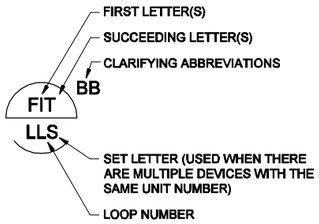
INSTRUMENT IDENTIFICATION

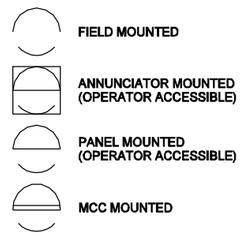
EXAMPLE SYMBOLS



DIGITAL SYSTEM INTERFACES

- ▲ ANALOG INPUT
- ▼ ANALOG OUTPUT
- △ DISCRETE INPUT
- ▽ DISCRETE OUTPUT

GENERAL INSTRUMENT OR FUNCTION SYMBOLS



SPECIAL CASES

ON AND OFF EVENT LIGHTS

ON-OFF HAND SWITCH MAINTAINED CONTACT SWITCH (CONTROLLED DEVICE WILL RESTART ON RETURN OF POWER AFTER POWER FAILURE).

STOP-START HAND SWITCH MOMENTARY CONTACT SWITCHES (CONTROLLED DEVICE WILL NOT RESTART ON RETURN OF POWER AFTER POWER FAILURE).

ACCESSORY DEVICES

EXAMPLE: TRANSMITTER AS AN ACCESSORY TO A FLOW ELEMENT

A	ALARM	S	SWITCH
C	CONTROLLER	T	TRANSMITTER
I	INDICATOR	X	UNCLASSIFIED
R	RECORDER		

TRANSDUCERS

A	ANALOG	I	CURRENT
D	DIGITAL	P	PNEUMATIC
E	VOLTAGE	PF	PULSE FREQUENCY
F	FREQUENCY	PD	PULSE DURATION
H	HYDRAULIC	R	RESISTANCE

EXAMPLE: I/P — FY — CURRENT TO PNEUMATIC TRANSDUCER (BACK OF PANEL, IN A FLOW LOOP)

INSTRUMENT SOCIETY OF AMERICA TABLE

LETTER	FIRST-LETTER: PROCESS OR INITIATING VARIABLE	FIRST-LETTER: MODIFIER	SUCCEEDING-LETTERS: READOUT OR PASSIVE FUNCTION	SUCCEEDING-LETTERS: OUTPUT FUNCTION	SUCCEEDING-LETTERS: MODIFIER
A	ANALYSIS (+)		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE (*)	USER'S CHOICE (*)	USER'S CHOICE (*)
C	USER'S CHOICE (*)			CONTROL	
D	DENSITY (S.G) (1)	DIFFERENTIAL			
E	VOLTAGE		PRIMARY ELEMENT (SENSOR)		
F	FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE (*)		GLASS, GAUGE VIEWING DEVICE	GATE	
H	HAND (MANUAL)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN		CONTROL STATION	
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE			
L	LEVEL		LIGHT (PILOT)		LOW
M	MOTION	MOMENTARY			MIDDLE
N	TORQUE (1)		USER'S CHOICE (*)	USER'S CHOICE (*)	USER'S CHOICE (*)
O	USER'S CHOICE (*)		ORIFICE, RESTRICTION		
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD OR PRINT		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED (+)	X AXIS	UNCLASSIFIED (+)	UNCLASSIFIED (+)	UNCLASSIFIED (+)
Y	EVENT, STATE OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION	Z AXIS		DRIVE, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

(+) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL. SEE ABBREVIATIONS AND LETTER SYMBOLS.

(*) WHEN USED, DEFINE THE MEANING HERE FOR THE PROJECT

(1) CH2M HILL DEFINITION

VALVE SYMBOLS

- GATE
- KNIFE GATE
- BUTTERFLY
- GLOBE
- BALL
- VEE- BALL
- PLUG
- SEAT PORT ECCENTRIC PLUG
- DIAPHRAGM
- PINCH
- NEEDLE
- SWING CHECK
- BALL CHECK
- PRESSURE RELIEF
- AIR AND/OR VACUUM RELEASE
- REGULATED SIDE PRESSURE CONTROL
- MULTI-PORT VALVES. AAROWS INDICATE FLOW PATTERN. SEAT PORTS ARE IMPLIED BY INDICATED FLOW PATTERN.
- ANGLE GATE
- SAMPLE
- PRESSURE REGULATING
- BACKFLOW PREVENTER

GATE SYMBOLS

- SLUICE
- BUTTERFLY
- FABRICATED SLIDE
- FLAP
- STOP LOG

LINE LEGEND

- PRIMARY PROCESS (CLOSED CONDUIT)
- SECONDARY PROCESS (CLOSED CONDUIT)
- PROCESS (OPEN CHANNEL)
- ANALOG SIGNAL (4 TO 20 mAdc, ETC.)
- DISCRETE SIGNAL (ON/OFF, ETC.)
- PNEUMATIC SIGNAL
- FILLED SYSTEM SIGNAL
- HYDRAULIC SYSTEM SIGNAL
- DATA LINK
- BUILDING OR FACILITY BOUNDARY
- PARALLELING LINES — (2), 3(2), (A), (B)
  - (A) TOTAL OF 2 SIGNALS
  - (B) 3 TYPICAL SETS OF 2 SIGNALS EACH. TOTAL OF 6 SIGNALS.
- CONNECTING LINES
- NON-CONNECTING LINES
- PACKAGE SYSTEM EQUIPMENT

PRIMARY ELEMENT SYMBOLS

- M — ELECTROMAGNETIC FLOWMETER
- PROPELLER OR TURBINE METER
- LE — LEVEL (PRESSURE TYPE)
- LS — LEVEL (FLOAT)

FLOW STREAM IDENTIFICATION

D	DRAIN, SANITARY	RD	ROOF DRAIN
DR	DRAIN, RESERVOIR	SA	SAMPLE
EA	EXHAUST AIR (DIESEL)	SD	STORM DRAIN
FE	FILTER EFFLUENT	W1	POTABLE WATER
OF	OVERFLOW	W2	UTILITY WATER
PE	PLANT EFFLUENT		
PI	PLANT INFLUENT		

PUMP AND EQUIPMENT SYMBOLS

- CENTRIFUGAL PUMP (DRY PIT) — XX
- SUBMERSIBLE SUMP PUMP — XX
- CENTRIFUGAL WET PIT PUMP OR TURBINE PUMP — XX
- RECIPROCATING OR METERING PUMP (POSITIVE DISPLACEMENT) — XX

NOTE:
XX: AS ADJUSTABLE SPEED
CS CONSTANT SPEED (SINGLE SPEED)
CS-2 CONSTANT SPEED (TWO SPEED)

EQUIPMENT TAG NUMBERS

WDXY

W	UNIT PROCESS NUMBER	
D:	ARV	AIR RELEASE VALVE
	AVRV	AIR AND VACUUM RELEASE VALVE
	E	EJECTOR
	G	GATE
	M	MECHANICAL EQUIPMENT
	P	PUMP
	T	TANK
X	LOOP NUMBER	
Y	UNIT NUMBER	

ABBREVIATIONS & LETTER SYMBOLS

AC	ALTERNATING CURRENT
AM	AUTO-MANUAL
CL_2 etc.	CHLORINE (TYPICAL: USE STANDARD CHEMICAL ELEMENT ABBREVIATION)
CP	CONTROL PANEL NO. X
DC	DIRECT CURRENT
DCS	DISTRIBUTED CONTROL SYSTEM
DCU	DISTRIBUTED CONTROL UNIT
DO	DISSOLVED OXYGEN
FCL_2	FREE CHLORINE RESIDUAL
FP	FIELD PANEL
FR	FORWARD-REVERSE
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
ISR	INTRINSICALLY SAFE RELAY
LCP	LOCAL CONTROL PANEL
LOS	LOCKOUT STOP
LR	LOCAL-REMOTE
MA	MANUAL-AUTO
MC	MODULATE-CLOSE
MCC	MOTOR CONTROL CENTER
MSC	MANUFACTURER SUPPLIED CABLE
OC	OPEN-CLOSE (D)
OCR	OPEN-CLOSE-REMOTE
OCA	OPEN-CLOSE-AUTO
OO	ON-OFF
OOA	ON-OFF-AUTO
OOR	ON-OFF-REMOTE
ORP	OXIDATION REDUCTION POTENTIAL
OSC	OPEN-STOP-CLOSE
pH	HYDROGEN ION CONCENTRATION
PLC	PROGRAMMABLE LOGIC CONTROLLER
RIO	REMOTE I/O UNIT
RTU	REMOTE TELEMETRY UNIT
SS	START-STOP
SSC	SUPERVISORY SET POINT CONTROL
TCL_2	TOTAL CHLORINE RESIDUAL

MISCELLANEOUS SYMBOLS

- DIAPHRAGM SEAL
- BLIND FLANGE
- AIR GAP
- V — VENT TO ATMOSPHERE
- SS — COMPOSITE SAMPLER
- I — OR — INTERLOCK. SEE CONTROL DIAGRAMS
- XX — AIR SET XX= SUPPLY PRESSURE IN PSIG.
- PRESSURE SWITCH
- 120V — 120 VOLT, 60 HZ POWER
- 480V — 480 VOLT, 60 HZ POWER
- ANNULAR DIAPHRAGM SEAL
- M — ELECTRIC MOTOR
- S — SEAL WATER SET
- SIGHT GLASS
- PIPE CAP
- STRAINER
- ANNUNCIATOR INPUT
- LEVEL SWITCH

GENERAL NOTES

1. COMPONENTS AND PANELS SHOWN WITH A SINGLE ASTERISK (*) ARE TO BE PROVIDED AS PART OF A PACKAGE SYSTEM.
2. COMPONENTS AND PANELS SHOWN WITH A DOUBLE ASTERISK (**) ARE TO BE PROVIDED UNDER DIVISION 16, ELECTRICAL.
3. THIS IS A STANDARD LEGEND. THEREFORE, NOT ALL OF THIS INFORMATION MAY ABE USED ON THIS PROJECT.

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DSGN	CS BURR						VERIFY SCALE
DR	PM HAMLIN						BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.
CHK	TG OSSOWSKI						
APVD	M WRAY	NO.	DATE	REVISION	BY	APVD	

CH2MHILL

HYDROGEOLOGIC, INC
OU-I MID-PLUME GROUNDWATER TREATMENT
FORT ORD
MONTEREY, CALIFORNIA

GENERAL

INSTRUMENTATION AND CONTROL LEGEND

SHEET	3
DWG	01-G-03
DATE	JULY 2006
PROJ	343084.01

FILENAME: 01ng003d_343084.dgn PLOT DATE: 7/6/2006 PLOT TIME: 11:47:31 AM