

GENERAL NOTES

- SEE ELECTRICAL DRAWINGS FOR POWER DISTRIBUTION, DISCONNECT REQUIREMENTS, EQUIPMENT LOCATIONS AND FEEDER REQUIREMENTS.
- MOTOR STARTER ELEMENTARIES SHOWN ARE INTENDED TO DEPICT THE GENERAL CONTROLS REQUIREMENT FOR THAT PARTICULAR PIECE OF EQUIPMENT AND DO NOT NECESSARILY INDICATE ALL THE REQUIREMENTS OF THE MOTOR STARTER.
- SEE ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR MOTOR STARTER REQUIREMENTS. SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR EQUIPMENT LOCATIONS AND POWER REQUIREMENTS. CONTRACTOR SHALL COORDINATE EQUIPMENT LOCATIONS SUCH AS NOT TO CAUSE INTERFERENCE WITH NEW AND/OR EXISTING EQUIPMENT.
- ENCLOSURE DIMENSIONS SHOWN ARE MINIMUM REQUIREMENTS. ENCLOSURES SHALL BE SIZED TO ACCOMMODATE EQUIPMENT, CONTROLS AND COMPONENTS AS SHOWN, SPECIFIED AND REQUIRED FOR AN OPERABLE SYSTEM.
- CIRCUITS SHOWN SHALL BE INSTALLED IN CONDUIT SIZES AS INDICATED IN THE GENERAL CIRCUIT/CONDUIT TAG IDENTIFICATION SCHEDULE.
- ALL PENETRATIONS THROUGH EXISTING SOLID CONCRETE STRUCTURES WHERE SLEEVES HAVE NOT BEEN PROVIDED SHALL BE CORE DRILLED AND SIZED TO ACCEPT MECHANICAL LINK SEALS. THROUGH FIRE RATED WALLS, CORE HOLES AND SEAL AROUND CONDUIT WITH NON-SHRINK GROUT.
- DISCRETE OUTPUTS SHALL BE PROVIDED WITH INTERPOSING RELAYS COMPATIBLE FOR USE WITH PLC OUTPUTS.
- CONDUIT RUNS ARE SHOWN DIAGRAMMATICALLY ONLY AND SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT AND STRUCTURAL CONDITIONS. EXPOSED CONDUITS ABOVE SUSPENDED CEILINGS AND FURRED WALLS SHALL BE INSTALLED PARALLEL TO THE BEAMS AND WALLS.
- PROVIDE ALL REQUIRED PULL BOXES AND JUNCTION BOXES FOR INSTALLATION OF THE WIRING IN ACCORDANCE WITH CONTRACT SPECIFICATIONS THOUGH THE BOXES MAY NOT BE INDICATED ON THE DRAWINGS.
- ALL INDICATION AND CONTROL WIRING IN JUNCTION BOXES SHALL BE WIRED TO NUMBERED TERMINAL STRIPS AND IDENTIFIED AS TO START AND END OF RUN.
- AREAS DESIGNATED AS HAZARDOUS LOCATIONS ARE SPECIFIED AND/OR SHOWN ON THE CONTRACT DRAWINGS. WORK INSTALLED IN AREAS DESIGNATED AS CLASS I, GROUP D, DIVISION 1 OR CLASS I, GROUP D, DIVISION 2 HAZARDOUS LOCATIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF ARTICLE 500 OF THE NATIONAL ELECTRIC CODE. REFER TO "E" AND "M" DRAWINGS FOR ADDITIONAL INFORMATION ON AREA CLASSIFICATIONS.
- CABLE AND CONDUCTOR REQUIREMENTS VARY BETWEEN DIFFERENT MANUFACTURERS OF EQUIPMENT AND INSTRUMENTATION. CONTRACTOR SHALL VERIFY MANUFACTURERS REQUIREMENTS AND PROVIDE CONDUIT AND CABLES AS REQUIRED.
- EXISTING EQUIPMENT AND WIRE IS SHOWN IN A LIGHT GRAY SCALE, NEW EQUIPMENT AND WIRING IS SHOWN BOLD. ALL WORK SHALL BE ASSUMED TO BE NEW UNLESS OTHERWISE INDICATED.
- ALL CONTROL WIRING SHALL CONFORM TO THE FOLLOWING:

LINE AND LOAD CIRCUITS (AC OR DC POWER)	COLOR	WIRE SIZE
1	BLACK	#12 AWG (MIN) STRANDED
2	WHITE	#12 AWG (MIN) STRANDED
3	RED	#14 AWG (MIN) STRANDED
4	BLUE	#14 AWG (MIN) STRANDED
5	BLUE/BLACK	#14 AWG (MIN) STRANDED
6	YELLOW	#14 AWG (MIN) STRANDED
7	GREEN	#12 AWG (MIN) STRANDED
8	BLACK/RED	#18 AWG (MIN) STRANDED

INSTRUMENT, EQUIPMENT AND CONTROL DEVICE EXAMPLES

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

ABBREVIATIONS

A/C	=	AIR CONDITIONING
AI	=	ANALOG INPUT
AMP	=	AMPERE
AO	=	ANALOG OUTPUT
AUTO	=	AUTOMATIC
AUX	=	AUXILIARY
ATS	=	AUTOMATIC TRANSFER SWITCH
BMS	=	BUILDING MANAGEMENT SYSTEM
BOU	=	BUREAU OF UTILITIES
BP	=	BOOSTER PUMP
CIM	=	COMMUNICATION INTERFACE MODULE
COMM	=	COMMUNICATION
CP	=	CONTROL PANEL
CPT	=	CONTROL POWER TRANSFORMER
CR	=	CONTROL RELAY
DI	=	DISCRETE INPUT
DO	=	DISCRETE OUTPUT
DP	=	DIFFERENTIAL PRESSURE
DPDT	=	DOUBLE POLE-DOUBLE THROW
DV	=	DISCHARGE VALVE
EF	=	EXHAUST FAN
E-NET	=	ETHERNET
E-STOP	=	EMERGENCY STOP
ETM	=	ELAPSE TIME METER
ETR	=	EXISTING TO REMAIN
EX	=	EXISTING
F/B	=	FEEDBACK
F/C	=	FIBER/COPPER
FM	=	FLOW METER
FO	=	FIBER OPTIC
FPP	=	FIBER OPTIC PATCH PANEL
F-STAT	=	FREEZE-STAT
GFI	=	GROUND FAULT INTERRUPTER
GND	=	GROUND
HMI	=	HUMAN MACHINE INTERFACE
HOA	=	HAND-OFF-AUTO
HX	=	HEAT EXCHANGER
I/W	=	IN ACCORDANCE WITH
I/O	=	INPUT/OUTPUT
ISB	=	INTRINSICALLY SAFE BARRIER
ISR	=	INTRINSICALLY SAFE RELAY
J-BOX	=	JUNCTION BOX
L	=	LINE
LEL	=	LOWER EXPLOSIVE LIMIT
LIS	=	LEAD-LAG-STANDBY
LOR	=	LOCK OUT RELAY
L/R	=	LOCAL/REMOTE
LS	=	LIMIT SWITCH
MAX	=	MAXIMUM
MCC	=	MOTOR CONTROL CENTER
MFR	=	MANUFACTURER
MIN	=	MINIMUM
MMS	=	MANUAL MOTOR STARTER
MPR	=	MOTOR PROTECTION RELAY
MOD	=	MOTOR OPERATED DAMPER
MOV	=	MOTOR OPERATED VALVE
N	=	NEUTRAL
NC	=	NORMALLY CLOSED
NEMA	=	NATIONAL ELECTRIC MANUFACTURERS ASSOCIATION
NO	=	NORMALLY OPEN
NTS	=	NOT TO SCALE
OIT	=	OPERATOR INTERFACE TERMINAL
OL	=	OVERLOAD
PC	=	PERSONAL COMPUTER
PCP	=	PUMP CONTROL PANEL
PCS	=	PLANT CONTROL SYSTEM
PIO	=	POINT I/O
PLC	=	PROGRAMMABLE LOGIC CONTROLLER
PS	=	POWER SUPPLY
PSCP	=	PUMP STATION CONTROL PANEL
PSI	=	POUNDS PER SQUARE INCH
PVCC	=	PVC COATED
QTY	=	QUANTITY
RAS	=	RETURN ACTIVATED SLUDGE
RCT	=	REPEAT CYCLE TIMER
RGS	=	RIGID GALVANIZED STEEL
RIO	=	REMOTE I/O
RL	=	RADAR LEVEL
RSP	=	RAW SEWAGE PUMP
RSSP	=	RETURN SECONDARY SLUDGE PUMP
RTD	=	RESISTANCE TEMPERATURE DEVICE
RTU	=	REMOTE TELEMETRY UNIT
RVSS	=	REDUCED VOLTAGE SOFT STARTER
SCADA	=	SUPERVISORY CONTROL AND DATA ACQUISITION
SF	=	SUPPLY FAN
SPD	=	SURGE PROTECTIVE DEVICE
SV	=	SUCTION VALVE
TEMP	=	TEMPERATURE
TR	=	TIMING RELAY
TSP	=	TWISTED SHIELDED PAIR
TST	=	TWISTED SHIELDED TRIAD
T-STAT	=	THERMOSTAT
TVSS	=	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	=	TYPICAL
UL	=	ULTRASONIC LEVEL
UON	=	UNLESS OTHERWISE NOTED
UPS	=	UNINTERRUPTIBLE POWER SUPPLY
VAC	=	VOLTS/ALTERNATING CURRENT
VCP	=	VENTILATION CONTROL PANEL
VDC	=	VOLTS/DIRECT CURRENT
VFD	=	VARIABLE FREQUENCY DRIVE

EQUIPMENT TAG

THE 3 LETTER EQUIPMENT TAG WILL BE DEVELOPED FROM THE LETTERS REPRESENTING THE DIFFERENT FUNCTIONS IN THE INSTRUMENTATION IDENTIFICATION SCHEDULE.

LOOP NUMBER IDENTIFICATION SCHEDULE

- THE FIRST DIGIT WILL EQUATE TO THE TYPE OF EQUIPMENT. EACH TYPE OF EQUIPMENT AND ITS ASSOCIATED DEVICE WILL HAVE A SEPARATE IDENTIFIER THAT EQUATES TO THE FOLLOWING CODES:

1	PUMP/MOTOR
2	VALVE
3	GENERATOR
4	NOT USED
5	NOT USED
6	NOT USED
7	TEMPORARY BYPASS PUMPING
8	MISC. DEVICE (GENERATOR, ATS, TANKS, ETC.)
9	ANALOG AND DISCRETE INSTRUMENTS

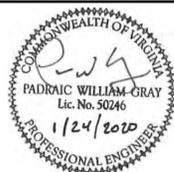
- SECOND AND THIRD NUMBERS EQUATE TO A SEQUENTIAL NUMBERING OF THE TYPES OF DEVICE. EX. CRYSPIT-901, CRYSPIT-902, CRYSPIT-903.
- A LETTER SUFFIX CAN BE ADDED IF REQUIRED TO DIFFERENTIATE BETWEEN DIFFERENT BUT SIMILAR POINTS. EX. CRYSPIT-YN-101A, CRYSPIT-YN-101B.

TAG EXAMPLES

- RUN STATUS FOR HIGH-LIFT PUMP NO. 1: CRYSPIT-MN-101
- PRESSURE SWITCH FOR HIGH-LIFT PUMP NO. 2: CRYSPIT-PSH-102
- HIGH WINDING TEMP. FOR HIGH-LIFT PUMP NO. 1: CRYSPIT-TSH-101

INSTRUMENTATION IDENTIFICATION SCHEDULE

	FIRST LETTER		SUCCEEDING LETTER		
	VARIABLE	MODIFIER	PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		AUTOMATIC
B	BREAKER		USER'S CHOICE		BYPASS
C	COMMUNICATIONS		USER'S CHOICE	CONTROL	
D	DENSITY	DIFFERENTIAL		OPEN OR START	
E	VOLTAGE (EMF)		PRIMARY ELEMENT	SENSOR	
F	FLOW RATE	RATIO	FAIL	FAIL	FAIL
G	GAUGING		GALSS	GATE	LOCAL/MANUAL/HAND
H	HAND				HIGH OR OPEN
I	CURRENT		INDICATE		INTERMEDIATE
J	POWER	SCAN			
K	TIME	TIME RATE			
L	LEVEL		LIGHT	CONTROL STATION	LOW OR CLOSE
M	MOTOR	MOMENTARY		MOTOR	MIDDLE
N	TORQUE		INPUT	FORWARD	ON 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
S	SPEED OR FREQUENCY	SUM	SWITCH	SWITCH	STOP
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VARIABLE OR VISCOSITY			VALVE OR DAMPER	VFD/VALVE
W	WEIGHT OR FORCE		WELL		
X	MOD. LIGHT OR VALVE		UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	INTERLOCK			RELAY OR COMPUTE	RESET
Z	POSITION			DRIVE OR ACTUATOR	



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

DES: CRM	SCALE: NOT TO SCALE
DRAWN: CRM	HORIZ: N/A
CHECK: PWG	VERT: N/A
DATE: 1/24/20	

CRYSTAL SPRING
PUMP STATION RELOCATION

ABBREVIATIONS, SCHEDULES,
AND GENERAL NOTES

REV	DATE	DESCRIPTION

DRAWING: 10.01
SHEET: 67