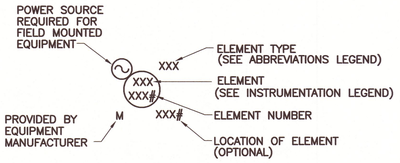
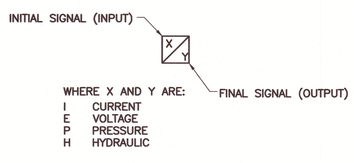
INSTRUMENTATION SYMBOL LEGEND

DESCRIPTION	EXISTING	NEW
PROCESS FLOW		
ELECTRICAL POWER OR PROCESS CONNECTION		
ELECTRICAL SIGNAL		
DATA LINK		
PLC INPUT/OUTPUT	I/O	I/O
PNEUMATIC SIGNAL		
HYDRAULIC SIGNAL		
DISCRETE OUTPUT SIGNAL	I/O	I/O
ANALOG OUTPUT SIGNAL	I/O	I/O
DISCRETE INPUT SIGNAL	I/O	I/O
ANALOG INPUT SIGNAL	I/O	I/O
HARDWIRE INTERLOCK	I XX# XX# (INTERLOCK I.D. NUMBER; LOCATION OF INTERLOCK)	I XX# XX# (INTERLOCK I.D. NUMBER; LOCATION OF INTERLOCK)
PROGRAMMABLE LOGIC CONTROLLER		
OPERATOR TERMINAL INTERFACE		
LOCAL (FIELD MOUNTED)		
FRONT PANEL MOUNTED		
REAR PANEL MOUNTED		
INTEGRAL EQUIPMENT		
SIGNAL SPLITTER CONVERTER/ BOOSTER (SEE BELOW)	X/Y	X/Y
MOTOR	M	M
ALARM/ STATUS LIGHT		

TYPICAL INSTRUMENTATION SYMBOL



TYPICAL SIGNAL CONVERTER SYMBOL



* ALSO USED AS A MODIFIER AFTER FIRST LETTER (i.e. PDIT: PRESSURE DIFFERENTIAL INDICATING TRANSMITTER)

** ALSO USED AS A MODIFIER AFTER LAST LETTER (i.e. LSHH: LEVEL SWITCH HIGH HIGH)

INSTRUMENTATION LEGEND

FIRST LETTER		SUCCEEDING LETTER	
1		2	3
A	ANALYSIS	ALARM	--
B	--	--	--
C	CONTROL	CONTROL	CONTROL
D	DIFFERENTIAL*	DETECT	--
E	--	ELEMENT	--
F	FLOW	--	--
G	GAS	GLASS	GLASS
H	HAND (MANUAL)	--	HIGH**
I	CURRENT	INDICATE	INDICATE
J	POWER	--	--
K	TIME*	--	--
L	LEVEL	LIGHT	LOW**
M	MOTOR	--	INTERMEDIATE
P	PRESSURE	--	--
Q	QUANTITY OR TOTALIZE*	QUANTITY	--
R	RADIATION	RECORD	RECORD
S	SPEED OR FREQUENCY	SWITCH	SIGNAL
T	TEMPERATURE	TRANSMIT	TRANSMIT
V	VIBRATION	VALVE	VALVE
W	TORQUE, WEIGHT, FORCE	--	--
X	--	--	--
Y	STATUS	RELAY, COMPUTE, OR CONVERT	RELAY, COMPUTE, OR CONVERT
Z	POSITION	--	--

ABBREVIATIONS LEGEND

ADM	ADMITTANCE
ATS	AUTOMATIC TRANSFER SWITCH
CAP	CAPACITANCE
CL	CHLORINE
CP	CONTROL PANEL
DO	DISSOLVED OXYGEN
ESTOP	EMERGENCY STOP
FOR	FORWARD-OFF-REVERSE
FSR	FORWARD-STOP-REVERSE
FRSA	FORWARD-STOP-REVERSE-AUTO
HOA	HAND-OFF-AUTO
I	CURRENT
INF	INFLUENT
LOE	LOSS OF ECHO
LOR	LOCAL-OFF-REMOTE
MCC	MOTOR CONTROL CENTER
MCP	MAIN CONTROL PANEL
OCR	OPEN-CLOSE-REMOTE
OPT	OPERATOR TERMINAL
PCP	PUMP CONTROL PANEL
PLC	PROGRAMMABLE LOGIC CONTROLLER
RESET	ALARM RESET
ROL	RAISE OFF LOWER
ROR	RUN-OFF-REMOTE
RTU	REMOTE TERMINAL UNIT
SCR	SPEED CONTROL RECTIFIER
TURB	TURBIDITY
ULT	ULTRASONIC
VFD	VARIABLE FREQUENCY DRIVE

VALVES AND FITTINGS

DESCRIPTION	EXISTING	NEW
GATE VALVE		
BALL VALVE		
PLUG VALVE		
GLOBE VALVE		
BUTTERFLY VALVE		
CHECK VALVE		
DOUBLE DISC CHECK VALVE		
DIAPHRAGM VALVE		
MUD VALVE		
TIDE CHECK VALVE		
NEEDLE VALVE		
PINCH VALVE		
3-WAY VALVE		
KNIFE GATE		
TELESCOPING VALVE	T	T
CONCENTRIC REDUCER		
ECCENTRIC REDUCER		
FLOW ARROW		
UNION		
PRESSURE SAFETY VALVE	PSV	PSV
VACUUM RELIEF	V	V
BACKPRESSURE VALVE	BPV	BPV
PRESSURE REDUCING VALVE	PRV	
BACKFLOW PREVENTER		
DUPLEX STRAINER		
SIMPLEX STRAINER		
WYE STRAINER		
IN-LINE MIXER		
EXPANSION JOINT		
ROTAMETER		
PULSTATION DAMPENER		
DIAPHRAGM SEAL		

ACTUATORS

CONTROL ACTUATOR	M	M
SOLENOID ACTUATOR	S	S
PNEUMATIC DIAPHRAGM ACTUATOR		
PNEUMATIC/HYDRALUIC CYLINDER		

PUMPS

DESCRIPTION	EXISTING	NEW
POSITIVE DISPLACEMENT		
PROGRESSIVE CAVITY		
SCREW PUMP		
CENTRIFUGAL		
SUBMERSIBLE PUMP		
HOSE		
CHEMICAL METERING		
CHEMICAL TRANSFER		

BLOWERS

CENTRIFUGAL		
POSITIVE DISPLACEMENT		
COMPRESSOR/TURBO		
AIR INTAKE FILTER		

MISCELLANEOUS SYMBOLS

MIXER		
IN-LINE STATIC MIXER		
GRINDER		
WEIR		
STOP GATE		
SLIDE GATE		
SHEAR GATE		
CHEMICAL INJECTION NOZZLE		
INTRINSIC SAFETY BARRIER	ISB	ISB
INTRINSIC SAFETY RELAY	ISR	ISR

FIELD INSTRUMENTS

DESCRIPTION	EXISTING	NEW
FIELD PIPE MOUNTED DEVICE		
PADDLE OR LEVER TYPE PROBE		
SUBMERSIBLE PRESSURE TRANSDUCER		
FLOAT SWITCH		
CAPACITANCE OR ADMITTANCE TYPE PROBE		
BUBBLE LIQUID LEVEL ELEMENT		
ULTRASONIC LEVEL TRANSDUCER		
RADAR LEVEL TRANSDUCER		
GUIDED WAVE RADAR		

FLOW METERS

MAGNETIC FLOW METER	M	M
VENTURI FLOW METER		
PARSHALL FLUME		
ULTRASONIC FLOW METER		
PITOT FLOW METER		
AVERAGING PITOT FLOW METER		
THERMAL MASS FLOW METER		
TURBINE FLOW METER	M	M
ORIFICE PLATE		

INDICATOR LIGHT COLOR LEGEND

RUN	RED
STOP	GREEN
WARNING	AMBER
ALARM	RED
POWER	WHITE

NOTES:

1. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
2. PROVIDE SIGNAL REPEATERS/CONVERTERS/BOOSTERS AS REQUIRED BASED UPON EQUIPMENT SELECTED BY INSTRUMENTATION SUPPLIER, DISTANCE AND LOCATION.
3. PROVIDE DRIP SHIELDS TO PROTECT ALL PANELS LOCATED UNDERNEATH PIPES OR OTHER LIQUID-CONTAINING STRUCTURES.
4. REFERENCE PROCESS AND ELECTRICAL DRAWINGS FOR LOCATION OF PANELS AND FIELD INSTRUMENTATION.
5. CONTRACTOR TO COORDINATE NEEDED VOLTAGE BASED UPON EQUIPMENT SUPPLIED.
6. ALL FLOOR MOUNTED CONTROL PANELS SHALL BE INSTALLED ON 4" HIGH CONCRETE EQUIPMENT PADS.
7. WHERE INPUT AND OUTPUT SIGNALS TO A PLC IS REQUIRED, PROVIDE PROPER TYPE AND QUANTITY OF INPUT/OUTPUT MODULES (I/O).
8. CONTRACTOR SHALL COORDINATE THE TYPE OF ANALOG SIGNAL PROVIDED BY THE EQUIPMENT OR FIELD DEVICES WITH THE PROPER TYPE PLC I/O.
9. ALL ANALOG SIGNALS WILL BE 4-20mA, UNLESS OTHERWISE INDICATED OR REQUIRED.

NO	SUBMISSIONS/REVISIONS	APP'D	DATE
1	ISSUED FOR BID	KMO	11/14
2	RECORD DRAWINGS	BAY	07/16

DESIGNED BY: AJM
CAD COORD: SCV
CAD: SJM
CHECKED BY: JP
DATE: 11/3/14
APPROVED BY: JP
DATE: 11/14/14
PROJECT NO: 12938A

COMMONWEALTH OF MASSACHUSETTS BARRY A. VACESPYN NO. 51080 REGISTERED PROFESSIONAL ENGINEER 7/29/16

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INSTRUMENTATION LEGEND, NOTES AND ABBREVIATIONS

DRAWING
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