

PUMP AND BLOWER SYMBOLS

- CENTRIFUGAL PUMP, INCLUDES MOTOR
- SUMP PUMP
- SUBMERSIBLE WELL PUMP
- BLOWER
- METERING PUMP

ELECTRICAL SYMBOLS

- NORMALLY OPEN RELAY CONTACT
- NORMALLY CLOSED RELAY CONTACT
- GROUND
- CIRCUIT BREAKER
- PRESSURE SWITCH
- FLOAT SWITCH
- ON/OFF SWITCH
- FUSE

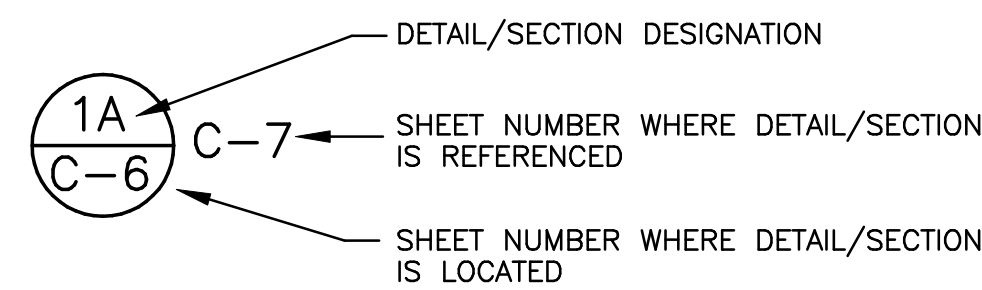
VALVE SYMBOLS

- BALL VALVE
- BUTTERFLY VALVE, CLOSED
- BUTTERFLY VALVE, OPEN
- CHECK VALVE
- DIAPHRAGM VALVE
- GATE VALVE
- SAMPLE PORT (NORMALLY CLOSED)
- GLOBE VALVE
- AIR VENT/VACUUM VALVE
- THREE WAY VALVE

LINE SYMBOLS

- PRIMARY PROCESS FLOW LINE
- UTILITY/SECONDARY PROCESS LINE
- SOFTWARE LINK
- ELECTRIC SIGNAL
- INSTRUMENT AIR SUPPLY LINE
- LIMIT LINE
- FENCE
- EXISTING EXTRACTION PIPELINE
- EXISTING RECHARGE PIPELINE
- EXISTING ELECTRICAL LINE
- EXISTING GAS LINE
- EXISTING STORM DRAIN
- EXISTING SANITARY SEWER
- EXISTING WATER LINE

DETAIL/SECTION REFERENCE



PIPING/MECHANICAL SYMBOLS

- Y STRAINER
- BASKET STRAINER
- BACKFLOW PREVENTER
- BLIND FLANGE
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- EXPANSION JOINT
- AIR OIL FILTER
- FLEX HOSE, FEMALE CONNECTOR WITH PLUG
- FLEX HOSE, MALE CONNECTOR WITH PLUG
- MOTOR
- FLANGE
- AIR FILTER
- CHICAGO TYPE FITTING
- AIR COMPRESSOR WITH RECEIVER
- CARBON ADSORPTION VESSEL
- CATALYTIC OXIDATION UNIT
- EMERGENCY SHOWER/EYEWASH
- FLAT BOTTOM TANK WITH ROOF
- HEAT EXCHANGER
- KNOCKOUT DRUM
- MIXER, STATIC
- STRIPPER OR SCRUBBER
- FILTER

MISCELLANEOUS SYMBOLS

- MW- MONITORING OBSERVATION WELL
 - PZ- PIEZOMETER
 - ⊙ EW- EXTRACTION WELL
 - ◆ IW- INJECTION WELL
- WELL NOMENCLATURE**
- IW-OU2-01-180-U
 - WELL TYPE: IW=INJECTION; EW=EXTRACTION; INF=INFILTRATION GALLERY
 - ELEVATION: U=UPPER; M=MIDDLE; L=LOWER
 - AQUIFER (A OR 180 FOOT)
 - LOCATION IDENTIFICATION
 - AREA
- TREATMENT PLANT

ACTUATORS

- DIAPHRAGM ACTUATOR
- SOLENOID ACTUATOR
- CYLINDER ACTUATOR
- MOTOR ACTUATOR

INSTRUMENT AND CONTROL SYMBOLS

- FIELD MOUNTED INSTRUMENT
- PANEL MOUNTED INSTRUMENT
- INSTRUMENT MOUNTED BEHIND CONTROL BOARD
- INSTRUMENT WITH TWO SERVICES OR FUNCTIONS (MULTIPOINT UNIT)
- INTERLOCK OR LOGIC
- PROGRAMMABLE LOGIC CONTROLLER (PLC)
- PLC I/O SIGNAL
XX = DI - DIGITAL INPUT
DO - DIGITAL OUTPUT
ANI - ANALOG INPUT
ANO - ANALOG OUTPUT
- INDICATOR, CONTROLLER, ALARM OR RECORDER COMPUTER DISPLAY
- PANEL MOUNTED LIGHT (COLOR: W-WHITE, R-RED, G-GREEN)
- FLOW STREAM NUMBER
- SIGNAL CONTINUATION
- PROCESS TO/FROM INDICATOR

INSTRUMENT IDENTIFICATION

FIRST LETTER	PROCESS VARIABLE OR ACTUATION	SUBSEQUENT LETTER	PROCESS VARIABLE OR ACTUATION
A	ANALYSIS	A	ALARM
B	BURNER/FLAME	E	ELEMENT
C	CONDUCTIVITY (ELECTRICAL)	G	GLASS, VIEWING
D	DENSITY/SP.GR	H	HIGH
E	VOLTAGE (EMP./ELECTRICAL)	I	INDICATING
F	FLOW RATE	L	LOW
G	GAGING (DIMENSIONAL)	F	FLOW
H	HAND (MANUALLY)	R	RECORDING
I	CURRENT/AMPS	S	SWITCH
J	POWER/WATTS	T	TRANSMITTER
K	TIME	V	VALVE
L	LEVEL		
M	MOISTURE/HUMIDITY (UNCLASSIFIED)		
N	(UNCLASSIFIED)		
O	PRESSURE/VACUUM		
P	QUANTITY/NUMBER/TOTALIZE INTEGRATE		
Q	RADIOACTIVITY		
R	SPEED/FREQUENCY		
S	TEMPERATURE		
T	MULTIVARIABLE		
U	UNCLASSIFIED		
V	WEIGHT/FORCE (UNCLASSIFIED)		
W	(UNCLASSIFIED) SECOND		
X	LETTER RELAY		
Y	POSITION		
Z			

INSTRUMENT LETTER DESIGNATIONS	
FLOW	
FAH	FLOW ALARM HIGH
FAL	FLOW ALARM LOW
FC	FLOW CONTROLLER
FCV	FLOW CONTROL VALVE
FE	FLOW ELEMENT
FI	FLOW INDICATOR
FIC	FLOW INDICATOR CONTROLLER
FIT	FLOW INDICATOR TRANSMITTER
FO	FLOW RESTRICTING ORIFICE
FIQ	FLOW TOTALIZING INDICATOR
FSH	FLOW SWITCH HIGH
FSL	FLOW SWITCH LOW
FT	FLOW TRANSMITTER
PRESSURE	
PAH	PRESSURE ALARM HIGH
PAL	PRESSURE ALARM LOW
PCV	PRESSURE CONTROL VALVE
PDSH	PRESSURE DIFFERENTIAL SWITCH HIGH
PI	PRESSURE INDICATOR
PSH	PRESSURE SWITCH HIGH
PSL	PRESSURE SWITCH LOW
PSV	PRESSURE RELIEF/SAFETY VALVE

INSTRUMENT LETTER DESIGNATIONS	
LEVEL	
LAH	LEVEL ALARM HIGH
LAHH	LEVEL ALARM HIGH HIGH
LAL	LEVEL ALARM LOW
LALL	LEVEL ALARM LOW LOW
LC	LEVEL CONTROLLER
LE	LEVEL ELEMENT
LG	LEVEL GAUGE
LI	LEVEL INDICATOR
LIC	LEVEL INDICATOR CONTROLLER
LSH	LEVEL SWITCH HIGH
LSHH	LEVEL SWITCH HIGH HIGH
LSL	LEVEL SWITCH LOW
LSSL	LEVEL SWITCH LOW LOW
LT	LEVEL TRANSMITTER
LIT	LEVEL INDICATOR TRANSMITTER
MISCELLANEOUS	
AO	AIR TO OPEN
AVV	AIR RELEASE AND VACUUM VALVE
EW	EXTRACTION WELL
ESD	EMERGENCY SHUTDOWN
HOA	HAND/OFF/AUTO
HS	HAND SWITCH
IW	INJECTION WELL
MCC	MOTOR CONTROL CENTER
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
PLC	PROGRAMMABLE LOGIC CONTROLLER
SP	SAMPLE PORT
VSC	VARIABLE SPEED CONTROLLER
TOC	TOP OF CASING
TOS	TOP OF SLAB

PROCESS LINE DESIGNATIONS	
XX-XXX-XXX	PIPE MATERIAL OF CONSTRUCTION FLUID SERVICE LINE SIZE ex. 3" - SINGLE CONTAINED 3"x6" - DOUBLE CONTAINED
FLUID SERVICE	
ACD	ACID
AIR	PROCESS AIR
ALK	ALKALINE
BW	BACKWASH WATER
CW	POTABLE WATER
GW	GROUNDWATER INFLUENT
GWE	GROUNDWATER EFFLUENT
GWR	GROUNDWATER RECYCLE
IA	INSTRUMENT AIR
NG	NATURAL GAS
PA	PLANT AIR
PER	HYDROGEN PEROXIDE
PW	PLANT WATER
SW	SUMP WATER
MATERIAL OF CONSTRUCTION	
ABS	ACRYLONITRILE BUTADIENE STYRENE
CPVC	CHLORINATED POLYVINYL CHLORIDE
CS	CARBON STEEL
HDPE	HIGH DENSITY POLYETHYLENE
PVC	POLYVINYL CHLORIDE
SS304	STAINLESS STEEL, TYPE 304
SS316	STAINLESS STEEL, TYPE 316
TFN	TEFLON TUBING
VEN	VENDER SPECIFIED PIPE

DESIGNED BY:	B. BEATTIE	DATE:	11/13/97
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4585 PACHECO BLVD. MARTINEZ, CA. 94553 (925) 372-9100		DEPARTMENT OF THE ARMY SACRAMENTO DISTRICT, CORPS OF ENGINEERS SACRAMENTO, CALIFORNIA	
SITES 2 AND 12 GROUNDWATER REMEDY STANDARD SYMBOLS AND LEGEND			
SCALE: NOT TO SCALE SHEET: 6-3 3 OF 46		SPEC. No.: FILE No.: 761966-E87	