INSTRUMENT AND FUNCTION SYMBOLS

TYPICAL INSTRUMENT IDENTIFICATION (ISA S5.1)

OUTPUT
- AREA FUNCTION CODE (OPTIONAL)
- FUNCTIONAL IDENTIFICATION CODE (DEVICE)
- BASIC INSTRUMENT
- PROCESS IDENTIFIER
- DEVICE SUFFIX

INPUT

25 PDIT 123 A

XX XXXX XXXX — INSTRUMENT FIELD MOUNTED

XX XXXX XXXX — INSTRUMENT PANEL MOUNTED

XX XXXX XXXX — INSTRUMENT BACK OR REAR OF PANEL MOUNTED

XX XXXX XXXX — INDICATING LIGHT FIELD MOUNTED

XX XXXX XXXX — INDICATING LIGHT PANEL MOUNTED

XX XXXX XXXX — PLC TAG

XX XXXX XXXX — SCADA POINT

XX XXX XXX — INSTRUMENT WITH PLC I/O

GATE VALVE SYMBOL

VALVE NORMALLY OPERATED OPEN

VALVE NORMALLY OPERATED CLOSED

GLOBE VALVE

NEEDLE VALVE

ANGLE VALVE

BUTTERFLY VALVE

CHECK VALVE

BALL VALVE

KNIFE GATE VALVE

PLUG VALVE

AIR VACUUM VALVE (ANTI-SIPHON)

UNION

THREE WAY VALVE

THREE WAY VALVE NORMALLY OPERATED LEFT PORT SHUT

THREE WAY VALVE NORMALLY OPERATED RIGHT PORT SHUT

VACUUM RELIEF VALVE

PRESSURE RELIEF VALVE

PRESSURE REGULATING VALVE

BACK PRESSURE REGULATING VALVE

DIAPHRAGM OPERATED VALVE

M — MOTOR OPERATED VALVE

PISTON OPERATED VALVE

SPRING OPPOSED SINGLE ACTING PISTON ACTUATOR

DOUBLE ACTING PISTON ACTUATOR

AIR RELIEF VALVE

FLOW STREAM TO CONNECTION NOT SHOWN ON OTHER DRAWING

ROCK TRAP

SPECTACLE BLIND TO BE REMOVED

D — DRAIN

ANNULAR SEAL

XX — INSTRUMENT SERVICES:

DC	DIRECT CURRENT POWER SUPPLY
TW	TEMPERATURE WELL
AC	AC ELECTRICAL SUPPLY
PE	PRESSURE ELEMENT
AS	AIR SUPPLY
TE	TEMPERATURE ELEMENT
LE	LEVEL ELEMENT
WS	WATER SUPPLY

INSTRUMENT AND FUNCTION SYMBOLS

DIAPHRAGM SEAL

I — INTERLOCK

VORTEX FLOW SENSOR

PITOT TUBE

SONIC FLOWMETER

PROPELLER OR TURBINE METER

T — THERMAL FLOW ELEMENT

SIGHT GLASS

FLOW STRAIGHTENING VANES

VENTURI OR FLOW TUBE

ORIFICE PLATE

ANNUNCIATOR HORN

ANNUBAR

MAGNETIC FLOWMETER

I P — I TO P TRANSDUCER

FILTER-REGULATOR AIRSET

XX FI XXXX — ROTAMETER

STRAINER

HOSE STATION

LINE BLANKED OFF

S OR S — SOLENOID OPERATED VALVE

VS — VARIABLE SPEED

SA — STROKE ADJUST

PNEUMATIC SYMBOLS (ISO 1219)

2 POSITION — 3 POSITION — NUMBER OF SQUARES EQUALS NUMBER OF POSITIONS

PIPEWORK IS SHOWN CONNECTED TO PORTS WITH SOLENOID IN UNOPERATED POSITION. PORTS ARE NUMBERED

ARROWS SHOW FLOW DIRECTION IN EACH POSITION

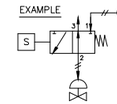
T ⊥ — INTERNAL FLOW BLOCK

S — SOLENOID OPERATOR

PILOT OPERATOR

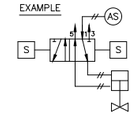
SPRING RETURN OPERATOR

EXAMPLE



2 POSITION, 3 PORT, 3 WAY NORMALLY CLOSED SOLENOID VALVE

EXAMPLE



2 POSITION, 5 PORT, 4 WAY DUAL SOLENOID VALVE

MOTOR

VENTILATION FAN

PUMP WITH MOTOR

SUMP PUMP

METERING PUMP

INSTRUMENT BLOCK DIAGRAM SYMBOLS

PERSONAL COMPUTER

SLC L/R M/A — SINGLE LOOP CONTROLLER

CIRCULAR CHART RECORDER

PROGRAMMABLE LOGIC CONTROLLER

MODEM — MODEM

TELEPHONE

PANEL INDICATOR

ANNUNICIATOR PANEL

MCC

RADIO TRANSCEIVER

INSTRUMENT ELECTRICAL WIRING

CONNECTION TO DEDICATED INSTRUMENT GROUND.

CONNECTION TO ELECTRICAL SUPPLY GROUND.

+ W, − B — SHIELD TERMINATION TO BE LEFT UNCONNECTED CLOSE CUT SHIELD DRAIN WIRE AND INSULATE EXPOSED SHIELD.

INSTRUMENT LINE SYMBOLS

INSTRUMENT SUPPLY OR CONNECTION TO PROCESS

PNEUMATIC SIGNAL

ELECTRICAL SIGNAL

CAPILLARY TUBE

VENDOR PACKAGE BOUNDARY

GUIDED SONIC OR ELECTROMAGNETIC

UN-GUIDED SONIC OR ELECTROMAGNETIC

PNEUMATIC BINARY SIGNAL

ELECTRIC BINARY SIGNAL

DIGITAL COMMUNICATION

MECHANICAL LINKAGE

TELEPHONE LINE

PIPING/EQUIPMENT LINE

PRIMARY PROCESS FLOW

SECONDARY PROCESS FLOW

EXISTING PIPE MATERIALS

AC	ASBESTOS CEMENT
DI	DUCTILE IRON
RC	REINFORCED CONCRETE

COMMODITIES

DCW	DOMESTIC COLD WATER	RWW	RAW WASTEWATER
DHW	DOMESTIC HOT WATER	SA	SERVICE AIR
DR	DRAIN	SEP	SEPTAGE
FC	FERROUS CHLORIDE	SW	SANITARY WATER
IA	INSTRUMENT AIR	VAP	VENTILATION AIR PIPING
PSW	PLANT SERVICE WATER	VE	VENT

PIPE MATERIAL CODES

A1	STEEL	F1	CAST IRON – GRAVITY
A10	STEEL	G1	COPPER TYPE K
A15	STEEL/STAINLESS	G2	COPPER TYPE L
316L	STAINLESS GR. 316L	G3	COPPER
E1	PVC – PRESSURE	H2	STAINLESS STEEL
E4	PVC – GRAVITY AND SEWER	HDPE	HIGH-DENSITY POLYETHLENE
E8	FRP	DI	DUCTILE IRON

TREATMENT CODES

(C)	INTERNALLY LINED COAL TAR EPOXY
(E)	EXTERNALLY COATED HIGH BUILD EPOXY
(G)	EXTERNALLY COATED COAL TAR EPOXY
(I)	INSULATED

LINE IDENTIFICATION

100 – RWW – A1 (□)

- TREATMENT CODE
- PIPE MATERIAL CODE
- COMMODITY
- LINE SIZE (IN MILLIMETRES)

INSTRUMENT TAGS

FUNCTIONAL IDENTIFICATION CODE (ISA S5.1)

	FIRST LETTER		REMAINING LETTERS			TYPICAL FUNCTIONAL ID CODES									
	VARIABLE	MODIFIER	PASSIVE FUNCTIONS	OUTPUT FUNCTION	MODIFIER	PRIMARY ELEMENT	BLIND TRANSMITTER	INDICATING TRANSMITTER	INDICATING CONTROLLER	RECORDER	SWITCH DEVICE	MODULATING VALVE	SELF ACTUATED VALVE	SAFETY VALVE	ALARM
						–E	–TF	–IT	–IC	–R	–S	–V	–CV	–SV	–A
A	ANALYTICAL		ALARM			AE	AT	AIT	AIC	AR					AA
B	BURNER, COMBUSTION					BE	BT	BIT	BIC						BA
C	CONDUCTIVITY			CONTROL STATION	CLOSED										
D	DENSITY	DIFFERENTIAL													
E	VOLTAGE		SENSE ELEMENT			EE	ET	EIT							
F	FLOW	RATIO/FRACTION	FAULT, FAILURE		FAST, FOWARD	FE	FT	FIT	FIC	FR	FS	FV	FCV	FSV	FA
G	GENERAL, GROUPED		GLASS VIEW ELEMENT												GA
H	HAND/HEATER				HIGH				HIC		HS	HV			
I	ELECTRIC CURRENT		INDICATE				IT	IIT							IA
J	POWER						JT	JIT							JA
K	TIME	TIMED									KS				KA
L	LEVEL				LOW	LE	LT	LIT	LIC	LR	LS	LV	LCV		LA
M	MOTOR/DRIVE				MIDDLE										
N	CONSISTENCY														
O			ORIFICE		OPEN										
P	PRESSURE, VACUUM		POINT CONNECTION			PE	PT	PIT	PIC	PR	PS	PV	PCV	PSV	PA
Q	QUANTITY	INTERGRATE													
R	DRIVES/LOGIC		RECORDER		REVERSE, RUN										
S	SPEED, FREQUENCY	SAFETY		SWITCH	SLOW	SE	ST	SIT	SIC	SR	SS				SA
T	TEMPERATURE			TRANSMIT		TE	TT	TIT	TIC	TR	TS	TV	TCV	TSV	TA
U	MULTIVARIABLE														
V	VIBRATION, VISCOSITY			VALVE		VE	VT	VIT		VR					VA
W	WEIGHT, FORCE		WELL			WE	WT	WIT			WS				WA
X	MISC.	X AXIS													
Y	EVENT	Y AXIS	SIGNAL TRANSDUCER	RELAY	COMPUTATION										
Z	POSITION	Z AXIS		FINAL CONTROL ELEMENT		ZE	ZT	ZIT			ZS				ZA
/					CONVERSION										

ADDITIONAL SPECIFIC TAGS

MC = MOTOR CONTROL
MI = MOTOR RUN INDICATION
MSM = MOTOR FEEDBACK
MOM = MOTOR COIL
MSP = MOTOR PERMISSIVE
MM = ACTUAL PUMP
MV = SOLENOID VALVE
MS = MOTOR RUN STATUS – FEEDBACK
MO = MOTOR OUTPUT – SIGNAL TO COIL/STARTER
MP = MOTOR PERMISSIVE
M = ACTUAL DRIVE
H = HEATER

INSTRUMENT ABBREVIATIONS

SLC	SINGLE LOOP CONTROLLER
PLC	PROGRAMABLE LOGIC CONTROLLER
RES CL_2	RESIDUAL CHLORINE
pH	pH
DO	DISSOLVED OXYGEN
O_2	OXYGEN
H/A	HAND–AUTO SELECTION
HOA	HAND–OFF–AUTO SELECTION
JOA	JOG–OFF–AUTO SELECTION
L/L	LEAD–LAG SELECTION
F/S	FAST–SLOW SELECTION
OCA	OPEN–CLOSE–AUTO SELECTION
SEL	SELECTOR SWITCH
M/A	MANUAL–AUTO SELECTION
L/R	LOCAL–REMOTE SELECTION
L–O–R	LOCAL–OFF REMOTE SELECTOR
O–S–C	OPEN–STOP–CLOSE SELECTOR
ESD	EMERGENCY SHUTDOWN
ACK	ACKNOWLEDGE (ALARM)
ENBL	ENABLE
FC	FAIL CLOSED
FL	FAIL LAST
FO	FAIL OPEN
STAT	STATUS
ALM	ALARM
EXH	EXHAUST
SP	SETPOINT
PV or MV	PROCESS OR MEASURED VARIABLE
OP	OUTPUT
RSP	REMOTE SETPOINT
NC	NORMALLY OPERATED CLOSED

DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
		0	JUN 2021	ISSUED FOR CONSTRUCTION	JH	JG	JG

REFERENCE DRAWINGS — REVISIONS

REGIONAL DISTRICT OF NANAIMO

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — G. GOEPEN # 213214 — 2021-06-16

PROJECT NAME: CHASE RIVER PUMP STATION UPGRADES

DRAWN: DW
DESIGNED: RN
CHECKED: JG
APPROVED: JG

CHASE RIVER PUMP STATION
PROCESS
GENERAL – MECHANICAL/INSTRUMENTATION
LEGEND AND ABBREVIATIONS

JACOBS

DRAWING NUMBER	SHEET	PROJECT NO.	SCALE
CRPS–P–001		707564	N.T.S.
		DATE: APR 2021	REV: 0