

**PROCESS**

**PIPING LEGEND**

PIPE FITTING	FLANGED	SCREWED	WELDED
90° ELBOW			
45° ELBOW			
TEE			
LATERAL			
ELBOW TURNED DOWN			
ELBOW TURNED UP			
ELBOW SIDE OUTLET DOWN			
ELBOW SIDE OUTLET UP			
TEE OUTLET DOWN			
TEE OUTLET UP			
REDUCER CONCENTRIC			
REDUCER ECCENTRIC			
EXPANSION JOINT			
FLANGE			
UNION			
CAP			
ORIFICE			
DRAIN			
FLEXIBLE CONNECTION			
QUICK CONNECT COUPLING			
PACKAGED EQUIPMENT TIE IN POINT			
BELL MOUTH			

**VALVES**

	PINCH
	KNIFE GATE
	GATE
	GLOBE
	BALL
	BUTTERFLY
	NEEDLE
	CHECK
	PLUG
	ANGLE
	PRESSURE SAFETY (RELIEF)
	UNCLASSIFIED Write type of body adjacent to symbol
	PRESSURE REGULATING VALVE
	AIR RELEASE VALVE
	FOUR WAY VALVE

**VALVE ACTUATORS**

	HAND
	PNEUMATIC OPERATOR
	MOTORIZED
	SOLENOID
	HYDRAULIC

**EQUIPMENT**

	CENTRIFUGAL PUMP
	GEAR PUMP
	DRAIN
	STOP LOGS
	SLUICE GATE (NORMALLY OPEN)
	SUBMERSIBLE PUMP
	WEIR GATE

**NOTE:**

EXISTING      PROPOSED

PROCESS PIPING 50mm DIAMETER AND SMALLER IS SHOWN SINGLE LINE.

PROCESS PIPING LARGER THAN 50 mm DIAMETER IS SHOWN DOUBLE LINE.

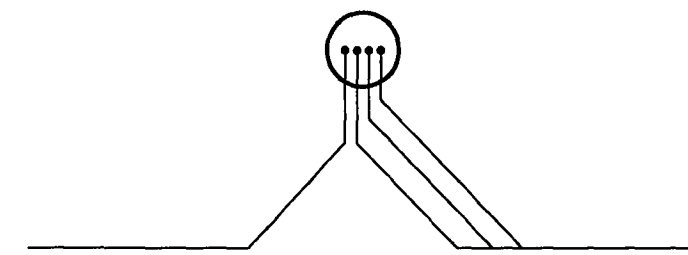
SEE DIVISION 15 AND MECHANICAL DRAWINGS FOR MECHANICAL PLUMBING LEGEND AND PIPE SPECIFICATIONS

DETAIL SYMBOL

	A - DETAIL NUMBER
	B - DRAWING WHERE DETAIL SHOWN

**ELECTRICAL AND INSTRUMENTATION**

**INSTRUMENT IDENTIFICATION**



FIRST LETTER	SUCCEEDING LETTERS	TYPICAL I/O TYPES
A ANALYSIS or SAMPLER	A ALARM or TROUBLE (Alarm and shutdown)	DI
B BURNER FLAME	B CLOSE or DECREASE	DI/DO
C CONDUCTIVITY	C CONTROL or CONTROLLER	AO
D DENSITY (Mass) or SPECIFIC GRAVITY (DIGITAL)	D OPEN or INCREASE	DI/DO
E VOLTAGE (EMF)	E PRIMARY ELEMENT (or PROBE)	
F FLOW RATE	F FAILURE	DI
G GAS	G GAUGE/ULTRASONIC GEN.	
H HAND (Manual)	H HIGH (Alarm only) HH HIGH (Shutdown)	DI
I CURRENT (Electrical)	I INDICATE	AI
J POWER	J LIGHT	DO
K TIME	K CONTROL STATION	DI
L LEVEL	L LOW (Alarm only) LL LOW (Shutdown)	DI
M MOTOR	M OPERATE or ON/OFF	DI
N MOISTURE	N START	DO
O TORQUE	O OVERLOAD or STOP	DO
P PRESSURE or VACUUM	P PNEUMATIC or PRESSURE	
Q COMMON	Q INTEGRATE or TOTALIZE	DI
R RADIOACTIVITY	R RECORDER	AI
S SPEED or FREQUENCY	S SWITCH or SAFETY	DI/DO
T TEMPERATURE	T TRANSMITTER	AI
U MULTIVARIABLE	U MULTIFUNCTION	DI
V VALVE or DAMPER	V VALVE	
W WEIGHT or FORCE	W WELL	
X UNCLASSIFIED*	X UNCLASSIFIED*	DI/DO
Y COMPUTER	Y RELAY or COMPUTE	
Z POSITION	Z DRIVE, ACTUATE or FINAL CONTROL ELEMENT	

\* TO BE DEFINED AT TIME OF USE

**INSTRUMENT IDENTIFICATION**

	FIELD MOUNTED INSTRUMENT
	INSTRUMENT WITH TWO SERVICE OR FUNCTION
	LOCAL PANEL - MOUNTED INSTRUMENT
	INSTRUMENT MOUNTED BEHIND LOCAL CONTROL PANEL
	INSTRUMENT MOUNTED ON MAIN PANEL
	INSTRUMENT MOUNTED BEHIND MAIN PANEL
	FIELD MOUNTED - PILOT LIGHT
	MAIN PANEL MOUNTED - PILOT LIGHT
	LOCAL PANEL MOUNTED - PILOT LIGHT
	DISTRIBUTED CONTROL, SHARED DISPLAY NOT NORMALLY ACCESSIBLE TO OPERATOR
	DISTRIBUTED CONTROL, SHARED DISPLAY NORMALLY ACCESSIBLE TO OPERATOR
	DISTRIBUTED CONTROL, AUXILIARY OPERATOR'S INTERFACE DEVICE
	DISTRIBUTED CONTROL SYSTEM - INTERNAL SYSTEM FUNCTION (i.e. COMPUTATION / SIGNAL CONDITIONING) Used in conjunction with function bubbles
	COMPUTER - INTERNAL SYSTEM FUNCTION (i.e. COMPUTATION / SIGNAL CONDITIONING)
	COMPUTER - INTERNAL SYSTEM FUNCTION NORMALLY ACCESSIBLE TO OPERATOR
	EQUIPMENT TAG
	LOGIC or SEQUENTIAL CONTROL
	LOGIC or SEQUENTIAL CONTROL PERFORMED WITHIN A DISTRIBUTED CONTROL SYSTEM
	LOGIC or SEQUENTIAL CONTROL PERFORMED WITHIN A DISTRIBUTED CONTROL SYSTEM NORMALLY ACCESSIBLE TO OPERATOR
	INTERLOCK

**LINE SYMBOLS**

	MAJOR PROCESS LINES (EXISTING)
	MAJOR PROCESS LINES
	ALL OTHER MECHANICAL LINES
	ALL OTHER MECHANICAL LINES (EXISTING)
	ELECTRICAL SIGNAL
	PNEUMATIC SIGNAL
	CAPILLARY TUBING ( Filled system )
	HYDRAULIC SIGNAL
	CONTROL SYSTEM DATA LINK
	ELECTROMAGNETIC or SONIC SIGNAL (Guided and Non Guided)
	PACKAGED UNIT

**COMMODITY ABBREVIATIONS**

DFE - DISINFECTED FINAL EFFLUENT  
 DE - DISINFECTED EFFLUENT  
 FW - FLUSHING WATER  
 FE - FINAL EFFLUENT  
 IA - INSTRUMENT AIR  
 PW - POTABLE WATER  
 SA - SERVICE AIR  
 SE - SECONDARY EFFLUENT  
 V - VENT

**EQUIPMENT ABBREVIATIONS**

SG - SLUICE GATE  
 SL - STOP LOGS  
 WG - WEIR GATE  
 WP - WEIR PLATE

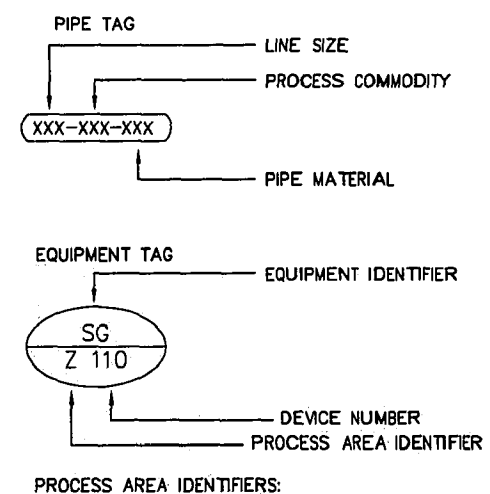
**GENERAL ABBREVIATIONS**

COH - COMPUTER-OFF-HAND SWITCH  
 DP - DRAIN POINT  
 DR - DRAIN  
 ES - ELECTRICAL SUPPLY  
 FP - FLUSH POINT  
 FW - FLUSHING WATER  
 HRLR - HYDRAULIC RESERVOIR LINE RETURN  
 HRLS - HYDRAULIC RESERVOIR LINE SUPPLY  
 LDS - LAND DRAINAGE SEWER  
 LE - LEVEL ELEMENT  
 NG - NATURAL GAS  
 O/C - OPEN CLOSE SWITCH  
 RD - ROOF DRAIN  
 SP - SAMPLE POINT  
 V - VALVE  
 HOA - HAND-OFF-AUTO SWITCH

**GENERAL NOTES:**

- ALL PRESSURE LINES ARE IDENTIFIED BY SHOWING PIPE ELEVATION TO CENTRE LINE.
- ALL PRESSURE LINES SHALL HAVE A MINIMUM SLOPE OF OF 0.5% UNLESS NOTED OTHERWISE

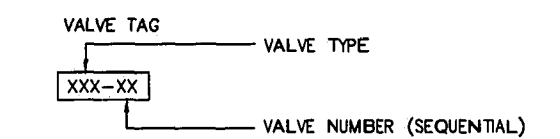
**MISCELLANEOUS**



PROCESS AREA IDENTIFIERS:

G - GRIT  
 M - ADMINISTRATION AND UTILITY BUILDINGS  
 P - PRIMARY CLARIFIERS  
 S - SECONDARY CLARIFIERS  
 R - REACTORS  
 Z - EFFLUENT DISINFECTION

XXX-XXX-XXX LINE CONTINUATION TO/FROM FLOWSHEETS WITH DRAWING NUMBER



**PRELIMINARY  
 NOT FOR CONSTRUCTION**

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REID CROWTHER & PARTNERS LIMITED  
 WINNIPEG  
**RECORD DRAWING**  
 SIG. DATE SEP 17 1999

B.M. ELEV.						ENGINEER'S SEAL	 <b>THE CITY OF WINNIPEG</b> WATER AND WASTE DEPARTMENT	SOUTH END WATER POLLUTION CONTROL CENTRE EFFLUENT DISINFECTION FACILITY	CITY DRAWING NUMBER SEP-2424
						ORIGINAL SIGNED BY D.J. TANIGUCHI 7/22/1998			SHEET OF
DESIGNED BY	KAS	CHECKED BY	BD				LEGEND SYMBOLS AND IDENTIFICATION	REV-1	
DRAWN BY	LLI	APPROVED BY							
1 RECORD DRAWING	99/09/17	LLI							
0 ISSUED FOR TENDER	98/07/27	LLI							
NO. REVISIONS	DATE	BY	DATE	98/04/21	DATE				
						CONSULTANT DRAWING NO. 61786.01 P01			