

ABBREVIATIONS

AC = AIR COMPRESSOR
AFF = ABOVE FINISHED FLOOR
AFG = ABOVE FINISHED GRADE
AI = ANALOG INPUT
AO = ANALOG OUTPUT
AUTO = AUTOMATIC
ATS = AUTOMATIC TRANSFER SWITCH
BFG = BELOW FINISHED GRADE
BP = BOOSTER PUMP
CBP = COUNTY BOOSTER PUMP
CIM = COMMUNICATION INTERFACE MODULE
CPT = CONTROL POWER TRANSFORMER
DI = DISCRETE INPUT
DO = DISCRETE OUTPUT
DPDT = DOUBLE POLE-DOUBLE THROW
ETM = ELAPSE TIME METER
ES = EMERGENCY STOP
HZ = HERTZ
I/O = INPUT/OUTPUT
MPD = MOTOR PROTECTIVE DEVICE
MOD = MOTOR OPERATED DAMPER
NIC = NETWORK INTERFACE CONNECTION
OL = OVERLOAD RELAY CONTACT
PCP = PUMP CONTROL PANEL
PLC = PROGRAMMABLE LOGIC CONTROLLER
PVCC = PVC COATED
RTD = RESISTIVE THERMAL DEVICE
RTU = REMOTE TELEMETRY UNIT
RWP = RAW WATER PUMP
SPD = SURGE PROTECTION DEVICE
TEMP = TEMPERATURE
TFM = TURBINE FLOW METER
TSP = TWISTED SHIELDED PAIR
TYP = TYPICAL
VA = VOLT-AMPS
VAC = VOLTS/ALTERNATING CURRENT
VDC = VOLTS/DIRECT CURRENT
VMR = VOLTAGE MONITOR RELAY
WP = WELL PUMP

MISCELLANEOUS

OR X # - DESIGNATION OF PLAN/SHEET NUMBER (1, 2, ETC.)
I-# X - DESIGNATION OF SECTION LETTER (A, B, ETC.)

INSTRUMENTATION IDENTIFICATION SCHEDULE

FIRST LETTER			SUCCEEDING LETTER		
VARIABLE		MODIFIER	PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		AUTOMATIC
B	BREAKER		USER'S CHOICE	CLOSE OR STOP	BYPASS
C	CONDUCTIVITY		CALCULATED VALUE	HAND CONTROL POINT	CLOSE
D	DENSITY	DIFFERENTIAL		OPEN OR START	
E	VOLTAGE (EMF)		PRIMARY ELEMENT	SENSOR	EMERGENCY STOP
F	FLOW RATE	RATIO	FAIL	FAIL	FAIL
G	GAUGING		GLASS		LOCAL/MANUAL/HAND
H	HAND				HIGH OR OPEN
I	CURRENT		INDICATE		INTERMEDIATE
J	POWER	SCAN			
K	TIME	TIME RATE		SOFT CONTROL POINT	LOCKOUT
L	LEVEL		LIGHT		LOW
M	MOTOR	MOMENTARY		MOTOR	MIDDLE
N	USERS CHOICE		INPUT	FORWARD	ON, START OR OPERATE
O				OFF	OVERLOAD
P	PRESSURE	PNEUMATIC	POINT (TEST)	POSITION	
Q	QUANTITY OR EVENT	TOTALIZE		EMERGENCY/ABNORMAL	
R	RADIOACTIVITY		RECORD OR PRINT	REMOTE	RUN INDICATION
S	SPEED OR FREQUENCY	SUM	SWITCH	SWITCH	STOP, OFF OR SHUTDOWN
T	TEMPERATURE		TOTALIZED	TRANSMIT	TRANSMITTER
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VARIABLE OR VISCOSITY			VALVE OR DAMPER	VFD
W	WEIGHT OR FORCE		WELL		
X	MOD, LIGHT OR VALVE		UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	INTERLOCK			RELAY OR COMPUTE	REVERSE
Z	POSITION			DRIVE OR ACTUATOR	

INSTRUMENT, EQUIPMENT AND CONTROL DEVICE EXAMPLES

FE = FLOW ELEMENT
FIT = FLOW INDICATING TRANSMITTER
PE = PRESSURE ELEMENT
PIT = PRESSURE INDICATING TRANSMITTER
PSH = PRESSURE SWITCH HIGH
SV = SOLENOID VALVE
TSH = TEMPERATURE SWITCH HIGH
TSL = TEMPERATURE SWITCH LOW
ZSC = POSITION SWITCH CLOSED
ZSO = POSITION SWITCH OPEN
FS = FLOW SWITCH
LSL = LEVEL SWITCH LOW
LSH = LEVEL SWITCH HIGH

ELEMENTARY WIRING SYMBOLS

RXX (CR) CONTROL RELAY
TDX (TR) TIME DELAY RELAY
VMRXX (VM) VOLTAGE MONITOR RELAY
ALTXX (ALT) ALTERNATING RELAY
XXX (NO) NORMALLY OPEN CONTACT
XXX (NC) NORMALLY CLOSED CONTACT
FUSED TERMINAL
CIRCUIT BREAKER
CIRCUIT BREAKER WITH EXTERNAL ACTIVATOR
SELECTOR SWITCH
XOO= REPRESENT THE NUMBER OF SWITCH POSITIONS
NORMALLY OPEN PUSH BUTTON
NORMALLY CLOSED PUSH BUTTON
EMERGENCY STOP PUSH BUTTON
PUSH-TO-TEST PILOT LIGHT
R=RED, G=GREEN, A=AMBER, W=WHITE, B=BLUE
MOTOR
TERMINAL BLOCK
THERMOSTAT CLOSE ON RISING TEMPERATURE
THERMOSTAT CLOSES ON FALLING TEMPERATURE
NORMALLY OPEN LIMIT SWITCH
NORMALLY OPEN LIMIT SWITCH
NORMALLY OPEN TIMED CLOSED CONTACT
NORMALLY CLOSE CONTACT TIMED OPEN
FLOAT SWITCH N.O.
FLOAT SWITCH N.C.
PRESSURE SWITCH
MANUAL MOTOR STARTER WITH OVERLOAD AND STOP/START SELECTOR SWITCH
GROUND
SOLENOID

GENERAL CIRCUIT/CONDUIT TAG IDENTIFICATION

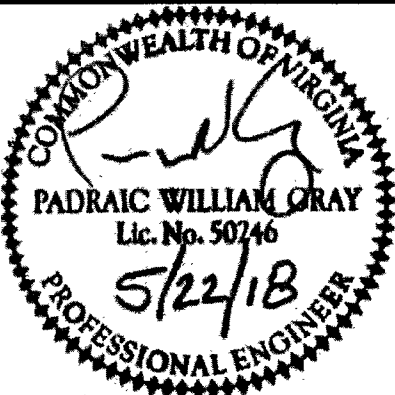
TAG	CONDUIT SIZE	CONDUCTORS	NOTES
C-X (Y)	3/4" (X=2 THRU 18) 1" (X=19 THRU 30) 2" (X=31 THRU 100)	X-#14, 1-#12G	(Y) DENOTES ADDITIONAL SPARES
P-X (Y)	3/4" (X=2 THRU 14) 1" (X=15 THRU 24) 2" (X=25 THRU 80)	X-#12, 1-#12G	(Y) DENOTES ADDITIONAL SPARES
TSP-X (Y)	3/4" (X=1,2) 1" (X=3,4) 2" (X=5 THRU 16)	X-#18 TWISTED SHIELDED PAIR	(Y) DENOTES ADDITIONAL SPARES
MAN-X	CONDUIT SIZE AS REQUIRED. MINIMUM 3/4"	CABLE AS PROVIDED OR RECOMMENDED BY EQUIPMENT MANUFACTURER. COORDINATE CONDUIT AND INSTALLATION REQUIREMENTS WITH MANUFACTURER.	
TOTAL CONDUCTORS REQUIRED = X + Y			

PLAN SYMBOLS

HOME RUN CONDUIT/CABLE
JUNCTION BOX
CONTROL ENCLOSURE
PRESSURE SWITCH
PRESSURE TRANSMITTER
FLOW METER
FLOW TRANSMITTER
LEVEL TRANSMITTER
FLOAT LEVEL SWITCH
LIMIT SWITCH CLOSED
LIMIT SWITCH OPEN
TEMPERATURE SWITCH
SOLENOID VALVE

GENERAL NOTES:

- ALL ALARM INDICATION AND CONTROL WIRING IN JUNCTION BOXES SHALL BE WIRED TO NUMBERED TERMINAL STRIPS AND IDENTIFIED AS TO START AND END OF RUN.
- ELECTRICAL ENCLOSURES LOCATED OUTDOORS AND INDOORS IN WET AND DAMP LOCATIONS SHALL BE WEATHERPROOF NEMA 4X STAINLESS STEEL 316 UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL VISIT THE JOB SITE AND EXAMINE THE EXISTING CONDITIONS THAT MAY AFFECT HIS/HER WORK.
- REFER TO "E" DRAWINGS FOR ADDITIONAL CONDUIT AND WIRING REQUIREMENTS.
- INSTALLATION OF CONDUIT, CONDUCTORS, AND OTHER ELECTRICAL MATERIAL SHALL BE IN ACCORDANCE WITH ELECTRICAL REQUIREMENTS U.O.N.
- ALL CONTROL CONDUCTORS SHALL BE STRANDED COPPER.
- ALL CONTROL CONDUCTORS SHALL BE RUN CONTINUOUSLY FROM DEVICE TO TERMINAL BLOCK WITHOUT SPLICES.



WESTERN VIRGINIA WATER AUTHORITY
601 South Jefferson Street, Suite 300
Roanoke, Virginia 24011

DES: HCA
DRAWN: HCA
CHECK: XXX
DATE: 05/24/18

SCALE: NO SCALE
HORIZ: N/A
VERT: N/A

SUMMIT VIEW BUSINESS PARK UTILITY IMPROVEMENTS
PHASE 1

INSTRUMENTATION AND CONTROLS
SYMBOLS ABBREVAITONS AND LEGENDS

DRAWING
10.01

SHEET
68

AS-BUILT

REV	DATE	DESCRIPTION