VALVE SYMBOLS

- BUTTERFLY VALVE
- BALL VALVE NORMALLY OPEN
- THREE WAY BALL VALVE
- GATE VALVE NORMALLY OPEN
- GLOBE VALVE NORMALLY OPEN
- DIAPHRAGM VALVE NORMALLY OPEN
- PLUG VALVE NORMALLY OPEN
- THREE WAY PLUG VALVE NORMALLY OPEN
- NEEDLE VALVE NORMALLY OPEN
- PINCH VALVE NORMALLY OPEN
- AUTO AIR RELEASE VALVE
- BACK PRESSURE CONTROL VALVE SELF CONTAINED
- FLOAT CONTROLLED VALVE
- 2-WAY SOLENOID VALVE
- 3-WAY SOLENOID VALVE
- 4-WAY SOLENOID VALVE
- V-BALL VALVE
- BALL VALVE NORMALLY CLOSED
- KNIFE GATE VALVE
- GATE VALVE NORMALLY CLOSED
- GLOBE VALVE NORMALLY CLOSED
- DIAPHRAGM VALVE NORMALLY CLOSED
- PLUG VALVE NORMALLY CLOSED
- CHECK VALVE
- NEEDLE VALVE NORMALLY CLOSED
- PINCH VALVE NORMALLY CLOSED
- PRESSURE RELIEF OR SAFETY VALVE
- PRESSURE REGULATING VALVE SELF CONTAINED
- BRINE TANK FLOAT VALVE
- SELF CONTAINED BLENDING VALVE
- MULTI FUNCTION VALVE PRESSURE RELIEF, BLEED
- 3 VALVE MANIFOLD
- FOOT VALVE
- 5 VALVE MANIFOLD
- 2 VALVE MANIFOLD

VALVE ACTUATOR SYMBOLS

	FAIL CLOSED ON PNEUMATIC OR ELECTRICAL FAILURE	FAIL OPEN ON PNEUMATIC OR ELECTRICAL FAILURE	FAIL INDETERMINATE ON PNEUMATIC FAILURE
PNEUMATIC DIAPHRAGM ACTUATORS			
ACTUATOR C/W POSITION INDICATOR, NO TRAVEL STOP			
ACTUATOR C/W POSITION INDICATOR, TRAVEL STOP			
PNEUMATIC PISTON ACTUATORS			
ACTUATOR C/W POSITION INDICATOR, NO TRAVEL STOP			
ACTUATOR C/W POSITION INDICATOR, TRAVEL STOP			

CONVERTER - (ELECT. SIGNAL / PNEUMATIC SIGNAL)

MOTORIZED ACTUATOR FAIL IN LAST POSITION ON ELECTRICAL FAILURE

GENERAL INSTRUMENT

- TEMPERATURE ELEMENT WITH THERMOWELL
- INLINE PRESSURE SENSOR
- DIAPHIRAGM SEAL
- SPECTACLE BLIND OPEN
- ORIFICE PLATE OR RESTRICTION ORIFICE
- STRAIGHTENING VANE
- VARIABLE AREA FLOW INDICATOR (ROTAMETER)
- VORTEX SENSOR FLOW METER
- V-CONE FLOW METER
- MAGNETIC FLOW METER
- ULTRASONIC FLOW METER
- PADDLE FLOW METER
- PROPELLER TYPE TURBINE FLOW METER
- FLOW SWITCH OR PULSE FLOW METER
- LEVEL INSTRUMENT TOP MOUNT FLOAT
- LEVEL INSTRUMENT SIDE MOUNT FLOAT
- ULTRASONIC LEVEL INSTRUMENT
- CAPACITANCE PROBE LEVEL INSTRUMENT
- GROUNDING CONNECTION
- CHEMICAL MIXING POINT OR TEE
- TANK STRAINER BASKET
- POLYMER DILUTION CHAMBER

INSTRUMENT / LOGIC SYMBOLS

	FIELD MOUNTED	PRIMARY LOCATION	AUXILIARY LOCATION
DISCRETE INSTRUMENTS			
MAN MACHINE INTERFACE (MMI)			
COMPUTER FUNCTION			
PROGRAMMABLE LOGIC CONTROL (PLC OR DCS)	PLC	PLC	PLC

SHARING COMMON HOUSING

UNDEFINED INTERLOCK LOGIC

PILOT LIGHT

EQUIPMENT SYMBOLS

- IN-LINE MIXER
- EDUCTOR
- HYDRAULIC TANK MIXER
- CALIBRATION COLUMN
- INLINE SIGHT GLASS
- OVAL SIGHT GLASS
- BULLSEYE SIGHT GLASS
- TANK LEVEL GUAGE
- LOCAL GRAVITY DRAIN
- PULSATION DAMPENER
- INLINE BASKET STRAINER
- STRAINER - Y TYPE
- CONICAL, TEMPORARY STRAINER
- BACKDRAFT DAMPENER
- INJECTION QUILL
- EXPANSION OR FLEX JOINT
- FLANGE WITH BLIND
- MALE/ FEMALE QUICK DISCONN CAM AND GROOVE COUPLING
- TRICLAMP CONNECTION
- RUPTURE DISC
- REDUCER
- MEDIA TRAP
- RESIN TRAP
- STEAM TRAP
- HYDROMETER POT
- ELECTRIC TANK HEATER
- IN-LINE HEAT EXCHANGER
- ELECTRIC TANK MIXER
- ATMOSPHERIC VENT
- AIR DRYER OR FUME SCRUBBER
- VACUUM BREAKER
- AIR SILENCER
- DEMISTER
- AIR FILTER
- INLINE AIR FILTER
- MANUAL OVERRIDE MANUAL RESET
- AIR COMPRESSOR HIGH PRESSURE

EQUIPMENT SYMBOLS

- VACUUM PUMP & SEPARATOR C/W MOTOR
- CENTRIFUGAL PUMP C/W MOTOR
- CENTRIFUGAL PUMP C/W TURBINE& MOTOR
- GEAR PUMP C/W MOTOR
- METERING PUMP
- SUBMERSIBLE PUMP C/W STRAINER & MOTOR
- SUBMERSIBLE PUMP C/W MOTOR
- SCREW CONVEYOR C/W MOTOR
- AIR DRIVEN PUMP
- PROGRESSIVE CAVITY PUMP C/W MOTOR
- CENTRIFUGAL FAN (LOW PRESSURE) C/W MOTOR
- POSITIVE DISPLACEMENT BLOWER C/W MOTOR
- MOTOR
- SOLENOID OR STEP MOTOR
- ATMOSPHERIC TANKS CLOSED TOP
- DECARBONATOR TOWER AND CLEARWELL
- PRESSURE VESSEL
- CARTRIDGE FILTER
- ULTRAFILTRATION VESSEL AND MEMBRANE
- OR
- MEMBRANE CONTACTOR
- UV STERILIZER
- REVERSE OSMOSIS MODULE
- EDI STACK

INSTRUMENT IDENTIFICATION LEGEND

	MEASURED VARIABLE	ELEMENT	TRANSMITTER	INDICATING TRANSMITTER	CONVERTER, TRANSDUCER, RELAY, SPECIAL DEVICES	INDICATOR	RECORDER	CONTROLLER	INDICATING CONTROLLER	SWITCH	SWITCH LOW LOW	SWITCH LOW	SWITCH HIGH	SWITCH HIGH HIGH	ALARM LOW LOW	ALARM LOW	ALARM HIGH	ALARM HIGH HIGH	TOTALIZER	CONTROL VALVE	VALVE	SOLENOID	LIGHT
A	ANALYSIS	AE	AT	AIT	AY	AI	AR	AC	AIC	AS	ASLL	ASL	ASH	ASHH	AALL	AAL	AHH	AAHH	–	–	–	–	AL
B	BURNER,FLAME	BE	BT	BIT	BY	BI	BR	BC	BIC	BS	BSLL	BSL	BSH	BSHH	BALL	BAL	BAH	BAHH	–	–	–	–	BL
C	CONDUCTIVITY	CE	CT	CIT	CY	CI	CR	CC	CIC	CS	CSLL	CSL	CSH	CSHH	CALL	CAL	CAH	CAHH	–	–	–	–	CL
D	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
E	VOLTAGE	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
F	FLOW	FE	FT	FIT	FY	FI	FR	FC	FIC	FS	FSLL	FSL	FSH	FSHH	FALL	FAL	FAH	FAHH	FQ	FCV	–	–	FL
G	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	HAND	–	–	–	–	–	–	–	–	HS	–	–	–	–	–	–	–	–	–	–	–	HV	–
I	CURRENT	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
J	POWER	–	–	–	–	–	–	–	–	JS	–	–	–	–	–	–	–	–	–	–	–	–	–
K	TIME	–	–	–	–	–	–	KC	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
L	LEVEL	LE	LT	LIT	LY	LI	LR	LC	LIC	LS	LSLL	LSL	LSH	LSHH	LALL	LAL	LAH	LAHH	–	LCV	–	–	LL
M	MANUAL	–	–	–	–	–	–	MC	–	–	–	–	–	–	–	–	–	–	–	–	MV	–	–
N	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–			
P	PRESSURE	–	PT	PIT	PY	PI	PR	PC	PIC	PS	PSLL	PSL	PSH	PSHH	PALL	PAL	PAH	PAHH	–	PCV	–	–	PL
PD	DIFFERENTIAL PRESSURE	–	PDT	PDIT	PDY	PDI	PDR	PDC	PDIC	PDS	PDSLL	PDSL	PDSH	PDSHH	PDALL	PDAL	PDAH	PDAHH	–	–	–	–	PDL
Q	QUANTITY	QE	QT	QIT	QY	QI	QR	–	–	QS	QSLL	QSL	QSH	QSHH	QALL	QAL	QAH	QAHH	–	–	–	–	QL
R	REMOTE	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	SPEED	–	–	–	–	–	–	SC	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
T	TEMPERATURE	TE	TT	TIT	TY	TI	TR	TC	TIC	TS	TSLL	TSL	TSH	TSHH	TALL	TAL	TAH	TAHH	–	TCV	–	–	TL
U	MULTIVARIABLE	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
V	VIBRATION	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
W	WEIGHT, FORCE	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
X	TORQUE	–	–	–	–	–	–	–	–	–	–	XSL	XSH	–	–	–	–	–	–	–	–	–	–
Y	ON/OFF AUTOMATIC	–	–	–	–	–	–	–	–	YS	–	YSL	YSH	–	–	–	–	–	–	–	YV	YY	YL
Z	POSITION	–	ZT	–	–	ZI	–	–	–	ZS	–	–	–	–	–	–	–	–	–	–	–	–	–

LINE DESIGNATION

- MAIN SERVICE PIPING
- AUXILIARY PIPE / TUBE
- SYSTEM LIMIT
- ELECTRICAL SIGNAL
- EQUIPMENT INSTALLED AND SUPPLIED BY OTHERS
- PNEUMATIC TUBE
- DATA LINK
- HOSE
- INSULATED PIPE
- INSULATED PIPE HEAT TRACED
- DIRECTION OF FLOW ARROW
- CAPILLARY TUBE

P & ID TIE-INS

RAW WATER SERVICE INLET
DWG #
gpm @ psig
MAX. gpm
MAX. psig
°F

ANDERSON TERMINATION POINT

ANDERSON INTERCONNECTING POINT

REVISION INDICATOR

C.S. ST. STL. PIPE MATERIAL CHANGE

ABBREVIATIONS

ALK	ALKALINITY	HCl	HYDROCHLORIC ACID	psig	POUND per SQUARE INCH, gage
A.S.	AIR SUPPLY	HOA	HAND OFF AUTO	PTFE	TEFLON
ASME	AMER. SOCIETY of MECH. ENG	H_2SO_4	SULPHURIC ACID	Q.C.	QUICK CONNECT
AWS	ANDERSON WATER SYSTEMS	hp.	HORSE POWER	RES.	RESISTIVITY
B.F.	BLIND FLANGE	Hz	HERTZ	R.F.	RAISED FACE FLANGE
CIP	CLEAN IN PLACE	I.D.	INSIDE DIAMETER	R.T.D.	RESISTANCE TEMPERATURE DETECTOR
C.I.	CAST IRON	IAS	INSTRUMENT AIR SUPPLY	R.O.	REVERSE OSMOSIS
Cl	CHLORINE	INT	INTERFACE		
COND.	CONDUCTIVITY	kW	KILOWATT(s)	SCH.	SCHEDULE
C.S.	CARBON STEEL	L.C.	LOCKED CLOSED	SiO_2	SILICA
CU. T	COPPER TUBING	L.O.	LOCKED OPEN	SFT	SOFT STARTER
C/W	COMPLETE WITH	Na	SODIUM	S.O.P.	SHUT OFF PRESSURE
DIA.	DIAMETER	NaCl	SODIUM CHLORIDE	SPEC.	SPECIFICATION
D.O.	DISSOLVED OXYGEN	NaOH	SODIUM HYDROXIDE	S.S.	STRAIGHT SIDE
DWG.	DRAWING	FNPT	FEMALE PIPE THREAD	ST. STL.	STAINLESS STEEL
DCS	DISTRIBUTE CONTROL SYSTEM	MNPT	MALE PIPE THREAD	S.W.	SOCKET WELD
ES.	ELECTRICAL SUPPLY	MAX.	MAXIMUM	T.B.A.	TO BE ANNOUNCED
ESD.	EMERGENCY SHUTDOWN	MIN.	MINIMUM	T.D.H.	TOTAL DISCHARGE HEAD
°F	DEGREES FAHRENHEIT	MCC	MOTOR CONTROL CENTER	THK.	THICK
F.C.	FAIL CLOSE	mm	MILLIMETERS	T.O.C.	TOTAL ORGANIC CARBON
F.F.	FLAT FACE FLANGE	O.D.	OUTSIDE DIAMETER	TURB.	TURBIDITY
F.I.	FAIL INDETERMINATE	O.R.	ORIFICE RESTRICTION	TYP.	TYPICAL
F.O.	FAIL OPEN	P. & I.D.	PROCESS AND INSTRUMENTS DIAGRAM	VFD	VARIABLE FREQUENCY DRIVE
F.S.	FORGED STEEL	PLC	PROGRAMMABLE LOGIC CONTROL	W	WATT(s)
HARD	HARDNESS	PE	PLAIN END	ZSC	POSITION SWITCH CLOSED
		POS	POSITIONED	ZSO	POSITION SWITCH OPEN

THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO ANDERSON WATER SYSTEMS. IT IS SUBMITTED IN CONFIDENCE AND IS TO BE USED SOLELY FOR THE PURPOSE FOR WHICH IT IS FURNISHED AND RETURNED UPON REQUEST. THIS DRAWING AND SUCH INFORMATION IS NOT TO BE REPRODUCED, TRANSMITTED, DISCLOSED OR USED OTHERWISE IN WHOLE OR IN PART WITHOUT THE WRITTEN AUTHORIZATION OF ANDERSON WATER SYSTEMS.

REV	REVISION DESCRIPTION	DRAWN	CHECKED	APP	DATE
A	ORIGINAL ISSUE	MG	BW	DC	08.30.12
B	REVISED PER CUSTOMER COMMENTS	MG		DP	10.03.12
C	REVISED PER CUSTOMER COMMENTS	MG		DP	11.12.12
D	REVISED PER CUSTOMER COMMENTS	MG		DP	11.29.12
E	CERTIFIED FOR CONSTRUCTION	MG		DP	01.07.13
F	REVISED PER CUSTOMER COMMENT	MG		DP	01.31.13
G	REVISED AIT-1530	MG		DP	03.11.13
H	AS BUILT	J.H.	M.G.	D.P.	06.21.13

ISSUED FOR
SEP 19 2013
INFORMATION

PROJECT INFORMATION
ZARCON LITTLE BOW ASP FACILITY
LSD 16-31-14-18 W4M
CONTRACT NUMBER:
120128

ANDERSON WATER SYSTEMS
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PHONE: +1 (905) 627-9233
www.AWSL.com

	BY	DATE
DRAWN	MG	08.30.12
CHECKED	BW	
APP		
REF.		
SCALE	N.T.S.	
SHEET	1 OF 3	

WEAK ACID CATION
WATER TREATMENT SYSTEM
P & I DIAGRAM

SIZE D | 120128-0001-1-PID-001 | H