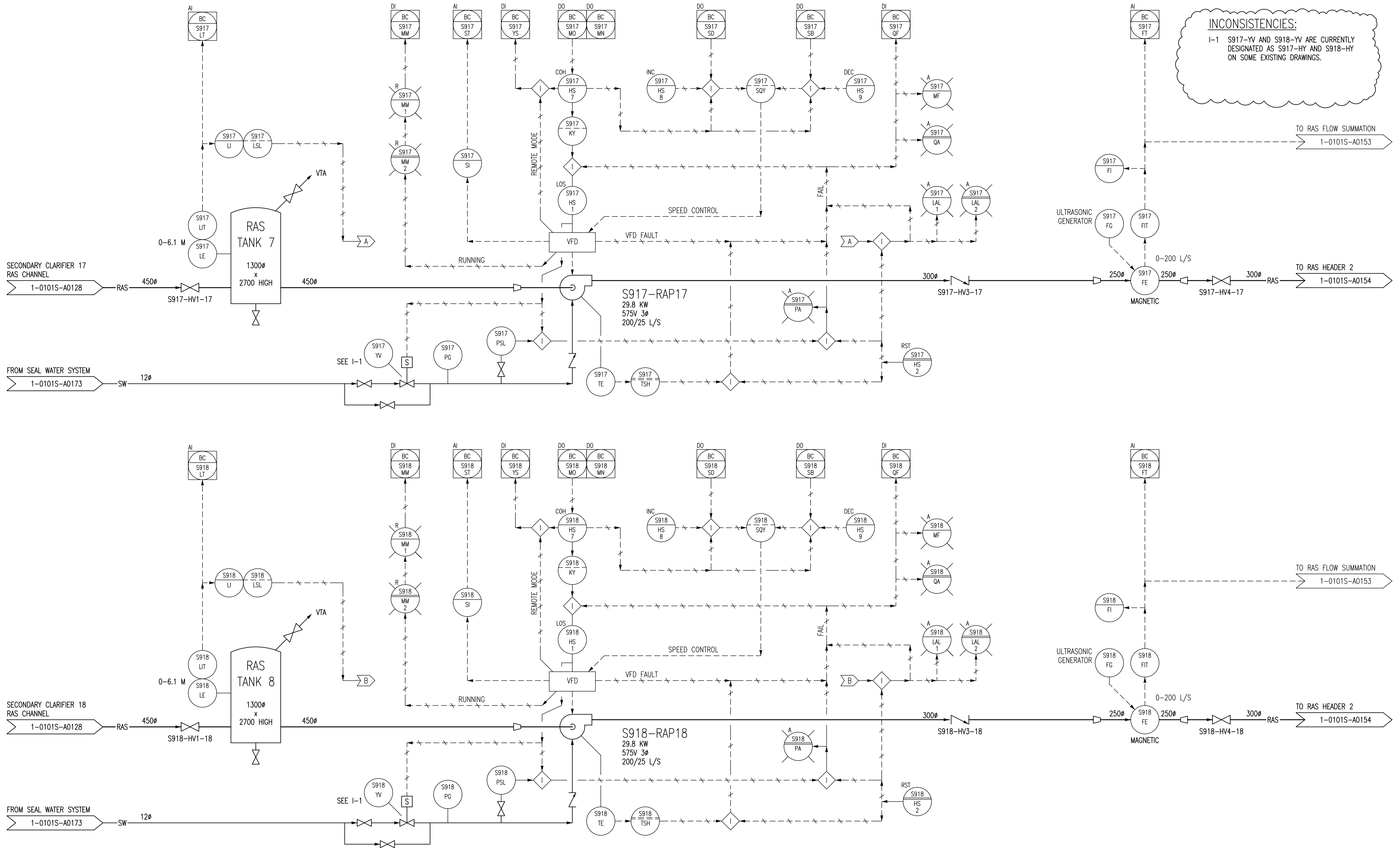


NOTES:
 1. ALL INSTRUMENTS SHOWN IN AN AUXILIARY LOCATION ARE IN THE CORRESPONDING VFD PANEL, LOCATED IN THE ELECTRICAL ROOM.

1-0101A-A0001	PROCESS AND INSTRUMENT DIAGRAMS LEGEND AND DETAILS
DRAWING NUMBER	REFERENCE DRAWINGS

B.M. ELEV.	FIELD BOOK #:	SNC • LAVALIN Engineers & Constructors		SNC • LAVALIN 200-1600 Ness Avenue Winnipeg, Manitoba Canada R3J 3W7		ENGINEER'S SEAL	
POSTED TO LBIS		DESIGNED BY	EXISTING	CHECKED BY	CJR	THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT NORTH END WATER POLLUTION CONTROL CENTRE SECONDARY CLARIFIERS PROCESS & INSTRUMENTATION DIAGRAM RETURN ACTIVATED SLUDGE PUMPS S915-RAP15 & S916-RAP16	
		DRAWN BY	CJR	APPROVED BY	EMR		
03	RENUMBERED DRAWING, WAS 1-0101S-G-A0147	2010/08/04	SLC	HOR. SCALE	NTS		RELEASED FOR CONSTRUCTION
02	RENUMBERED FACILITY CODE	2005/10/06	CJR	VERTICAL			
01	ISSUED FOR C.O.W. USE	2005/09/15	CJR	DATE	2004/11/15		DATE
00	RELEASED FOR CUSTOMER REVIEW.	2004/11/23	CJR	DATE		DATE	
NO.	REVISIONS	DATE	BY	FILENAME:	1-0101S-A0147-001-03.dwg		

CITY DRAWING NUMBER	SHEET	REV.	SIZE
1-0101S-A0147	001	03	D



NOTES:
 1. ALL INSTRUMENTS SHOWN IN AN AUXILIARY LOCATION ARE IN THE CORRESPONDING VFD PANEL, LOCATED IN THE ELECTRICAL ROOM.

1-0101A-A0001	PROCESS AND INSTRUMENT DIAGRAMS LEGEND AND DETAILS
DRAWING NUMBER	REFERENCE DRAWINGS

B.M. ELEV.	FIELD BOOK #:	SNC • LAVALIN Engineers & Constructors 200-1600 Ness Avenue Winnipeg, Manitoba Canada R3J 3W7		ENGINEER'S SEAL
POSTED TO LBIS		DESIGNED BY	EXISTING	CHECKED BY
		DRAWN BY	CJR	APPROVED BY
03	RENUMBERED DRAWING, WAS 1-0101S-G-A0148	2010/08/04	SLC	
02	RENUMBERED FACILITY CODE	2005/10/06	CJR	
01	ISSUED FOR C.O.W. USE	2005/09/15	CJR	
00	RELEASED FOR CUSTOMER REVIEW.	2004/11/23	CJR	
NO.	REVISIONS	DATE	BY	DATE
				2004/11/15
FILENAME: 1-0101S-A0148-001-03.dwg				

THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT

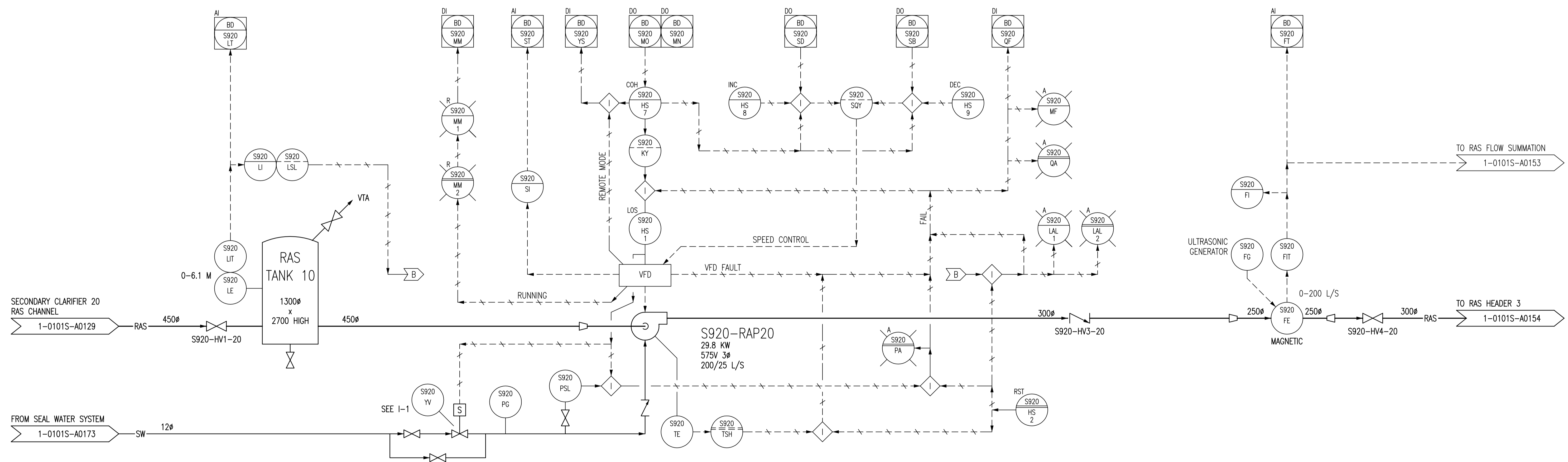
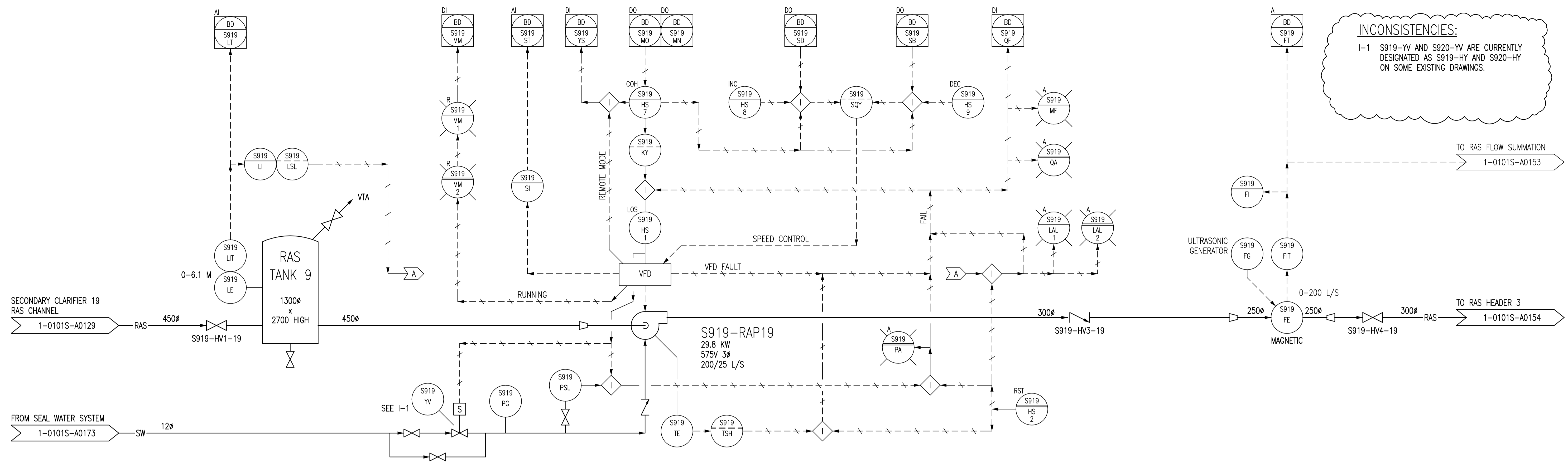
Winnipeg

NORTH END WATER POLLUTION CONTROL CENTRE
 SECONDARY CLARIFIERS
 PROCESS & INSTRUMENTATION DIAGRAM
 RETURN ACTIVATED SLUDGE PUMPS
 S917-RAP17 & S918-RAP18

CITY DRAWING NUMBER	SHEET	REV.	SIZE
1-0101S-A0148	001	03	D

AI SIZE - S94 x 841 mm

LAST SAVE: 2010/07/28 - 11:35am
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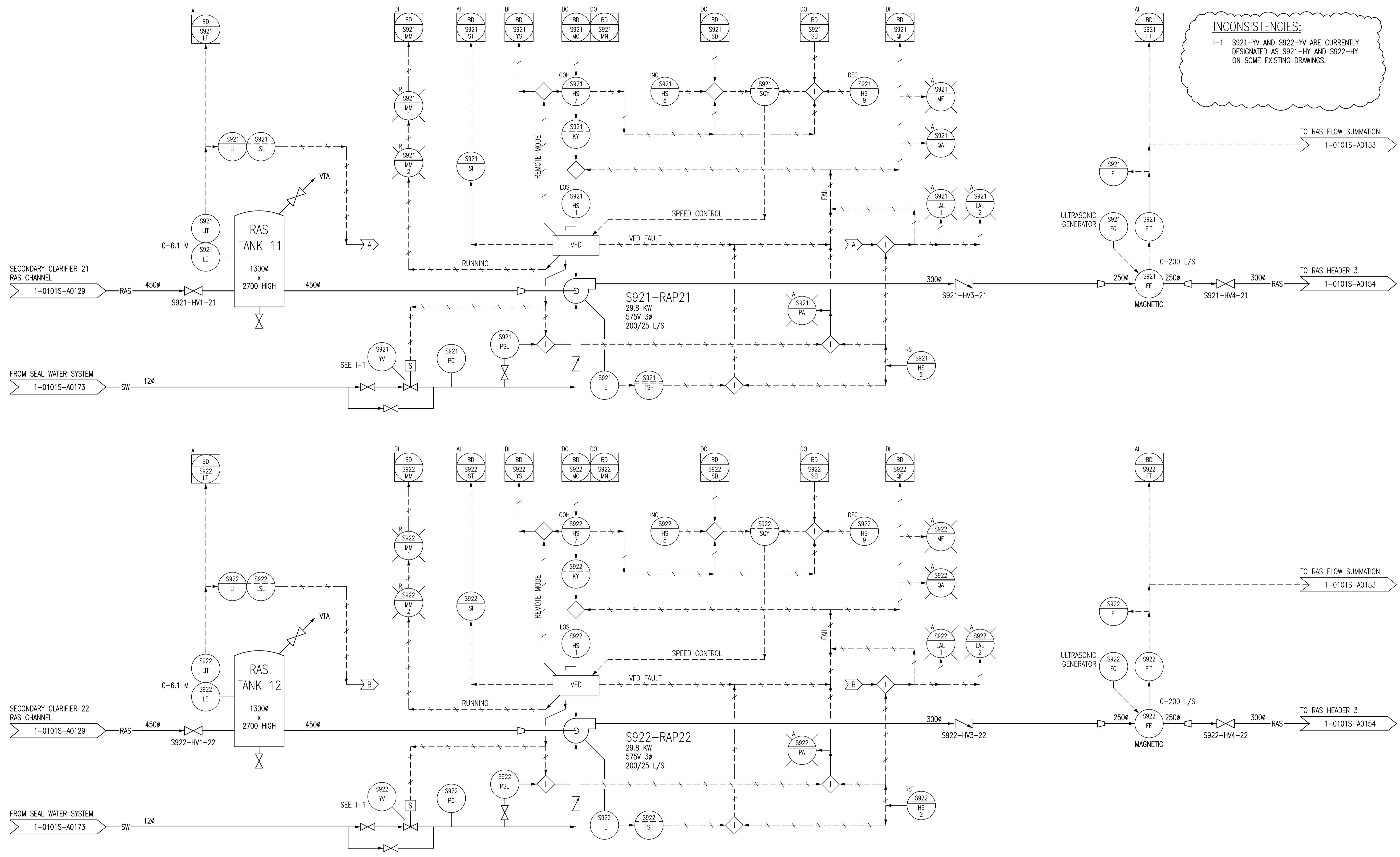


NOTES:
1. ALL INSTRUMENTS SHOWN IN AN AUXILIARY LOCATION ARE IN THE CORRESPONDING VFD PANEL, LOCATED IN THE ELECTRICAL ROOM.

1-0101A-A0001	PROCESS AND INSTRUMENT DIAGRAMS LEGEND AND DETAILS
DRAWING NUMBER	REFERENCE DRAWINGS

B.M. ELEV.	FIELD BOOK #:	SNC • LAVALIN Engineers & Constructors		SNC • LAVALIN 200-1600 Ness Avenue Winnipeg, Manitoba Canada R3J 3W7		ENGINEER'S SEAL	
POSTED TO LBIS		DESIGNED BY	EXISTING	CHECKED BY	CJR	<p>THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT</p> <p>NORTH END WATER POLLUTION CONTROL CENTRE SECONDARY CLARIFIERS PROCESS & INSTRUMENTATION DIAGRAM RETURN ACTIVATED SLUDGE PUMPS S919-RAP19 & S920-RAP20</p>	
		DRAWN BY	CJR	APPROVED BY	EMR		
03	RENUMBERED DRAWING, WAS 1-0101S-G-A0149	2010/08/04	SLC	HOR. SCALE	NTS		RELEASED FOR CONSTRUCTION
02	RENUMBERED FACILITY CODE	2005/10/06	CJR	VERTICAL			
01	ISSUED FOR C.O.W. USE	2005/09/15	CJR	DATE	2004/11/15		DATE
00	RELEASED FOR CUSTOMER REVIEW.	2004/11/23	CJR	FILENAME:	1-0101S-A0149-001-03.dwg		
NO.	REVISIONS	DATE	BY				

CITY DRAWING NUMBER	SHEET	REV.	SIZE
1-0101S-A0149	001	03	D



NOTES:
 1. ALL INSTRUMENTS SHOWN IN AN AUXILIARY LOCATION ARE IN THE CORRESPONDING VFD PANEL, LOCATED IN THE ELECTRICAL ROOM.

1-0101A-A0001	PROCESS AND INSTRUMENT DIAGRAMS LEGEND AND DETAILS
DRAWING NUMBER	REFERENCE DRAWINGS

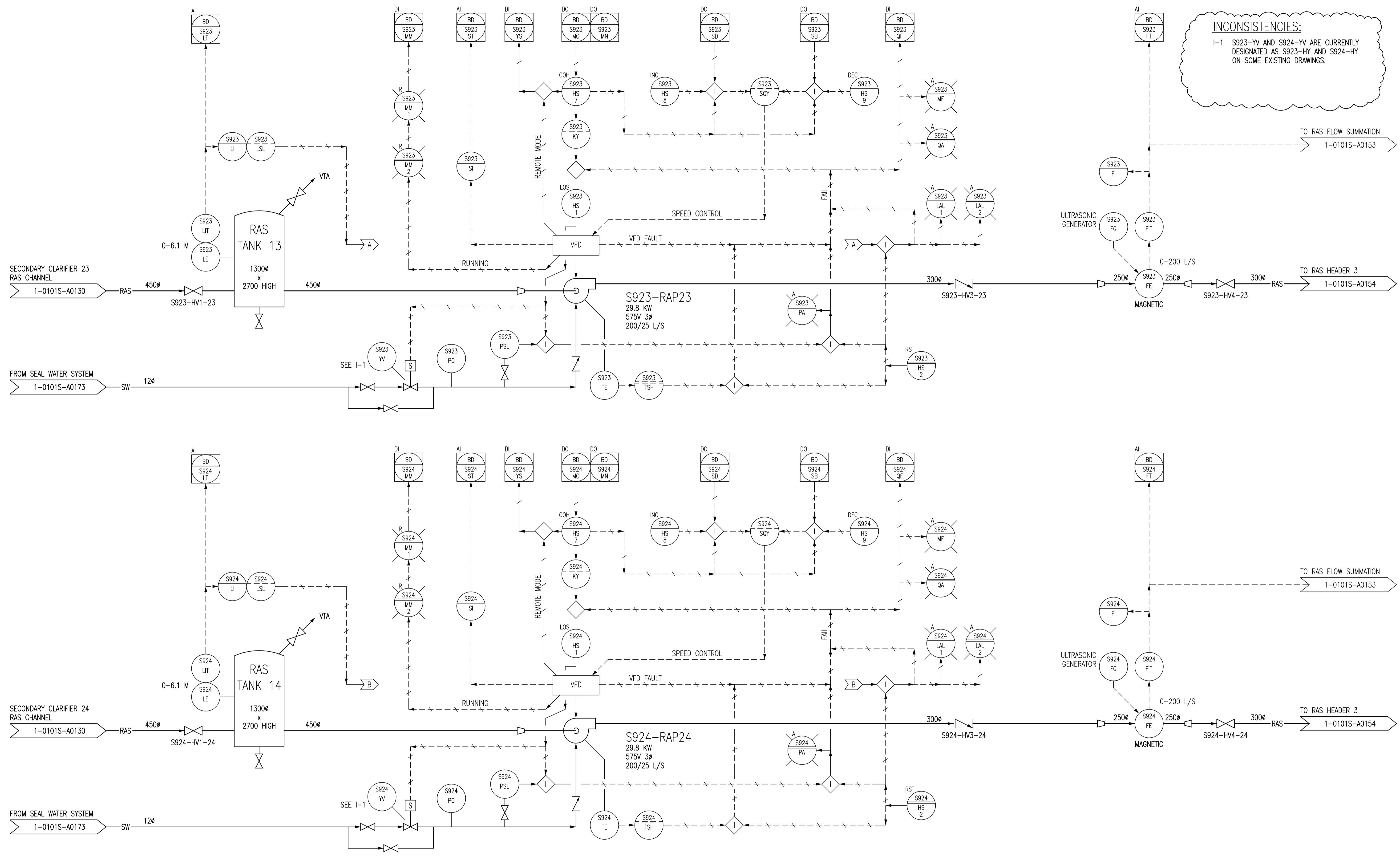
B.M. ELEV.	FIELD BOOK #:	SNC • LAVALIN Engineers & Constructors		SNC • LAVALIN 200-1600 Ness Avenue Winnipeg, Manitoba Canada R3J 3W7	
POSTED TO LBIS		DESIGNED BY	EXISTING	CHECKED BY	CJR
		DRAWN BY	CJR	APPROVED BY	EMR
03	RENUMBERED DRAWING, WAS 1-0101S-G-A0150	2010/08/04	SLC	HOR. SCALE	NTS
02	RENUMBERED FACILITY CODE	2005/10/06	CJR	VERTICAL	RELEASED FOR CONSTRUCTION
01	ISSUED FOR C.O.W. USE	2005/09/15	CJR	DATE	2004/11/15
00	RELEASED FOR CUSTOMER REVIEW.	2004/11/23	CJR	DATE	
NO.	REVISIONS	DATE	BY	FILENAME:	1-0101S-A0150-001-03.dwg

ENGINEER'S SEAL

THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

NORTH END WATER POLLUTION CONTROL CENTRE
SECONDARY CLARIFIERS
PROCESS & INSTRUMENTATION DIAGRAM
RETURN ACTIVATED SLUDGE PUMPS
S921-RAP21 & S922-RAP22

CITY DRAWING NUMBER	SHEET	REV.	SIZE
1-0101S-A0150	001	03	D



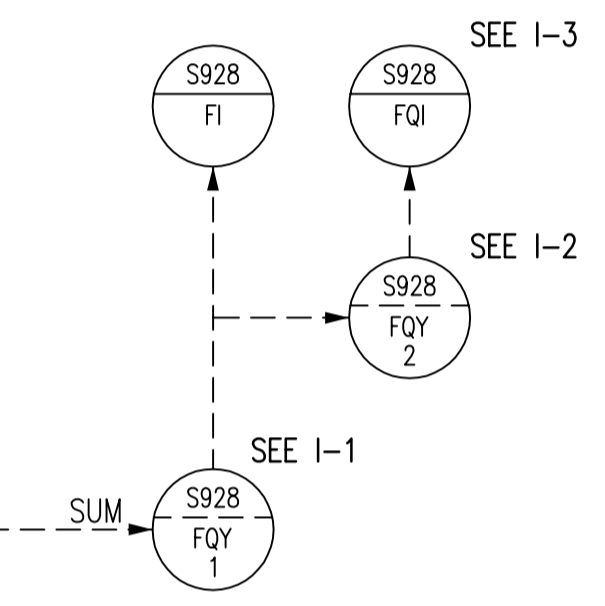
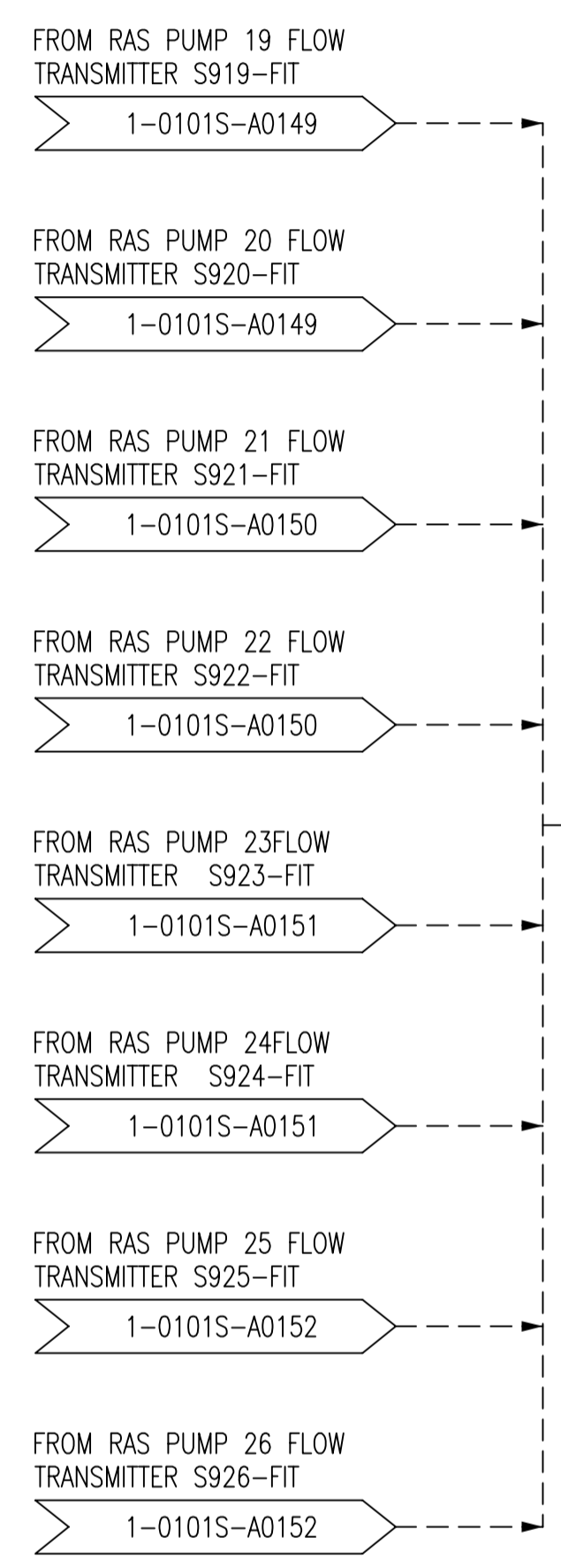
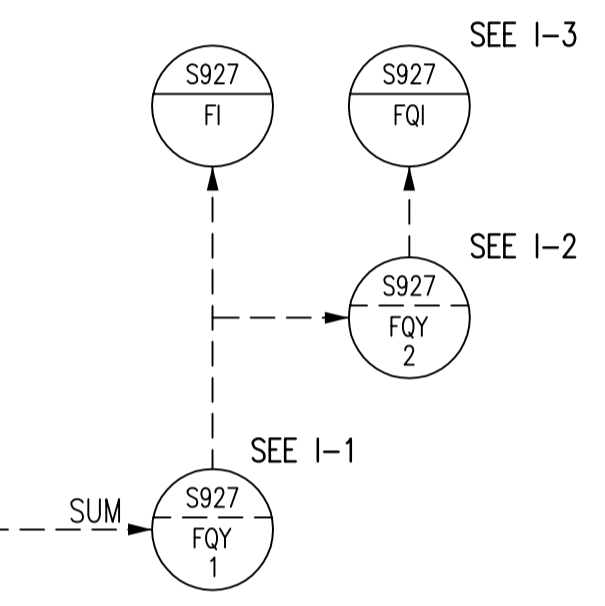
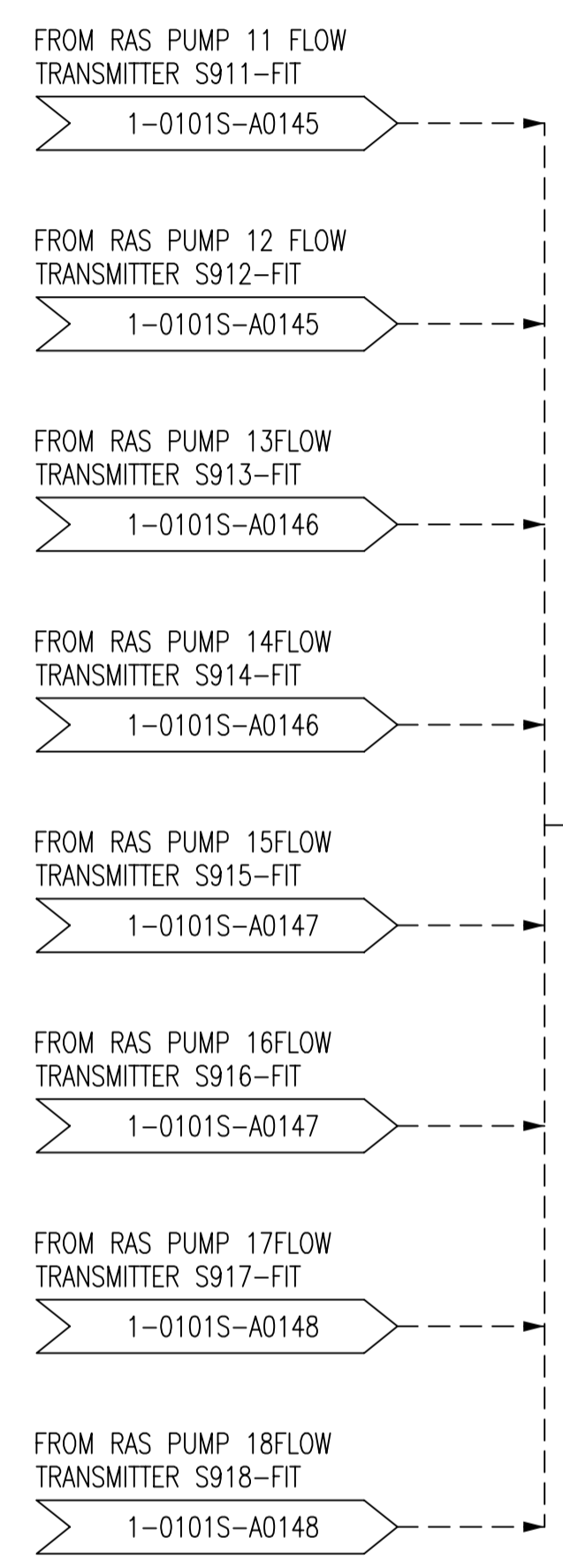
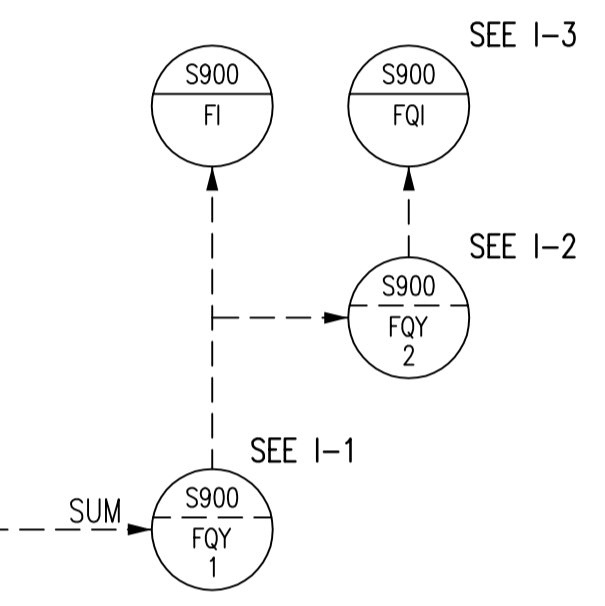
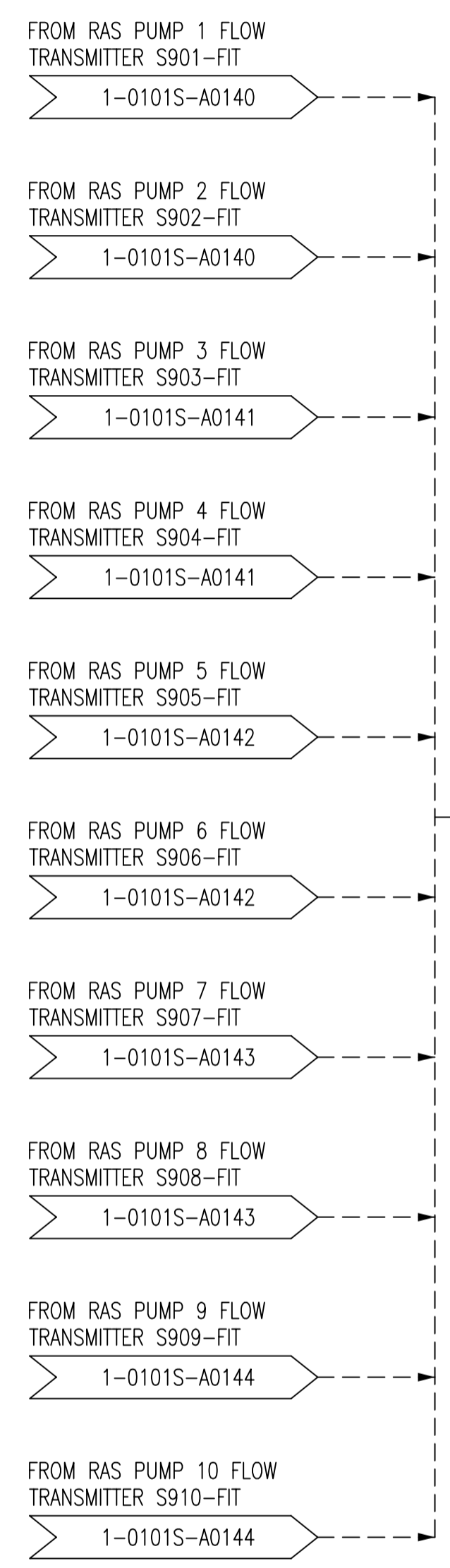
INCONSISTENCIES:
I-1 S923-YV AND S924-YV ARE CURRENTLY DESIGNATED AS S923-HY AND S924-HY ON SOME EXISTING DRAWINGS.

NOTES:
1. ALL INSTRUMENTS SHOWN IN AN AUXILIARY LOCATION ARE IN THE CORRESPONDING VFD PANEL, LOCATED IN THE ELECTRICAL ROOM.

1-0101A-A0001	PROCESS AND INSTRUMENT DIAGRAMS LEGEND AND DETAILS
DRAWING NUMBER	REFERENCE DRAWINGS

B.M. ELEV.	FIELD BOOK #:			ENGINEER'S SEAL
POSTED TO LBIS		DESIGNED BY	EXISTING	CHECKED BY
		CJR		CJR
		DRAWN BY	CJR	APPROVED BY
				EMR
03	RENUMBERED DRAWING, WAS 1-0101S-G-A0151	2010/08/04	SLC	
02	RENUMBERED FACILITY CODE	2005/10/06	CJR	
01	ISSUED FOR C.O.W. USE	2005/09/15	CJR	
00	RELEASED FOR CUSTOMER REVIEW.	2004/11/23	CJR	
NO.	REVISIONS	DATE	BY	DATE
				2004/11/15
		FILENAME: 1-0101S-A0151-001-03.dwg		
		THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT		
		NORTH END WATER POLLUTION CONTROL CENTRE SECONDARY CLARIFIERS PROCESS & INSTRUMENTATION DIAGRAM RETURN ACTIVATED SLUDGE PUMPS S923-RAP23 & S924-RAP24		
CITY DRAWING NUMBER		SHEET	REV.	SIZE
1-0101S-A0151		001	03	D

INCONSISTENCIES:
 I-1 FOR ALL LOOPS ON THIS DRAWING, FQY1 IS CURRENTLY LABELLED FY.
 I-2 FOR ALL LOOPS ON THIS DRAWING, FQY2 IS CURRENTLY LABELLED FQ.
 I-3 FOR ALL LOOPS ON THIS DRAWING, FQ1 IS CURRENTLY LABELLED FQ.



1-0101A-A0001	PROCESS AND INSTRUMENT DIAGRAMS LEGEND AND DETAILS
DRAWING NUMBER	REFERENCE DRAWINGS

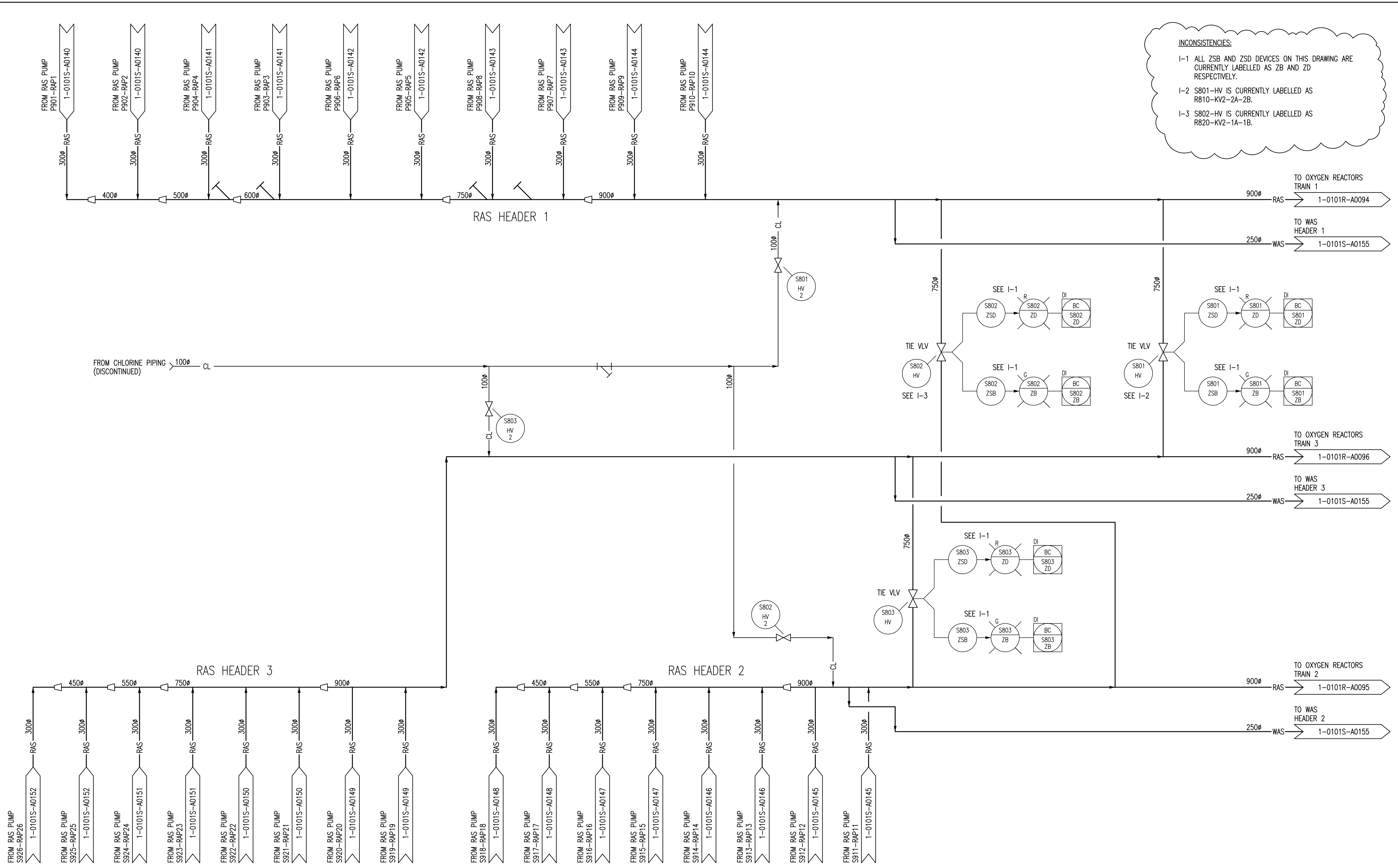
B.M. ELEV.	FIELD BOOK #:	SNC • LAVALIN Engineers & Constructors		SNC • LAVALIN 200-1600 Ness Avenue Winnipeg, Manitoba Canada R3Z 3W7	
POSTED TO LBIS		DESIGNED BY	EXISTING	CHECKED BY	CJR
		DRAWN BY	CJR	APPROVED BY	EMR
03	RENUMBERED DRAWING, WAS 1-0101S-G-A0153	2010/08/04	SLC	HOR. SCALE	NTS
02	RENUMBERED FACILITY CODE	2005/10/06	CJR	VERTICAL	RELEASED FOR CONSTRUCTION
01	ISSUED FOR C.O.W. USE	2005/09/15	CJR	DATE	2004/10/05
00	RELEASED FOR CUSTOMER REVIEW.	2004/11/23	CJR	DATE	
NO. REVISIONS	DATE	BY	FILENAME: 1-0101S-A0153-001-03.dwg		

ENGINEER'S SEAL

THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT

NORTH END WATER POLLUTION CONTROL CENTRE
 SECONDARY CLARIFIERS
 PROCESS & INSTRUMENTATION DIAGRAM
 RETURN ACTIVATED SLUDGE FLOW SUMMATION

CITY DRAWING NUMBER	SHEET	REV.	SIZE
1-0101S-A0153	001	03	D



INCONSISTENCIES:

- I-1 ALL ZSB AND ZSD DEVICES ON THIS DRAWING ARE CURRENTLY LABELLED AS ZB AND ZD RESPECTIVELY.
- I-2 S801-HV IS CURRENTLY LABELLED AS R810-KV2-2A-2B.
- I-3 S802-HV IS CURRENTLY LABELLED AS R820-KV2-1A-1B.

1-0101A-A0001	PROCESS AND INSTRUMENT DIAGRAMS LEGEND AND DETAILS
DRAWING NUMBER	REFERENCE DRAWINGS

B.M. ELEV.	FIELD BOOK #:	SNC • LAVALIN Engineers & Constructors		SNC • LAVALIN 200-1600 Ness Avenue Winnipeg, Manitoba Canada R3J 3W7	
POSTED TO LBIS		DESIGNED BY	EXISTING	CHECKED BY	CJR
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03	RENUMBERED DRAWING, WAS 1-0101S-G-A0154	2010/08/04	SLC	HOR. SCALE	NTS
02	RENUMBERED FACILITY CODE	2005/10/06	CJR	RELEASED FOR CONSTRUCTION	
01	ISSUED FOR C.O.W. USE	2005/09/15	CJR	DATE	2004/08/20
00	RELEASED FOR CUSTOMER REVIEW.	2004/11/23	CJR	DATE	
NO.	REVISIONS	DATE	BY	FILENAME:	1-0101S-A0154-001-03.dwg

ENGINEER'S SEAL

THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT

NORTH END WATER POLLUTION CONTROL CENTRE
 SECONDARY CLARIFIERS
 PROCESS & INSTRUMENTATION DIAGRAM
 RAS PUMP DISCHARGE PIPING

CITY DRAWING NUMBER: 1-0101S-A0154
 SHEET: 001
 REV: 03
 SIZE: D