A1 SIZE - 594 x 841 mm

VALVE SYMBOLS

- NORMALLY OPEN VALVE
- NORMALLY CLOSED VALVE
- GATE WITH HAND CONTROL
- ANGLE
- BUTTERFLY
- BALL
- GLOBE
- IN-LINE SAFETY
- FLOAT
- NEEDLE
- THREE WAY
- FOUR WAY
- CHECK
- STOP CHECK
- AIR ASSISTED CHECK
- SPRING OPERATED CHECK
- COCK VALVE
- QUICK CONNECT AIR HOSE COUPLING
- PLUG VALVE

GATE SYMBOLS

- FLAP GATE
- SLIDE GATE (N.O.)
- SLIDE GATE (N.C.)
- OR STOP LOG (N.O.)
- STOP LOG (N.C.)

INSTRUMENT SYMBOLS

- DISCRETE INSTRUMENTS FIELD MOUNTED
- DISCRETE INSTRUMENTS PRIMARY LOCATION (CONTROL ROOM) FRONT PANEL MOUNTED
- DISCRETE INSTRUMENTS PRIMARY LOCATION (CONTROL ROOM) REAR PANEL MOUNTED
- DISCRETE INSTRUMENTS AUXILIARY LOCATION (NORMALLY ACCESSIBLE) FRONT PANEL MOUNTED
- DISCRETE INSTRUMENTS AUXILIARY LOCATION (NORMALLY ACCESSIBLE) REAL PANEL MOUNTED
- AI — DCIS FUNCTION DATA ACCESSIBLE TO OPERATOR — AI = ANALOG INPUT, AO = ANALOG OUTPUT, DI = DIGITAL INPUT, DO = DIGITAL OUTPUT
- AI — PLC FUNCTION AUXILIARY LOCATION DATA NOT ACCESSIBLE TO OPERATOR — AI = ANALOG INPUT, AO = ANALOG OUTPUT, DI = DIGITAL INPUT, DO = DIGITAL OUTPUT
- AI — PLC FUNCTION PRIMARY LOCATION DATA NOT ACCESSIBLE TO OPERATOR — AI = ANALOG INPUT, AO = ANALOG OUTPUT, DI = DIGITAL INPUT, DO = DIGITAL OUTPUT
- AI — OTHER COMPUTER FUNCTION — AI = ANALOG INPUT, AO = ANALOG OUTPUT, DI = DIGITAL INPUT, DO = DIGITAL OUTPUT, SI = SERIAL INPUT, SO = SERIAL OUTPUT
- DISCRETE INSTRUMENTS FIELD MOUNTED NO LOOP IDENTIFIER

- R — PILOT LIGHT (FIELD)
- R — PILOT LIGHT (CONTROL ROOM)
- R — PILOT LIGHT (FIELD PANEL)

W = WHITE, R = RED, G = GREEN, A = AMBER, B = BLUE

- I — INTERLOCK
- R — RESET
- K — KEYED INTERLOCK
- P — PURGE

ACTUATOR SYMBOLS

- DIAPHRAGM OPERATED
- DIAPHRAGM OPERATED WITH POSITIONER
- DIAPHRAGM OPERATED WITH POSITIONER, FAIL CLOSE
- DIAPHRAGM OPERATED WITH POSITIONER, FAIL OPEN
- DIAPHRAGM OPERATED (SINGLE/DUAL) TWO WAY, FAIL OPEN
- DIAPHRAGM OPERATED (SINGLE/DUAL) TWO WAY, FAIL CLOSE
- DIAPHRAGM OPERATED VALVE WITH HAND ADJUSTMENT FAIL CLOSED
- M — MOTOR OPERATED
- PRESSURE REGULATOR, SELF CONTAINED
- BACK PRESSURE REGULATOR, SELF CONTAINED
- PRESSURE REGULATOR, SELF CONTAINED WITH HAND ADJUSTMENT
- BACK PRESSURE REGULATOR, SELF CONTAINED WITH HAND ADJUSTMENT
- PRESSURE REGULATOR, EXTERNAL TAP
- BACK PRESSURE REGULATOR, EXTERNAL TAP
- DIAPHRAGM OPERATED, PRESSURE BALANCED
- PRESSURE RELIEF OR SAFETY
- VACUUM RELIEF
- S / E/P / FY — SOLENOID ACTIVATED (DIRECTLY IN THE PROCESS/ON INSTRUMENT AIR LINE TO DIAPHRAGM OR CYLINDER VALVE)
- S / E/P / FY — THREE WAY SOLENOID ACTIVATED (DIRECTLY IN THE PROCESS/ON INSTRUMENT AIR LINE TO DIAPHRAGM OR CYLINDER VALVE) N.C. N.O.
- CYLINDER OPERATED (SINGLE/DUAL)
- CYLINDER OPERATED WITH POSITIONER
- DOUBLE ACTING CYLINDER
- TEMPERATURE SAFETY VALVE
- FLOAT LEVEL VALVE

PID STANDARDS

1. DRAWINGS UTILIZE CITY OF WINNIPEG STANDARDS FOR BORDER AND TITLE BLOCK. ALL DRAWINGS ARE PRODUCED ON AUTOCAD (LATEST REV., R2000 OR LATER).
2. ALL UNITS ARE IN METRIC, EXCEPT AS NOTED OTHERWISE. ALL DIMENSIONS SHOWN ARE IN MILLIMETERS (mm).
3. DRAWING CONTENT GENERALLY CONFORMS WITH TO ISA-5.1 STANDARD. AN EXCEPTION REGARDING EQUIPMENT TAGGING HAS BEEN MADE TO ALLOW BETTER CONFORMITY IN NAMING.
4. PID'S INDICATE MAJOR PROCESS PIPING AND EQUIPMENT AND ASSOCIATED LOCAL INSTRUMENTATION, DCS AND OTHER PROCESS I/O.
5. EQUIPMENT INCLUDING VESSELS, DRUMS, EXCHANGERS, HEATERS, PUMPS, COMPRESSORS, ETC. ARE ARRANGED IN SEQUENCE WITH PRINCIPLE FUNCTIONS AND FLOWS.
6. ALL MAJOR EQUIPMENT INCLUDING PUMPS, COMPRESSORS, TANKS, ETC. ARE LABELED AS TO FUNCTION WITH DESIGN SIZES AND RATINGS.
7. ALL PROCESS LINES ARE LABELED ACCORDING TO FUNCTION AND SIZE UTILIZING SYSTEM CODES DEFINED HEREIN.
8. 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

- 1-0101M-G-A0001 — PROCESS / SIGNAL CONTINUATION ON INDICATED DRAWING
- SIGNAL CONTINUATION ON SAME DRAWING

ACCESSORY DEVICE SYMBOLS

- ORIFICE PLATE
- FLANGE
- PIPE REDUCER
- DAMPER
- PUMP
- BLOWER / FAN
- MOTOR
- STRAINER
- DRAIN
- UNION
- TE — TEMPERATURE ELEMENT WITH THERMOWELL
- SCREWED CAP
- HOSE CONNECTION
- BLIND FLANGE
- FILTER
- EXPANSION JOINT
- VENTURI TUBE
- SINGLE PORT PITOT TUBE
- AVERAGING PITOT TUBE
- MIX TEE
- VARIABLE AREA FLOW INDICATOR (ROTAMETER)
- VORTEX FLOW METER
- DUPLEX STRAINER
- MIXER
- FLOW NOZZLE
- AIR INTAKE / RELEASE
- DIAPHRAGM SEAL
- AIR VENT
- HEAT TRACING
- HEAT EXCHANGER
- C/C — COOLING COIL
- D/X — MECHANICAL COOLING (EVAPORATOR)
- H/C — HEATING COIL
- E/C — ELECTRIC HEATING COIL
- CONDENSOR
- T — TRAP
- S — S-TRAP PRESSURE RELIEF
- VENT TO ATMOSPHERE
- AXIAL PROPELLER PUMP
- FLAME ARRESTER
- PRESSURE ARRESTER
- FLEX PIPE
- HOSE REEL

ELECTRICAL SYMBOLS

- CIRCUIT BREAKER
- FUSED DISCONNECT
- DISCONNECT LINK
- LIGHTNING ARRESTOR

INSTRUMENT LINE SYMBOLS

- INSTRUMENT SUPPLY OR CONNECTION TO PROCESS
- PNEUMATIC SIGNAL
- ELECTRIC SIGNAL
- HYDRAULIC SIGNAL
- CAPILLARY TUBE
- ELECTROMAGNETIC OR SONIC SIGNAL GUIDED
- ELECTROMAGNETIC OR SONIC SIGNAL UNGUIDED
- ELECTRIC BINARY (ON/OFF) SIGNAL (OPTIONAL)
- PNEUMATIC BINARY SIGNAL (OPTIONAL)
- DATA / SERIAL LINK (OPTIONAL)

B.M. ELEV.
FIELD BOOK /:
POSTED TO LBIS

NO.	REVISIONS	DATE	BY
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

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DESIGNED BY EMR | CHECKED BY CJR
DRAWN BY DS | APPROVED BY EMR
HOR. SCALE NTS | VERTICAL
DATE 2004/01/23 | RELEASED FOR CONSTRUCTION
DATE
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ENGINEER'S SEAL

Winnipeg
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-D-A0001	001	06	D

LAST SAVE: 2005/10/06 - 10:40am
PATH: M:\CADFILES\12240-CITY OF WPG North End\ABAUTOCA - General\1-0101A-D-A0001-001-060.dwg

A1 SIZE - 594 x 841 mm

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	DIFFERENTIAL			OPEN, INCREASE (1)
E	VOLTAGE (EMF)		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)	FAILURE		
G	GAS		GLASS, VIEWING DEVICE, GUAGE (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	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS, VALVE, DAMPER (4)			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED (5)	X AXIS	UNCLASSIFIED (5)	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:

1. 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.
2. 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.
3. 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.
4. 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.
5. 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
AAH	ANALYSIS ALARM - HIGH
AAHH	ANALYSIS ALARM - HIGH-HIGH
AE	ANALYSIS ELEMENT
AIT	ANALYSIS INDICATING TRANSMITTER (ANALYTIC INST.)
AK	ANALYSIS (AMPLER) CONTROL STATION
ASH	ANALYSIS SWITCH - HIGH
ASHH	ANALYSIS SWITCH - HIGH-HIGH
ASY	ANALYSIS SAFETY RELAY
AT	ANALYSIS TRANSMITTER (ANALYTIC INST.)
BK	BURNER CONTROL STATION
BS	BURNER FLAME SWITCH
BV	BURNER VALVE
DE	DENSITY ELEMENT
DR	DENSITY RECORDER
DT	DENSITY TRANSMITTER
DX	DENSITY SOURCE (X = SOURCE)
EE	VOLTAGE ELEMENT/TRANSFORMER
EI	VOLTAGE INDICATOR
ET	VOLTAGE TRANSMITTER
FE	FLOW ELEMENT
FG	FLOW METER ULTRASONIC GENERATOR
FI	FLOW INDICATOR
FIC	FLOW INDICATING CONTROLLER
FIT	FLOW INDICATING TRANSMITTER
FQI	FLOW TOTALIZING INDICATOR
FQY	FLOW TOTALIZING / INTEGRATING RELAY
FR	FLOW RECORDER
FRC	FLOW RECORDING CONTROLLER
FRQ	FLOW RECORDING TOTALIZER
FSL	FLOW SWITCH LOW
FT	FLOW TRANSMITTER
FV	FLOW VALVE
FY	FLOW COMPUTER / RELAY
GE	GAS ELEMENT
GS	GAS SWITCH MODULE
HK	HAND CONTROL STATION
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
PSHH	PRESSURE SWITCH HIGH (2ND STAGE)
PSL	PRESSURE SWITCH LOW
PSV	PRESSURE SAFETY VALVE (RELIEF)
PT	PRESSURE TRANSMITTER
PY	PRESSURE RELAY (I/I CONVERTER)
SI	SPEED INDICATOR
SK	SPEED CONTROL STATION
ST	SPEED TRANSMITTER
TE	TEMPERATURE ELEMENT
TG	TEMPERATURE GAUGE
TI	TEMPERATURE INDICATOR
TIC	TEMPERATURE INDICATING CONTROLLER
TIT	TEMPERATURE INDICATING TRANSMITTER
TR	TEMPERATURE RECORDER
TSH	TEMPERATURE SWITCH HIGH
TSL	TEMPERATURE SWITCH LOW
TT	TEMPERATURE TRANSMITTER
TV	TEMPERATURE VALVE
TW	TEMPERATURE THERMOWELL
TY	TEMPERATURE RELAY (SOLENOID VALVE OR M/P)
XE	VELOCITY ELEMENT
XI	VELOCITY INDICATOR
XK	UNCLASSIFIED CONTROL STATION (X = FIRE)
XT	POWER FACTOR TRANSMITTER
XT	VELOCITY TRANSMITTER (X = VELOCITY)
XX	UNCLASSIFIED (XX = ALARM ANNUNCIATOR)
YS	COMPUTER SWITCH
YSA	STATE SAFETY ALARM
YSL	STATE SAFETY LIGHT
ZI	POSITION INDICATOR
ZS	POSITION SWITCH
ZSB	POSITION SWITCH CLOSED (LIMIT SWITCH)
ZSDL	POSITION SWITCH OPEN (LIMIT SWITCH)
ZSH	POSITION SWITCH HIGH
ZSL	POSITION SWITCH LOW
ZT	POSITION TRANSMITTER

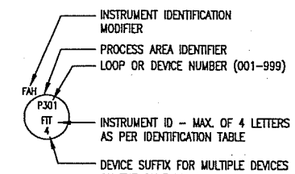
NOTES FOR INSTRUMENT FIELD DEVICE IDENTIFIERS:

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

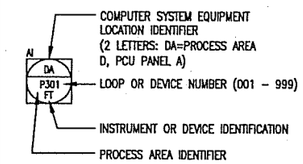
INSTRUMENT IDENTIFICATION MODIFIER

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

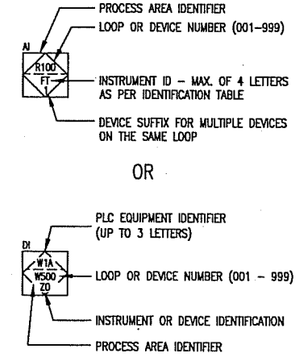
INSTRUMENT FIELD DEVICE NUMBERING



CONTROL SYSTEM (DCS) POINT TAG NUMBERING



PLC POINT TAG NUMBERING



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06	RENUMBERED FACILITY CODE	2005/10/06	CJR
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SNC·LAVALIN 200-1800 Ness Avenue Winnipeg, Manitoba Canada R3J 3W7

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HOR. SCALE NTS | VERTICAL | RELEASED FOR CONSTRUCTION
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FILENAME: 1-0101A-D-A0001-002-06D.dwg

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: 1-0101A-D-A0001 | SHEET: 002 | REV.: 06 | SIZE: D

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A1 SIZE - 594 x 841 mm

INSTRUMENT SIGNAL IDENTIFIERS

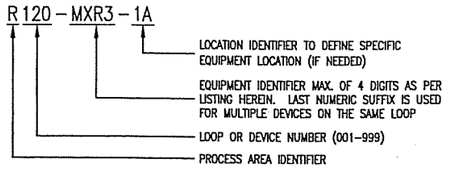
IDENTIFIER	DEFINITION	SIGNAL TYPE
AA	ANALYSIS ALARM (1ST STAGE)	DIGITAL INPUT
AF	ANALYSIS (SAMPLER) FAIL	DIGITAL INPUT
AH	ANALYSIS HIGH ALARM (1ST OR 2ND STAGE)	DIGITAL INPUT
AM	ANALYSIS (SAMPLER) ON/OFF STATUS	DIGITAL INPUT
AN	ANALYSIS (SAMPLER) START	DIGITAL OUTPUT
AT	ANALYSIS TRANSMIT (APPLIED TO 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

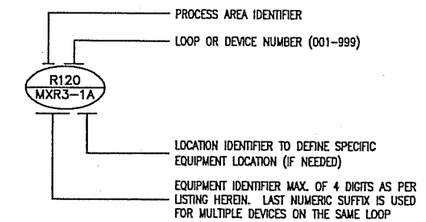
IDENTIFIER	DEFINITION
AB	AIR BLOWER
AC	AIR COMPRESSOR
ACU	AIR CONDITIONING UNIT
AD	AIR DRYER
AF	AERATION FAN (EXISTING OR NEW)
AHU	AIR HANDLING UNIT
BD	BACK DRIVE
BF	BOILER FAN (EXISTING OR NEW)
BP	BOILER PUMP (EXISTING OR NEW)
CA	CAKE AGITATOR
CAP	CAKE PUMP
CC	COOLING COIL
CE	CENTRIFUGE
CM	CLARIFIER 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
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
LOP	LUBE OIL PUMP
MAU	MAKE-UP AIR UNIT
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
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
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.



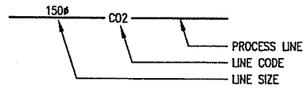
OR



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
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
VAA	VACUUM AIR
VTA	VENT TO ATMOSPHERE
W	WATER
WAS	WASTE ACTIVATED SLUDGE

NO.	REVISIONS	DATE	BY
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

B.M. ELEV.
FIELD BOOK #:
POSTED TO LBIS

SNC•LAVALIN Engineers & Constructors
SNC-LAVALIN 320-1800 Main Avenue Winnipeg, Manitoba Canada R3J 3W7

DESIGNED BY EMR | CHECKED BY CJR
DRAWN BY DS | APPROVED BY EMR
HOR. SCALE NTS
VERTICAL
RELEASED FOR CONSTRUCTION
DATE 2004/01/23
DATE
FILENAME: 1-0101A-D-A0001-003-060.dwg

ENGINEER'S SEAL

Winnipeg
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-D-A0001 | SHEET: 003 | REV.: 06 | SIZE: D

LAST SAVE: 2005/10/06 - 10:40am
PATH: W:\JOBFILES\112440-CITY OF WPG North Esh\48AUTO\A - General\1-0101A-D-A0001-003-060.dwg

A1 SIZE - 594 x 841 mm

FROM SURGE WELL M170-LSL
1-0101M-G-A0003

OPEN M162-FV ON
M161-FV EMERGENCY STOP / CLOSE

FROM SURGE WELL
EAST SUCTION HEADER
1-0101M-G-A0003

RS

4 kW
575V 3ø

M161 FV

M160–P6
505 RPM
522 kW
4160V

188 ML/D
1050ø

134

P6 RUN

COMMON ALARM

REMOTE TRIP

IQ-1000 II

MOTOR WINDING

MOTOR BEARING

PUMP BEARING

FROM SIPHON VALVE AIR SUPPLY
1-0101M-G-A0016

SIPHON BREAK VALVE

AIR INLET

200ø

MV-3F

FROM POTABLE WATER SYSTEM
1-0101M-G-A0015

SW

TO DISCHARGE WELL
1-0101M-G-A0011

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

NO.	REVISIONS	DATE	BY
02	RENUMBERED FACILITY CODE	2005/10/06	CJR
01	ISSUED FOR C.O.W. USE	2005/09/15	CJR
00	RELEASED FOR CUSTOMER REVIEW	2004/09/07	CJR

B.M. ELEV.
FIELD BOOK #:
POSTED TO LBS

SNC-LAVALIN Engineers & Constructors
SNC-LAVALIN 200-1600 Notre Avenue Winnipeg, Manitoba Canada R3J 3W7

DESIGNED BY	EXISTING	CHECKED BY	CJR
DRAWN BY	EPA/CJR	APPROVED BY	EMR
HOR. SCALE	NTS	RELEASED FOR CONSTRUCTION	
VERTICAL			
DATE	2004/01/23	DATE	

FILENAME: 1-0101M-G-A0009-001-02D.dwg

ENGINEER'S SEAL

Winnipeg
THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

NORTH END WATER POLLUTION CONTROL CENTRE
MAIN BUILDING
PROCESS & INSTRUMENTATION DIAGRAM
RAW SEWAGE PUMP P6

CITY DRAWING NUMBER	SHEET	REV.	SIZE
1-0101M-G-A0009	001	02	D

LAST SAVE: 2005/10/06 - 11:15am
PATH: M:\CADFILES\112440-CITY OF WPCC North End\ABAUTOCAD - Main Bldg\1-0101M-G-A0009-001-02D.dwg