

ELECTRICAL SYMBOLS:

- RV
 MOTOR STARTER/CONTROLLER (NON-COMBINATION - COMBINATION - MANUAL)
 RV DENOTES REDUCED VOLTAGE
 LOCAL CONTROL PANEL
 WITH CONTROLLER AND DISCONNECT FURNISHED BY EQUIPMENT VENDOR.
 DUPLEX CONVENIENCE RECEPTACLE, 2 POLE, 3 WIRE, 120 VOLTS A.C. 20 AMP RECEPTACLE DESIGNATIONS, FIRST NUMBER DENOTES PANEL, SECOND NUMBER DENOTES CIRCUIT NUMBER.
 GF-SS/CRE
 GF-DENOTES GROUND FAULT TYPE
 SS-DENOTES SURGE SUPPRESSION TYPE
 CRE-DENOTES CORROSION RESISTANT AND WEATHER-PROOF.
 SINGLE CONVENIENCE RECEPTACLE, 2 POLE, 3 WIRE, REFER TO DRAWINGS FOR AMPERE AND VOLTAGE RATING.
 POWER RECEPTACLE, 3 PHASE, 4 WIRE, 480V A.C. WITH DISCONNECT SWITCH, REFER TO DRAWINGS FOR AMPERE RATING.
 POWER RECEPTACLE, 2 POLE, 3 WIRE 250 VOLTS A.C. REFER TO DRAWINGS FOR AMPERE RATINGS
 WELDING RECEPTACLE
 POWER ON-OFF SNAP SWITCH, 1PH, 120V AC, 20A
 SINGLE POLE SWITCH - LOWER CASE LETTER DENOTES SWITCHING.
 THREE-WAY SWITCH
 FOUR-WAY SWITCH
 SINGLE POLE MANUAL STARTER
 TWO OR THREE POLE MANUAL STARTER, 20A
 LETTERS AND NUMERALS INDICATE PANEL AND CIRCUIT NUMBER (LP1-2). CROSS LINES INDICATE NUMBER OF CONDUCTORS. HALF HASH MARKS INDICATES NEUTRAL. NUMBER DENOTES WIRE SIZE WHEN NOT #12 AWG. CONTINUE CONDUIT AND WIRE RUN FROM BOX TO DEVICE IN ROOM OR AREA AS NOTED BY BRANCH CIRCUIT NUMBER #10 AWG WIRING SHALL BE USED FOR RUNS BETWEEN PANEL AND FIRST LIGHTING FIXTURE OR RECEPTACLE EXCEEDING 50 FT, UNLESS OTHERWISE NOTED ON DRAWING.
 INDICATES GROUND CONDUCTOR
 INDICATES HOMERUN AND CONDUIT TAG, REFER TO ONE LINE AND INTERCONNECTION DIAGRAM
 PUSHBUTTON STATION
 PUSHBUTTON STATION WITH LOCK-OUT FEATURE
 SELECTOR SWITCH
 INDICATING LIGHT
 CONTROL STATION - REFER TO CONTROL SCHEMATICS AND ONE LINE DIAGRAMS
 HAND-OFF-AUTO SELECTOR SWITCH CONTROL STATION
 DEVICE LOCATED IN FIELD AT OR NEAR MOTOR
 DEVICE LOCATED IN CONTROL PANEL
 CONTROL STATION FURNISHED BY EQUIPMENT VENDOR
 AMMETER - AMMETER SWITCH
 VOLTMETER - VOLTMETER SWITCH
 MICROPROCESSOR BASED METERING DEVICE
 LINE SWITCH DISCONNECT - UNFUSED OR FUSED F DENOTES FUSING, ONLY WHERE INDICATED. 60 DENOTES SWITCH AMP RATING.
 ELECTRICAL MANHOLE
 ELECTRICAL HANDHOLE
 TELEPHONE HANDHOLE
 VARIABLE FREQUENCY DRIVE
 JUNCTION BOX SIZE AS REQUIRED BY N.E.C.
 TERMINAL BOX SIZE AS REQUIRED BY N.E.C. AND TO ACCOMMODATE ALL TERMINATIONS ON TERMINAL BLOCKS TERMINATIONS INCLUDING SPARE WIRING.
 PULL BOX SIZE AS REQUIRED BY N.E.C.
 KEY INTERLOCK

- ELECTRIC MOTOR (NUMBER INDICATES HORSEPOWER). FOR FANS, MOUNT CONTROL STATION ADJACENT TO FAN, PROVIDE CHANNEL SUPPORT. FOR 120 VOLT BRANCH CIRCUIT MOTORS, NUMERALS DENOTES DISTRIBUTION OR LIGHTING PANEL AND BRANCH CIRCUIT NUMBER.
 MOTORIZED VALVE WITH CONTROLLER
 GROUND CONNECTION
 GROUND TEST POINT
 GROUND ROD
 GROUND GRID CABLE CONNECTION
 GROUND
 #4/0 GROUND CABLE BURIED 2'-6" BELOW GRADE
 FUSE
 PHOTOCELL
 FLUORESCENT LIGHTING FIXTURE - SURFACE OR PENDANT MOUNTED. SEE LIGHTING FIXTURE SCHEDULE FOR TYPE. FIRST NUMERAL DENOTES LIGHTING PANEL (LP1), SECOND NUMBER DENOTES BRANCH CIRCUIT NUMBER. LOWER CASE LETTER DENOTES SWITCHED CIRCUIT.
 FLUORESCENT LIGHTING FIXTURE WITH BATTERY PACK.
 CEILING OR PENDANT MOUNTED LIGHTING FIXTURE. SEE LIGHTING FIXTURE SCHEDULE FOR TYPE.
 CEILING OR PENDANT MOUNTED LIGHTING FIXTURE WITH QUARTZ BACKUP. SEE LIGHTING FIXTURE SCHEDULE FOR TYPE.
 WALL/PENDANT MOUNTED EXIT SIGN. TOP LETTERS AND NUMERALS DENOTE TYPE (SEE LIGHTING FIXTURE SCHEDULE FOR DESCRIPTION). BOTTOM NUMBERS DENOTE LIGHTING PANEL NUMBER AND CIRCUIT DESTINATION. SHADED TRIANGLE INDICATES DIRECTION OF EXIT SIGN FACE.
 WALL MOUNTED LIGHTING FIXTURE. SEE LIGHTING FIXTURE SCHEDULE FOR TYPE.
 POLE OR STANCHION MOUNTED LIGHTING FIXTURE. SEE LIGHTING FIXTURE SCHEDULE FOR TYPE.
 TWO (2) POLE OR STANCHION MOUNTED LIGHTING FIXTURES
 POLE MOUNTED FIXTURE WITH GF RECEPTACLE
 2 LAMP SELF CONTAINED DC EMERGENCY LIGHTING UNIT. SEE LIGHTING FIXTURE SCHEDULE FOR DESCRIPTION. LETTER AND NUMERALS DENOTES FIXTURE TYPE.
 FIXTURE DESIGNATION SYMBOL. SEE LIGHTING FIXTURE SCHEDULE FOR DESCRIPTION AND TYPE. ALL FIXTURES SHOWN IN A ROOM WITH THIS SYMBOL SHALL BE OF TYPE INDICATED BY LETTER, NUMBER IN SYMBOL INDICATES LAMP WATTAGE AND NUMBER OF LAMPS WHERE MORE THAN ONE (UNLESS OTHERWISE NOTED). NUMBER BELOW SYMBOL INDICATES MOUNTING HEIGHT ABOVE FINISHED FLOOR OR AS NOTED.
 CURRENT TRANSFORMER
 POTENTIAL TRANSFORMER
 THERMAL-MAGNETIC BREAKER. 3P INDICATES 3 POLE BREAKER. PROVIDE WITH CURRENT LIMITERS WHERE INDICATED ON THE DRAWINGS
 MOLDED CASE SWITCH, NON-AUTOMATIC HIGH INSTANTANEOUS ONLY CIRCUIT BREAKER, NUMBER DENOTES FRAME SIZE.
 DRAWOUT TYPE POWER CIRCUIT BREAKER WITH RMS TYPE SOLID STATE TRIP PROGRAMMER THAT INCLUDES GROUND FAULT PROTECTION.

- CIRCUIT BREAKER WITH RMS TYPE SOLID STATE TRIP PROGRAMMER THAT INCLUDES GROUND FAULT PROTECTION.
 AC COMBINATION FULL VOLTAGE NON-REVERSING STARTER WITH MAGNETIC BREAKER. PROVIDE WITH CURRENT LIMITERS WHERE INDICATED ON THE DRAWINGS
 AC COMBINATION FULL VOLTAGE REVERSING STARTER WITH MAGNETIC BREAKER. PROVIDE WITH CURRENT LIMITERS WHERE INDICATED ON THE DRAWINGS
 AC COMBINATION SOLID STATE REDUCED VOLTAGE NON-REVERSING STARTER WITH MAGNETIC BREAKER. PROVIDE WITH CURRENT LIMITERS WHERE INDICATED ON THE DRAWINGS
 UNIT HEATER - NUMERAL DENOTES LIGHTING PANEL AND BRANCH CIRCUIT NUMBER
 THERMOSTAT
 MOTORIZED DAMPER
 LOUVER MOTOR
 TRANSFORMER - DELTA PRIMARY WITH SOLIDLY GROUNDED WYE SECONDARY. TYPE AND SIZE AS NOTED ON THE DRAWINGS AND IN SPECIFICATIONS
 LIGHTNING ARRESTOR
 AIR INTERRUPTER SWITCH WITH FUSING WHERE NOTED
 SUBMERSIBLE CABLES BY VENDOR
 INDICATES NEW EQUIPMENT/CONDUIT
 INDICATES EXISTING EQUIPMENT/CONDUIT
 INDICATES CONCEALED OR BELOW GRADE EQUIPMENT/CONDUIT
 MICROPROCESSOR METERING DEVICE
 INDICATES DEMOLITION WORK
 CONDUIT GOING UP
 CONDUIT GOING DOWN

INSTRUMENTS:

- INSTRUMENT DEVICE, LETTER IDENTIFIES DEVICE FUNCTION, NUMBERS WHERE INDICATED DENOTES LOOP NUMBER
 PRESSURE SWITCH (PSH DENOTES PRESSURE SWITCH HIGH AND FSL DENOTES PRESSURE SWITCH LOW)
 CONTROL VALVE
 FLOW SWITCH (FSH DENOTES FLOW SWITCH HIGH AND FSL DENOTES FLOW SWITCH LOW)
 LIMIT SWITCH
 PRESSURE TRANSMITTER (I DENOTES INDICATING TYPE)
 LEVEL TRANSMITTER (LE DENOTES LEVEL ELEMENT)
 FLOW TRANSMITTER (FE DENOTES FLOW ELEMENT)
 LEVEL SWITCH (LSH DENOTES LEVEL SWITCH HIGH AND LSL DENOTES LEVEL SWITCH LOW)
 MOTORIZED VALVE
 SOLENOID VALVE
 STROBE LIGHT

ABBREVIATIONS:

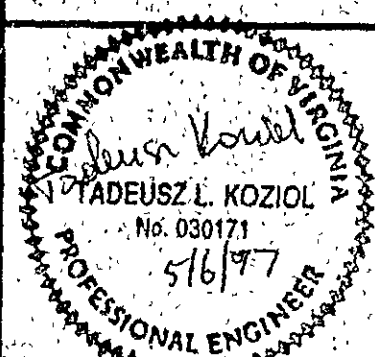
- AFF ABOVE FINISH FLOOR
 AFG ABOVE FINISHED GRADE
 BKR BREAKER
 CBV CABLE BY VENDOR, INSTALLED BY CONTRACTOR
 CKT CIRCUIT
 CNL CONTROL
 CP CONTROL PANEL
 CPT CONTROL POWER TRANSFORMER
 CT CURRENT TRANSFORMER
 DN DOWN
 DPDT DOUBLE POLE DOUBLE THROW SWITCH
 EHH ELECTRICAL HANDHOLE
 EL ELEVATION
 EMH ELECTRICAL MANHOLE
 EXP EXPLOSION PROOF
 EXIST EXISTING
 FDR FEEDER
 FVNR FULL VOLTAGE NON-REVERSING
 GND OR G GROUND
 HOA HAND-OFF-AUTOMATIC
 JB JUNCTION BOX
 LA LIGHTNING ARRESTOR
 LCP LOCAL CONTROL PANEL
 LTG LIGHTING
 MCC MOTOR CONTROL CENTER
 NA NON-AUTOMATIC
 NCTC NORMALLY CLOSED, TIMED TO CLOSE
 NCTO NORMALLY CLOSED, TIMED TO OPEN
 NOTC NORMALLY OPEN, TIMED TO CLOSE
 NOTO NORMALLY OPEN, TIMED TO OPEN
 NTS NOT TO SCALE
 PB PULL BOX
 PFD PULL FUSE DISCONNECT
 PNL PANEL
 PT POTENTIAL TRANSFORMER
 RECP RECEPTACLE
 RVNR REDUCED VOLTAGE NON-REVERSING
 (S) (SH) SHIELDED CABLE
 SP SPARE
 SC SCADA
 SS SELECTOR SWITCH
 SWGR SWITCHGEAR
 WP WEATHERPROOF
 XFMR TRANSFORMER
 N.E.C. NATIONAL ELECTRIC CODE
 (TYP) TYPICAL
 SHT. OR SH. SHEET

GENERAL NOTES:

- THE SYMBOLS AND ABBREVIATIONS LIST ON THIS SHEET IS A COMPREHENSIVE STANDARD GUIDE INTENDED FOR GENERAL USE ON ALL PROJECTS. THEREFORE NOT ALL THE SYMBOLS AND ABBREVIATIONS CONTAINED IN THIS LIST ARE NECESSARILY USED ON THIS PARTICULAR PROJECT AND SHOULD BE USED FOR CLARIFICATION ONLY.
 - ALL DUCT BANK ROUTING SHOWN IS DIAGRAMMATICAL, FINAL LOCATION TO BE VERIFIED IN THE FIELD. ALL CONDUITS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 16111 AND 16112.
 - ALL MATERIALS AND EQUIPMENT SHALL CONFORM TO THE AREA CLASSIFICATION INDICATED. MATERIALS, EQUIPMENT AND INCIDENTALS IN AREAS IDENTIFIED AS WET, CORROSIVE OR HAZARDOUS SHALL MEET NEC AND NEMA REQUIREMENTS FOR THE LOCATION NOTED. WET AND CORROSIVE (NEMA 4X), HAZARDOUS (CLASS AND DIVISION DESIGNATED). INDOOR AREA DESIGNATIONS FOR CORROSIVE AND HAZARDOUS LOCATIONS ARE INDICATED ON THE DRAWINGS. ALL INDOOR AREAS NOT DESIGNATED AS CORROSIVE OR HAZARDOUS SHALL BE CONSIDERED DUSTY. MATERIALS, EQUIPMENT AND INCIDENTALS FOR DUSTY LOCATIONS SHALL MEET NEMA 12 REQUIREMENTS.
 - PROVIDE EXPANSION AND DEFLECTION FITTINGS FOR CONDUITS PASSING THROUGH STRUCTURAL EXPANSION JOINTS.
 - PROVIDE JUNCTION BOX FOR ANY DEVICE WITH PIG TAIL SUCH AS SOLENOID VALVES, LIMIT SWITCHES, SMOKE DETECTORS ETC. FOR PROPER ELECTRICAL CONNECTION. PROVIDE ALL HARDWARE FOR MOUNTING OF JUNCTION BOX.
 - CONTRACTOR SHALL PROVIDE SUITABLE, PERMANENT AND LEGIBLE LAMINATED PLASTIC NAMEPLATES AND WARNING SIGNS ON ALL ELECTRICAL OPERABLE EQUIPMENT AS REQUIRED OR AS DIRECTED BY THE ENGINEER.
 - CONDUIT DESIGNATIONS:
 - CONDUIT TAGS PREFIXED BY THE LETTER C: NEW CONDUIT AND WIRES.
 - CONDUIT TAGS PREFIXED BY THE LETTERS EC: NEW WIRES TO BE INSTALLED IN EXISTING CONDUIT. CONTRACTOR SHALL DISCONNECT AND REMOVE ALL WIRES FROM CONDUITS IDENTIFIED BY THE LETTERS EC.
 - CONDUIT TAGS PREFIXED BY THE LETTERS TP: NEW TEMPORARY POWER WIRING AS SHOWN ON THE DRAWINGS.
 - CONDUIT AND CABLE SCHEDULE:
 - REFER TO ONE LINE, INTERCONNECTION DIAGRAMS AND SH. E-27 FOR CONDUIT AND WIRE SIZES.
 - TEMPORARY POWER:
 - PROVIDE TEMPORARY POWER AND LIGHT FOR CONSTRUCTION PURPOSES IN ACCORDANCE WITH SPEC SECTION 01510.
 - PROVIDE TEMPORARY POWER FOR EXISTING MCC'S AND PANELS AS SHOWN ON THE DRAWINGS.
 - TEMPORARY POWER WIRING SHALL BE PROVIDED IN ACCORDANCE WITH ARTICLE 305 OF THE N.E.C.
 - WORK BY BAF MANUFACTURER (SEE SPEC. SECTION 11398) INCLUDES:
 - INSTRUMENTATION AND CONTROLS FOR BAF FACILITY UNLESS OTHERWISE NOTED.
 - CONDUIT, CABLE TRAYS AND WIRING FROM FIELD EQUIPMENT, MOTORS, LOCAL CONTROL STATIONS, INSTRUMENTS, VALVES, ETC. TO THE MCC AND/OR BAF CONTROL PANEL.
 - CABLE TRAY AND WIRING FROM BAF CONTROL PANEL TO MCC=10" AND MCC-11."
 - 120V POWER CONDUIT AND WIRING FROM PANEL LP-1 TO ALL FIELD DEVICES, INSTRUMENTS, MOTORS, ACOUSTIC ENCLOSURES ETC. PROVIDED BY BAF MANUFACTURER.
 - CABLE TRAY AND WIRING FROM BAF CONTROL PANEL TO COMPUTER CONSOLE.
- "10. See BAF Manufacturer's shop drawings for scope of equipment, conduit and wires to be provided by BAF Manufacturer."

SHOW THIS
ON ALL SHTS

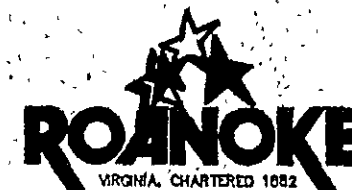
RECORD DRAWINGS



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NO.	BY	DATE	REVISIONS	REMARKS

DES GJM/TK
DWN GJM/TK
CHK TK



CITY OF ROANOKE, VIRGINIA
WATER POLLUTION
CONTROL PLANT
UPGRADE AND EXPANSION

ELECTRICAL
LEGEND

SCALE: NONE

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