

INSTRUMENT AND FUNCTION SYMBOLS

- PRIMARY DEVICE/ELEMENT, FIELD MOUNTED
- DEVICE/ELEMENT LOCALLY INSTALLED NEAR ELEMENT
- INDICATING LIGHT, LOCALLY INSTALLED, SEE SPECIFICATIONS FOR DESCRIPTION
- ILLUMINATED CONTROL DEVICE, LOCALLY INSTALLED, SEE SPECIFICATIONS FOR DESCRIPTION.
- DISPLAY/CONTROL FUNCTION, FIELD MOUNTED
- DISPLAY/CONTROL FUNCTION, CONTROL BOARD/PANEL MOUNTED
- DISPLAY/CONTROL FUNCTION, OPERATOR ACCESS BEHIND CONTROL BOARD/PANEL
- DISPLAY/CONTROL FUNCTION, IN MCC
- FIELD DEVICE STATUS / IN PLC TO COMPUTER OR OPERATOR DISPLAY.
- PROCESS CONTROL DISPLAY ELEMENT - FROM PLC
- DIGITAL INPUT
- DIGITAL OUTPUT
- ANALOG INPUT
- ANALOG OUTPUT
- INSTRUMENT OR DEVICE CONTROL FUNCTION DESIGNATIONS
 HOA HAND-OFF-AUTO
 LOR LOCAL (OFF) REMOTE
 RSL RAISE-STOP-LOWER
 OCA OPEN-CLOSE-AUTO
 AM AUTOMATIC-MANUAL
 L/S LOCKOUT STOP
 SS STOP-START (PUSHBUTTONS)
 SEL SELECT
 SD SHUTDOWN

VALVE SYMBOLS

- GATE VALVE (OPEN)
- SWING CHECK VALVE (OPEN)
- GLOBE VALVE (OPEN)
- BUTTERFLY VALVE (OPEN)
- ROTARY VALVE (OPEN)
- BALL VALVE (OPEN)
- PLUG VALVE (OPEN)
- MOTOR OPERATED VALVE (OPEN)
- SOLENOID VALVE - 2 WAY (OPEN)
- SOLENOID VALVE - 3 WAY (OPEN)
- PRESSURE REGULATING VALVE SELF-CONTAINED (CLOSED)
- PRESSURE REGULATING VALVE SELF-CONTAINED (OPEN)
- CYLINDER OPERATED VALVE PNEUMATIC/HYDRAULIC (OPEN)
- BACK PRESSURE VALVE (OPEN)
- PRESSURE RELIEF VALVE
- OPEN ANGLE VALVE (OPEN)

- "Y" STRAINER
- RESTRICTOR

INSTRUMENT AND FUNCTION SYMBOLS

- DEVICE WITH ADDITIONAL CONTROL/PROCESSING FUNCTIONS AS DESCRIBED BELOW:
 A=ANALOG I=CURRENT
 B=BINARY O=SONIC, ELECTROMAGNETIC
 D=DIGITAL P=PNEUMATIC
 E=VOLTAGE R=RESISTANCE (ELEC)
 H=HYDRAULIC
- ELECTRICAL CONTROL OR LOGIC FUNCTION AS DESCRIBED:
 AND ALL INPUTS REQUIRED FOR OUTPUT
 OR ANY INPUT CHANGES OUTPUT
 NOT OUTPUT BASED ON CONDITION NON CONCURRENT INPUTS

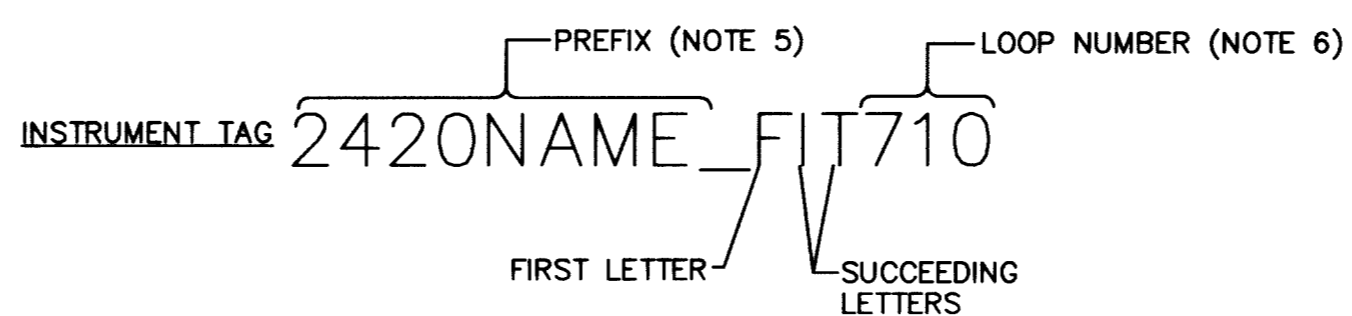
LINE SYMBOLS

- DIRECTIONAL ARROW
- INSTRUMENT SIGNAL LINE
- PROCESS CONNECTION
- PROCESS PIPING
- EXISTING PROCESS PIPING
- FUTURE PIPING
- ELECTRICAL/LOGIC INTERCONNECTIONS
- PNEUMATIC, INSTRUMENT AIR
- CAPILLARY LINE
- HYDRAULIC LINE
- ELECTRIC TRACED LINE
- PROCESS OR EQUIPMENT CONTROL PANEL/ENCLOSURE
- FLOW INDICATOR
- SONIC FLOW METER
- TURBINE / FLOW METER
- MAGNETIC FLOW METER
- VENTURI TUBE
- FLOW NOZZLE
- SONIC LEVEL INDICATOR/TRANSMITTER
- PULSATION DAMPENER WITH PRESSURE GAUGE

EQUIPMENT/DEVICE SYMBOLS

- RETURN PUMP
- SAMPLE PUMP
- EXISTING CHEMICAL FEED PUMP
- POSITIVE DISPLACEMENT PUMP
- PUMP - VERTICAL TURBINE
- MIXER - PROPELLER TYPE
- TANK - AS DEFINED
- TANK - ABOVE GROUND STORAGE
- INJECTION TAP
- DRAIN

EXAMPLE - DEVICE IDENTIFICATION



TAG NUMBER LETTER IDENTIFICATION				
ALPH.	FIRST LETTER	SECOND LETTER	THIRD LETTER	
	FUNCTION	INPUT FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYZER	ALARM / HI ALARM		
B			CLOSE, STOP, DECREASE	
C	COMMUNICATION	CONTROL	CONTROL	
D		DIFFERENTIAL	OPEN, START, INCREASE	DRAWDOWN
E	VOLTAGE	SENSOR (PRIMARY ELEMENT)		EAST
F	FLOW	FAIL		
G				
H	HAND	HI-HI ALARM		
I	CURRENT (ELEC.)	INDICATE		INLET, SUCTION
J	POWER			
K	TIME		CONTROL STATION	
L	LEVEL	LOW ALARM	LIGHT	
M	MOTOR			
N	INTRUSION	RUN, ON, OPERATING		NORTH
O		LOW-LOW ALARM		OUTLET DISCHARGE
P	PRESSURE			PLC
Q	QUANTITY	TOTALIZE, INTEGRATE		
R				RTU
S	SPEED	STATUS, SWITCH		SOUTH
T	TEMPERATURE		TRANSMIT	
U		MULTIFUNCTION		UN-NEEDED/OBSOLETE
V	VIBRATION			
W	WEIGHT			WEST
X	TEST	MULTIFUNCTION		UNCLASSIFIED FIELD DEVICE
Y	EVENT, STATE	RELAY, COMPUTE, CONVERT		
Z	POSITION			SCADA COMPUTER

NOTES:

- COVERS ALL ANALYSIS NOT LISTED IN TABLE. TYPE OF ANALYSIS WILL BE DEFINED OUTSIDE TAGGING BALLOON ON DIAGRAM.
 - INTENDED TO COVER UNLISTED MEANINGS THAT WILL BE USED TO A LIMITED EXTENT. MEANINGS WILL BE DEFINED OUTSIDE TAGGING BALLOON ON DIAGRAM.
 - FUNCTION OF COMPUTING DEVICE WILL BE DEFINED OUTSIDE TAGGING BALLOON. SEE ABBREVIATIONS FOR DESIGNATION.
 - USERS CHOICE
 - THE INSTRUMENT LOOP NUMBERS SHALL BE PRECEDED BY THE FOLLOWING PREFIXES.
- | PREFIX | LOCATION |
|----------|--------------------|
| 2227V040 | ZONE 2227 VALVE 40 |
- THE CONTRACTOR SHALL UTILIZE THE DISTRICT'S INSTRUMENT TAG NUMBERING CRITERIA FOR ALL INSTRUMENTATION AND ELECTRICAL COMPONENTS INCLUDING: (SEE SCHEDULE A, SECTION 16075)
 - A. WIRING (WIRE LABELS, TERMINALS, WIRE LISTS, ETC)
 - B. FLOW INSTRUMENTATION
 - C. FIELD DISPLAYS
 - D. SOLENOID VALVES
 - E. LEVEL SWITCHES
 - F. CONTINUOUS LEVEL INSTRUMENTATION
 - G. SECURITY TAGGING
 - H. DATA TAGGING

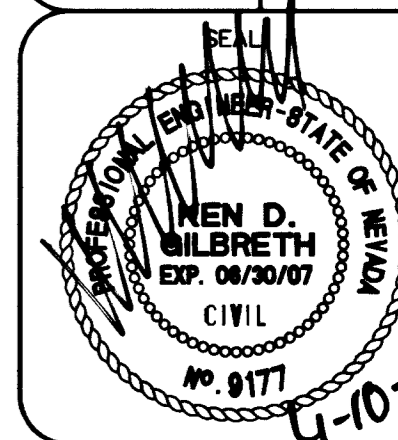
DISTRICT STANDARD LOOP NUMBERING CONVENTION			
LOOP NUMBER	MAJOR PROCESS SYSTEM	LOOP NUMBER	PROCESS TYPE, LOCATION, UNIT NUMBER
000	MASTER STATION	010	SCADA COMPUTERS, NETWORK
		020	ENVIRONMENT
		030	SPARE
100	RESERVOIRS, TANKS, BASINS	100	SINGLE UNIT
		120	WELL MILLER
		130	TRANSDUCER PROBE DRAWDOWN
		140	CAPACITIVE PROBE DRAWDOWN
		150	SURGE TANKS/SUPPRESSORS
		160	INLET BUMP
		170	UNDER DRAIN
		180	OUTLET BUMP
		190	MIXER
200	PUMPS	200	STATION/SINGLE PUMP GROUP
		210	PUMP GROUP 1
		220	PUMP GROUP 2
		230	PUMP GROUP 3
		240	PUMP GROUP 4
		250	PUMP GROUP 5
		260	PUMP GROUP 6
		270	PUMP GROUP 7
		280	PUMP GROUP 8
		290	WELL BUMP
300	FACILITY	300	COMMON
		310	CONTROL BUILDING
		320	DISINFECTION BUILDING
		330	VAULT
		340	FIRE SYSTEM
		350	SPARE
		360	POWER
		370	ENVIRONMENT
		380	AIR SYSTEMS
		390	WEATHER
400	DISINFECTION	400	COMMON
		410	RESIDUAL ANALYZERS
		420	SAMPLE COLLECTION/RETURN
		430	WASHDOWN
		440	SPARE
		450	SODIUM HYPOCHLORITE
		460	CL2 GAS
		470	SPARE
		480	SPARE
		490	SPARE
500	COMMUNICATION	500	GENERAL
		510	RADIO
		520	LAND LINE (TELEPHONE)
		530	SPARE
		540	SPARE
		550	SPARE
		560	SPARE
		570	REPEATER BATTERY
		580	SPARE
		590	SPARE
600	FIELD COMPUTER	600	COMMON
		610	RTU
		620	PLC
		630	DPC 3001 (HOCKEY PUCK)
		640	DPC 3001 (HOCKEY PUCK)
		650	DPC 3001 (HOCKEY PUCK)
		660	DPC 3001 (HOCKEY PUCK)
		670	BATTERY
		680	SPARE
		690	SPARE
700	DISTRIBUTION	700	PRESSURE STATION
		710	PRV STATION
		720	RATE OF FLOW STATION
		730	RECHARGE VALVE
		740	CHECK VALVE
		750	ELECTRIC VALVE (MOV)
		760	ISOLATION VALVE
		770	RELIEF VALVE
		780	SPARE
		790	SPARE

DEPARTMENT OF PUBLIC WORKS
CITY OF LAS VEGAS



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INSTRUMENTATION DETAILS FOR
PRV RELOCATION
PROJECT
MARTIN L KING BLVD IMPROVEMENTS
ALTA DR TO CAREY AVE



WO. NO. 6224
DESIGNED BY
DRAWN BY CGM
DATE 4/2/07
SCALE HORIZ. VERT.
DRAWING SHEET 55 OF 237 SHEETS

Robert J. Morgan
LAS VEGAS VALLEY WATER DISTRICT
DATE 7/17/07