VALVE SYMBOLS

- GATE
- KNIFE GATE
- BUTTERFLY
- GLOBE
- BALL
- VEE-BALL
- PLUG
- SEAT PORT ECCENTRIC PLUG
- DIAPHRAGM
- PINCH
- NEEDLE
- SWING CHECK
- BALL CHECK
- BACKFLOW PREVENTER
- ROTARY
- TELESCOPE
- SAMPLE
- MUD
- PRESSURE RELIEF
- AIR AND/OR VACUUM RELEASE
- REGULATED SIDE PRESSURE CONTROL
- PRESSURE REGULATION (CLAY-TYPE)
- MULTI-PORT VALVE (GATE VALVE SHOWN. FOR OTHER VALVE TYPES, APPROPRIATE VALVE SYMBOL SHOWN). SEAT PORTS ARE IMPLIED BY INDICATED FLOW PATTERN.
- ANGLE GATE

GATE SYMBOLS

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

ACTUATOR SYMBOLS

- PNEUMATIC DIAPHRAGM SPRING-OPPOSED, SINGLE OR DOUBLE ACTING
- PNEUMATIC CYLINDER SINGLE OR DOUBLE ACTING ACTUATED BY ONE INPUT
- M ELECTRIC MOTOR
- S SOLENOID
- VALVE POSITIONER
- H HYDRAULIC
- DIAPHRAGM, DIFFERENTIAL PRESSURE
- EH ELECTROHYDRAULIC
- MANUAL
- P PNEUMATIC

NOTE:
ON LOSS OF PRIMARY POWER (PNEUMATIC, ELECTRICAL, OR HYDRAULIC)

XX: FO FAIL OPEN
FC FAIL CLOSED
FLP FAIL TO LAST POSITION

PRIMARY ELEMENT SYMBOLS

- PARSHALL FLUME
- WEIR
- ORIFICE PLATE
- FLOW TUBE
- J PITOT-STATIC
- VORTEX METER
- ULTRASONIC FLOWMETER
- M ELECTROMAGNETIC FLOWMETER
- C CORIOLIS MASS FLOWMETER
- PISTON FLOWMETER
- PROPELLER OR TURBINE METER
- THERMAL FLOWMETER
- LEVEL (BUBBLER TUBE)
- LS LEVEL (FLOAT)
- ROTAMETER
- DE DENSITY METER
- XX GENERIC
- LE LEVEL, RADAR
- LE LEVEL, SONIC

MISCELLANEOUS SYMBOLS

- V VENT TO ATMOSPHERE
- AIR GAP
- D DRAIN
- T DRIP TRAP
- PIG INSERT POINT
- PIG CATCH POINT
- A SELF CONTAINED AIR SUPPLY
- AP AIR PURGE SET
- F FLUSHING CONNECTION
- S SEAL WATER SET
- WP WATER PURGE SET
- FLEXIBLE CONNECTION
- AERATOR
- DIAPHRAGM SEAL
- ANNULAR DIAPHRAGM SEAL
- SS COMPOSITE SAMPLER
- FLAME TRAP
- CALIBRATION COLUMN
- INLINE SILENCER
- BLIND FLANGE
- PIPE CAP
- STRAINER
- BASKET STRAINER
- FILTER
- PULSATION DAMPENER
- EXPANSION CHAMBER
- TJ TELEPHONE JACK
- DJ DATA JACK
- MIXER
- SIGHT GLASSES
- FFLCPLLLX — PANEL CONTINUED ON SAME OR OTHER DRAWING; PANEL OUTLINE; PANEL NAME
- 120V — 120 VOLT, 60 HZ POWER
- 480V — 480 VOLT, 60 HZ POWER
- XX — AIR SET XX = SUPPLY PRESSURE IN PSIG.
- PLUG
- RECEPTACLE
- RUPTURE DISK (VACUUM)
- RUPTURE DISK (PRESSURE)
- TV TV MONITOR
- TV TV CAMERA
- AND LOGIC ELEMENT: IF A AND NOT B THEN C
- OR LOGIC ELEMENT: IF A OR B THEN C
- RADIO ANTENNA
- OR I INTERLOCK, SEE CONTROL STRATEGIES
- HORN
- SKIMMING MECHANISM
- SCREW
- SCREW CONVEYOR
- MIXER
- E ELECTRIC MOTOR
- PORTABLE RECEPTACLE/ CONTAINMENT AREA
- ANTENNA
- BUBBLE TRAP
- R CONTROL RELAY

PUMP AND COMPRESSOR SYMBOLS

- CENTRIFUGAL PUMP (DRY PIT) XX
- CENTRIFUGAL WET PIT PUMP OR TURBINE PUMP XX
- RECIPROCATING OR METERING PUMP (POSITIVE DISPLACEMENT) XX
- DIAPHRAGM PUMP XX
- GEAR PUMP OR BLOWER (POSITIVE DISPLACEMENT) XX
- PROGESSING CAVITY PUMP XX
- COMPRESSOR (CENTRIFUGAL) XX
- COMPRESSOR (PISTON) XX
- BLOWER OR FAN (CENTRIFUGAL) XX
- EJECTOR
- PISTON PUMP XX
- SUBMERSIBLE SUMP PUMP XX
- ROTARY PUMP
- VACUUM PUMP
- SCREW PUMP
- BLOWER

XX: AS ADJUSTABLE SPEED
CS-1 CONSTANT SPEED (SINGLE SPEED)
CS-2 CONSTANT SPEED (TWO SPEED)

LINE SIZE AND FLOW STREAM INDENTIFICATION

(FOR REFERENCE ONLY. SEE SITE AND MECHANICAL DRAWINGS)

XX" RW

PIPE DIAMETER IN INCHES

FLOW STREAM INDENTIFICATION

FLOW STREAM IDENTIFICATION

LEGEND	SERVICE	LEGEND	SERVICE
BW	BLEND WATER	PRG	PURGE
BWR	BACKWASH WATER RECLAIM	PTW	PERMEATE TO WASTE
BWS	BACKWASH WATER SUPPLY	PWR	PURGE WATER RECLAIM
CA	CITRIC ACID	RCW	RECLAIM WATER
CF	CLEANING FEED	ROC	RO CONCENTRATE
CFI	CARTRIDGE FILTER INFLUENT	ROF	RO FEED
CFE	CARTRIDGE FILTER EFFLUENT	ROP	RO PERMEATE
CI	CORROSION INHIBITOR	ROB	RO BYPASS
CCR	CLEANING CONCENTRATE RETURN	RW	RAW WATER
CPR	CLEANING PERMEATE RETURN	RWR	RINSE WATER RECLAIM
D	DRAIN	S	SAMPLE
F	FLUORIDE	SBS	SODIUM BISULFITE
FL	RO FLUSH	SS	SANITARY SEWER
FP	FIRE PROTECTION	SSOL	SALT SOLUTION
FW	FINISHED WATER	TI	THRESHOLD INHIBITOR
FWS	FILTER WATER SUPPLY	TW1	TEPIDWATER - POTABLE
H2SO4	SULFURIC ACID	V	VENT
IA	INSTRUMENT AIR	W1	PLANT WATER - POTABLE
NaOCL	SODIUM HYPOCHLORITE	W2	PLANT WATER - PROCESS
NaOH	SODIUM HYDROXIDE		
NH3	AQUEOUS AMMONIA		
OF	OVERFLOW		

REGISTERED PROFESSIONAL ENGINEER JERRY NORDAL No. 12586 Exp: 9-30-11 ELECTRICAL STATE OF CALIFORNIA

DATE: 10/05/09

SYMBOL	DESCRIPTIONS	DATE	APPROVAL

REVISIONS

EASTERN MUNICIPAL WATER DISTRICT
PERRIS II DESALINATION FACILITY
PERRIS, CALIFORNIA

INSTRUMENTATION AND CONTROL
LEGEND SHEET 2

CH2MHILL

SUBMITTED BY: ART JUNG, P.E. CHIEF, DESIGN BRANCH

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: J NORDAL
DRAWN BY: A GORDEN
CHECKED BY: W PEARSON

CADD FILE NAME: PDFg019d.dgn

SPEC. NO.: NOT APPLICABLE

L.A. DISTRICT FILE NO. XXX-XXXX

G-19

SHEET 19 OF 226 SHEETS

PLOT DATE: 2/19/2010 PLOT TIME: 10:53:07 AM

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