NOTE: ROUTE 11 STATION PROGRAM UPDATES ARE NOT IN LUMP SUM CONTRACT AND SHALL BE PERFORMED ON TIME AND MATERIALS BASIS. WORK SHALL BE TO INVESTIGATE AND CORRECT PROGRAMMING ISSUES TO ALLOW REMOTE ADJUSTMENT OF CONTROL SETPOINTS THROUGH SCADA SYSTEM.

N
W E
S

Jefferson National Forrest

Peppers Ferry Rd

Wytheville

Max Meadows Tank

Grahams Forge Tank

Collins Pump Station &Tank

Lots Gap Control Valve

Radio Tank

PS

Route 11 Booster Station (PROGRAM UPDATES - SEE NOTE)

Blue Sky Tank

Fort Chiswell Tank

PS

81

Rural Retreat

Crockett

WYTHE

Felts

Big Survey Tank

Raper Ridge Tank

Barren Springs Tank

Fox Den Booster Station

PS

Piney Booster Station

PS

Austinville Rd

Castleton Rd

Slabtown

Austinville

Rakestown Booster Station (Replace Controls)

Barren Springs Control Valve/ Meter

Ivanhoe

PS

Rakestown Tank (Replace Radio)

Grayson Tank (Replace Radio w/ Cell Modem)

21

Speedwell Control Valve/ Meter

Speedwell

Old Speedwell Tank & Booster Station

New Speedwell Tank

77

CARROLL

Mount Rogers National Recreating Area

LEGEND

- Proposed SCADA Site
- Existing SCADA Site
- Non SCADA Site

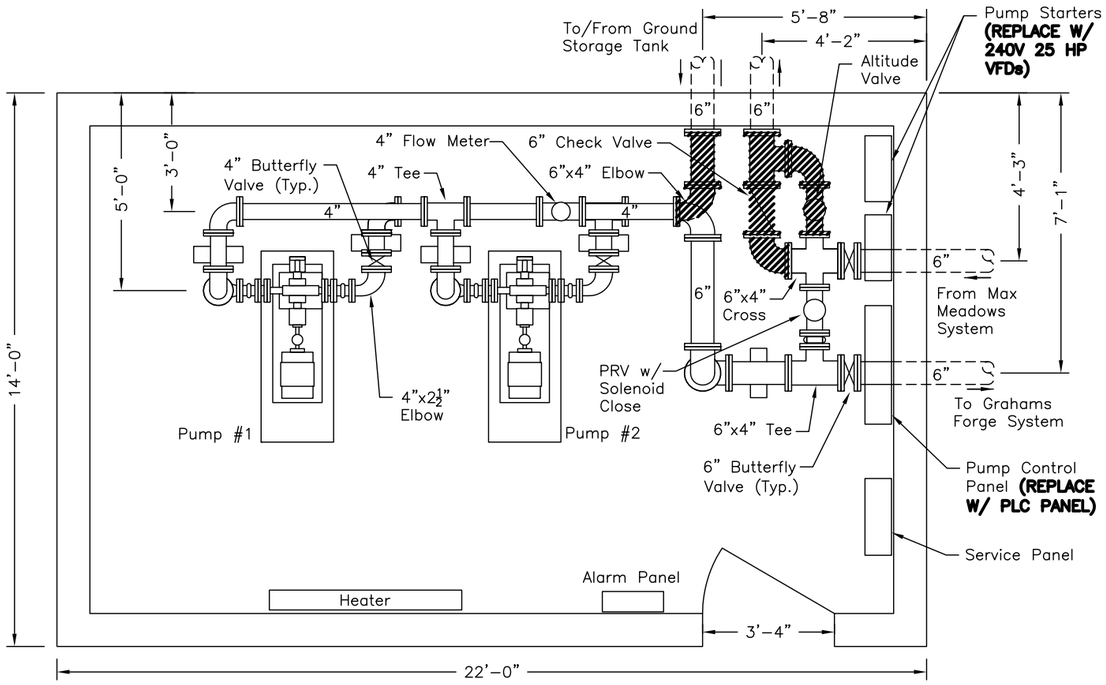
5,000 0 5,000 10,000 15,000

SCALE IN FEET

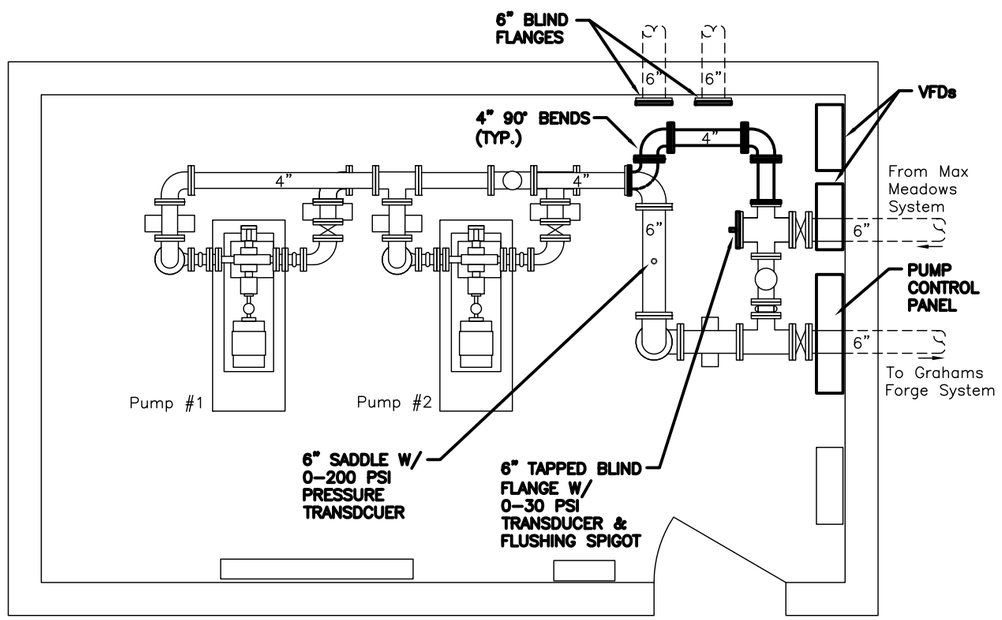
Peed & Bortz , L.L.C.

CIVIL & ENVIRONMENTAL ENGINEERS

EXHIBIT1 - SYSTEM OVERVIEW
2024 WATER FACILITY SCADA EXPANSION
WYTHE COUNTY (6/24/2024)



EXISTING BOOSTER STATION PLAN
N.T.S.

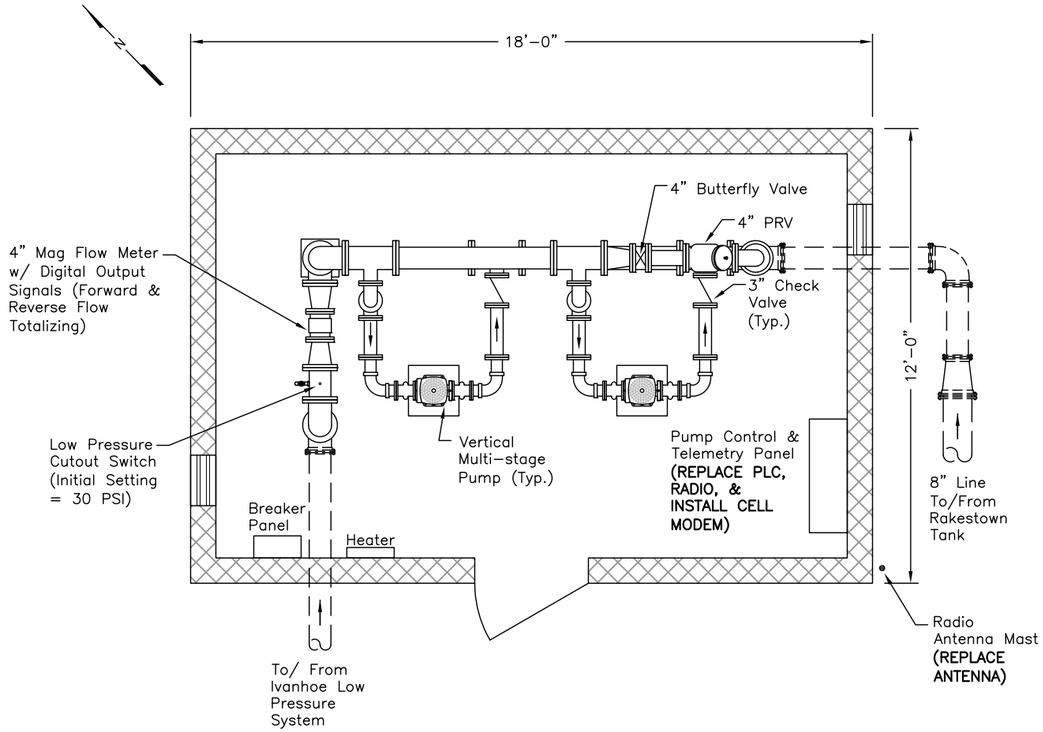


MODIFIED BOOSTER STATION PLAN
N.T.S.

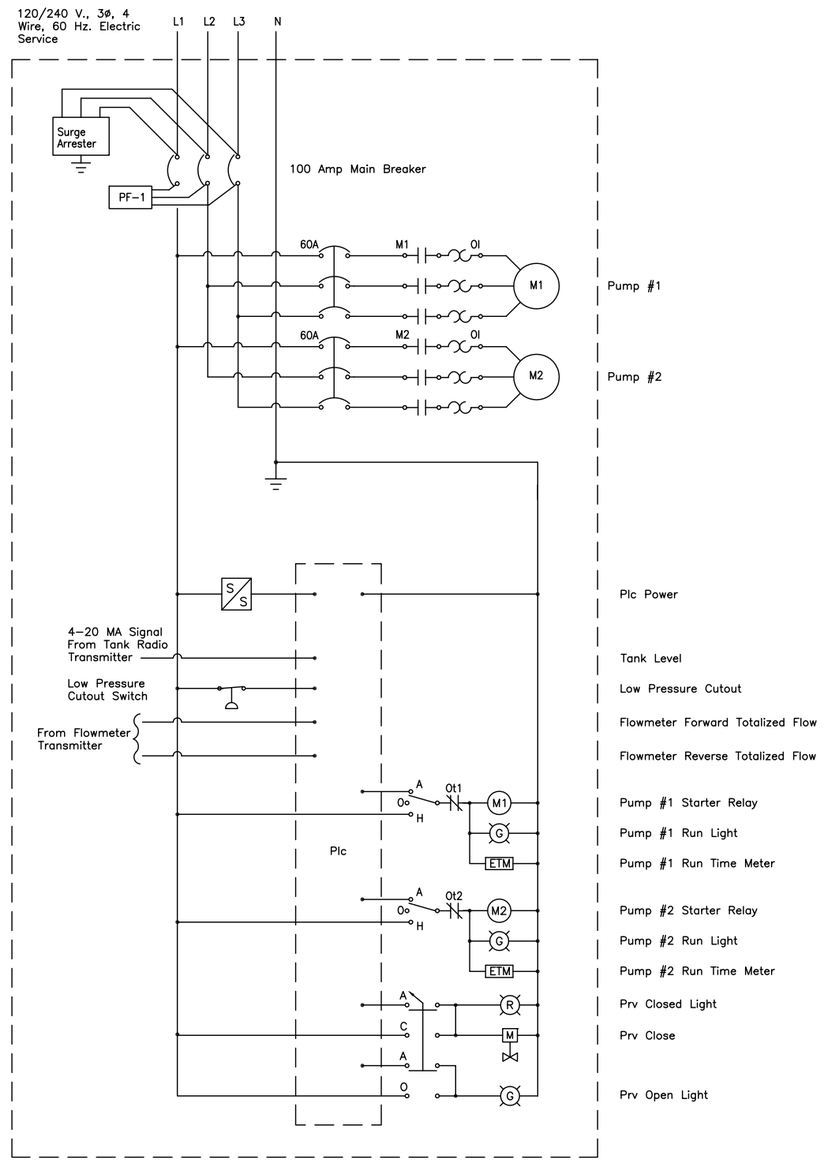
NOTES:

1. REMOVE EXISTING INDICATED PIPING AND VALVES FROM GROUND STORAGE TANK PIPING WITHIN BOOSTER STATION BUILDING. INSTALL NEW 4" PIPING TO DIRECTLY CONNECT MAX MEADOWS TANK SYSTEM TO PUMP SUCTION SUPPLY. INSTALL PRESSURE TRANSDUCER WITH ISOLATION BALL VALVE & FLUSHING SPIGOT ON 6"x4" CROSS SUPPLYING PUMPS. NEW PIPE AND FITTINGS SHALL BE CLASS 350 FLANGED DUCTILE IRON PIPE WITH STAINLESS STEEL HARDWARE. PIPE AND FITTINGS SHALL BE PAINTED WITH INDUSTRIAL GRADE PRIMER AND HIGH BUILD EPOXY FINISH COAT SIMILAR TO CARBOLINE "890".
2. REPLACE EXISTING RELAY PUMP CONTROL PANEL AND STARTERS W/ PLC CONTROL PANEL AND VARIABLE FREQUENCY DRIVES.
3. PUMP OPERATION SHALL BE AS FOLLOWS:
   - COLLINS BOOSTER STATION SERVES AS A BACKUP SUPPLY FOR THE GRAHAMS FORGE TANK WHICH IS NORMALLY SUPPLIED BY A CONTROL VALVE FROM A WATER MAIN CROSSING INTERSTATE 81. PUMP WILL NORMALLY BE IN "OFF" MODE.
   - IN "AUTO" PUMPS WILL OPERATE ACCORDING TO THE SAME SCADA TANK FILL SETTINGS WHICH NORMALLY OPERATE THE CONTROL VALVE. A LOW "TANK FILL" LEVEL WILL CALL ONE PUMP TO OPERATE UNTIL THE "TANK FULL" LEVEL IS REACHED. PUMPS WILL ALTERNATE EACH CYCLE. ONLY ONE PUMP WILL OPERATE AT A TIME.
   - PUMPS WILL NORMALLY OPERATE AT A MAXIMUM SPEED SCADA SETPOINT. SEPARATE MAXIMUM SPEED SETPOINTS SHALL BE PROVIDED FOR EACH PUMP. PLC SHALL MONITOR THE SUCTION PRESSURE AND REDUCE PUMP SPEED AS NECESSARY TO KEEP SUPPLY SYSTEM PRESSURE AT OR ABOVE MINIMUM SETPOINT.

EXHIBIT 2 - COLLINS BOOSTER STATION DETAIL
2024 WATER FACILITY SCADA EXPANSION
WYTHE COUNTY, VIRGINIA (6/24/2024)



STATION PLAN
N.T.S.



CONTROL PANEL SCHEMATIC
N.T.S.

NOTES:

1. REPLACE EXISTING US FILTER INTRALINK LC3000 PLC WITHIN EXISTING PUMP CONTROL & TELEMETRY PANEL. PLC PROGRAM SHALL PROVIDE SIMILAR OPERATION TO EXISTING CONTROLS, AS FOLLOWS:
   - WHEN TANK LEVEL REACHES A LOW "PUMP ON" LEVEL SETPOINT, ONE LEAD PUMP IS STARTED AND PRV SOLENOID VALVE IS ACTIVATED TO FORCE PRV CLOSED. ONLY ONE PUMP OPERATES AT ANY TIME, WITH PUMPS ALTERNATING EACH CYCLE.
   - WHEN TANK LEVEL REACHES HIGH "PUMP OFF" LEVEL SETPOINT, THE OPERATING PUMP IS STOPPED AND PRV CLOSE SOLENOID IS DEACTIVATED.
   - A LOW SUCTION PRESSURE SWITCH ALSO STOPS PUMP AND PRV CLOSE OPERATION. OPERATION SHALL RESUME AFTER AN ADJUSTABLE DELAY (0-60 MINUTES) HAS ELAPSED.
   - HIGH AND LOW TANK ALARM LEVEL SETPOINTS ARE PROVIDED.
   - FLOW METER FORWARD AND REVERSE FLOWS ARE MONITORED FROM ANALOG AND PULSE FLOW TOTAL INPUTS.
2. INSTALL CELL MODEM TO INTERFACE NEW PLC WITH EXISTING SCADA SYSTEM FOR BOOSTER STATION AND TANK LEVEL MONITORING AND CONTROL.
3. REPLACE EXISTING SPREAD SPECTRUM RADIO & ANTENNA FOR LEVEL MONITORING TELEMETRY FROM EXISTING RAKESTOWN TANK.

EXHIBIT 3 - RAKESTOWN BOOSTER STATION DETAIL
2024 WATER FACILITY SCADA EXPANSION
WYTHE COUNTY, VIRGINIA (6/24/2024)