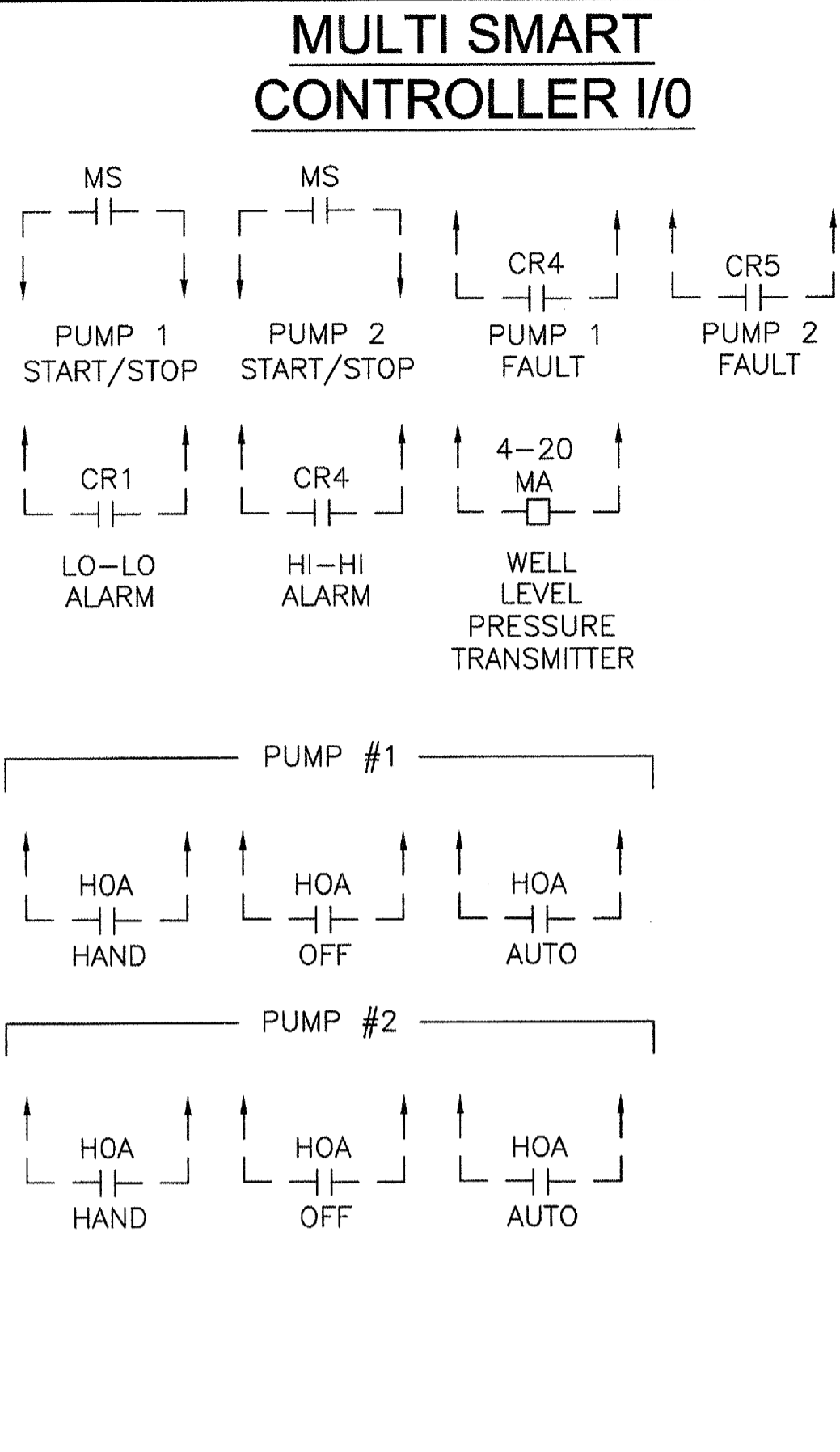


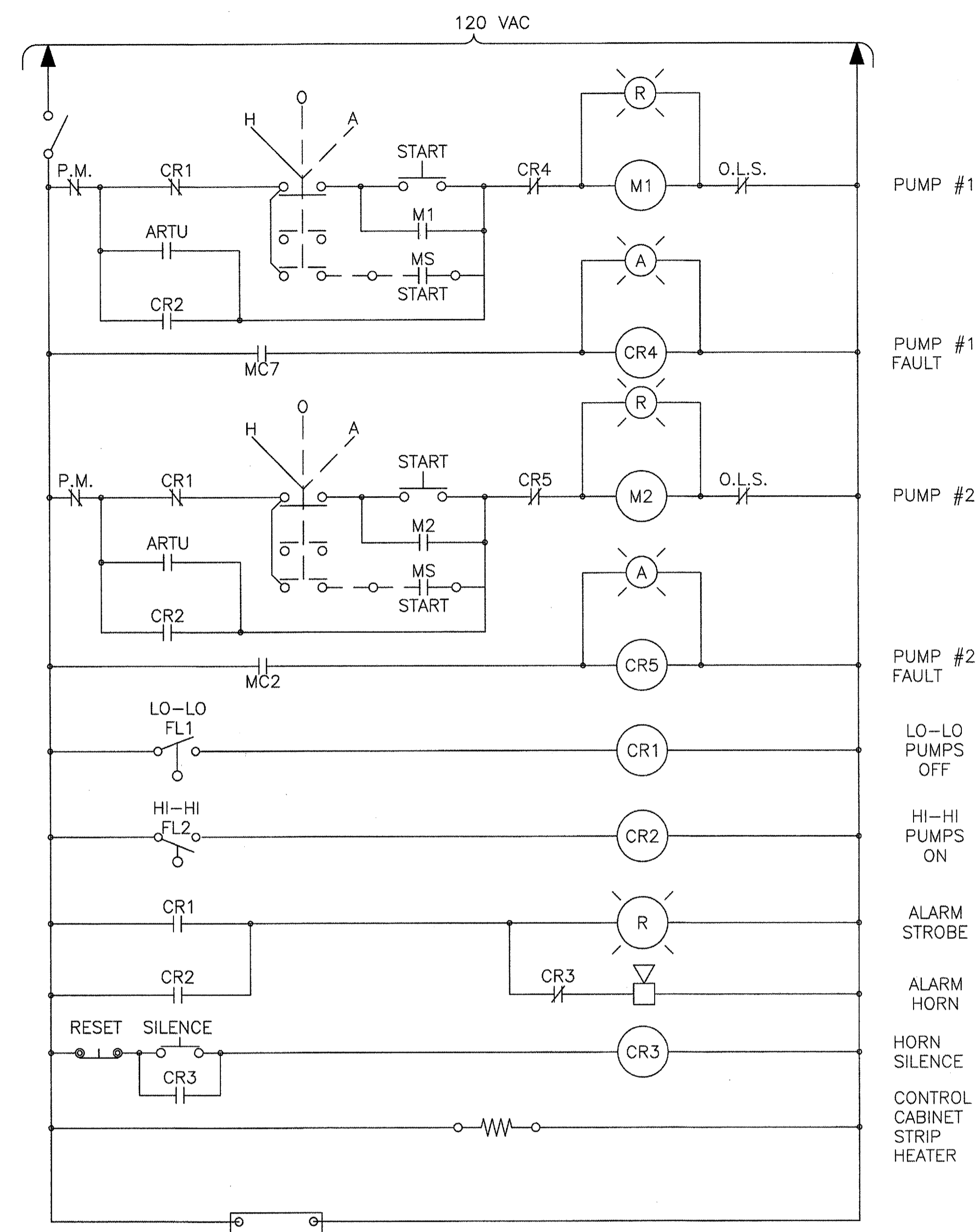
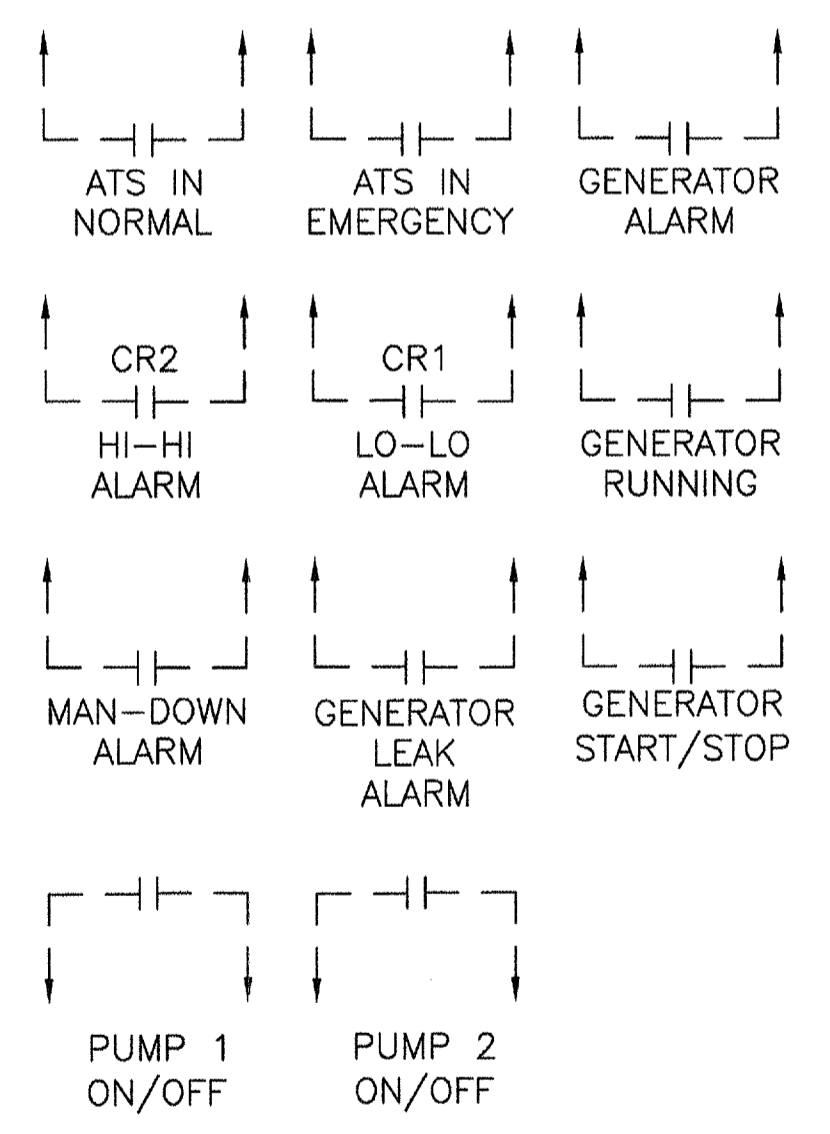
GENERAL NOTES:
BASIC REQUIREMENTS:
 THE ELECTRICAL INSTALLATION SHALL COMPLY WITH:
 A.) THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE.
 B.) ALL STATE AND LOCAL CODES.
 C.) THE REQUIREMENTS OF THE LOCAL ELECTRIC UTILITY COMPANY PROVIDING SERVICE.
 THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS AND/OR INSPECTIONS REQUIRED TO PERFORM THE WORK.
 THE CONTRACTOR SHALL ARRANGE WITH THE LOCAL UTILITY COMPANY FOR SERVICE TO THE SITE. SERVICE SHALL BE 480Y /277V, 3Ø, 4W UNDERGROUND.
 THE CONTRACTOR SHALL PROVIDE AND PERMANENTLY INSTALL ON THE MAIN CIRCUIT BREAKER SWITCH A RED ON WHITE PHENOLIC WARNING TAG WITH A MINIMUM OF 1/2" HIGH LETTERS WITH THE FOLLOWING TEXT:
WARNING!
 LOCK OUT ALL POWER WHILE WORKING ON ANY EQUIPMENT TO AVOID ELECTRICAL SHOCK OR EQUIPMENT ACTIVATION.
 RACEWAY, BOXES AND WIRING
 CONCRETE ENCASED CONDUITS SHALL BE SCHEDULE 40 PVC, MINIMUM OF 1", UNLESS OTHERWISE NOTED.
 EXPOSED AND BURIED CONDUITS AND FITTINGS SHALL BE PVC COATED RIGID GALVANIZED STEEL (PVC-RGS), MINIMUM OF 1", UNLESS OTHERWISE NOTED. FITTINGS SHALL BE CAST WITH THREADED HUBS.
 USE MYERS HUBS FOR CONDUIT CONNECTIONS TO PANELS, CABINETS, AND DEVICE ENCLOSURES.
 ELBOWS FOR TRANSITION TO ABOVE GRADE FOR BURIED AND CONCRETE ENCASED CONDUITS SHALL BE PVC-RGS.
 DAMAGED AREAS ON PVC COATED CONDUITS AND FITTINGS SHALL BE REPAIRED USING MATERIALS AND REPAIR KITS FROM THE MANUFACTURER OF THE CONDUIT AND FITTINGS.
 BURIED CONDUITS AND CONCRETE ENCASED CONDUITS SHALL HAVE A MINIMUM COVER OF 24" AND A MAXIMUM COVER OF 36".
 JUNCTION BOXES AND PULL BOXES SHALL BE NEMA 4X STAINLESS STEEL.
 BOXES FOR WEATHERPROOF WIRING DEVICES SHALL BE CAST OR NEMA 4X STAINLESS STEEL.
 USE INSULATING WASHERS TO PREVENT DISSIMILAR OR INCOMPATIBLE METALS FROM MAKING CONTACT. STAINLESS STEEL SHALL BE CONSIDERED TO BE COMPATIBLE WITH ALUMINUM.
 INSTALL INSULATING BUSHINGS AT EACH CONDUIT END.
 MAKE ALL CONNECTIONS BETWEEN THE SCADA EQUIPMENT AND THE PUMP CONTROLS AS REQUIRED BY THE SCADA MANUFACTURER.
 INSTALL AND CONNECT POWER AND CONTROL CABLES (BY OTHERS) BETWEEN THE CONTROL PANEL AND THE INDIVIDUAL PUMPS AND WETWELL CONTROL DEVICES. CABLES ARE TO BE CONTINUOUS WITH NO SPLICES. CONTRACTOR SHALL SIZE CONDUITS TO ACCOMMODATE EACH CABLE, BUT IN NO CASE SHALL CONDUITS FOR PUMPS CABLES OR FLOAT CABLES BE LESS THAN TWO INCHES (2").
 AFTER INSTALLATION OF CABLES INTO THE WETWELL, CONTRACTOR SHALL INSTALL DUCT SEAL AT LEAST SIX INCHES (6") INTO THE END OF EACH CONDUIT ENTERING THE WET WELL.
 ALL WIRING SHALL BE STRANDED COPPER CONDUCTOR WITH 600 VOLT TYPE THHN/THWN INSULATION.
PUMP CONTROL PANEL REQUIREMENTS:
 CONTROLS AND ELECTRICAL COMPONENTS SHALL BE HOUSED IN COMPLETELY WEATHER PROOF, NEMA 4X, STAINLESS STEEL METAL CABINETS.
 THE PUMP CONTROL PANEL SHALL INCLUDE ALL ITEMS SHOWN IN THE VENDOR DRAWINGS, UNLESS OTHERWISE NOTED IN THESE NOTES. CONTROL PANEL SHALL INCLUDE, BUT IS NOT LIMITED TO, THE FOLLOWING:
 A.) MOTOR STARTER FOR EACH PUMP. STARTERS SHALL BE PROVIDED BY THE PUMP MANUFACTURER AND SHALL BE FULL VOLTAGE, NON-REVERSING, NEMA RATED.
 B.) HOA SWITCHES
 C.) PILOT LIGHTS
 D.) POWER INDICATOR LIGHTS
 E.) OTHER LIGHTS AS REQUIRED
 F.) ALARM SILENCE PUSH BUTTON
 G.) ALARM RESET BUTTON
 H.) ELAPSED TIME INDICATORS
 I.) CONTROL TRANSFORMERS - 480V TO 120V STEP DOWNS MOUNTED OUTSIDE THE CONTROL PANEL FOR HEAT CONTROL PURPOSES.
 J.) CONDENSATE STRIP HEATER(S) AND THERMOSTAT
 K.) ALARM HORN AND WIRING - 120 VOLT
 L.) NEMA 4X RED ALARM LIGHT AND WIRING - 120 VOLT
 M.) PHASE UNDER VOLTAGE MONITOR WITH TIME DELAY
 N.) MOISTURE SENSING SEAL FAILURE RELAYS WITH INDICATOR
 O.) ALARM OUTPUTS FOR HIGH WATER ALARMS AND PUMP TROUBLE FOR EACH PUMP. COORDINATE WITH SCADA UNIT MANUFACTURER FOR TYPES OF OUTPUTS REQUIRED.
 NOTE: THE PUMP TROUBLE OUTPUTS ARE TO HAVE NO TIME DELAY ADDED.
 P.) RELAYS FOR PHASE FAILURE AND PHASE UNBALANCE PROTECTION.
 Q.) LAG PUMP ON DELAY TIMER RELAY, 0-60 SECONDS FOR EACH PUMP, SUCH THAT THE PUMPS CANNOT START AT THE SAME TIME.
 R.) PUMP FAILURE ALARM OUTPUT FOR EACH MOTOR TO INCLUDE MOTOR OVERLOAD, MOTOR THERMAL CUTOUT AND LEAK SEAL FAILURE (FLS) CONDITIONS.
 S.) BREAKERS FOR SECURITY LIGHTING, GENERATOR BLOCK HEATER, BATTERY CHARGER, AND TWO SPARE 120V BREAKERS.
 T.) TERMINAL BLOCKS FOR ALL CONNECTIONS INTO AND OUT OF THE PANEL.
 U.) INTRINSICALLY SAFE BARRIERS FOR FLOATS AND LEVEL SENSOR.
 V.) CONTROL CIRCUITS SHALL BE 120 VAC / 1 PHASE.

W.) 480V CIRCUIT BREAKERS SHALL HAVE A KAIC RATING EQUAL TO OR GREATER THAN THE PUMP STATION MAIN CIRCUIT BREAKER. ONLY THE HIGH LEVEL AND LOW LEVEL ALARMS SHALL BE WIRED TO THE ALARM HORN AND RED LIGHT. NO PUMP FAILURES SHALL BE WIRED TO THE HORN AND LIGHT CIRCUIT.
 PROVIDE SPARE FUSES AND SPARE BULBS OF EACH TYPE THAT IS USED IN THE ELECTRICAL/CONTROL SYSTEM.
 THE CONTROL PANEL MANUFACTURER SHALL COORDINATE WITH THE PUMP MANUFACTURER AND THE GENERATOR MANUFACTURER, SUCH THAT THE SCADA SYSTEM CAN BE INSTALLED INTO THE PUMP CONTROL PANEL.
 THE PUMP CONTROL PANEL SHALL BE SIZED SUCH THAT THERE IS ADEQUATE SPACE FOR THE SCADA/RTU EQUIPMENT. THE CONTROL PANEL MANUFACTURER SHALL COORDINATE THE RECEIPT AND INSTALLATION OF THE SCADA EQUIPMENT IN THE CONTROL PANEL. THERE WILL BE TWO (2) LEVELS OF FLOAT SWITCH CONTROL AS FOLLOWS:
 A.) LOW LEVEL ALARM WHICH WILL SHUT DOWN THE PUMP (S) IF RUNNING.
 B.) HIGH LEVEL ALARM

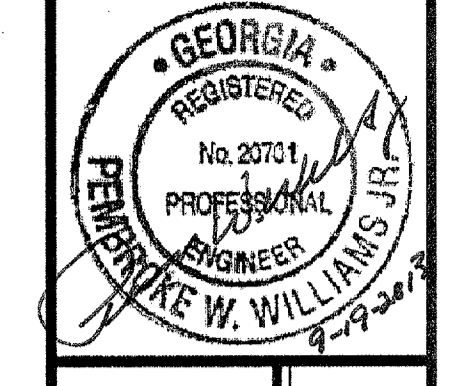
SCADA REQUIREMENTS:
 A REMOTE TERMINAL UNIT (RTU) SHALL BE PROVIDED BY DEXTER FORTSON ASSOCIATES, INC, OR AN ALTERNATE ACCEPTABLE TO THE AUTHORITY, TO COMMUNICATE WITH THE AUTHORITY'S SCADA SYSTEM. THE RTU SHALL INCLUDE ANY AND ALL RADIO REPEATER SITE/STATION EQUIPMENT REQUIRED TO COMMUNICATE WITH THE SCADA SYSTEM AND SHALL PROVIDE THE FOLLOWING MONITORING/CONTROL POINTS:
 A.) EACH PHASE VOLTAGE, CURRENT, AND POWER FACTOR FOR EACH PUMP IN THE STATION.
 B.) STATION VOLTAGE PHASE TO PHASE AND PHASE TO NEUTRAL AND CURRENT IN EACH PHASE AT THE LINE SIDE OF THE MAIN DISCONNECT SWITCH AND AT THE EMERGENCY POWER INPUT TO THE ATS.
 C.) MANUAL ON/OFF CONTROL FOR EACH PUMP FROM A REMOTE SIGNAL TO THE RTU.
 D.) STATUS OF EACH PUMP -ON/OFF.
 E.) PUMP TROUBLE ALARM FOR EACH PUMP WITH 20 SECOND TIME DELAY FOR EACH OF THE FOLLOWING POINTS: MOTOR OVERLOAD; MOTOR THERMAL CUTOUT AND LEAK SEAL FAILURE.
 F.) STATION OPERATION -SIMPLEX, DUPLEX, TRIPLEX OR QUADPLEX.
 G.) STATION ON NORMAL POWER.
 H.) STATION ON EMERGENCY POWER.
 I.) GENERATOR RUNNING.
 J.) GENERATOR ALARM.
 K.) MAINTENANCE SHUTDOWN.
 L.) MAN DOWN
 M.) SCADA CONTROL OFF
 N.) LOW WET WELL ALARM
 O.) HIGH WET WELL ALARM
 P.) ALARM ACKNOWLEDGE / SILENCE
 Q.) MANUAL OFF / ON
 R.) GENERATOR FUEL TANK LEAK ALARM
 S.) GENERATOR START/STOP FROM A REMOTE SIGNAL TO THE RTU.
 T.) PROVIDE ALTERNATOR FOR THE OPERATION OF PUMPS (TRIPLEX AND QUADPLEX ONLY).
 U.) ATS OPEN (NORMAL POWER) AND CLOSED (EMERGENCY POWER) INDICATION.
 V.) CONTROL VOLTAGE ALARM.
 W.) STATUS OF CONTROL VOLTAGE TO THE RTU.
 THE SCADA EQUIPMENT SHALL BE INSTALLED IN THE PUMP CONTROL PANEL.



DEXTER-FORTSON ARTU I/O



PUMP CONTROL DIAGRAM
 NO SCALE



ATKINS

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 Marietta, Ga 30060
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PROJ. NO.:	100094005
DESIGNED BY:	PWW
DRAWN BY:	JAL
CHECKED BY:	PWW
APPROVED BY:	PWW
DATE:	AUGUST, 2013
SCALE:	AS NOTED

CHEROKEE COUNTY WATER & SEWERAGE AUTHORITY
 HOLLY SPRINGS
 DOWNTOWN SANITARY SEWER SYSTEM

GENERAL NOTES AND CONTROL DIAGRAM

SHEET NO.

E-4

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