PROCESS LINE SYMBOLS

- MATERIAL FLOW (NO PIPING)
- MAIN PROCESS
- SECONDARY PROCESS AND UTILITY LINES
- VENDOR SUPPLIED LINE
- EQUIPMENT OR PIPING CONTAINED WITHIN A MANUFACTURERS PACKAGE
- MANUAL OPERATION, SHOWS ROUTING OF PROCESS THAT IS MANUALLY TRANSFERRED BETWEEN EQUIPMENT OR PIPING
- HOSE

INSTRUMENT LINE SYMBOLS

- CONNECTION TO PROCESS (MECH. LINK OR INSTR. INPUT)
- PNEUMATIC SIGNAL
- ELECTRICAL CONNECTION (SEE NOTE BELOW)
- CAPILLARY TUBING (FILLED SYSTEM)
- HYDRAULIC SIGNAL
- XX INSTRUMENT AIR SUPPLY (XX - SUPPLY PRESSURE IN PSI)
- NUCLEAR OR SONIC SIGNAL (WITHOUT WIRING OR TUBING)
- INTERNAL SYSTEM LINK (SOFTWARE OR DATA LINE)

NOTES

DASHED LINE BETWEEN ELECTRICAL COMPONENTS AND/OR INTERLOCK SYMBOLS ARE ONLY INTENDED TO SHOW THAT THESE COMPONENTS MAKE UP A PARTICULAR SYSTEM. THESE CONNECTING LINES DO NOT SHOW THE ACTUAL ELECTRICAL WIRING. FOR CIRCUIT DETAILS, REFER TO INSTRUMENTATION LOOP SHEETS OR ELECTRICAL DRAWING. ARROW HEAD OR DASHED LINE SHOWS DIRECTION OF ELECTRICAL TRIP.

AUXILIARY SYMBOLS

- P.P. INSULATED LINE (PERSONNEL PROTECTION)
- T.I. INSULATED LINE (THERMAL INSULATION)
- E.L.C. INSULATED LINE (ELECTRICALLY TRACED)
- JA64 / WB8 CHANGE OF PIPE MATERIAL
- CHANGE OF PIPE NUMBER
- TIE-IN OR BATTERY LIMIT
- GATE VALVE
- GLOBE VALVE
- CHECK VALVE
- BUTTERFLY VALVE OR DAMPER
- PLUG VALVE
- PINCH VALVE
- BALL VALVE
- DIAPHRAGM VALVE
- NEEDLE VALVE
- RELIEF VALVE
- 3-WAY VALVE
- 4-WAY VALVE
- KNIFE GATE VALVE
- DOLE VALVE
- DART VALVE
- SPADE VALVE
- OWNER SUPPLIED/PREPURCHASED VALVE
- Y-STRAINER
- T AUTOMATIC DRAIN/STREAM TRAP
- BLIND FLANGE
- CAP ON PIPE END
- SCREWED CAP ON PIPE END
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- ORIFICE
- MATERIAL CONDUCTING HOSE
- EXPANSION JOINT
- JOHNSON COUPLING
- 100-17-201 MATCH FLAG GIVING REFERENCE DWG. NUMBER
- FILTER
- LUBRICATOR
- OPEN DRAIN
- SPRAY HEAD
- AC AIR CONNECTION ONLY
- WC WATER CONNECTION ONLY
- AHS AIR HOSE STATION
- WHS WATER HOSE STATION
- SHS STEAM HOSE STATION
- SPECTACLE BLIND
- STARTUP STRAINER

SERVICE CODE

AHP	AIR, HIGH PRESSURE	FVS	FLASH STEAM VENT
AI	INSTRUMENT AIR	RCI	CORROSION INHIBITOR
AP	PLANT AIR	RFL	FLOCCULANT
APR	PROCESS AIR	RGL	GLYCOL
CHP	CONDENSATE, HIGH PRESSURE	RLM	LIME
CLP	CONDENSATE, LOW PRESSURE	RNA	NITRIC ACID
CM	CIRCULATING MEDIUM	RSA	SULPHURIC ACID
DM	DILUTE MEDIUM	RSC	CYANIDE
DR	DRAIN	RSD	SURFACTANT/DIPERSAUT
DS	SANITARY DRAIN ABOVE GROUND	RSH	CAUSTIC
DSP	SEWAGE PUMPED	SHP	STEAM, HIGH PRESSURE
DSW	SEWAGE	SLP	STEAM, LOW PRESSURE
GNI	NITROGEN	VSD	SANITARY DRAIN VENT
GOX	OXYGEN	WAC	AUTOCLAVE COOLING WATER
GP	PROPANE	WAS	AGITATOR SEAL WATER
K	CHEMICAL TREATMENT	WBD	BOILER BLOWDOWN
ODM	OVER DENSE MEDIUM	WBF	BOILER FEED WATER
OH	HYDRAULIC OIL	WC	COOLING WATER
OLH	LUBE OIL HIGH PRESSURE	WDC	DOMESTIC WATER, COLD
PDM	PROCESS DILUTE MEDIUM	WDH	DOMESTIC WATER, HOT
PM	PROCESS MEDIUM	WDM	DEMINERALIZED WATER
PSL	SLURRY	WF	FIRE WATER ABOVE GROUND
PSN	SLURRY, NEUTRAL	WFR	FRESH WATER
PSU	SUMPAGE	WG	GLAND WATER
PTA	TAILINGS	WP	PROCESS WATER
PVB	VENT BLEED	WR	RECLAIM WATER
PVR	RELIEF VENT		

ABBREVIATIONS

FOR ABBREVIATIONS EXTERNAL TO INSTRUMENT IDENTIFICATION SYMBOLS.

AS	- AIR SUPPLY
ACFO	- AIR TO CLOSE, FAIL OPEN
AOFC	- AIR TO OPEN, FAIL CLOSE
CCR	- CENTRAL CONTROL ROOM
DIR	- DIRECT - ACTING
E	- VOLTAGE
ES	- ELECTRICAL SUPPLY
FC	- FAIL CLOSED
FO	- FAIL OPEN
FF	- FAIL FLOATS (DOUBLE ACTING PISTON ACTUATOR)
FI	- FAIL INTERMEDIATE
FL	- FAIL LOCKED
HOA	- HAND - OFF - AUTO
HS	- HYDRAULIC SUPPLY
I	- CURRENT
IL	- INSULATION LIMIT
IP	- INSPECTION PORT
P	- PNEUMATIC
R	- RESISTANCE
REV	- REVERSE - ACTING
RTD	- RESISTANCE(TYPE) TEMP. DETECTOR
S	- SOLENOID ACTUATOR
SP	- SET POINT
SQ.RT.	- SQUARE ROOT (√ SYMBOL)
TC	- THERMOCOUPLE
WS	- WATER SUPPLY
MH	- MANHOLE
NC	- NORMALLY CLOSED
NO	- NORMALLY OPEN
R/L	- REMOTE / LOCAL
A/M	- AUTO / MANUAL
H/A	- HAND / AUTOMATIC
H/S	- HIGH SELECT
ISO	- ISOLATOR
RSP	- REMOTE SET POINT

ACTUATOR SYMBOLS

- DIAPHRAGM(SPRING OPPOSED) WITHOUT POSITIONER OR OTHER PILOT
- SOLENOID
- MOTOR OPERATOR
- SINGLE ACTING CYLINDER WITHOUT POSITIONER
- DOUBLE ACTING CYLINDER
- SPRING RETURN CYLINDER (FAIL OPEN OR FAIL CLOSE)
- ELECTRO-HYDRAULIC
- POSITIONER (PNEUMATIC POSITIONER ILLUSTRATED ON DIAPHRAGM ACTUATOR. INPUT SIGNAL MAY BE EITHER PNEUMATIC OR ELECTRIC.) IN OUT AS

VALVE NUMBER

25V125
- VALVE SIZE (MILLIMETERS)
- VALVE CODE

PIPE LINE NUMBER

150-PSL-150-035
- LINE IDENTIFICATION NUMBER
- PIPING SPECIFICATION CODE
- SERVICE CODE
- PIPE SIZE (MILLIMETERS)

FLOW LEGEND

S = SOLIDS t/h
W = m³/h

GENERAL INSTRUMENT SYMBOLS

- CONTROL SYSTEM FUNCTION
- INSTRUMENT - LOCALLY MOUNTED
- INSTRUMENT - FRONT PANEL MOUNTED
- INSTRUMENT - REAR PANEL, RACK OR CABINET MOUNTED
- INSTRUMENT - TWO VARIABLES OR DUAL FUNCTION
- EXISTING INSTRUMENT
- INSTRUMENT - SUPPLIED WITH EQUIPMENT
- INSTRUMENT - MOUNTED IN FIELD PANEL
- L PILOT LIGHT, INDICATING LIGHT
- M MOTOR UNIT NUMBER
- GENERALIZED FOR INTERLOCK LOGIC - SOFT WIRED
- GENERALIZED FOR INTERLOCK LOGIC - HARD WIRED
- AND INTERLOCK - EFFECTIVE ONLY IF ALL INPUT EXISTS
- OR INTERLOCK - EFFECTIVE IF ONE OR MORE INPUT EXISTS
- PURGE OR FLUSHING DEVICE
- DIGITAL COMPUTE OR DATA LOGGING SIGNAL
- INSTRUMENT MOUNTED IN LINE
- ALL TYPES OF CONTROL VALVES UNLESS OTHERWISE DESIGNATED
- 3-WAY CONTROL VALVE
- 3-WAY SOLENOID VALVE
- SELF CONTAINED PRESSURE REDUCING REGULATOR
- MOTOR OPERATED VALVE
- PSV PRESSURE RELIEF OR SAFETY VALVE SPRING OR WEIGHT LOADED OR WITH INTEGRAL PILOT
- CHEMICAL SEAL
- FI ROTAMETER TYPE FLOW INDICATOR
- DIAPHRAGM
- RUPTURE DISC

INSTRUMENT TAG NO. SYSTEM

EACH INSTRUMENT IS IDENTIFIED BY A COMBINATION OF LETTERS AND NUMBERS. THE LETTERS ARE SELECTED FROM TABLE 1 TO CLASSIFY THE INSTRUMENT FUNCTION. THE LETTERS ARE FOLLOWED BY A LOOP NUMBER.

THE LOOP IDENTIFICATION NUMBER WILL BE COMMON TO ALL INSTRUMENTS WITHIN THAT LOOP. A LETTER SUFFIX IS ADDED TO DIFFERENTIATE BETWEEN INSTRUMENTS BEARING THE SAME LETTER PREFIX WITHIN ANY GIVEN LOOP.

FIST LETTER "A" FOR ANALYSIS COVERS ALL ANALYSIS THAT ARE NOT LISTED IN THE TABLE. THE TYPE OF ANALYSIS IN EACH INSTANCE WILL BE DEFINED OUTSIDE THE TAGGING BALOON FOR EXAMPLE; pH, ORP, CO, O_2 ... ETC.

pH AIT ORP AIT

EXAMPLE

F	IC	16	349	A
FIRST LETTER	SUCCEEDING LETTERS	P&ID NUMBER	SEQUENTIAL NUMBER	SUFFIX IF REQUIRED
FUNCTIONAL IDENTIFCATION		LOOP NUMBER		
INSTRUMENT TAG NUMBER				

TABLE 1

LETTER IDENTIFICATION

	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER			MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION				
C	CONDUCTIVITY			CONTROL	
D	DENSITY OR SPECIFIC GRAVITY	DIFFERENTIAL			
E	VOLTAGE		PRIMARY ELEMENT		
F	FLOW	RATIO			
G	GAUGING		GLASS		
H	HAND OPERATED				HIGH
I	CURRENT		INDICATE		
J	POWER	SCAN			
K	TIME			CONTROL STATION	
L	LEVEL		LIGHT(PILOT)		LOW
M	MOISTURE				MIDDLE OR INTER.
N	UNDEFINED		UNDEFINED		
O	OPERATION		ORIFICE(RESTRICT.)		
P	PRESSURE OR VACUUM		POINT(TEST CONNECT)		
Q	QUANTITY	INTEGRATE OR TOTALIZE			
R	RADIOACTIVITY		RECORD		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE			MULTIFUNCTION	
V	VISCOSITY OR VIBRATION			VALVE OR DAMPER	
W	WEIGHT, FORCE OR TORQUE		WELL		
X	UNDEFINED		UNDEFINED		
Y	EVENT, STATE OR PRESSURE			RELAY OR COMPUTE	
Z	POSITION, DIMENSION			DRIVE ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

NOT FOR CONSTRUCTION

NO.	DESCRIPTION	DATE	BY
A	DRAWINGS RE-ISSUED - NO CHANGES TO PREVIOUS ISSUE	JUN95	CWL

REVISIONS

DESIGN: PIPING
TOOL: NONE
DATE
DESIGNED BY:
DRAWN BY: CWL JUL '93
CHECKED BY:
APPROVED BY:

CLIENT: BRINCO COAL MINING CORPORATION
Division of Hillsborough Resources Limited
LOCATION: CAMPBELL RIVER B.C.

KILBORN

ENGINEERING DATA CONTAINED HEREIN ARE RESTRICTED IN USE FOR THE ORIGINAL PURPOSE FOR WHICH THEY ARE PREPARED

TITLE
QUINSAM COAL - WASH PLANT EXPANSION
SYMBOLS & LEGEND
P & I DIAGRAM

10017001.DWG
KEY No. 8537
PROJECT No. 25
DRAWING NUMBER 100-17-001
REV A

752972

95/06/23 13:07

DWG.NO | REFERENCE DRAWINGS | DESCRIPTION | DATE | BY | REVISIONS