

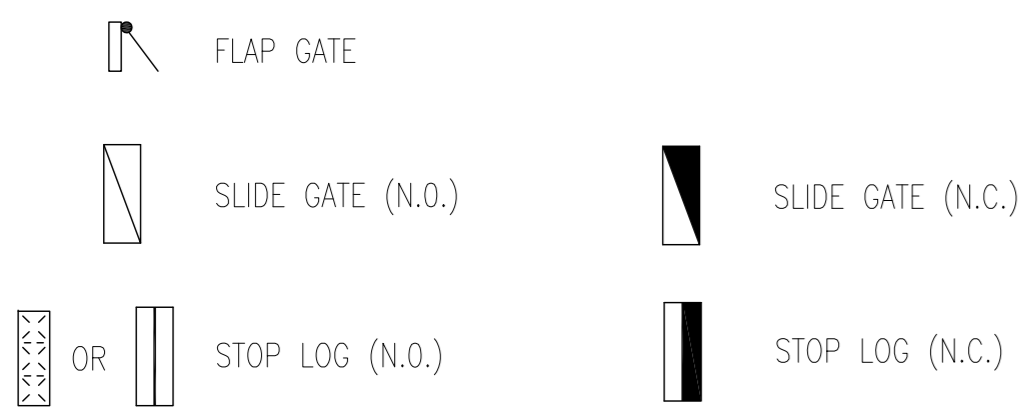
Appendix B – Boiler Drawings

Drawing No.	Drawing Name/Title
1-0101A-A-0001-001-R07	P&ID Legend and Details
1-0101A-A-0001-002-R07	P&ID Legend and Details
1-0101A-A-0001-003-R07	P&ID Legend and Details
1-0101B-A-0005-001-R02	Boilers P&ID Boiler 1
1-0101B-A-0006-001-R02	Boilers P&ID Boiler 2
1-0101B-A-0007-001-R03	Boilers P&ID Boiler 3
1-0101B-A-0008-001-R03	Boilers P&ID Boiler 4
1-0101B-A-0020-001-R01	Boilers P&ID Boiler Controller Digital I/O Wiring
1-0101B-A-0020-002-R01	Boilers P&ID Boiler Controller Analog I/O Wiring
1-0101B-E0005-001-R06 (NEP1922A)	Boiler Control Panel Component Layout
1-0101B-E0002-001-R08 (NEP-1922B)	Boiler Control Electrical Schematic CB700X-500 HP, 125# Hot Water
1-0101B-E0002-002-R07 (NEP-1922C)	Boiler Control Electrical Schematic CB700X-500HP, 125# Hot Water
NEP-1922D1	Boiler 1 Controller
1-0101B-E0004-001-R01	Boilers Single Line Diagram- Electrical Distribution
NEP-1314	Boiler Building Electrical Modifications
NEP-1353	Control Room Layout- Boiler Building and Existing Primary Clarifier Area
NEP-2270	Loop Wiring Diagram Temperature Monitoring Boiler #1
NEP-2271	Loop Wiring Diagram Temperature Monitoring Boiler #2
NEP-2272	Loop Wiring Diagram Temperature Monitoring Boiler #3
NEP-2273	Loop Wiring Diagram Temperature Monitoring Boiler #4
NEP-1934	Loop Wiring Diagram Digester Gas to Boilers B901-FIT

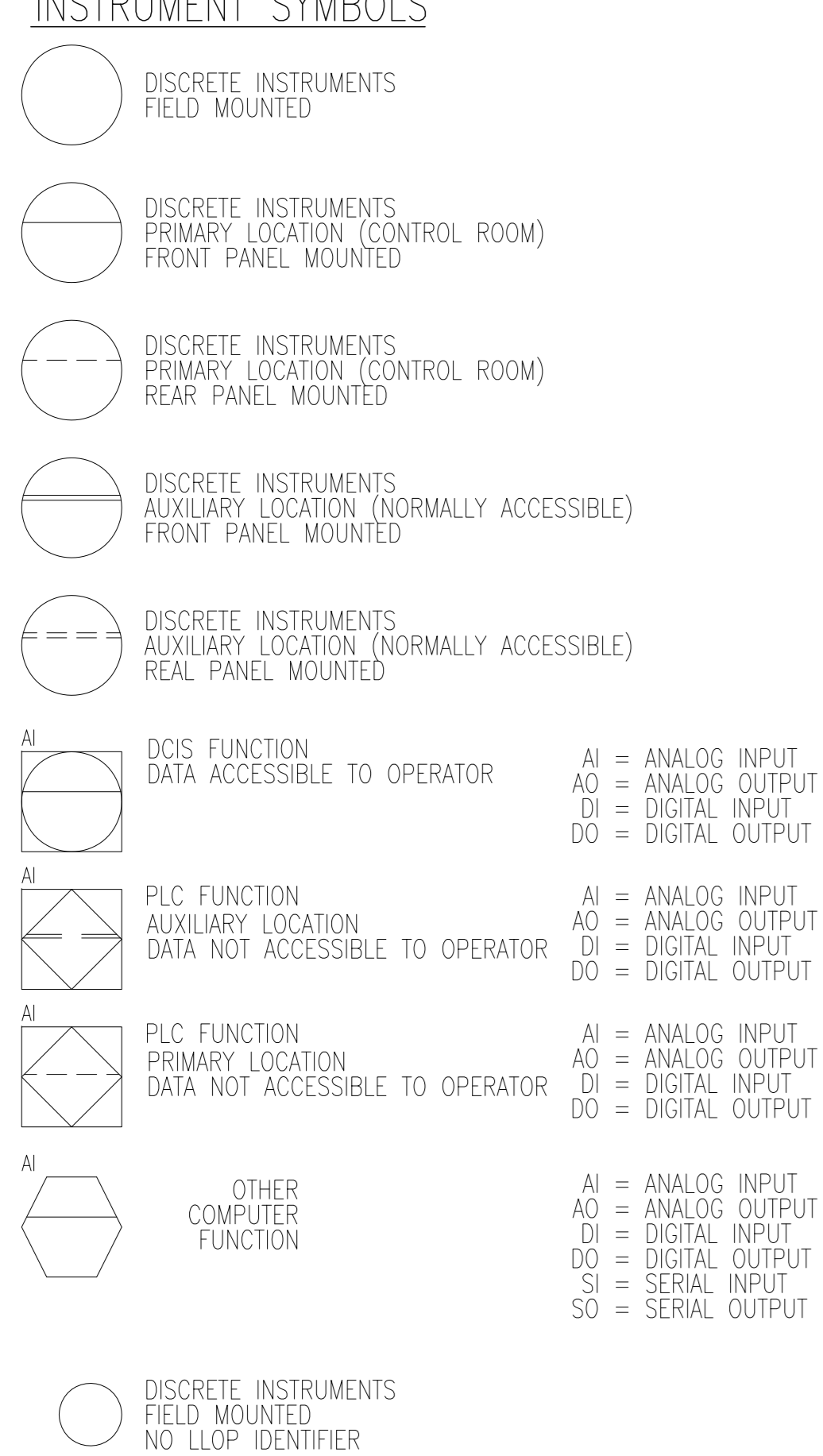
VALVE SYMBOLS



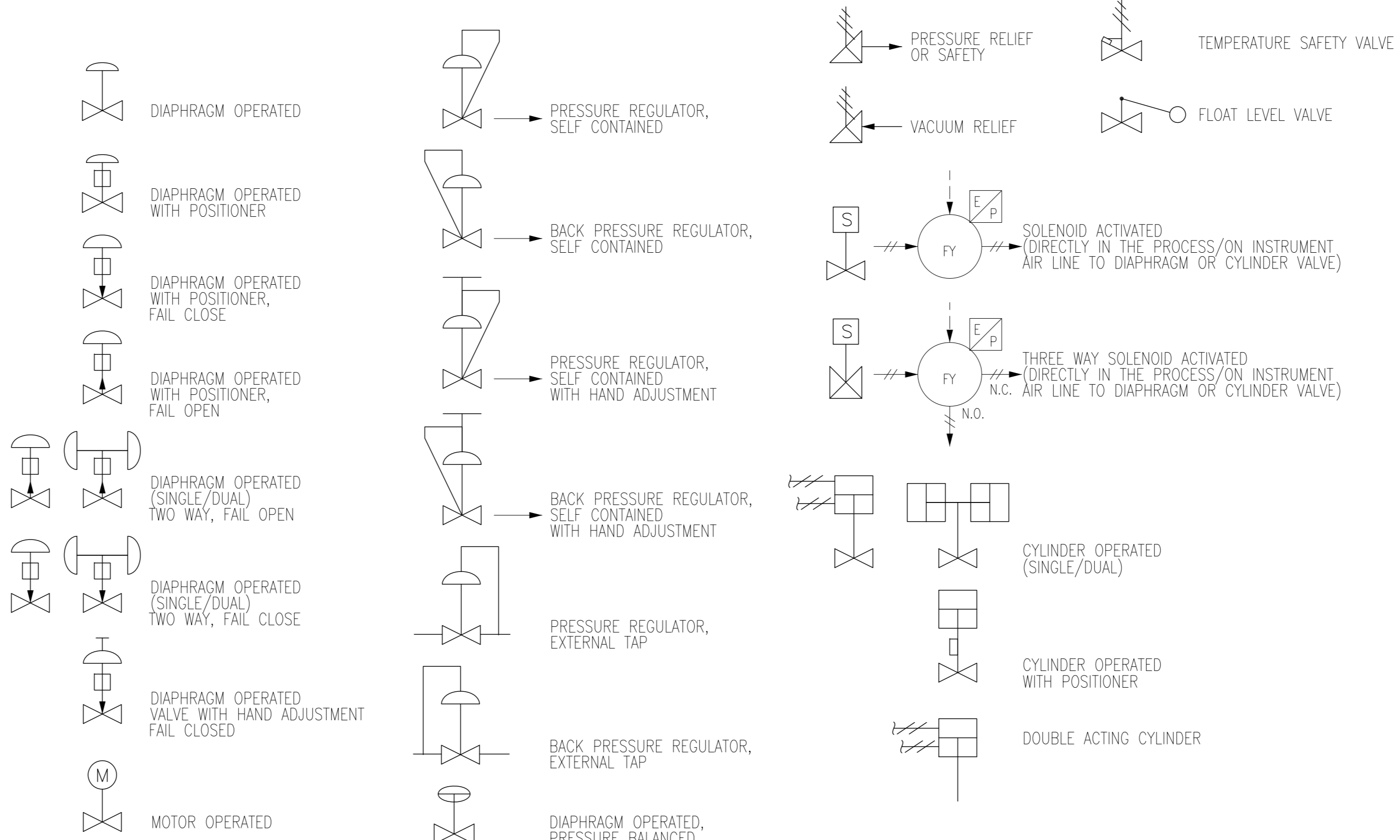
GATE SYMBOLS



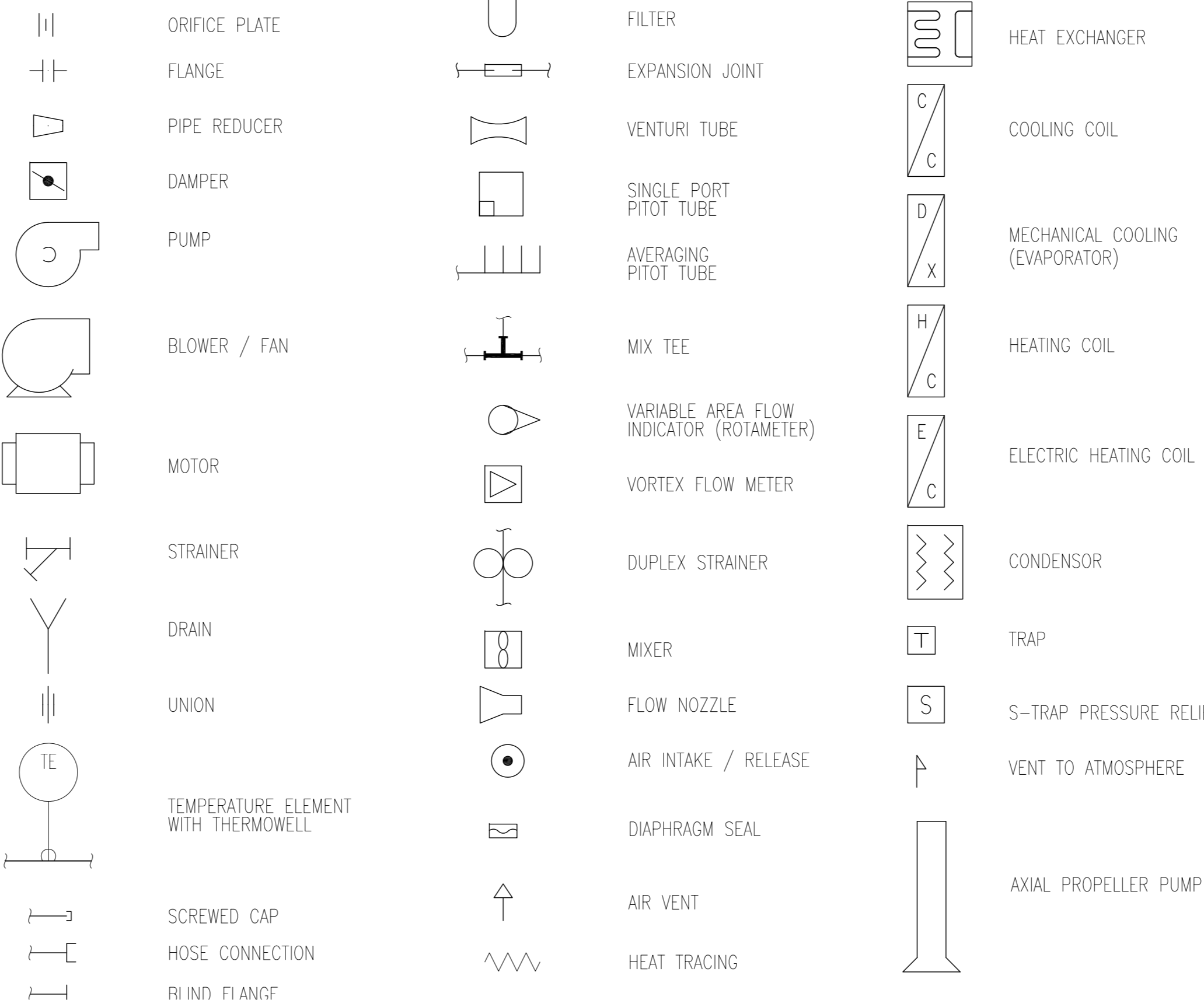
INSTRUMENT SYMBOLS



ACTUATOR SYMBOLS



ACCESSORY DEVICE SYMBOLS



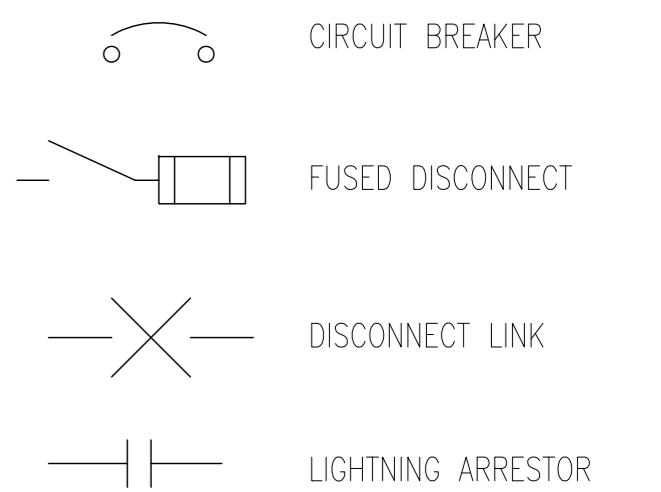
PID STANDARDS

- 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.

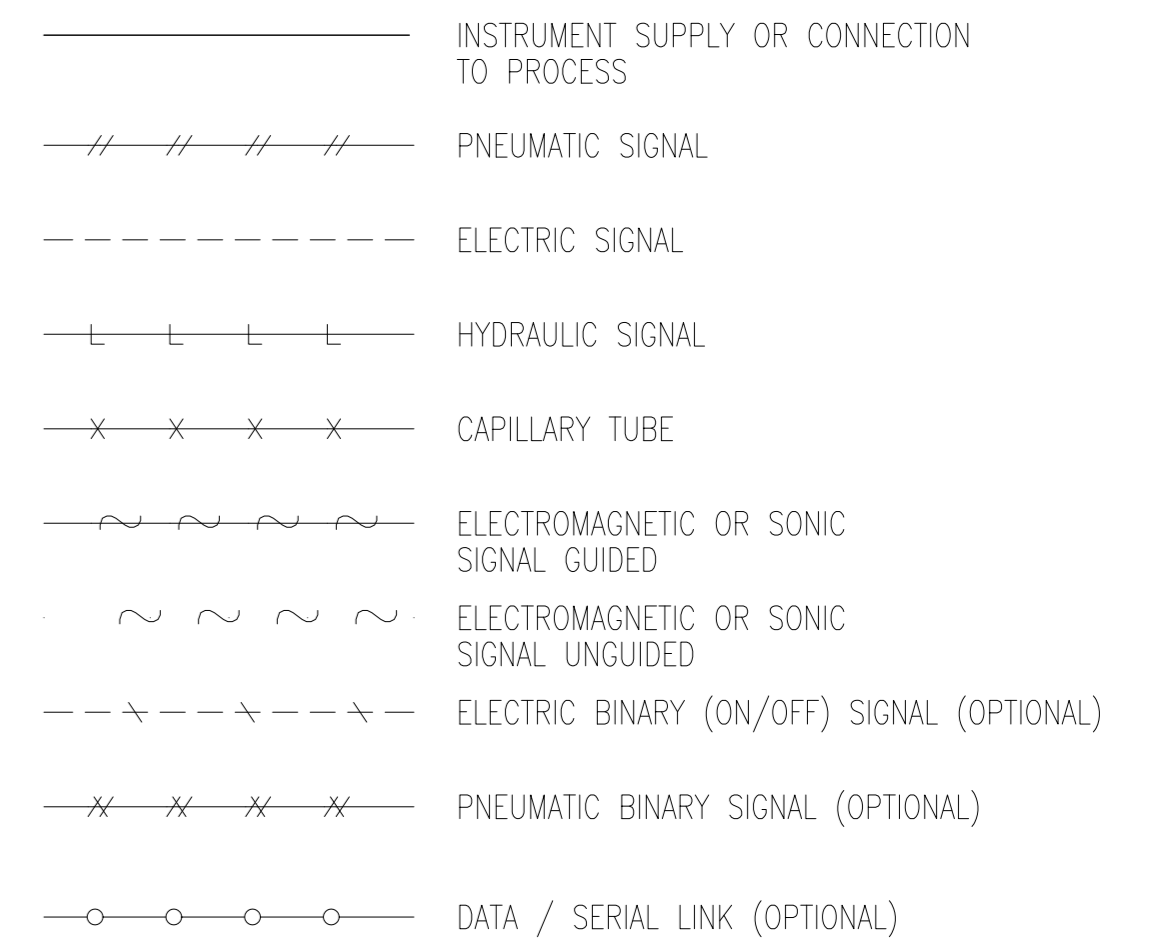
CONNECTING ARROWS



ELECTRICAL SYMBOLS



INSTRUMENT LINE SYMBOLS



B.M. ELEV.	FIELD BOOK #:	SNC-LAVALIN Engineers & Constructors		SNC-LAVALIN 200-1600 Nest Avenue Winnipeg, Manitoba Canada R3J 3W7		ENGINEER'S SEAL
POSTED TO LBIS		DESIGNED BY	EMR	CHECKED BY	CJR	THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT NORTH END WATER POLLUTION CONTROL CENTRE PROCESS AND INSTRUMENT DIAGRAMS LEGEND AND DETAILS
07 DWG WAS 1-0101A-A0001-001	2012/06/18	DRAWN BY	DS	APPROVED BY	EMR	
06 RENUMBERED FACILITY CODE	2005/10/06	DATE	2004/01/23	DATE	2004/01/23	CITY DRAWING NUMBER 1-0101A-A0001
05 ISSUED FOR C.O.W. USE	2005/09/15	FILENAME:	1-0101A-A0001-001-060.dwg	SHEET	001	
04 RELEASED FOR CUSTOMER REVIEW	2005/08/22	REV.	07	SIZE	D	
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	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	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	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.

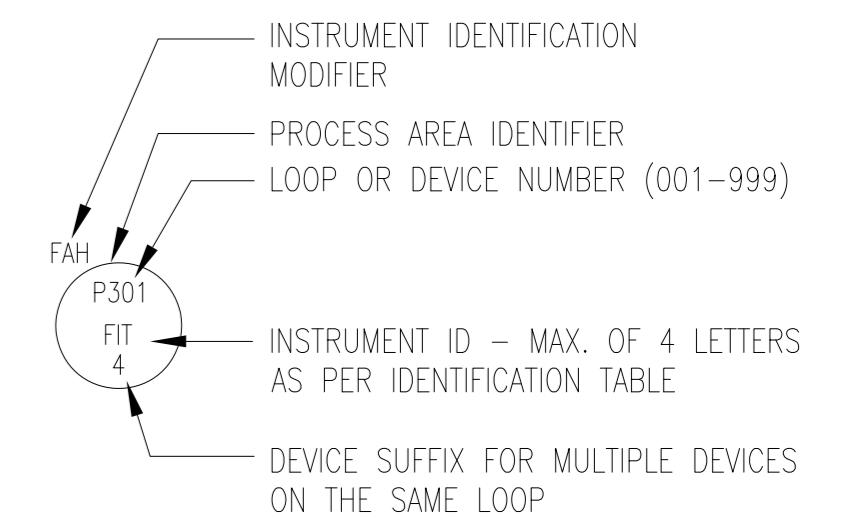
INSTRUMENT FIELD DEVICE IDENTIFIERS			
IDENTIFIER	DEFINITION	IDENTIFIER	DEFINITION
AAH	ANALYSIS ALARM - HIGH	PSHH	PRESSURE SWITCH HIGH (2ND STAGE)
AAHH	ANALYSIS ALARM - HIGH-HIGH	PSL	PRESSURE SWITCH LOW
AE	ANALYSIS ELEMENT	PSV	PRESSURE SAFETY VALVE (RELIEF)
AIT	ANALYSIS INDICATING TRANSMITTER (ANALYTIC 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:

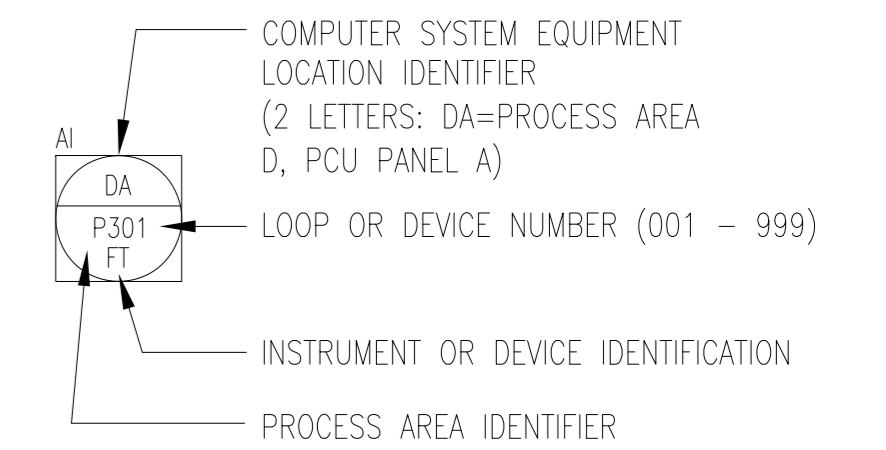
- THE LAST IDENTIFIER LETTER IS IN SOME CASES OPTIONAL (EG. FSL)
- THIS TABLE IS DERIVED FROM THE INSTRUMENT & DEVICE IDENTIFICATION TABLE, AND IS NOT EXHAUSTIVE.

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

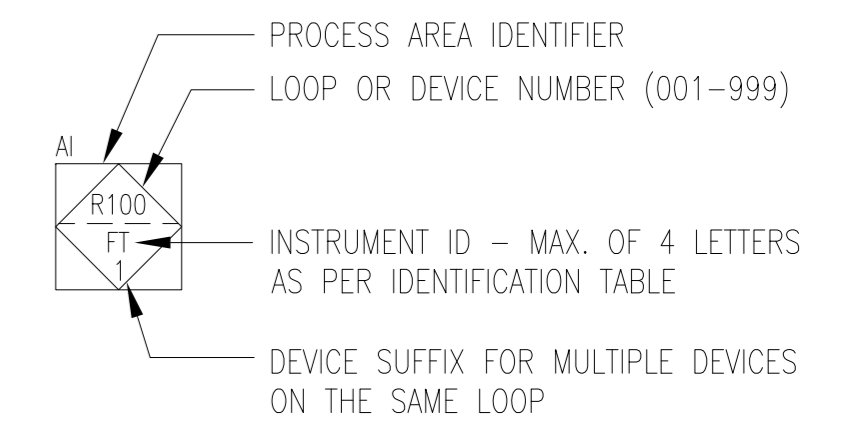
INSTRUMENT FIELD DEVICE NUMBERING



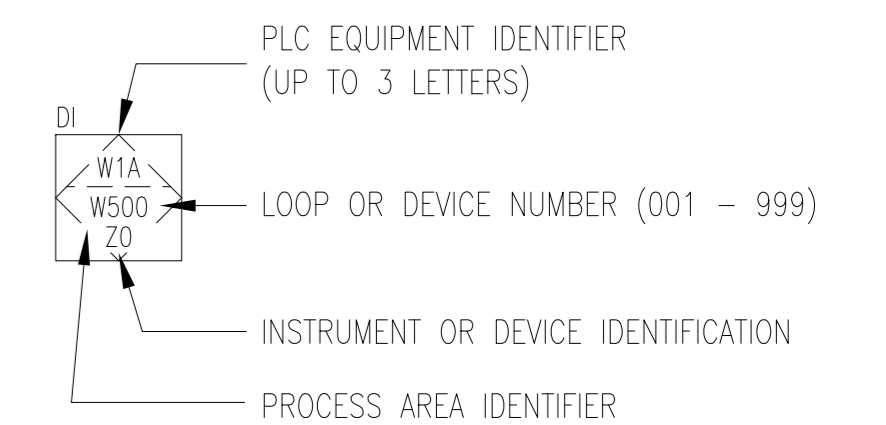
CONTROL SYSTEM (DCS) POINT TAG NUMBERING



PLC POINT TAG NUMBERING



OR



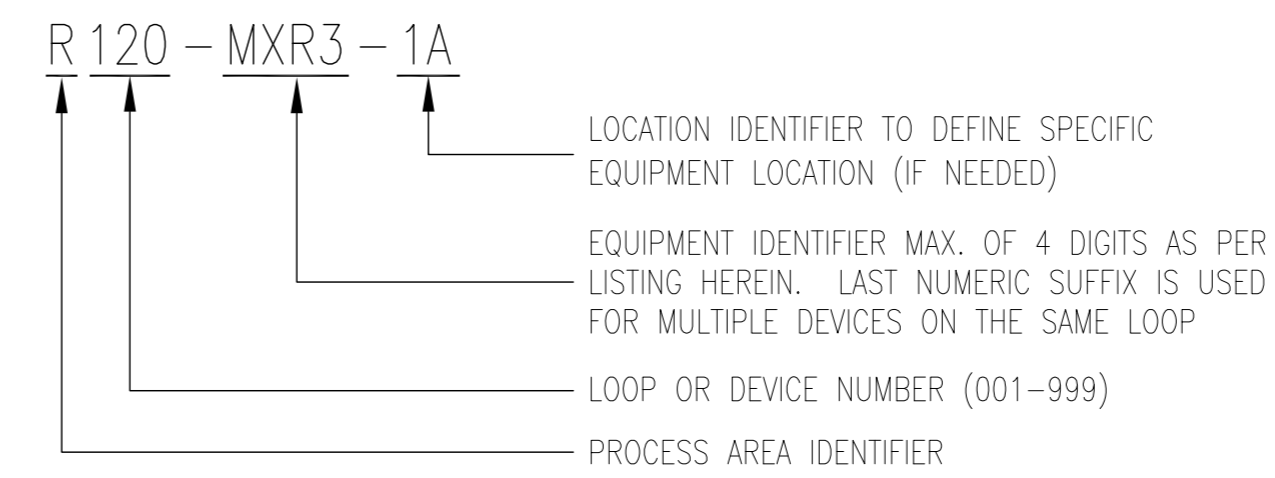
B.M. ELEV.	FILE BOOK #:	SNC-LAVALIN Engineers & Constructors 200-1600 Ness Avenue Winnipeg, Manitoba Canada R3J 3W7		ENGINEER'S SEAL
POSTED TO LBIS		DESIGNED BY	EMR	CHECKED BY
07	DWG NUMBER WAS 1-0101A-D-A001-002	2012/06/18	SW	CJR
06	RENUMBERED FACILITY CODE	2005/10/06	CJR	CJR
05	ISSUED FOR C.O.W. USE	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	
00	ISSUED FOR REVIEW	2004/06/01	CJR	
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	1-0101A-A001	SHEET
		REV.	002	SIZE
		REV.	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

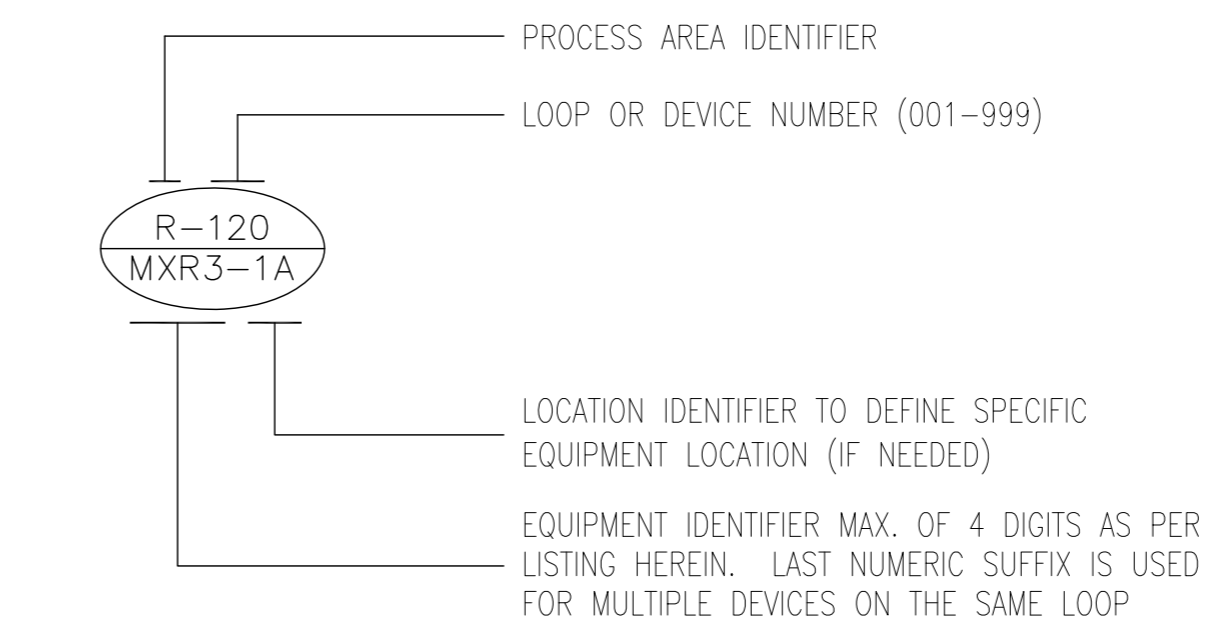
EQUIPMENT IDENTIFIERS	
IDENTIFIER	DEFINITION
AB	AIR BLOWER
AC	AIR COMPRESSOR
ACU	AIR CONDITIONING UNIT
AD	AIR DRYER
AF	AERATION FAN (EXISTING OR NEW)
AHU	AIR HANDLING UNIT
BD	BACK DRIVE
BF	BOILER FAN (EXISTING OR NEW)
BP	BOILER PUMP (EXISTING OR NEW)
CA	CAKE AGITATOR
CAP	CAKE PUMP
CC	COOLING COIL
CE	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.



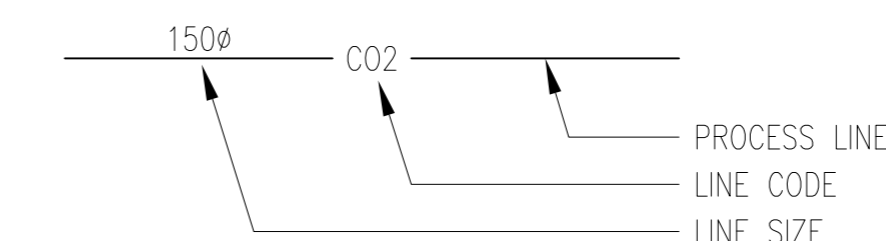
OR



IMPERIAL PIPE SIZE CHART (METRIC EQUIVALENT)

IN	MM	IN	MM
1/8	= 3	1/4	= 350
1/4	= 6	3/8	= 400
3/8	= 10	1/2	= 450
1/2	= 12	3/4	= 500
3/4	= 20	1	= 550
1	= 25	1 1/4	= 600
1 1/4	= 32	1 1/2	= 650
1 1/2	= 38	2	= 700
2	= 50	2 1/2	= 750
2 1/2	= 65	3	= 800
3	= 75	3 1/2	= 850
3 1/2	= 90	4	= 900
4	= 100	4 1/2	= 950
4 1/2	= 112	5	= 1000
5	= 125	6	= 1050
6	= 150	7	= 1100
7	= 175	8	= 1150
8	= 200	9	= 1200
9	= 225	10	= 1250
10	= 250	11	= 1300
11	= 275	12	= 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
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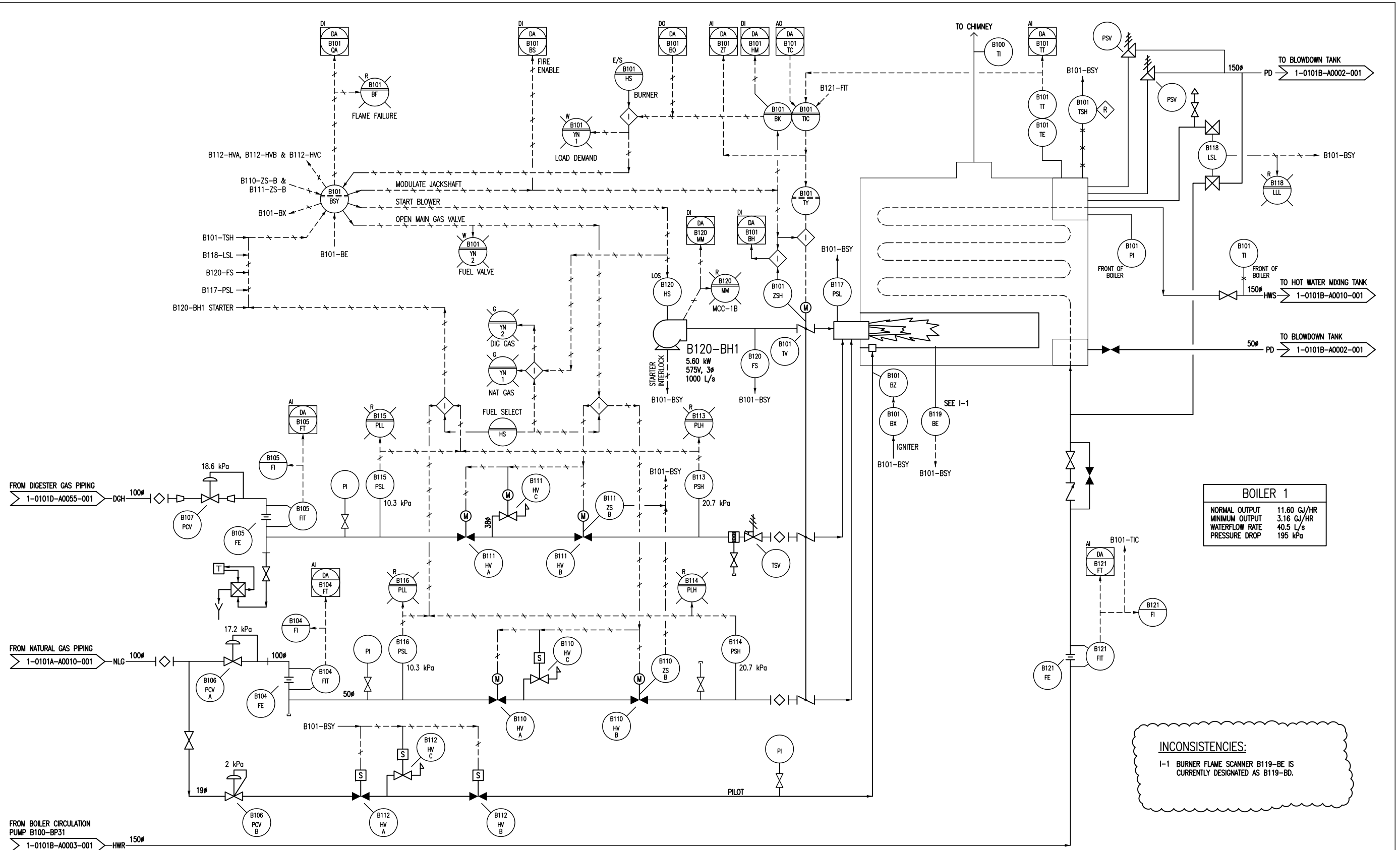
B.M. ELEV.		FIELD BOOK #:	
07	REVISED BY EARTHTECH	2005/11/10	LAE
06	RENUMBERED FACILITY CODE	2005/10/06	CJR
05	ISSUED FOR C.O.W. USE	2005/09/15	CJR
04	RELEASED FOR CUSTOMER REVIEW	2005/08/22	CJR
03	REVISED BY EARTHTECH	2005/01/21	DL
02	ISSUED FOR REVIEW	2004/11/25	CJR
01	ISSUED FOR REVIEW	2004/10/14	CJR
00	ISSUED FOR REVIEW	2004/06/01	CJR

				ENGINEER'S SEAL	
DESIGNED BY: EMR CHECKED BY: CJR		DRAWN BY: DS APPROVED BY: EMR		CITY DRAWING NUMBER: 1-0101A-A0001	
HOR. SCALE: NTS VERTICAL:		RELEASED FOR CONSTRUCTION:		SHEET REV. SIZE: 003 08	
DATE: 2004/01/23		DATE:		FILENAME: 1-0101A-A0001-003-08.dwg	

WATER AND WASTE DEPARTMENT

NORTH END WATER POLLUTION CONTROL CENTRE

PROCESS AND INSTRUMENT DIAGRAMS
 LEGEND AND DETAILS



INCONSISTENCIES:
 I-1 BURNER FLAME SCANNER B119-BE IS CURRENTLY DESIGNATED AS B119-BD.

NOTES:
 1. ALL INSTRUMENTS SHOWN IN AN AUXILIARY LOCATION ARE IN THE CORRESPONDING LOCAL BOILER OPERATING PANEL.

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

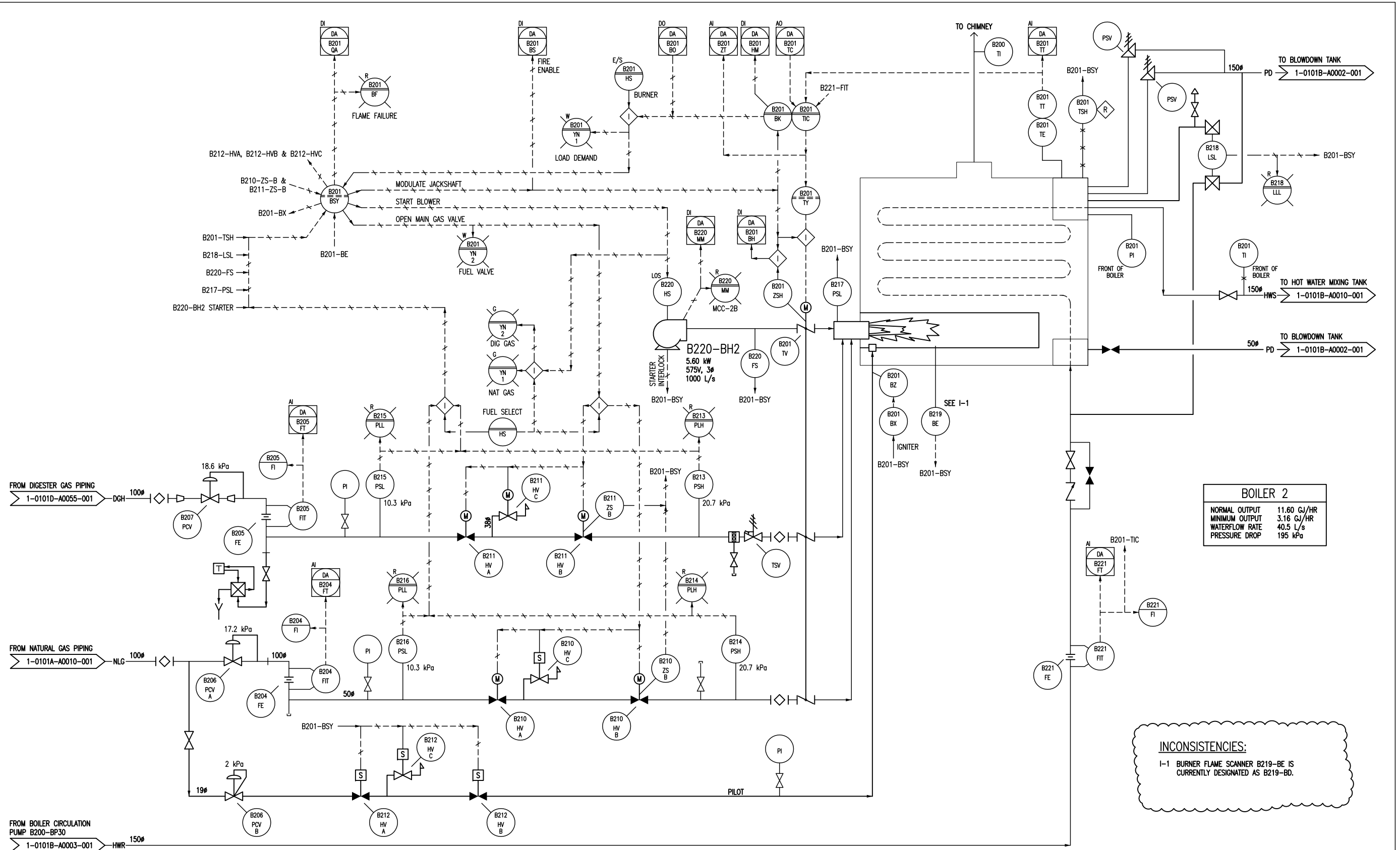
B.M. ELEV.		FIELD BOOK #:		SNC-LAVALIN Engineers & Constructors		SNC-LAVALIN 200-1600 Main Avenue Winnipeg, Manitoba Canada R3J 3H7		ENGINEER'S SEAL	
POSTED TO LBS				DESIGNED BY	EXISTING	CHECKED BY	CJR		
				DRAWN BY	CJR	APPROVED BY	EMR		
03	ORIG # WAS 1-0101B-G-A0271-001-02D.dwg	2010/12/06	SPH	HOR. 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	2005/02/09	DATE			
00	RELEASED FOR CUSTOMER REVIEW	2005/08/22	CJR	FILENAME:	1-0101B-A005-001.dwg				
NO. REVISIONS		DATE	BY						

THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT

Winnipeg

NORTH END WATER POLLUTION CONTROL CENTRE
 BOILERS
 PROCESS & INSTRUMENTATION DIAGRAM
 BOILER 1

CITY DRAWING NUMBER: 1-0101B-A0005
 SHEET: 001
 REV: 02



BOILER 2
 NORMAL OUTPUT 11.60 GJ/HR
 MINIMUM OUTPUT 3.16 GJ/HR
 WATERFLOW RATE 40.5 L/s
 PRESSURE DROP 195 kPa

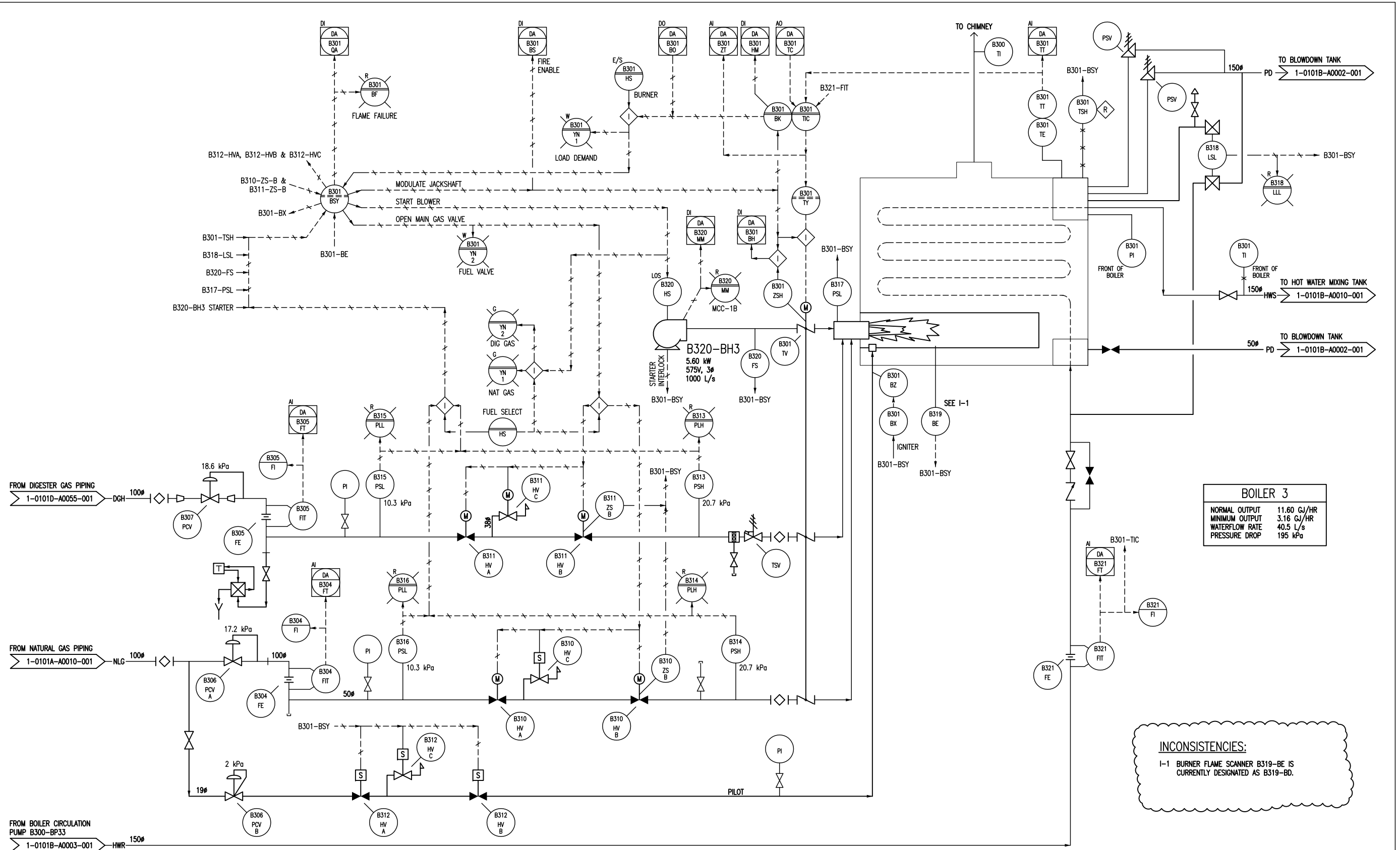
INCONSISTENCIES:
 I-1 BURNER FLAME SCANNER B219-BE IS CURRENTLY DESIGNATED AS B219-BD.

NOTES:
 1. ALL INSTRUMENTS SHOWN IN AN AUXILIARY LOCATION ARE IN THE CORRESPONDING LOCAL BOILER OPERATING PANEL.

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 Main Avenue Winnipeg, Manitoba Canada R3J 3K7	
POSTED TO LBS		DESIGNED BY	EXISTING	CHECKED BY	CJR
		DRAWN BY	CJR	APPROVED BY	EMR
03	ORIG # WAS 1-0101B-G-A0272-001-02D.dwg	2010/12/08	SPH	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	2005/08/22	CJR	DATE	2005/08/18
NO. REVISIONS	DATE	BY	FILENAME: 1-0101B-A0006-001.dwg		

ENGINEER'S SEAL		THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT	
NORTH END WATER POLLUTION CONTROL CENTRE BOILERS PROCESS & INSTRUMENTATION DIAGRAM BOILER 2			
CITY DRAWING NUMBER	SHEET	REV.	SIZE
1-0101B-A0006	001	02	



NOTES:

1. ALL INSTRUMENTS SHOWN IN AN AUXILIARY LOCATION ARE IN THE CORRESPONDING LOCAL BOILER OPERATING PANEL.

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

B.M. ELEV.	FIELD BOOK #:
POSTED TO LBS	
DESIGNED BY	EXISTING
CHECKED BY	CJR
DRAWN BY	CJR
APPROVED BY	EMR
ORIG #	WAS 1-0101B-G-A0273-001-02D.dwg
DATE	2010/12/06
SCALE	SPH
RENUMBERED FACILITY CODE	2005/10/06
DATE	CJR
ISSUED FOR C.O.W. USE	2005/09/15
DATE	CJR
RELEASED FOR CUSTOMER REVIEW	2005/08/22
DATE	CJR
NO. REVISIONS	DATE BY
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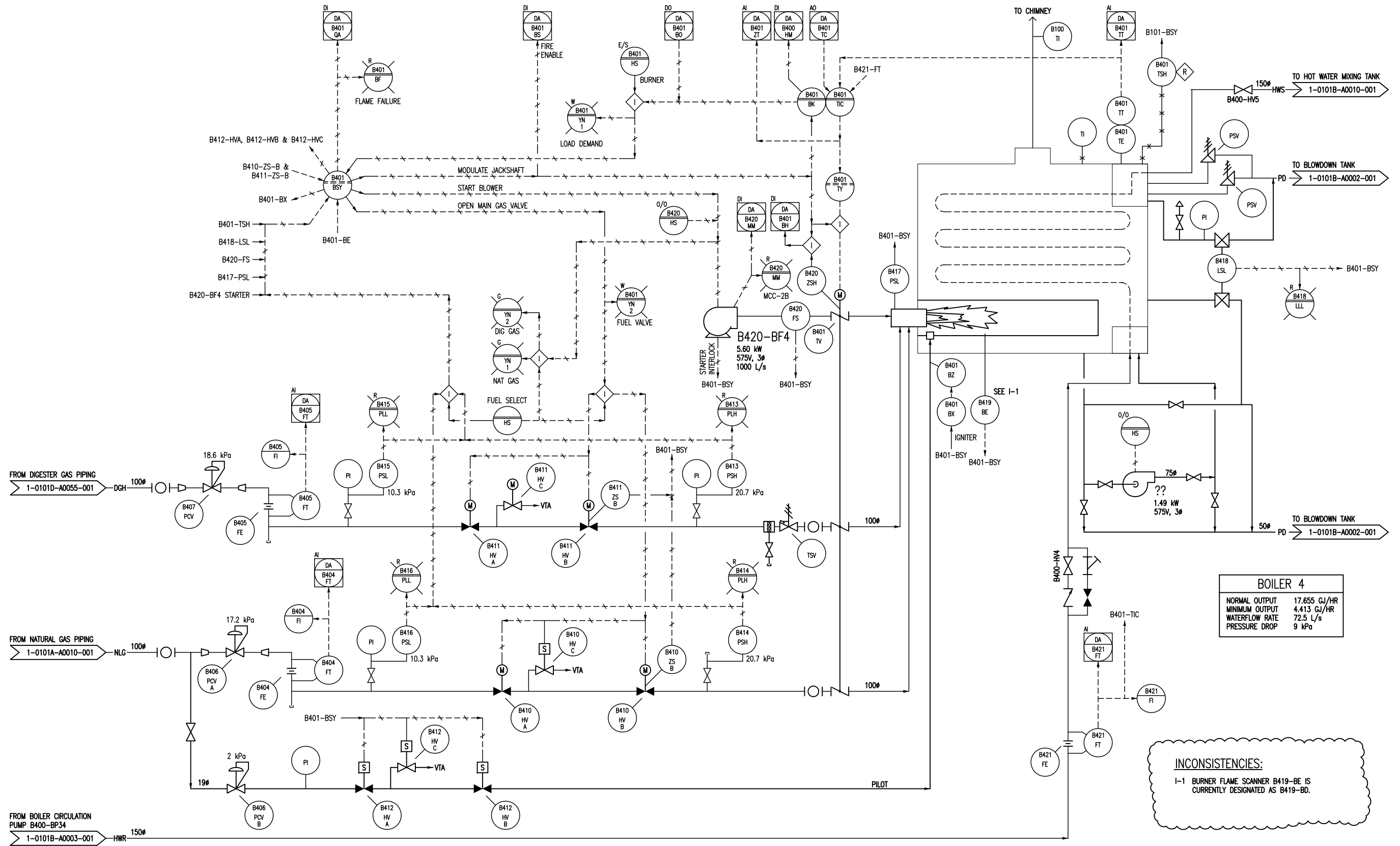
SNC-LAVALIN Engineers & Constructors		SNC-LAVALIN 200-1600 Main Avenue Winnipeg, Manitoba Canada R3J 3H7	
DESIGNED BY	EXISTING	CHECKED BY	CJR
DRAWN BY	CJR	APPROVED BY	EMR
HOR. SCALE	NTS	RELEASED FOR CONSTRUCTION	
VERTICAL		DATE	

ENGINEER'S SEAL

THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

NORTH END WATER POLLUTION CONTROL CENTRE
BOILERS
PROCESS & INSTRUMENTATION DIAGRAM
BOILER 3

CITY DRAWING NUMBER	SHEET	REV.	SIZE
1-0101B-A0007	001	03	



INCONSISTENCIES:
 I-1 BURNER FLAME SCANNER B419-BE IS CURRENTLY DESIGNATED AS B419-BD.

- NOTES:**
- ALL INSTRUMENTS SHOWN IN AN AUXILIARY LOCATION ARE IN THE CORRESPONDING LOCAL BOILER OPERATING PANEL.

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 Main Avenue Winnipeg, Manitoba Canada R3J 3H7	
POSTED TO LBS		DESIGNED BY	EXISTING	CHECKED BY	CJR
		DRAWN BY	CJR	APPROVED BY	EMR
03	ORIG # WAS 1-0101B-G-A0274-001-02D.dwg	2010/12/06	SPH	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	2005/02/09
00	RELEASED FOR CUSTOMER REVIEW	2005/08/22	CJR	DATE	
NO. REVISIONS	DATE	BY	FILENAME: 1-0101B-A0008-001.dwg		

ENGINEER'S SEAL		THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT	
NORTH END WATER POLLUTION CONTROL CENTRE BOILERS PROCESS & INSTRUMENTATION DIAGRAM BOILER 4			
CITY DRAWING NUMBER	SHEET	REV.	SIZE
1-0101B-A0008	001	03	

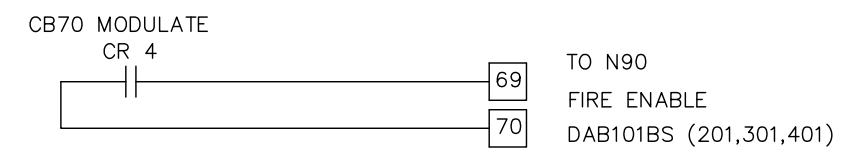
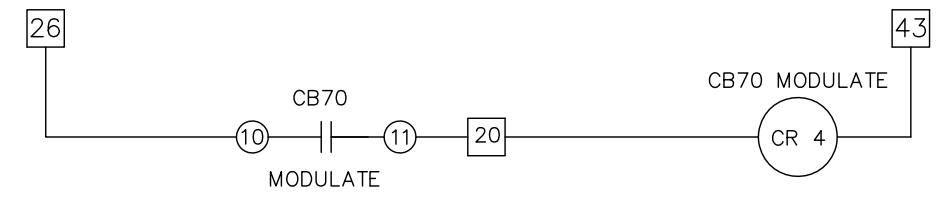
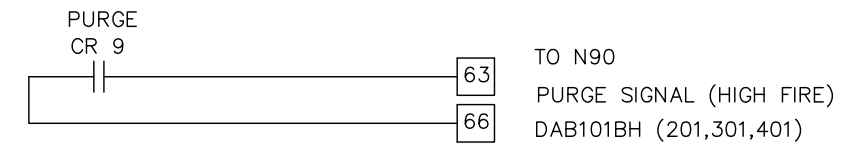
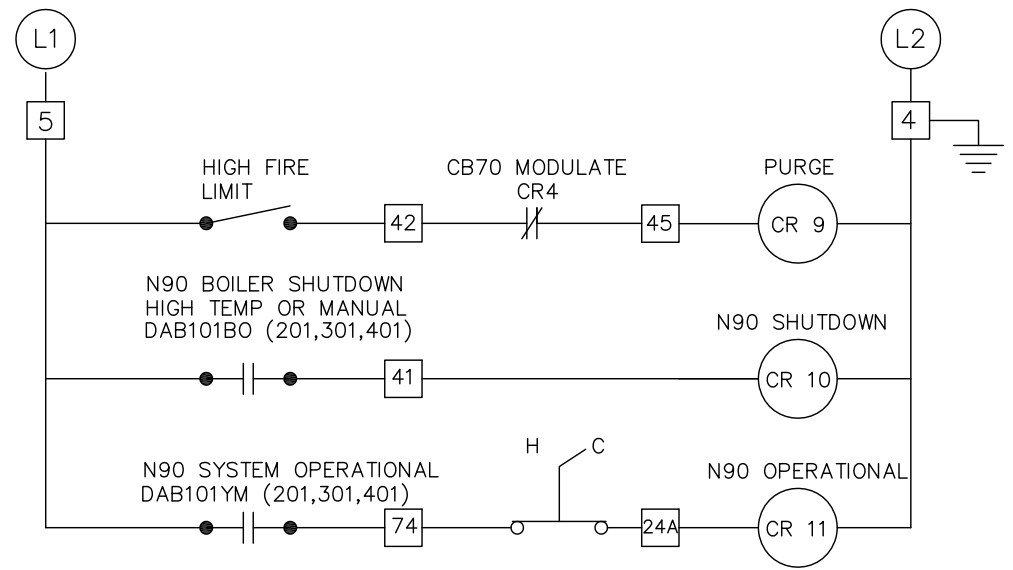
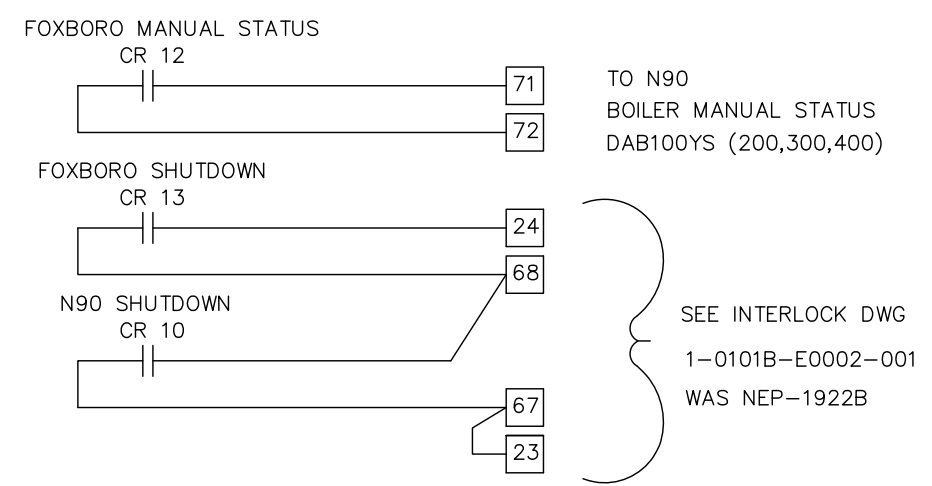
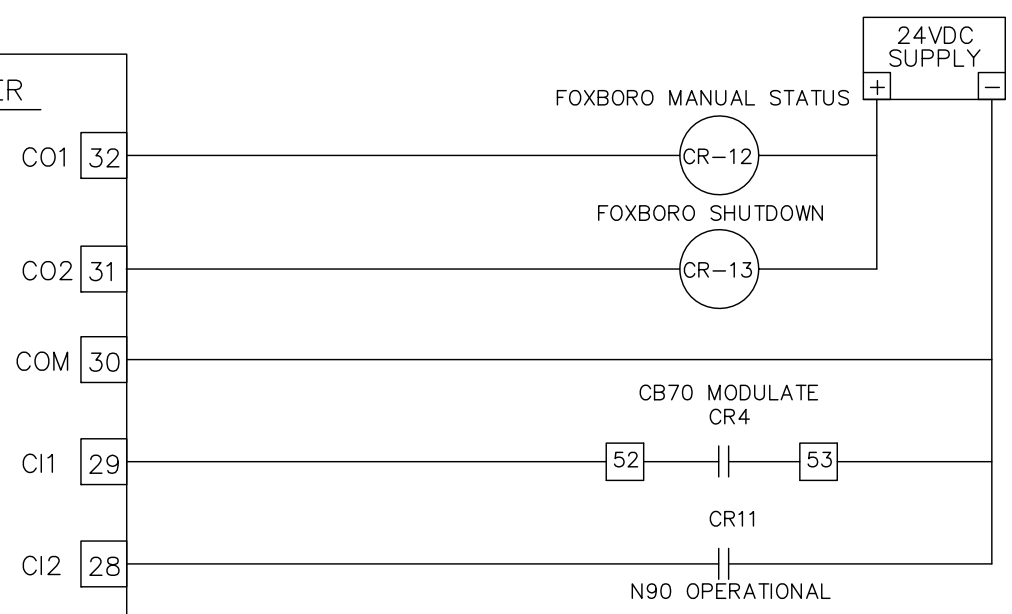
FOXBORO 762CNA CONTROLLER

CONTACT OUTPUT 1 ENERGIZES CR-12 INDICATING TO N90 THAT BOILER IS IN MANUAL

CONTACT OUTPUT 2 ENERGIZES CR-13 TO ENABLE BOILER TO RUN

CONTACT INPUT 1 MAKES WHEN CB70 COMPLETES IT'S DIAGNOSTICS

CONTACT INPUT 2 MAKES WHEN THE N90 IS OPERATIONAL



NO.	REVISIONS	DATE	BY
1	WAS 1-0101B-A0286-001	10.12.10	SW
0	RECORD DRAWING	08.01.17	MLK

DESIGNED BY	—	CHECKED BY	
DRAWN BY	MLK	APPROVED BY	
HOR. SCALE	N.T.S.	RELEASED FOR CONSTRUCTION	
VERTICAL		DATE	2008 01 17

ENGINEER'S SEAL

PLOT DATE: 2012 03 05

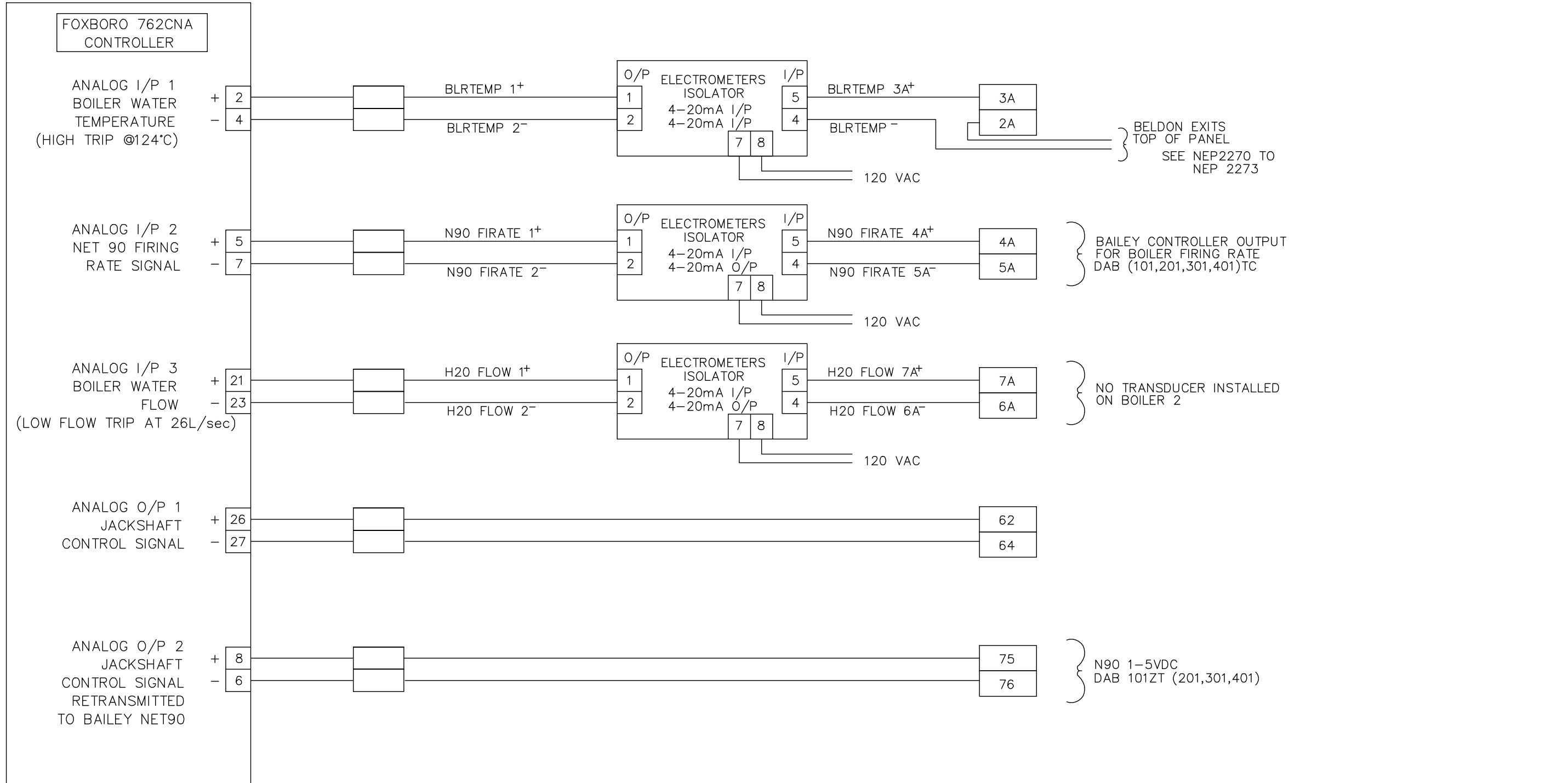
THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

NORTH END WATER POLLUTION CONTROL CENTRE
BOILER CONTROLLER
DIGITAL I/O WIRING

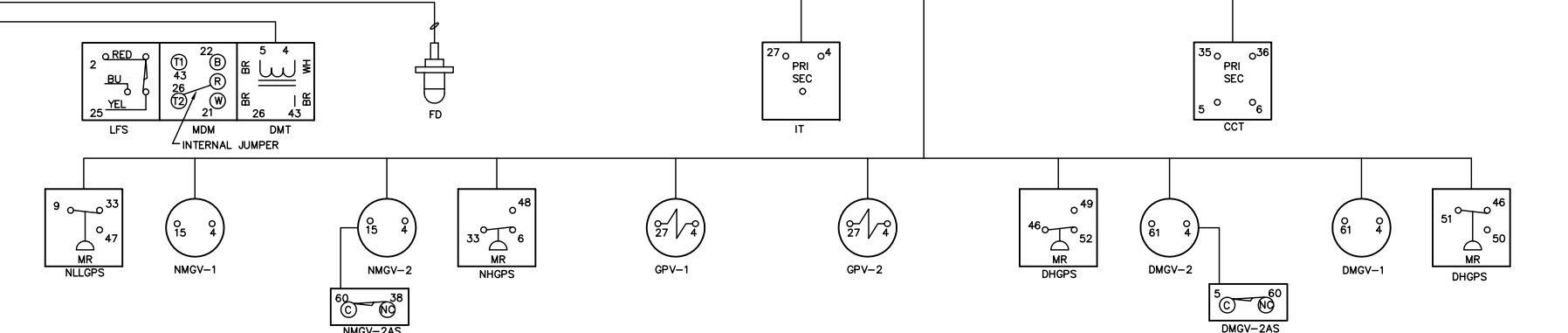
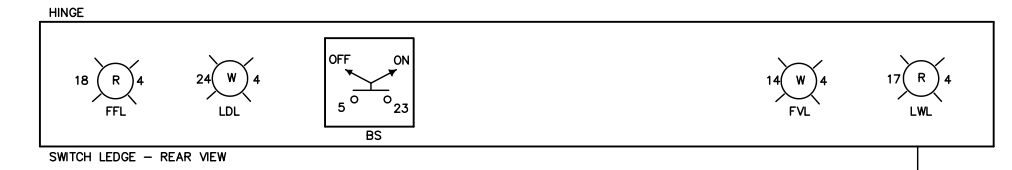
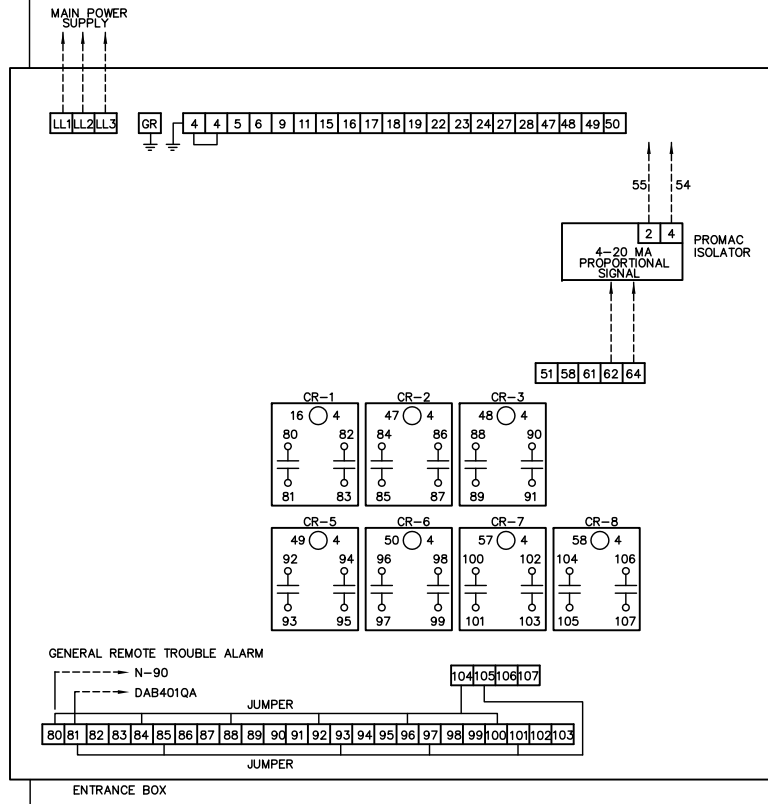
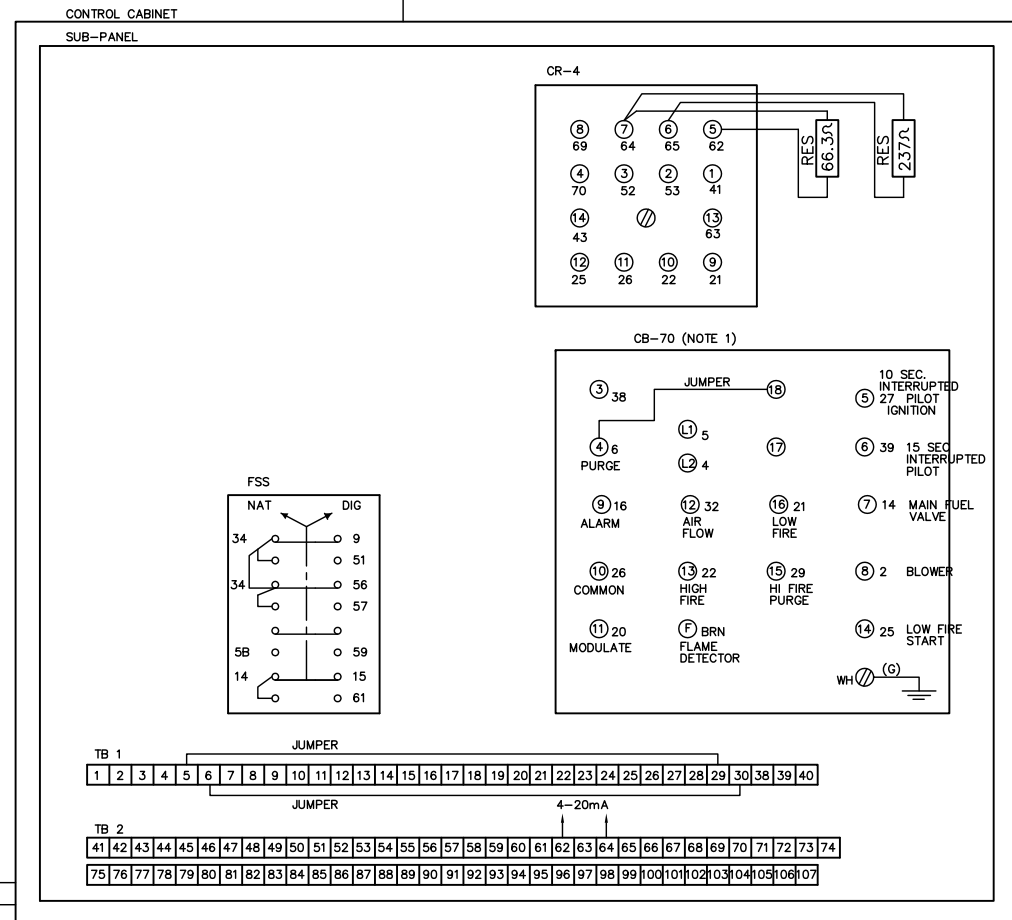
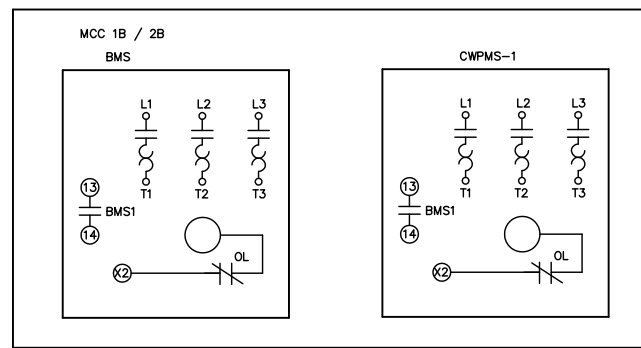
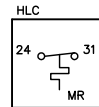
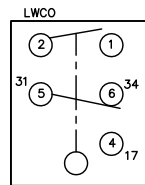
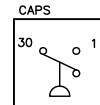
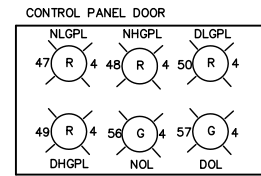
REV 01

CITY DRAWING NUMBER **1-0101B-A0020-001**

← FOXBORO CONTROLLER PANEL ✕ BOILER CONTROL PANEL →



B.M. ELEV. <table border="1" style="width: 100%; height: 100%;"> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table>																	DESIGNED BY: — DRAWN BY: MLK HOR. SCALE: N.T.S. VERTICAL: — DATE: 2008 01 17	CHECKED BY: — APPROVED BY: — RELEASED FOR CONSTRUCTION: — DATE: —	ENGINEER'S SEAL PLOT DATE: 2011 01 12	THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT NORTH END WATER POLLUTION CONTROL CENTRE BOILER CONTROLLER ANALOG I/O WIRING	REV 01
CITY DRAWING NUMBER		1-0101B-A0020-002																			
NO. REVISIONS		DATE BY																			
01 DWG WAS 1-0101B-A0286-002		10.12.10 SW																			
0 RECORD DRAWING		08.01.17 MLK																			



NOTES:
 NOTE 1 - FOR FURTHER INFORMATION REGARDING PROGRAM RELAY SEE FORM C18-6363
 NOTE 2 - REFER TO R-G DRAWING WDB509-153-A PROVOX CABINET TO BE MOUNTED ON SIDE BOILER CONT., PANEL

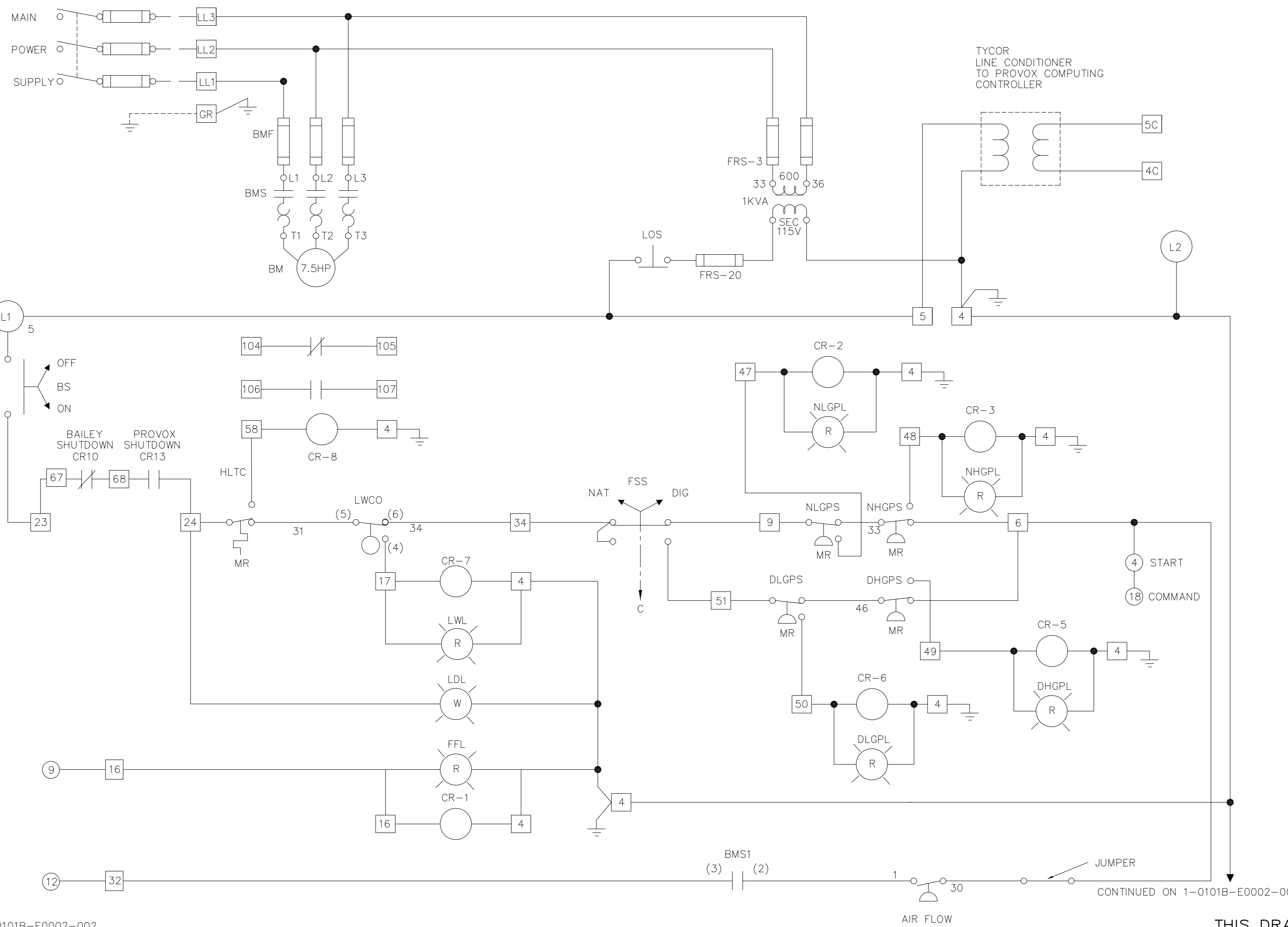
ELECTRICAL NOMENCLATURE
 DOL - DIGESTOR OPERATION LIGHT
 NOL - NATURAL OPERATION LIGHT
 'D' - PREFIX INDICATES DIGESTOR GAS EQUIPMENT
 'N' PREFIX INDICATES NATURAL GAS EQUIPMENT
 LOS - LOCK-OFF-STOP
 DGNAL - DIGESTOR GAS NOT AVAILABLE LIGHT
 BM - BLOWER MOTOR
 BMF - BLOWER MOTOR FUSES
 BMS - BLOWER MOTOR STARTER
 BMSI - BLOWER MOTOR STARTER INTERLOCK
 BS - BURNER SWITCH
 CAPS - COMBUSTION AIR PROVING SWITCH
 CWPMS - CIRCULATING WATER PUMP MOTOR FUSES
 CWPMS - CIRCULATING WATER PUMP MOTOR STARTER
 CWPS - CIRCULATING WATER PUMP SWITCH
 DMT - DAMPER MOTOR TRANSFORMER
 FD - FLAME DETECTOR
 FFL - FLAME FAILURE LIGHT
 FSS - FUEL SELECTOR SWITCH
 FVL - FUEL VALVE LIGHT
 GPV - GAS PILOT VALVE
 HGPL - HIGH GAS PRESSURE LIGHT
 HGPS - HIGH GAS PRESSURE SWITCH
 HLC - HIGH LIMIT CONTRL
 HLTC - HIGH LIMIT TEMPERATURE CONTROL
 LDL - LOAD DEMAND LIGHT
 LFS - LOW FIRE SWITCH
 LGPL - LOW GAS PRESSURE LIGHT
 LGPS - LOW GAS PRESSURE SWITCH
 LWCO - LOW WATER CUTOFF
 LWL - LOW WATER LIGHT
 MDM - MODULATING DAMPER MOTOR
 MGV - MAIN GAS VALVE
 (MR) - MANUAL RESET
 N - DENOTES NATURAL GAS EQUIPMENT (PREFIX)

SCHEMATIC SYMBOLS
 □ ENTRANCE BOX TERMINAL
 ○ PROGRAM RELAY TERMINAL
 () TERMINAL DESIGNATION OF DEVICE
 * OPTIONAL EQUIPMENT NOT FURNISHED BY C-B DIV.
 + INDICATES CONNECTION
 - INDICATES NO CONNECTION
 △ PROVOX TERMINAL BOX
CLEAVER BROOKS
 OLD DWG. NO. WD-S79989-3
 CB700X-500HP 125# HOT WATER

THIS DRAWING WAS ORIGINALLY NEP-1922A
 SEE REFERENCE DRAWING : 1-0101B-E0002-001

B.M. ELEV.				ENGINEER'S SEAL		 THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT	NORTH END WATER POLLUTION CONTROL CENTRE SHEET 1 OF 1
06 WAS 1-0101B-J-E0001-001 10.12.10 SW 5) NEW DWG NUMBER 06.05.11 WKT 4) GENERAL REVISIONS 01-94 MBD 3) GENERAL REVISIONS 08-93 WKT 2) GENERAL REVISIONS 07-93 MBD 1) GENERAL REVISIONS 03-93 MBD NO. REVISIONS DATE BY				DESIGNED BY R.G. SALES CO. CHECKED BY A. EINARSON DRAWN BY EN MBD APPROVED BY HOR. SCALE N.T.S. VERTICAL JANUARY 1993			
				RELEASED FOR CONSTRUCTION FEB. 1984 PLOT DATE: 2010 12 20			

*FUSIBLE DISC.



CONTINUED ON 1-0101B-E0002-002

CONTINUED ON 1-0101B-E0002-002

NOTES:

- NOTE 1 - FOR FURTHER INFORMATION REGARDING PROGRAM RELAY SEE FORM C18-6363
- NOTE 2 - REFER TO R-G DRAWING WD8509-153-A PROVOX CABINET TO BE MOUNTED ON SIDE BOILER CONT., PANEL

ELECTRICAL NOMENCLATURE

- DOL - DIGESTOR OPERATION LIGHT
- NOL - NATURAL OPERATION LIGHT
- 'D' - PREFIX INDICATES DIGESTOR GAS EQUIPMENT
- 'N' PREFIX INDICATES NATURAL GAS EQUIPMENT
- LOS - LOCK-OFF-STOP
- DGNAL - DIGESTOR GAS NOT AVAILABLE LIGHT
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- BMF - BLOWER MOTOR FUSES
- BMS - BLOWER MOTOR STARTER
- BMSI - BLOWER MOTOR STARTER INTERLOCK
- BS - BURNER SWITCH
- CAPS - COMBUSTION AIR PROVING SWITCH
- CWPMF - CIRCULATING WATER PUMP MOTOR FUSES
- CWPMS - CIRCULATING WATER PUMP MOTOR STARTER
- CWPS - CIRCULATING WATER PUMP SWITCH
- DMT - DAMPER MOTOR TRANSFORMER
- FD - FLAME DETECTOR
- FFL - FLAME FAILURE LIGHT
- FSS - FUEL SELECTOR SWITCH
- FVL - FUEL VALVE LIGHT
- GPV - GAS PILOT VALVE
- HGPL - HIGH GAS PRESSURE LIGHT
- HGPS - HIGH GAS PRESSURE SWITCH
- HLC - HIGH LIMIT CONTRL
- HLTC - HIGH LIMIT TEMPERATURE CONTROL
- LDL - LOAD DEMAND LIGHT
- LFS - LOW FIRE SWITCH
- LGPL - LOW GAS PRESSURE LIGHT
- LGPS - LOW GAS PRESSURE SWITCH
- LWCO - LOW WATER CUTOFF
- LWL - LOW WATER LIGHT
- MDM - MODULATING DAMPER MOTOR
- MGV - MAIN GAS VALVE
- (MR) - MANUAL RESET
- N - DENOTES NATURAL GAS EQUIPMENT (PREFIX)

SCHEMATIC SYMBOLS

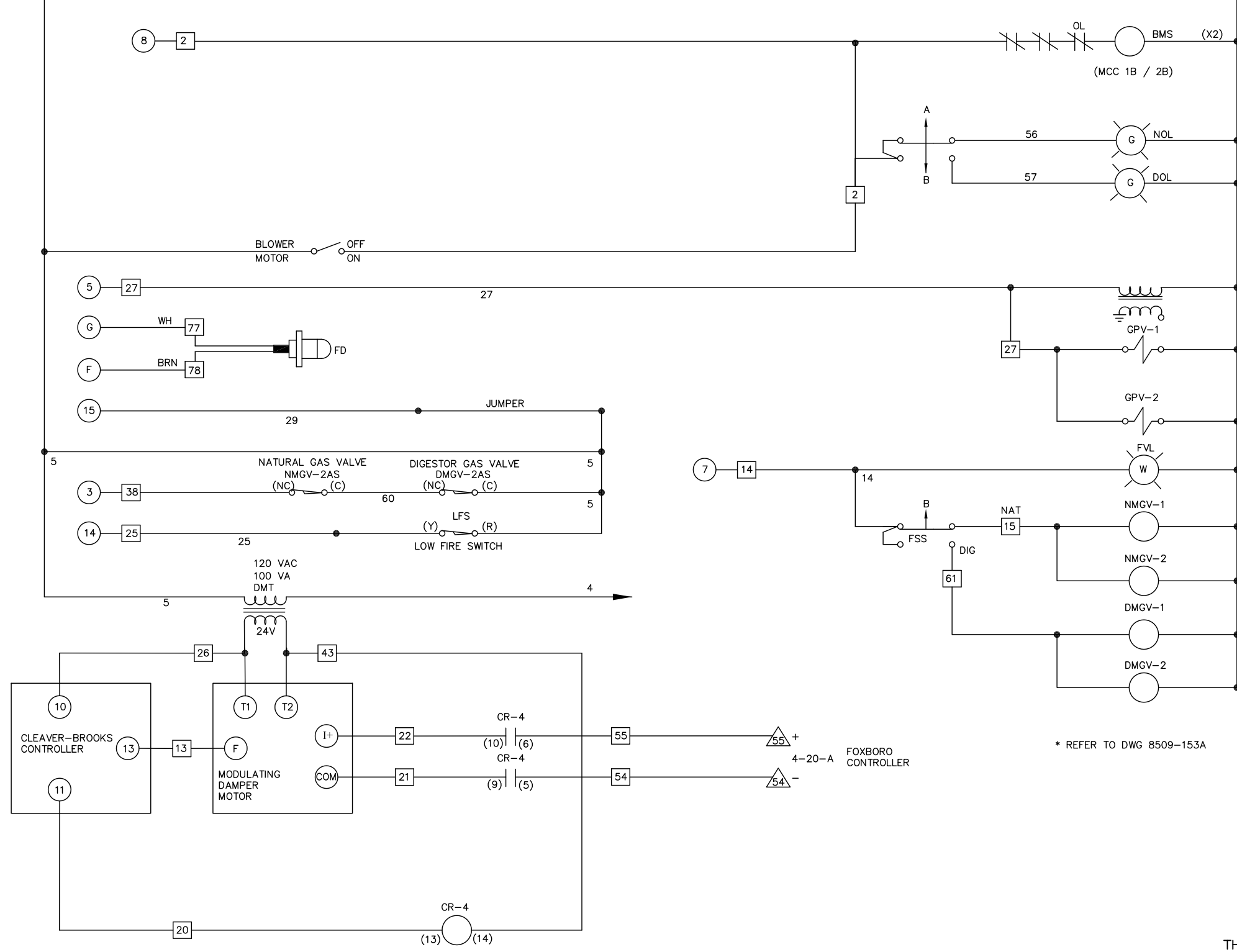
- ENTRANCE BOX TERMINAL
- PROGRAM RELAY TERMINAL
- () TERMINAL DESIGNATION OF DEVICE
- * OPTIONAL EQUIPMENT NOT FURNISHED BY C-B DIV.
- INDICATES CONNECTION
- + INDICATES NO CONNECTION
- △ PROVOX TERMINAL BOX

THIS DRAWING WAS ORIGINALLY NEP-1922B
SEE REFERENCE DRAWINGS : 1-0101B-E0005-001
1-0101B-E0002-002

B.M. ELEV.				ENGINEER'S SEAL		THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT	
08	WAS 1-0101B-G-E0002-001	10.12.10	SW	DESIGNED BY	R.C.SALES CO.	CHECKED BY	A. EINARSON
7)	NEW DWG NUMBER	06.05.11	WKT	DRAWN BY	EN MBD	APPROVED BY	
6)	GENERAL REVISIONS	05-99	GMZ	HOR. SCALE	N.T.S.	RELEASED FOR CONSTRUCTION	FEB. 1984
5)	GENERAL REVISIONS	07-96	SG	VERTICAL			
4)	GENERAL REVISIONS	01-94	MBD	DATE	JANUARY 1994	DATE	
3)	GENERAL REVISIONS	08-93	WKT				
2)	GENERAL REVISIONS	07-93	MBD				
1)	GENERAL REVISIONS	03-93	MBD				
NO. REVISIONS				PLOT DATE: 2012 03 05		SHEET 1 OF 2	
				CITY DRAWING NUMBER		1-0101B-E0002-001-08	

CONTINUED ON 1-0101B-G-E0002-001-07-B

CONTINUED ON 1-0101B-G-E0002-001-07-B



NOTES:

- NOTE 1 - FOR FURTHER INFORMATION REGARDING PROGRAM RELAY SEE FORM C18-6363
- NOTE 2 - REFER TO R-G DRAWING WD8509-153-A PROVOX CABINET TO BE MOUNTED ON SIDE BOILER CONT., PANEL

ELECTRICAL NOMENCLATURE

- DOL - DIGESTOR OPERATION LIGHT
- NOL - NATURAL OPERATION LIGHT
- 'D' - PREFIX INDICATES DIGESTOR GAS EQUIPMENT
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- HGPL - HIGH GAS PRESSURE LIGHT
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- HLTC - HIGH LIMIT TEMPERATURE CONTROL
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- LFS - LOW FIRE SWITCH
- LGPL - LOW GAS PRESSURE LIGHT
- LGPS - LOW GAS PRESSURE SWITCH
- LWCO - LOW WATER CUTOFF
- LWL - LOW WATER LIGHT
- MDM - MODULATING DAMPER MOTOR
- MGV - MAIN GAS VALVE
- (MR) - MANUAL RESET
- N - DENOTES NATURAL GAS EQUIPMENT (PREFIX)

SCHEMATIC SYMBOLS

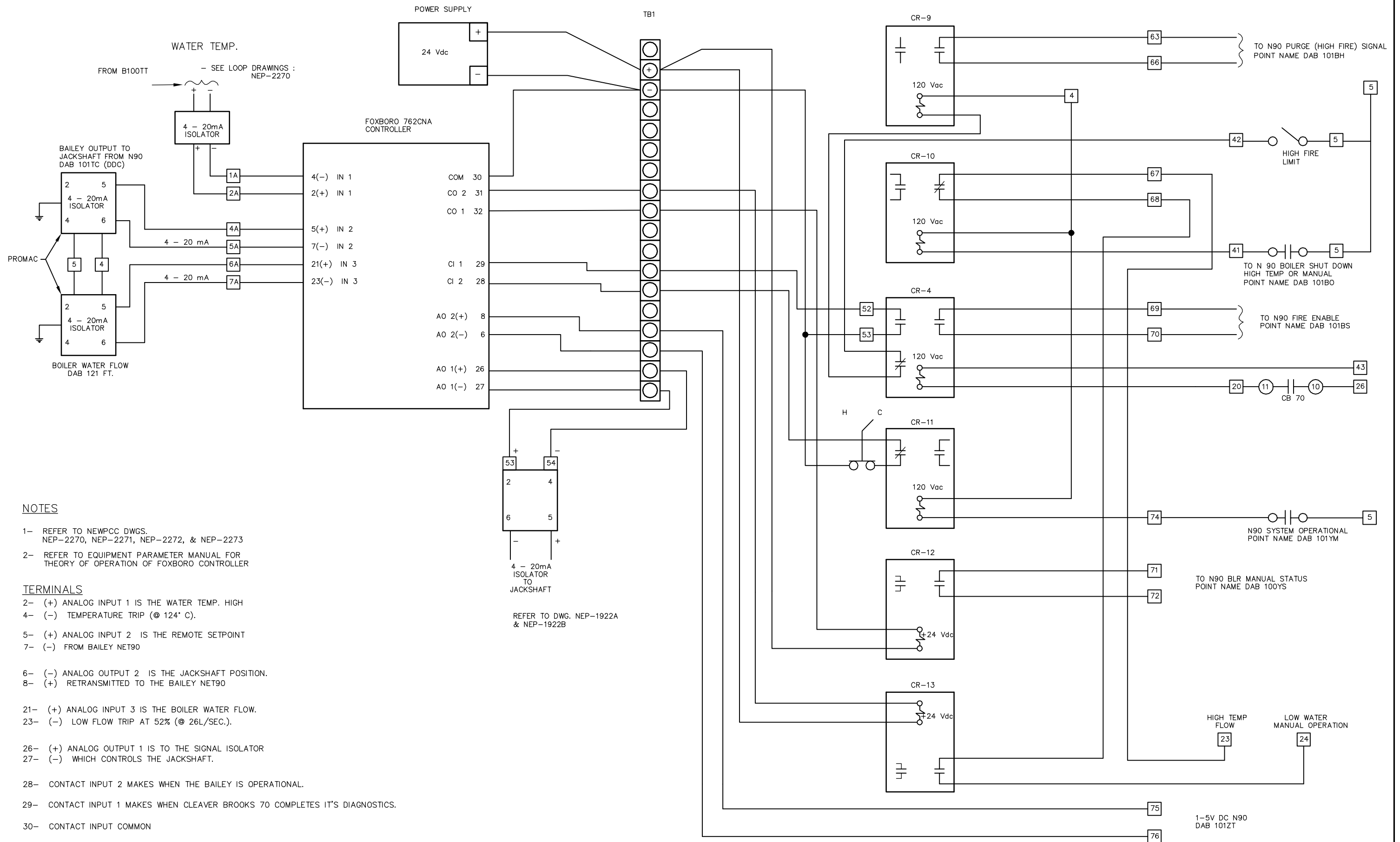
- ENTRANCE BOX TERMINAL
- PROGRAM RELAY TERMINAL
- () TERMINAL DESIGNATION OF DEVICE
- * OPTIONAL EQUIPMENT NOT FURNISHED BY C-B DIV.
- + INDICATES CONNECTION
- ⊕ INDICATES NO CONNECTION
- △ PROVOX TERMINAL

* REFER TO DWG 8509-153A

LAST CIRCUIT NO. USED - 107

THIS DRAWING WAS ORIGINALLY NEP-1922C
SEE REFERENCE DRAWINGS : 1-0101B-E0005-001-06
1-0101B-E0002-001-08

B.M. ELEV.			ENGINEER'S SEAL			<p>THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT</p>	
07 WAS 1-0101B-G-E0002-002 10.12.10 SW 6). REVISED TO DATE 07.12.06 WKT 5). NEW DWG NUMBER 06.05.11 WKT 4). GENERAL REVISIONS 01-94 MBD 3). GENERAL REVISIONS 08-93 WKT 2). GENERAL REVISIONS 07-93 MBD 1). GENERAL REVISIONS 03-93 MBD NO. REVISIONS DATE BY			DESIGNED BY R.C.SALES CO. CHECKED BY A. EINARSON DRAWN BY EN MBD APPROVED BY HOR. SCALE N.T.S. VERTICAL DATE JANUARY 1993 DATE FEB. 1984				
CITY DRAWING NUMBER 1-0101B-E0002-002-07						PLOT DATE: 2010 12 20	

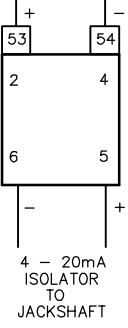


NOTES

- 1- REFER TO NEWPCC DWGS. NEP-2270, NEP-2271, NEP-2272, & NEP-2273
- 2- REFER TO EQUIPMENT PARAMETER MANUAL FOR THEORY OF OPERATION OF FOXBORO CONTROLLER
- 5- (+) ANALOG INPUT 2 IS THE REMOTE SETPOINT
- 7- (-) FROM BAILEY NET90
- 6- (-) ANALOG OUTPUT 2 IS THE JACKSHAFT POSITION.
- 8- (+) RETRANSMITTED TO THE BAILEY NET90
- 21- (+) ANALOG INPUT 3 IS THE BOILER WATER FLOW.
- 23- (-) LOW FLOW TRIP AT 52% (@ 26L/SEC.).
- 26- (+) ANALOG OUTPUT 1 IS TO THE SIGNAL ISOLATOR
- 27- (-) WHICH CONTROLS THE JACKSHAFT.
- 28- CONTACT INPUT 2 MAKES WHEN THE BAILEY IS OPERATIONAL.
- 29- CONTACT INPUT 1 MAKES WHEN CLEAVER BROOKS 70 COMPLETES IT'S DIAGNOSTICS.
- 30- CONTACT INPUT COMMON
- 31- CONTACT OUTPUT 1 ENERGIZES CR-12 WHICH INDICATES TO THE BAILEY THAT THE BOILER IS IN MANUAL.
- 32- CONTACT OUTPUT 2 ENERGIZES CR-13 WHICH INDICATES AN ALARM CONDITION WHICH IN TURN THE BAILEY SHUTS DOWN THE BOILER.

TERMINALS

- 2- (+) ANALOG INPUT 1 IS THE WATER TEMP. HIGH
- 4- (-) TEMPERATURE TRIP (@ 124° C).
- 5- (+) ANALOG INPUT 2 IS THE REMOTE SETPOINT
- 7- (-) FROM BAILEY NET90
- 6- (-) ANALOG OUTPUT 2 IS THE JACKSHAFT POSITION.
- 8- (+) RETRANSMITTED TO THE BAILEY NET90
- 21- (+) ANALOG INPUT 3 IS THE BOILER WATER FLOW.
- 23- (-) LOW FLOW TRIP AT 52% (@ 26L/SEC.).
- 26- (+) ANALOG OUTPUT 1 IS TO THE SIGNAL ISOLATOR
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- 28- CONTACT INPUT 2 MAKES WHEN THE BAILEY IS OPERATIONAL.
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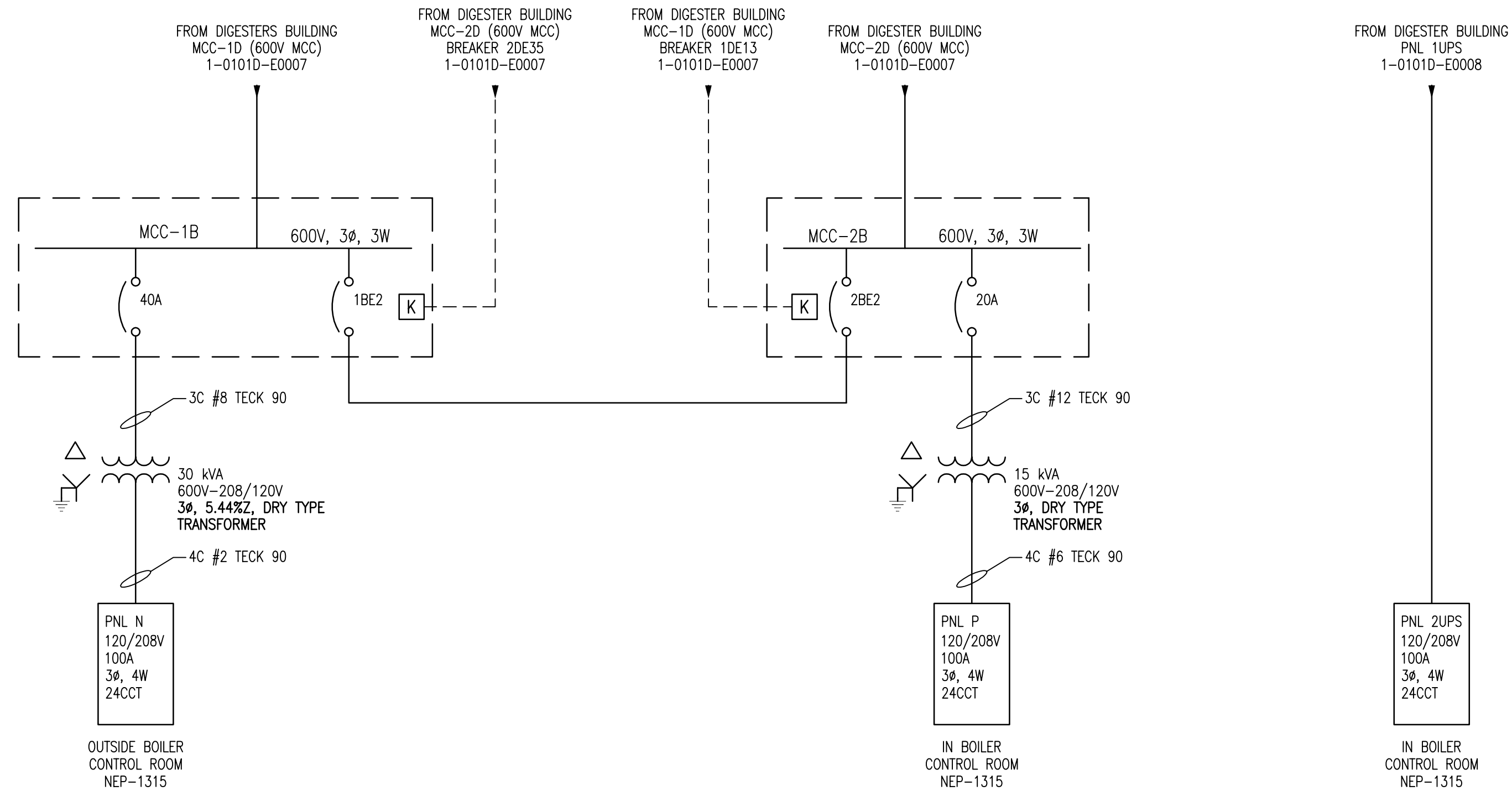
REFER TO DWG. NEP-1922A & NEP-1922B

NO.	REVISIONS	DATE	BY	NO.	REVISIONS	DATE	BY
9)	GENERAL REVISIONS	06-99	TM				
8)	GENERAL REVISIONS	05-99	GMZ				
7)	REPLACED CONTROLLER	04-99	AE				
6)	GENERAL REVISIONS	05-95	WKT				
5)	GENERAL REVISIONS	01-94	MBD				
4)	GENERAL REVISIONS	08-93	WKT				
3)	GENERAL REVISIONS	07-93	MBD				
2)	GENERAL REVISIONS	01-93	TM				
10)	GENERAL REVISIONS	01.00	EN	1)	GENERAL REVISIONS	03-93	MBD

DESIGNED BY	R.G. SALES CO.	CHECKED BY	A. EINARSON
DRAWN BY	MBD TM	APPROVED BY	
HOR. SCALE	N.T.S.	RELEASED FOR CONSTRUCTION	FEB. 1984
VERTICAL		DATE	FEBRUARY 1993

ENGINEER'S SEAL
PLOT DATE
JULY 07, 1999


THE CITY OF WINNIPEG
WORKS AND OPERATIONS DIVISION
WATERWORKS WASTE AND DISPOSAL DEPARTMENT
 NORTH END WATER POLLUTION CONTROL CENTRE
 SHEET 4 OF 4
 CITY DRAWING NUMBER
NEP-1922D1



NOTES:

1. ALL CONDUIT IS GENERALLY RIGID ALUMINUM, UNLESS OTHERWISE NOTED.

LAST SAVE: 2008/04/17 - 9:26am
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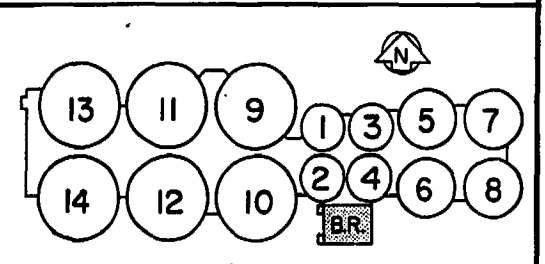
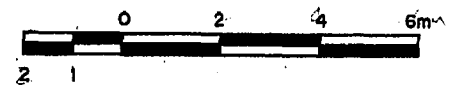
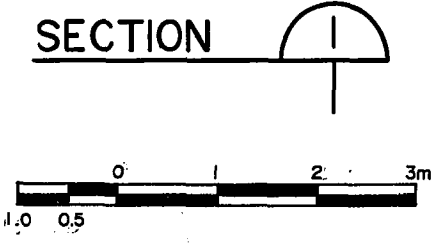
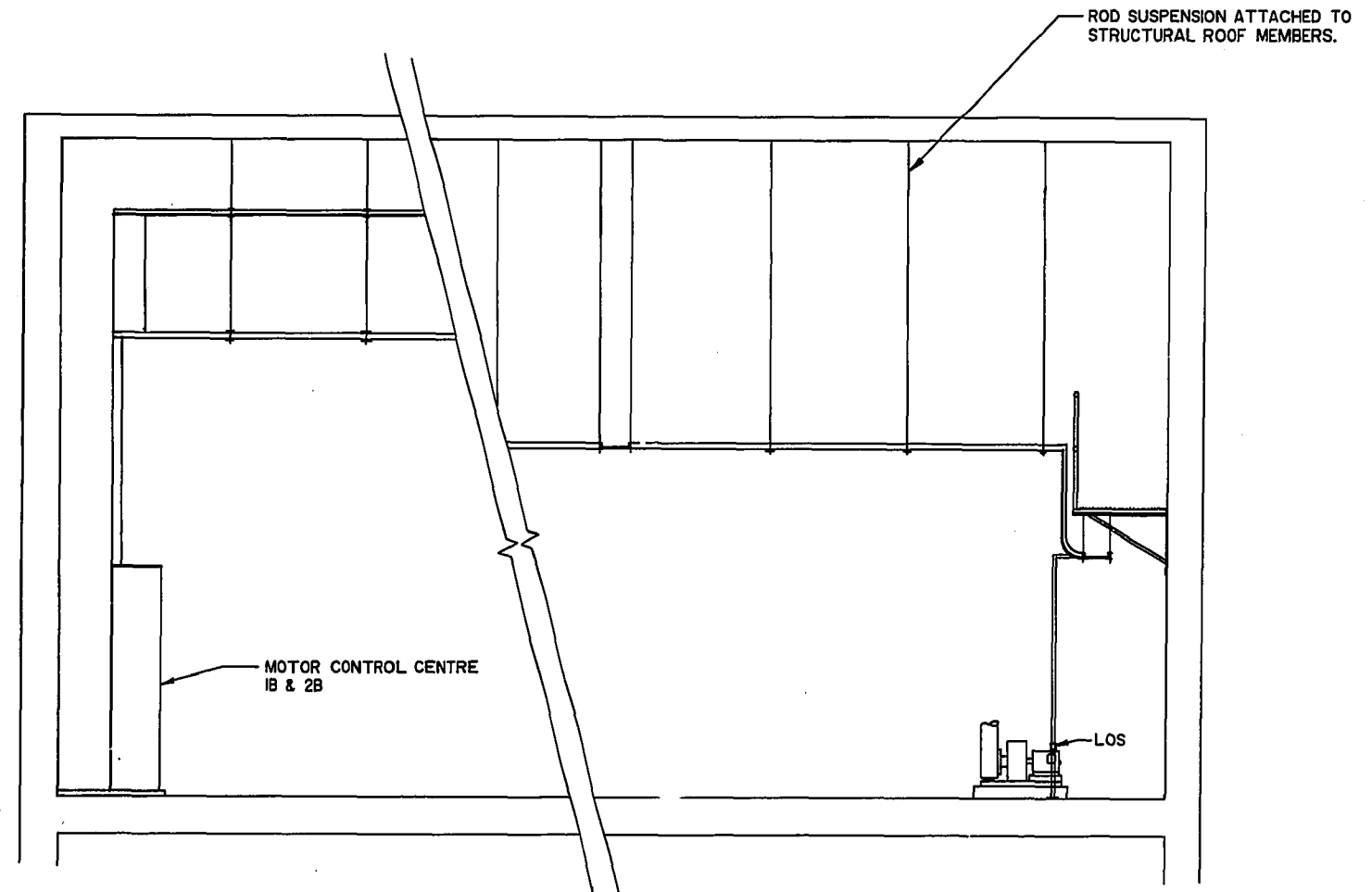
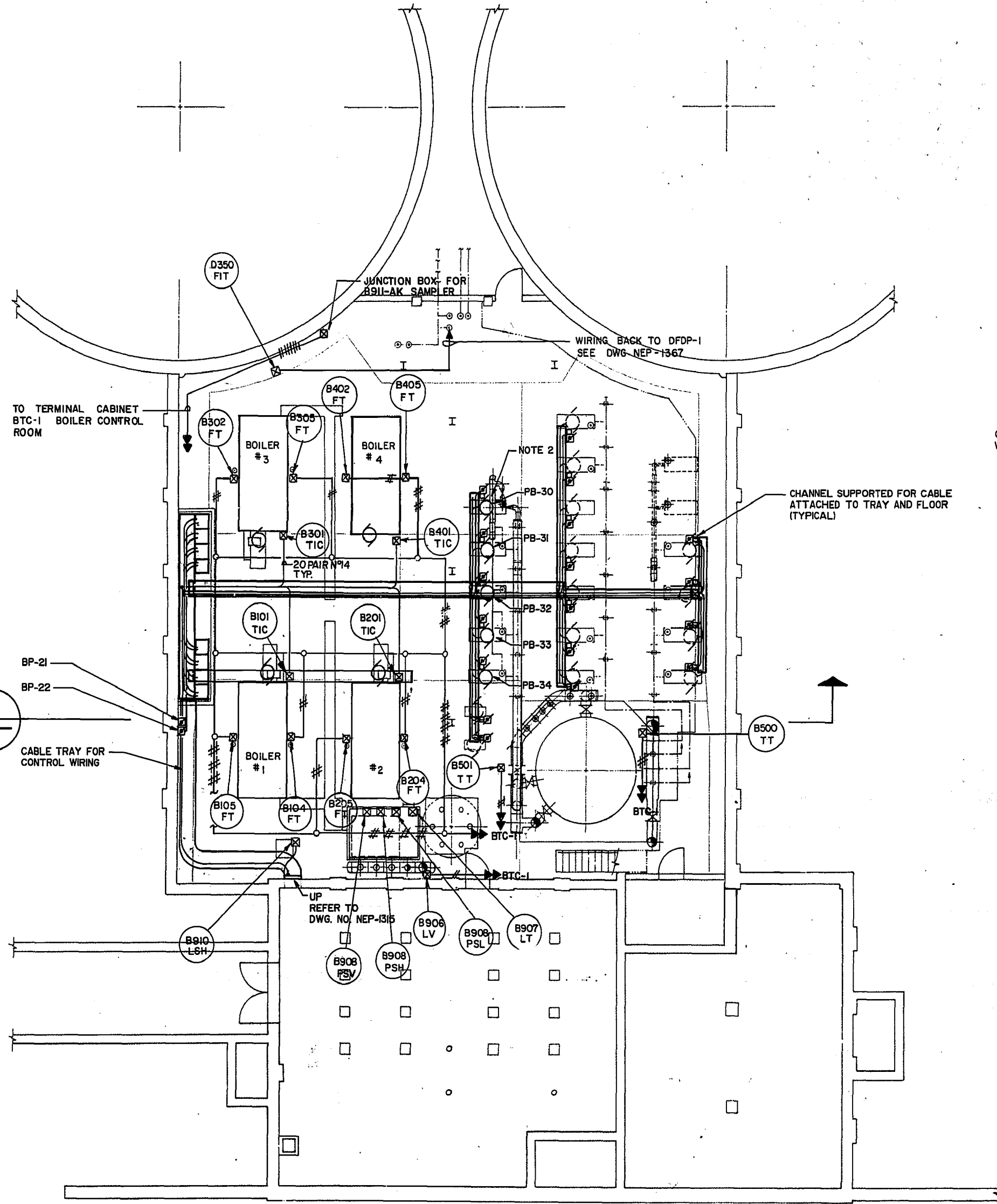
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NEP-1307 NEP-1308 1-0101D-E0007 1-0101A-E0003 1-0101A-E0004	BOILER MCC-1B SCHEDULE BOILER MCC-2B SCHEDULE DIGESTERS SINGLE LINE DIAGRAM EAST ELECTRICAL ROOM DISTRIBUTION 4160V ELECTRICAL DISTRIBUTION SWITCHING DIAGRAM ELECTRICAL SINGLE LINE DIAGRAM LEGEND & DETAILS

B.M. ELEV.	FIELD BOOK #:	SNC-LAVALIN INC. 148 Nature Park Way Winnipeg, MB, Canada R3P 0X7 204-786-8080		ENGINEER'S SEAL	
POSTED TO LBIS		DESIGNED BY	EXISTING	CHECKED BY	CJR
		DRAWN BY	DEB	APPROVED BY	
01	REVISED DRAWING NUMBER; WAS 1-0101B-F-E0001	2008/03/03	EFB	HOR. SCALE	NTS
00	ISSUED FOR CITY USE	2007/07/05	CJR	VERTICAL	RELEASED FOR CONSTRUCTION
PB	UPDATED PANEL N TRANSFORMER SPECS	2007/04/20	EFB	DATE	2006/07/07
PA	ISSUED FOR REVIEW	2007/02/19	CJR	DATE	
NO. REVISIONS	DATE	BY	FILENAME: 1-0101B-E0004-01-01D.dwg		

THE CITY OF WINNIPEG
 WATER AND WASTE DEPARTMENT

NORTH END WATER POLLUTION CONTROL CENTRE
 BOILERS
 SINGLE LINE DIAGRAM
 ELECTRICAL DISTRIBUTION

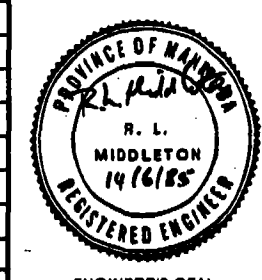
CITY DRAWING NUMBER	SHEET	REV.	SIZE
1-0101B-E0004	001	01	D



FOR SHOP DRAWING INFORMATION
REFER TO THE SHOP DRAWING
CROSS REFERENCE INDEX

AS CONSTRUCTED
APPROVED BY: [Signature]
DATE: 1985-04-25

NO.	REVISIONS	DATE	APP.
A	REVISED TO AS CONSTRUCTED	21/01/85	[Signature]



Underwood McLellan Ltd.
Consulting Engineers and Planners
GORE & STORRIE LIMITED
CONSULTING ENGINEERS

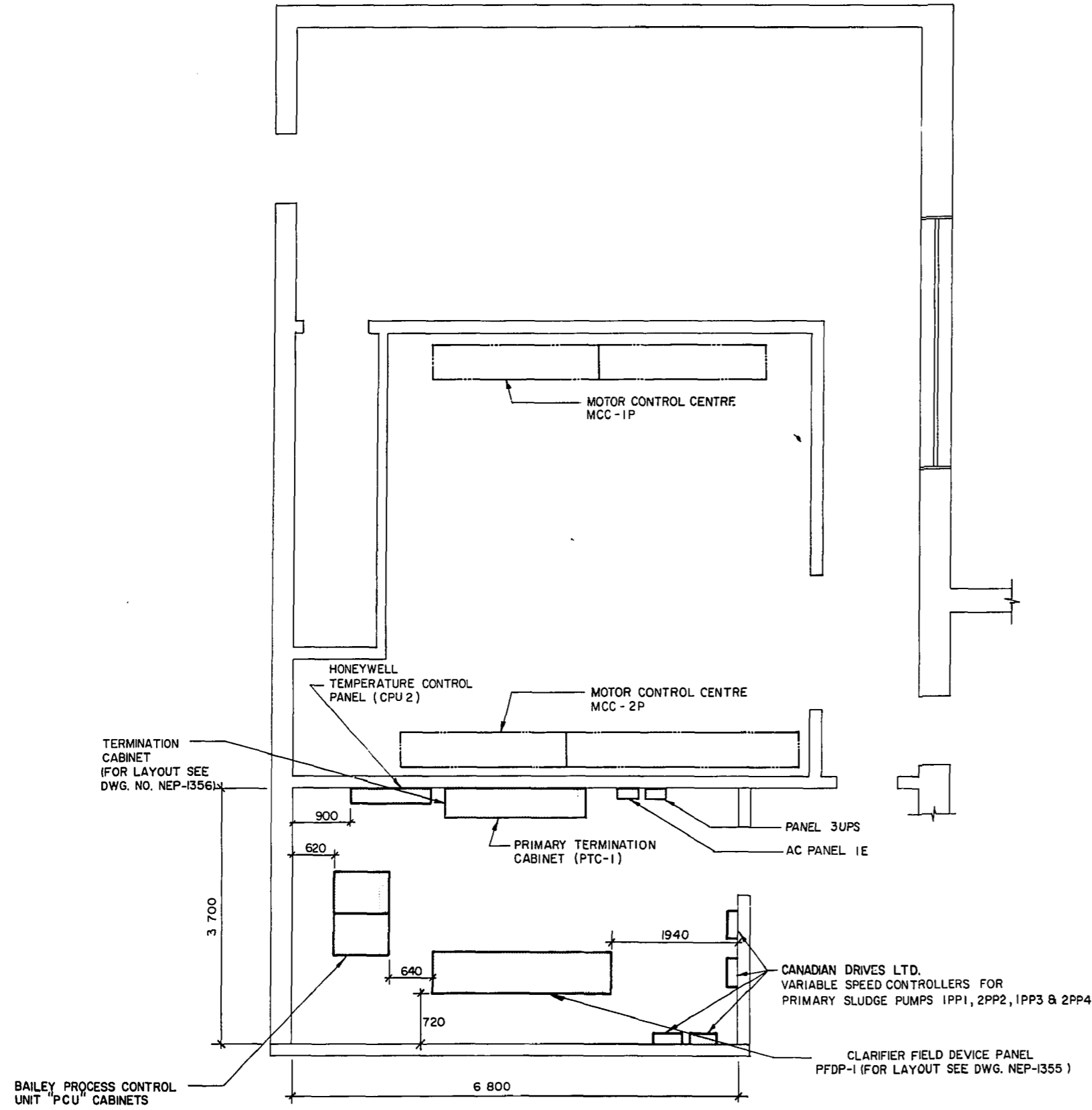
DESIGNED BY: G. NORSWORTHY
DRAWN BY: G.S.N.
CHECKED BY: R. MIDDLETON
DATE: FEB./85
APPROVED BY: [Signature]
DATE: JUNE/85

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

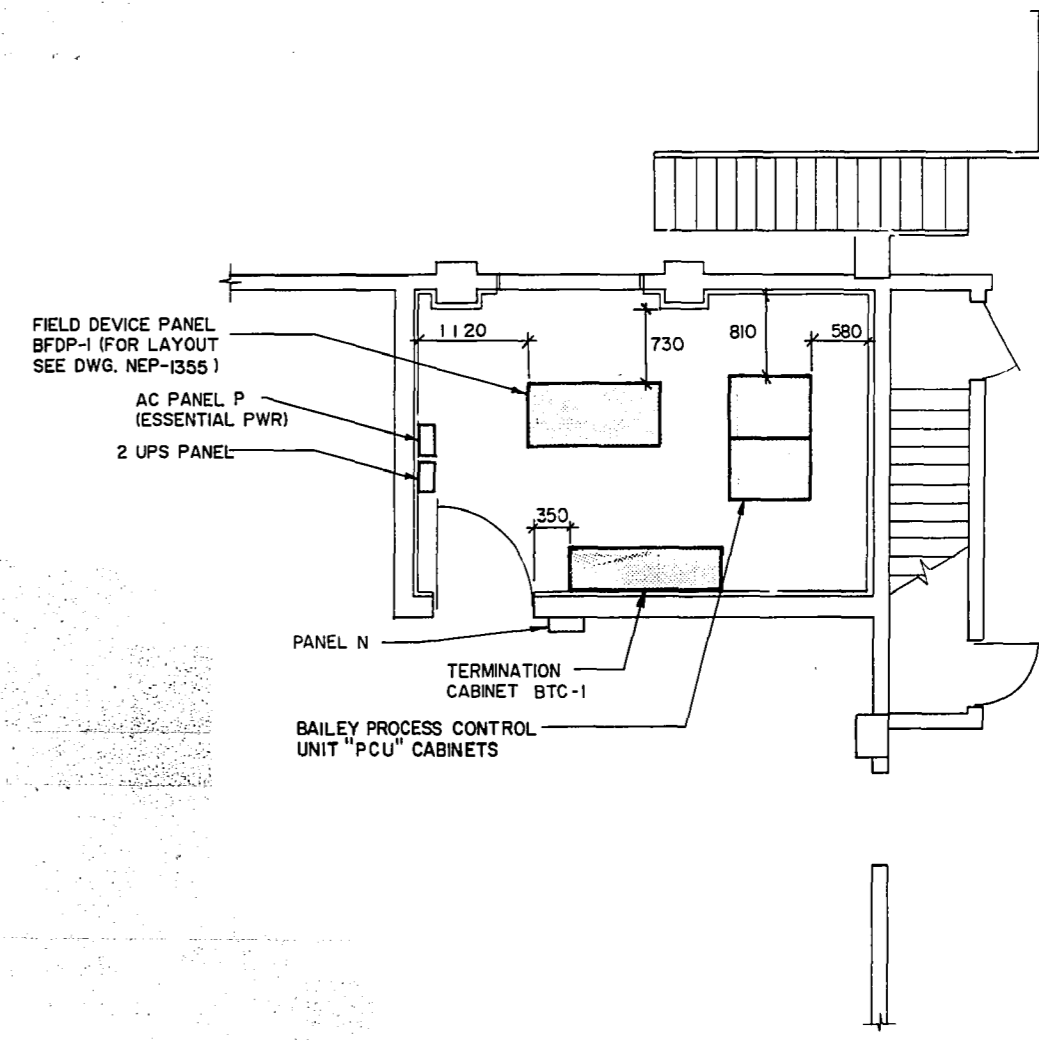
NORTH END WATER POLLUTION CONTROL CENTRE
SLUDGE DIGESTION EXPANSION

BOILER BUILDING ELECTRICAL MODIFICATIONS

RELEASED FOR CONSTRUCTION: [Signature] DATE: 17/6/85
SCALE: AS SHOWN DRAWING NO.: NEP-1314



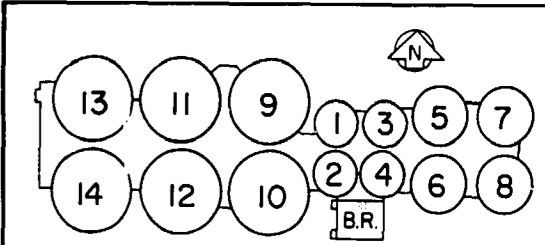
**CLARIFIER AREA
CONTROL ROOM LAYOUT**



**BOILER AREA
CONTROL ROOM LAYOUT**

FOR SHOP DRAWING INFORMATION
REFER TO THE SHOP DRAWING
CROSS REFERENCE INDEX

AS CONSTRUCTED
APPROVED BY: [Signature]
DATE: 17/6/85



KEY PLAN

NO	REVISIONS	DATE	APP
A	REVISED TO AS CONSTRUCTED	17/6/85	[Signature]



Underwood McLellan Ltd
Consulting Engineers and Planners
GORE & STORRIE LIMITED
CONSULTING ENGINEERS

DESIGNED BY: J.K. DANIELSON
DRAWN BY: J.K.D.
CHECKED BY: R.L. MIDDLETON
DATE: MAY/85
APPROVED BY: [Signature]
DATE: JUNE/85

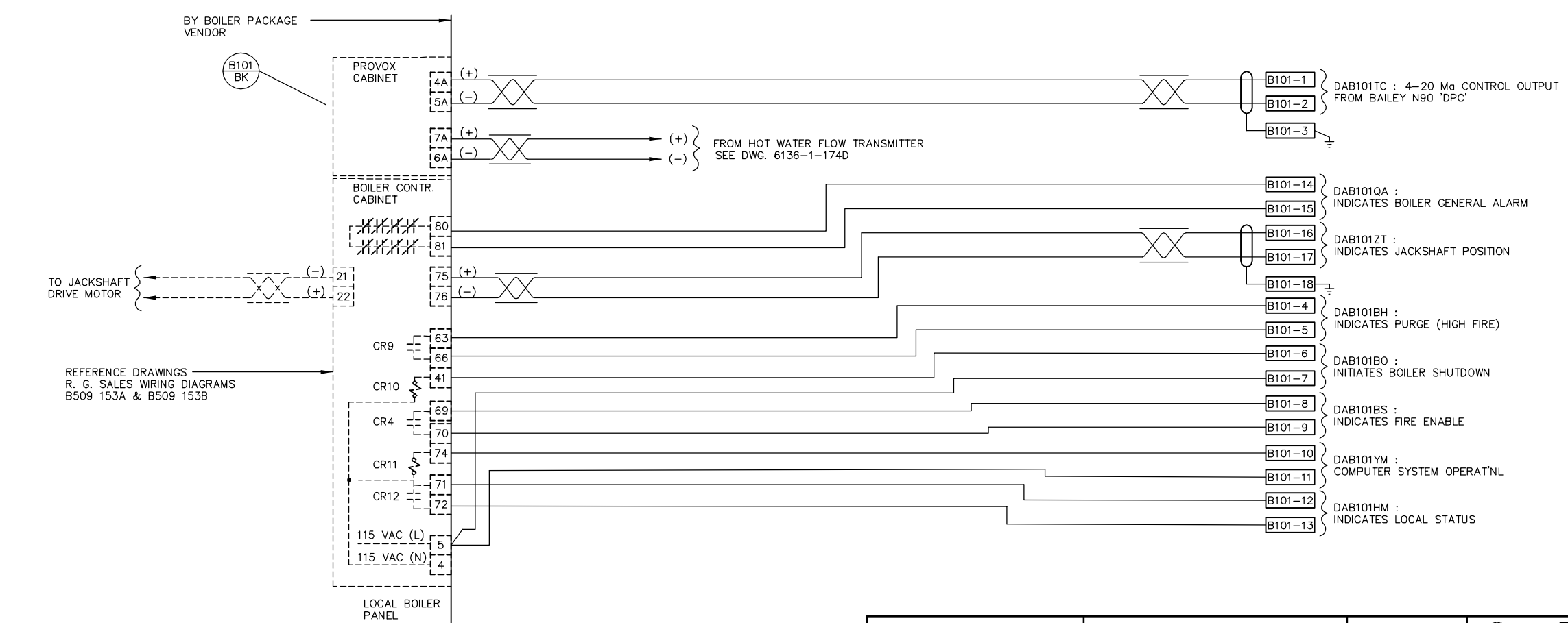
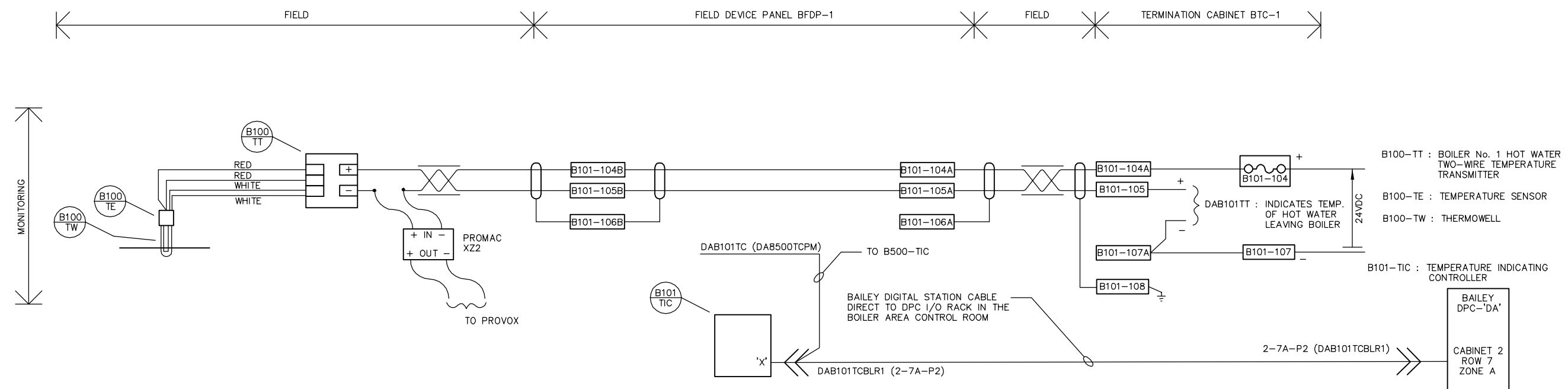
THE CITY OF WINNIPEG
WORKS & OPERATIONS
DIVISION
WATERWORKS, WASTE &
DISPOSAL DEPARTMENT

NORTH END WATER POLLUTION CONTROL CENTRE
SLUDGE DIGESTION EXPANSION

CONTROL ROOM LAYOUT
BOILER BUILDING AND
EXISTING PRIMARY CLARIFIER AREA

RELEASED FOR CONSTRUCTION: [Signature]
DATE: 17/6/85

SCALE: AS NOTED
DRAWING NO: **NEP-1353**

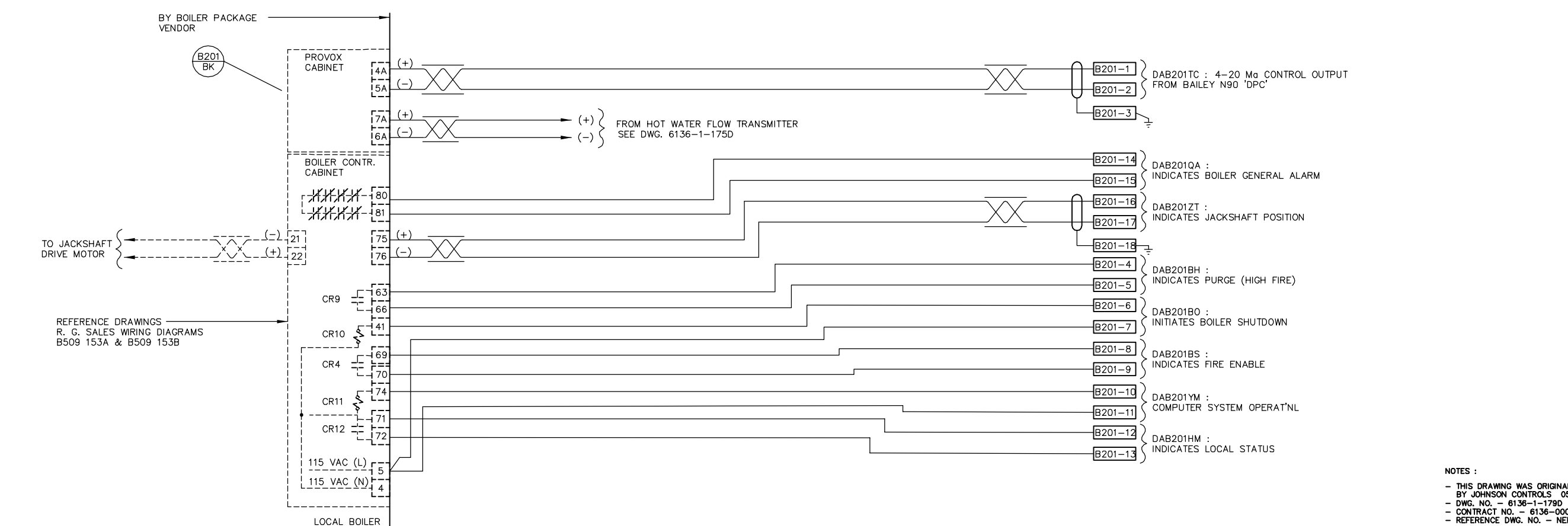
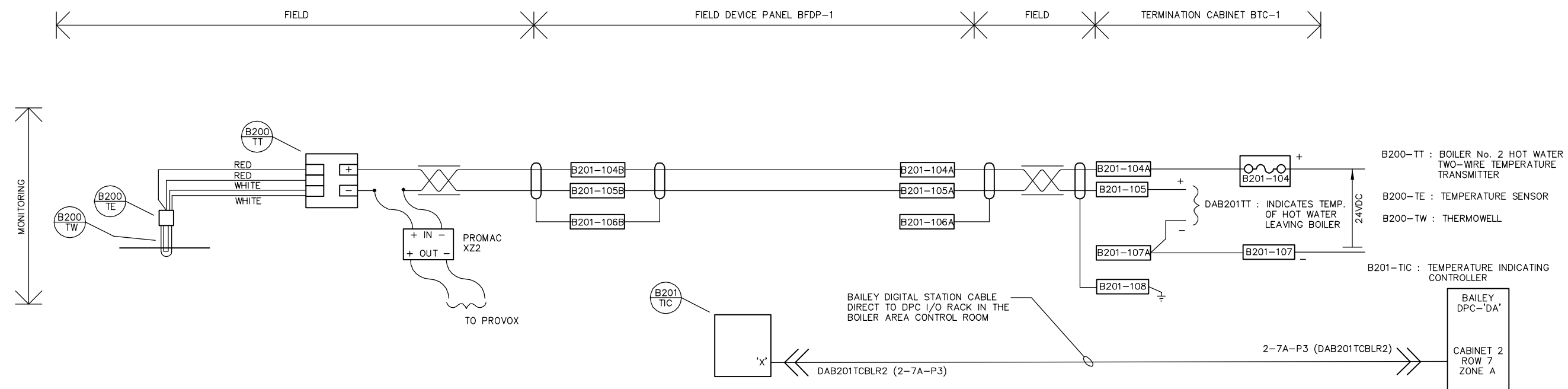


B100-TT : BOILER No. 1 HOT WATER TWO-WIRE TEMPERATURE TRANSMITTER
 B100-TE : TEMPERATURE SENSOR
 B100-TW : THERMOWELL
 B101-TIC : TEMPERATURE INDICATING CONTROLLER

DAB101TC : 4-20 Ma CONTROL OUTPUT FROM BAILEY N90 'DPC'
 DAB101QA : INDICATES BOILER GENERAL ALARM
 DAB101ZT : INDICATES JACKSHAFT POSITION
 DAB101BH : INDICATES PURGE (HIGH FIRE)
 DAB101BO : INITIATES BOILER SHUTDOWN
 DAB101BS : INDICATES FIRE ENABLE
 DAB101YM : COMPUTER SYSTEM OPERAT'NL
 DAB101HM : INDICATES LOCAL STATUS

NOTES :
 - THIS DRAWING WAS ORIGINALLY DRAWN BY JOHNSON CONTROLS 05-86
 - DWG. NO. - 6136-1-17BD
 - CONTRACT NO. - 6136-0001
 - REFERENCE DWG. NO. - NEP-1335

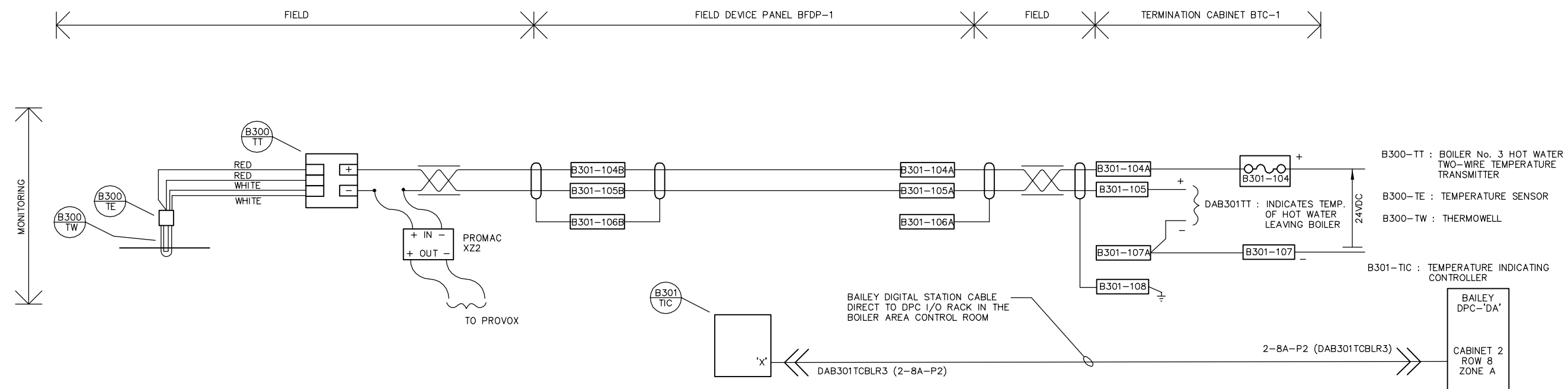
B.M. ELEV.		ENGINEER'S SEAL		THE CITY OF WINNIPEG WORKS AND OPERATIONS DIVISION WATERWORKS WASTE AND DISPOSAL DEPARTMENT	
DESIGNED BY		CHECKED BY		NORTH END WATER POLLUTION CONTROL CENTRE SLUDGE DIGESTION EXPANSION	
DRAWN BY WKT		APPROVED BY		SLUDGE DIGESTION EXPANSION LOOP WIRING DIAGRAM TEMPERATURE MONITORING BOILER NO. 1	
1). REDRAWN & REVISED IN AUTOCAD12		HOR. SCALE VERTICAL		NO. REVISIONS DATE BY DATE	
05-95 WKT		N.T.S.		RELEASED FOR CONSTRUCTION DATE	
		MAY 18, 1995		PLOT DATE MAY 18, 1995	
				SHEET 4 OF 4 CITY DRAWING NUMBER NEP-2270	



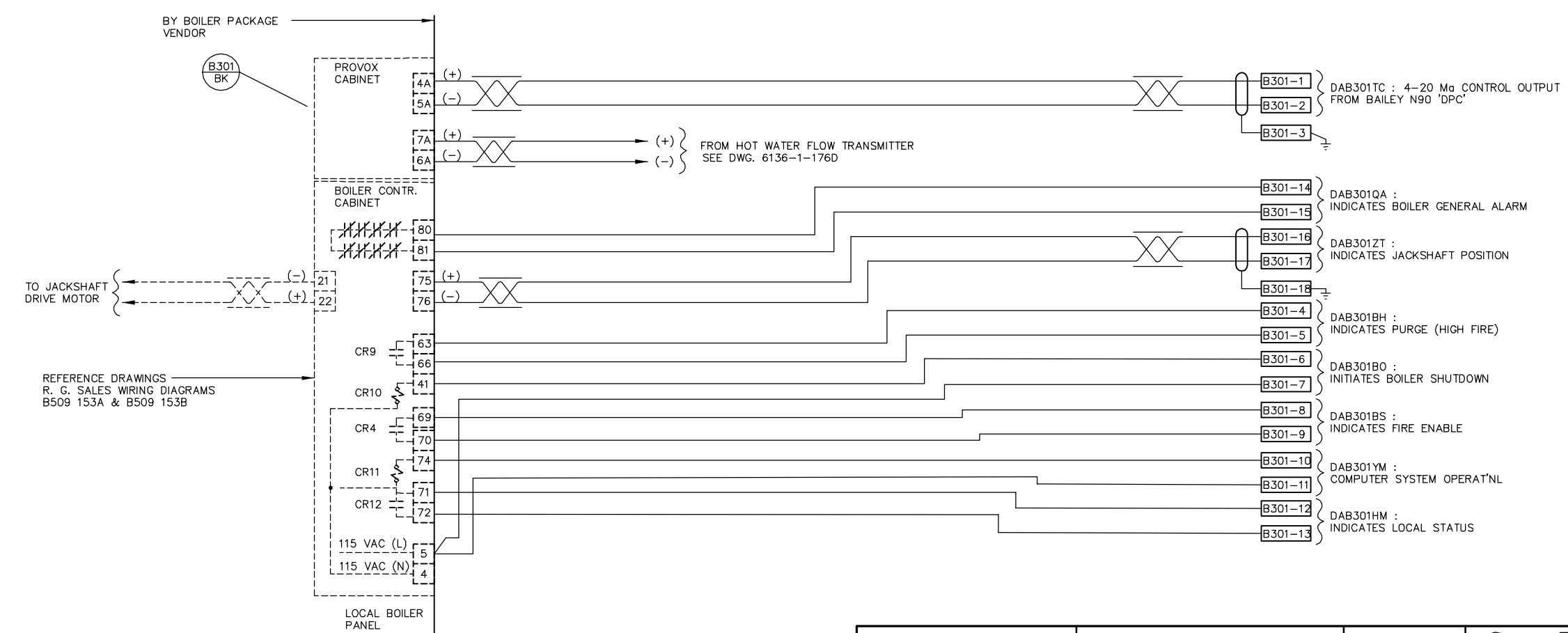
NOTES :

- THIS DRAWING WAS ORIGINALLY DRAWN BY JOHNSON CONTROLS 05-86
- DWG. NO. - 6136-1-179D
- CONTRACT NO. - 6136-0001
- REFERENCE DWG. NO. - NEP-1335

B.M. ELEV.		ENGINEER'S SEAL		THE CITY OF WINNIPEG WORKS AND OPERATIONS DIVISION WATERWORKS WASTE AND DISPOSAL DEPARTMENT		SHEET 4 OF 4	
DESIGNED BY		CHECKED BY				NORTH END WATER POLLUTION CONTROL CENTRE SLUDGE DIGESTION EXPANSION	
DRAWN BY WKT		APPROVED BY		LOOP WIRING DIAGRAM TEMPERATURE MONITORING BOILER NO. 2		NEP-2271	
1). REDRAWN & REVISED IN AUTOCAD12		RELEASED FOR CONSTRUCTION					
NO. REVISIONS		DATE		PLOT DATE			
		MAY 18, 1995		MAY 19, 1995			



B300-TT : BOILER No. 3 HOT WATER TWO-WIRE TEMPERATURE TRANSMITTER
 B300-TE : TEMPERATURE SENSOR
 B300-TW : THERMOWELL
 B301-TIC : TEMPERATURE INDICATING CONTROLLER

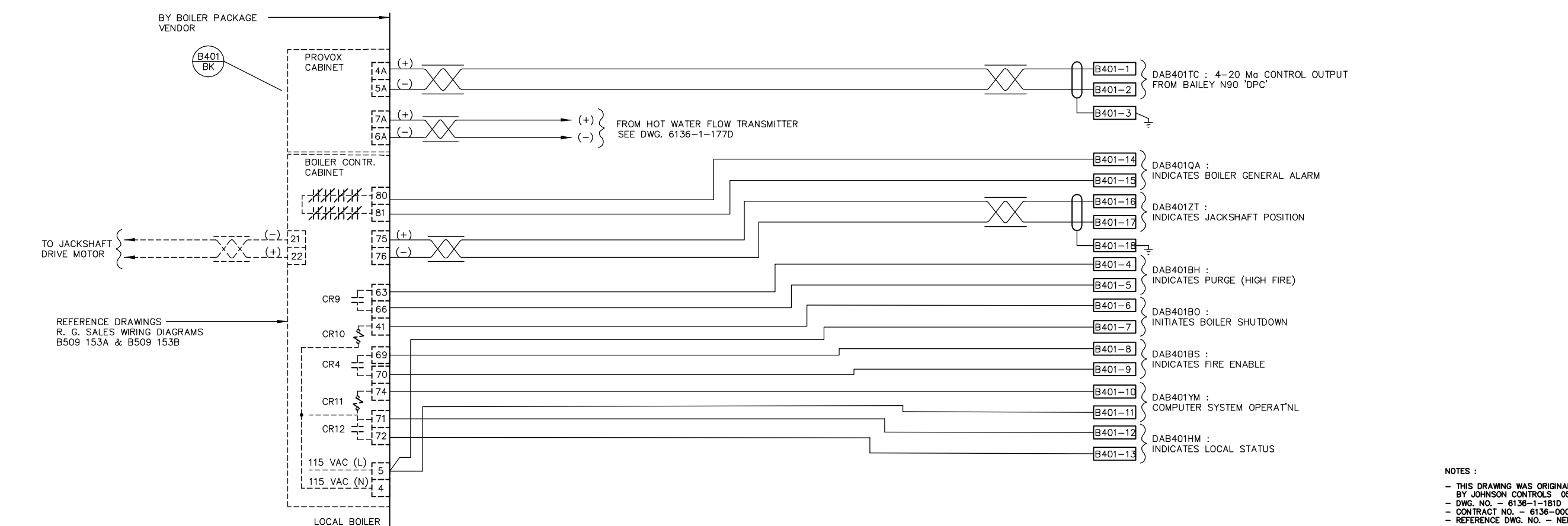
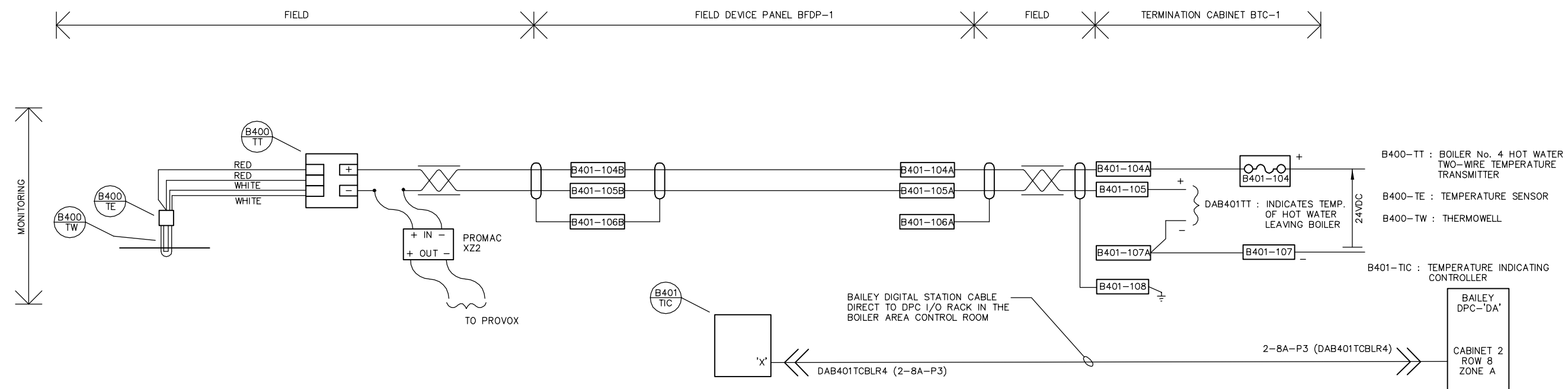


DAB301TC : 4-20 Ma CONTROL OUTPUT FROM BAILEY N90 'DPC'
 DAB301QA : INDICATES BOILER GENERAL ALARM
 DAB301ZT : INDICATES JACKSHAFT POSITION
 DAB301BH : INDICATES PURGE (HIGH FIRE)
 DAB301BO : INITIATES BOILER SHUTDOWN
 DAB301BS : INDICATES FIRE ENABLE
 DAB301YM : COMPUTER SYSTEM OPERAT'NL
 DAB301HM : INDICATES LOCAL STATUS

REFERENCE DRAWINGS
 R. G. SALES WIRING DIAGRAMS
 B509 153A & B509 153B

NOTES :
 - THIS DRAWING WAS ORIGINALLY DRAWN BY JOHNSON CONTROLS 05-86
 - DWG. NO. - 6136-1-1800
 - CONTRACT NO. - 6136-0001
 - REFERENCE DWG. NO. - NEP-1335

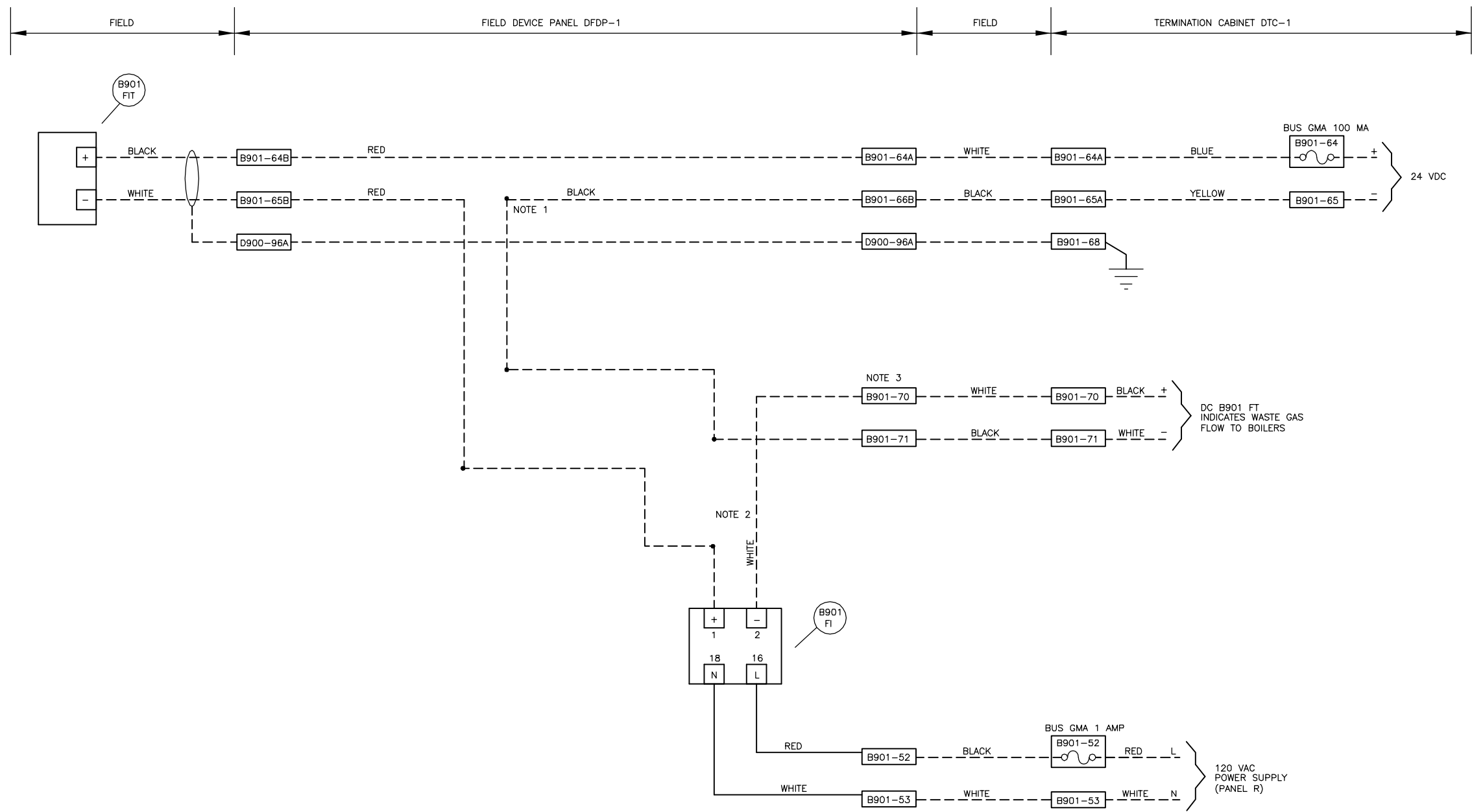
B.M. ELEV.		ENGINEER'S SEAL		 THE CITY OF WINNIPEG WORKS AND OPERATIONS DIVISION WATERWORKS WASTE AND DISPOSAL DEPARTMENT		SHEET 4 OF 4	
DESIGNED BY		CHECKED BY				NORTH END WATER POLLUTION CONTROL CENTRE SLUDGE DIGESTION EXPANSION	
DRAWN BY WKT		APPROVED BY		LOOP WIRING DIAGRAM TEMPERATURE MONITORING BOILER NO. 3		NEP-2272	
1). REDRAWN & REVISED IN AUTOCAD12		RELEASED FOR CONSTRUCTION				PLOT DATE MAY 19, 1995	
NO. REVISIONS		DATE BY		DATE MAY 18, 1995			



NOTES :

- THIS DRAWING WAS ORIGINALLY DRAWN BY JOHNSON CONTROLS 05-86
- DWG. NO. - 6136-1-181D
- CONTRACT NO. - 6136-0001
- REFERENCE DWG. NO. - NEP-1335


B.M. ELEV.		ENGINEER'S SEAL		THE CITY OF WINNIPEG WORKS AND OPERATIONS DIVISION WATERWORKS WASTE AND DISPOSAL DEPARTMENT		SHEET 4 OF 4	
DESIGNED BY		CHECKED BY				NORTH END WATER POLLUTION CONTROL CENTRE SLUDGE DIGESTION EXPANSION	
DRAWN BY WKT		APPROVED BY		LOOP WIRING DIAGRAM TEMPERATURE MONITORING BOILER NO. 4		NEP-2273	
HOR. SCALE VERTICAL N.T.S.		RELEASED FOR CONSTRUCTION					
1). REDRAWN & REVISED IN AUTOCAD12		DATE MAY 18, 1995		PLOT DATE MAY 19, 1995			
NO. REVISIONS		DATE BY					



B901-FIT FLOW INDICATING TRANSMITTER
 B901-FI FLOW INDICATOR
 NOTE 2 STATION CONNECTION BEHIND B901-FI
 NOTE 3 PREVIOUSLY WAS WIRE # 210.18 & # 210.19

DC B901 FT
 INDICATES WASTE GAS
 FLOW TO BOILERS

120 VAC
 POWER SUPPLY
 (PANEL R)

B.M. ELEV.				ENGINEER'S SEAL				 THE CITY OF WINNIPEG WORKS AND OPERATIONS DIVISION WATERWORKS WASTE AND DISPOSAL DEPARTMENT			
				DESIGNED BY JOHNSON CONTROLS CHECKED BY RJP				N.E.W.P.C.C. SLUDGE DIGESTION EXPANSION			
				DRAWN BY TM APPROVED BY				SHEET 1 OF 2			
				HOR. SCALE N.T.S. VERTICAL				CITY DRAWING NUMBER NEP-1934			
2 REVISED TO DATE 04-95 MBD				RELEASED FOR CONSTRUCTION				NR 12105			
1 REVISED TO DATE ON CAD 92.05.14 RJP				CONSULTANT DRAWING NO. 6136-1-262D				PLOT DATE: APRIL 26, 1995			
NO. REVISIONS DATE BY DATE				MAY 1993							