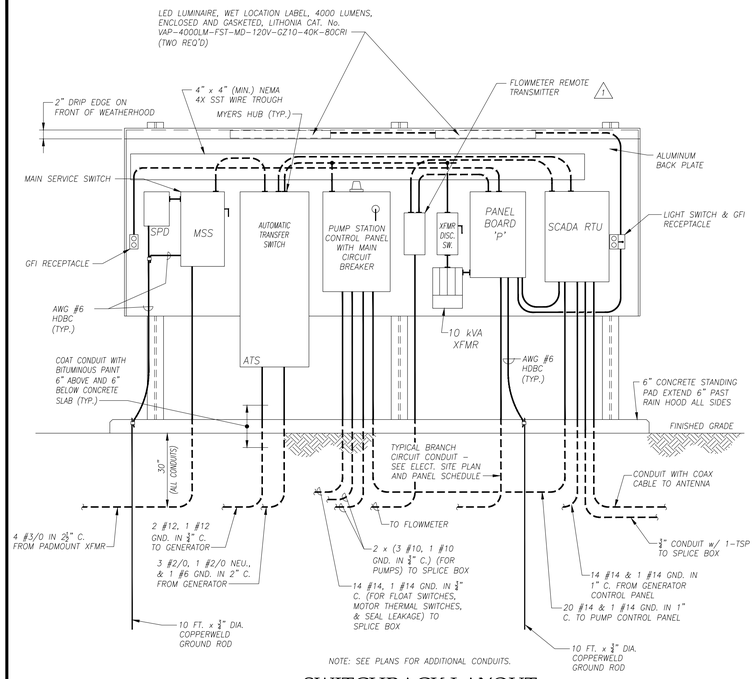
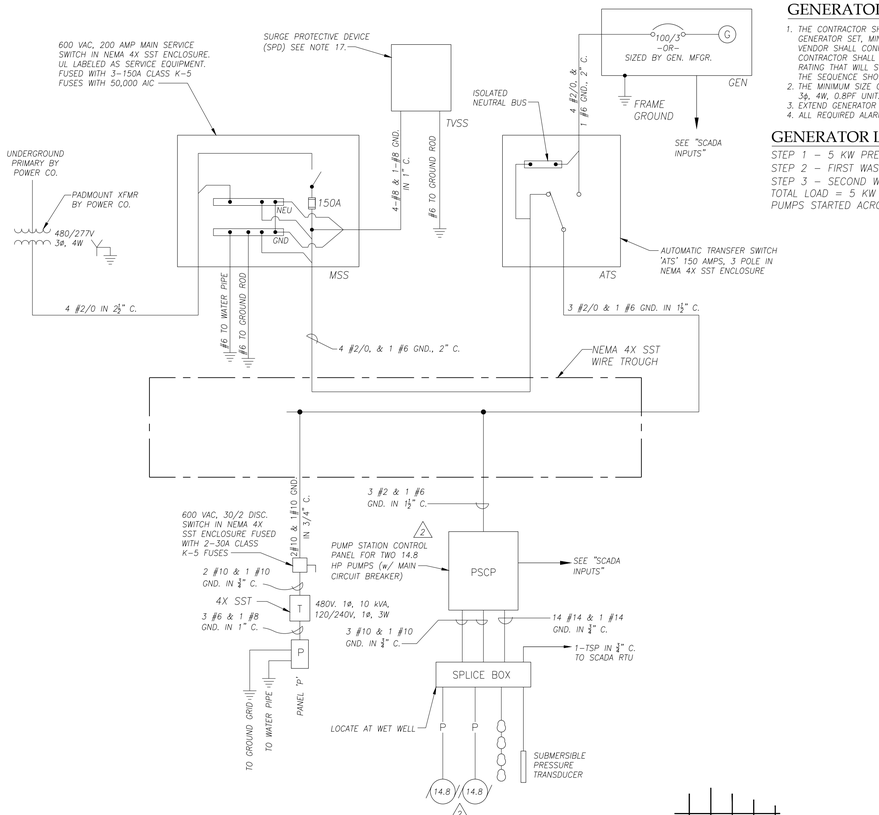


NOTE: SEE PLANS FOR ADDITIONAL CONDUITS.

SWITCHRACK LAYOUT

NO SCALE



ONE-LINE DIAGRAM

NO SCALE

GENERATOR NOTES

1. THE CONTRACTOR SHALL PROVIDE A DIESEL ENGINE DRIVEN GENERATOR SET, MINIMUM SIZE AS SHOWN BELOW. GENERATOR VENDOR SHALL CONFIRM THIS SIZE IS ADEQUATE, OR THE CONTRACTOR SHALL PROVIDE A GENERATOR WITH HIGHER RATING THAT WILL START AND RUN THE LISTED EQUIPMENT IN THE SEQUENCE SHOWN BELOW.
2. THE MINIMUM SIZE GENERATOR SET SHALL BE A 60 KW, 480V, 3ø, 4W, 0.8PF UNIT.
3. EXTEND GENERATOR NEUTRAL TO SERVICE GROUND.
4. ALL REQUIRED ALARMS SHALL BE PROVIDED WITH GENERATOR.

GENERATOR LOADING SEQUENCE

STEP 1 – 5 KW PRELOAD
STEP 2 – FIRST WASTEWATER PUMP (14.8 HP, 21 FLA) 2
STEP 3 – SECOND WASTEWATER PUMP (14.8 HP, 21 FLA)
TOTAL LOAD = 5 KW + TWO 13.4 HP WASTEWATER PUMPS PUMPS STARTED ACROSS THE LINE.

NOTES:

1. ALL ELECTRICAL MATERIALS, EQUIPMENT, AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE LATEST NATIONAL ELECTRICAL CODE, ALL LOCAL REQUIREMENTS, AND THE ENGINEER'S SPECIFICATIONS.
2. ELECTRICAL EQUIPMENT AND BOXES TO BE MOUNTED TO BACKING PLATE WITH NYLON SPACERS & STAINLESS STEEL BOLTS, NUTS, AND WASHERS.
3. NO EQUIPMENT SHALL BE MOUNTED LESS THAN 36" ABOVE FINISHED GRADE.
4. ALL FASTENERS TO BE STAINLESS STEEL w/ PLASTIC WASHERS.
5. WIRING SHALL BE THWN INSULATED STRANDED COPPER WIRE. COLOR CODING AND WIRE IDENTIFICATION SHALL BE AS SPECIFIED.
6. CONDUIT SHALL BE PVC BELOW GRADE, RIGID GALVANIZED STEEL FOR ALL EXPOSED EXTERIOR LOCATIONS. USE PVC CONDUIT WHERE EMBEDDED IN CONCRETE. USE PVC COATED RIGID CONDUIT WHERE TRANSITIONING OUT OF THE GROUND OR OUT OF CONCRETE EMBEDMENT.
7. EACH PANEL SHALL HAVE AN ENGRAVED PLASTIC NAMEPLATE SECURED WITH STAINLESS STEEL SCREWS.
8. HOOD TO BE 12 GA. MILL FINISH ALUMINUM.
9. HOOD TO BE HELIARC "STITCH" WELDED TO ¼" ALUMINUM PLATE EQUIPMENT BACKING BOARD.
10. HOOD SHALL BE SAME WIDTH AS ALUMINUM PLATE EQUIPMENT BACKING BOARD.
11. PROVIDE MOUNTING TABS FOR LIGHT FIXTURE UNDER WEATHERHOOD.
12. BACKING PLATE TO BE ¼" ALUMINUM. MOUNT TO "I" BEAM POSTS WITH STAINLESS STEEL BOLTS, NUTS, AND WASHERS.
13. PANEL LAYOUT IS SCHEMATIC ONLY. ADJUST AS NEEDED TO ACCOMMODATE EQUIPMENT. MAINTAIN 4" MIN. CLEARANCE BETWEEN PANELS, AND FROM PANELS TO SIDE SHIELDS.
14. ALL ENCLOSURES SHALL BE NEMA 4X RATED STAINLESS STEEL AND LOCKABLE.
15. NO JUNCTION BOXES OR SPLICES IN THE WETWELL.
16. ANTENNA HEIGHT, ORIENTATION, AND POLE/TOWER REQUIREMENTS SHALL BE DETERMINED IN PATH STUDY.
17. SURGE PROTECTIVE DEVICE SHALL BE LEVITON MODEL 52277-7CS, OR APPROVED EQUAL. UNIT SHALL BE DESIGNED FOR 3 PHASE WYE 277/480 VAC, AND SHALL HAVE INTEGRAL DISCONNECT, SURGE COUNTER, AND REPLACEABLE PLUG-IN MODULES. UNIT SHALL PROVIDE 7 MODE PROTECTION. INSTALL IN NEMA 3R ENCLOSURE.

GROUND ROD

PANEL DESIGNATION: 'P'
VOLTAGE: 120/240V, 1ø, 3W
AMPERES: 100A

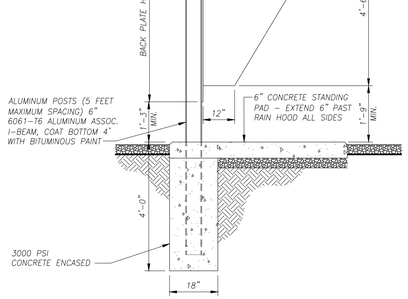
LOCATION: SWITCHRACK
MAIN: 60/2 MCB
PANEL MOUNTING: NEMA 4X, SST

LOAD SERVED	CONNECTED LOAD (KVA) L1	CONNECTED LOAD (KVA) L2	CIRCUIT BREAKER AMPS	CIRCUIT BREAKER POLES	CKT NO.	CKT NO.	CIRCUIT BREAKER AMPS	CIRCUIT BREAKER POLES	CONNECTED LOAD (KVA) L1	CONNECTED LOAD (KVA) L2	LOAD SERVED
SWITCH RACK LIGHTING	0.2		20	1	1	2	20	1	0.2		SCADA RTU
RECEPTACLE (SWITCHRACK)		0.5	20	1	3	4	20	1		0.2	AREA LIGHT
GEN. BATTERY CHARGER	0.6		20	1	5	6	20	1	0.5		HOT BOX
COOLANT HEATER		1.8	20	1	7	8	20	1		0.1	FLOWMETER
SPARE			20	2	9	10	30	2			SPARE
RECEPTACLE (SWITCHRACK)	0.5		20	1	13	14	20	1			SPARE
SPARE			20	1	15	16					SPACE
SPACE					17	18					SPACE
SUB-TOTAL	1.3	2.3							0.7	0.3	SUB-TOTAL

L1: 2.0 KVA
L2: 2.6 KVA

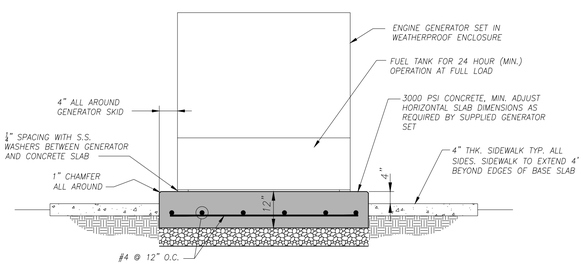
TOTAL CONNECTED LOAD= 4.6 KVA

INTERRUPTING RATING AT 240 VOLTS: 10,000 AMPERES



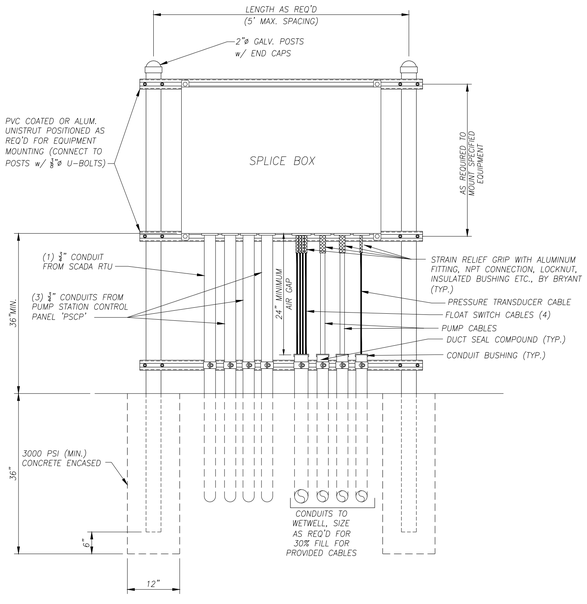
WEATHERHOOD & ELECTRICAL RACK DETAIL

NO SCALE



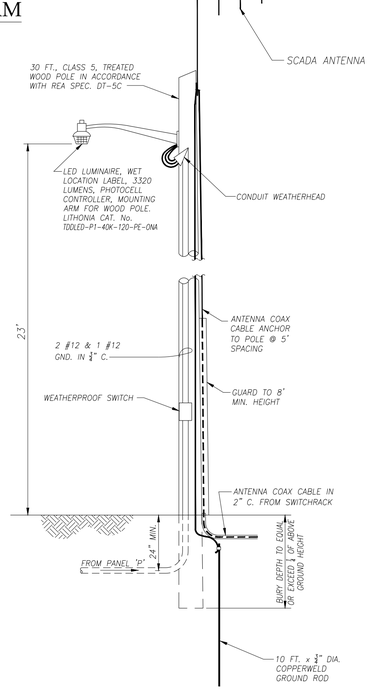
DETAIL - STANDBY GENERATOR

NO SCALE



SPLICE BOX AT WETWELL DETAIL

NO SCALE



AREA LIGHT/SCADA ANTENNA POLE DETAIL

NO SCALE

SCADA RTU INPUTS

DRY CONTACTS AND TERMINAL STRIPS SHALL BE PROVIDED IN THE PUMP STATION CONTROL PANEL FOR THE FOLLOWING INPUTS TO THE SCADA RTU:

HIGH LEVEL ALARM
PUMP RUN STATUS (FROM AUX. CONTACTS ON MOTOR STARTER)
PUMP HOA SWITCHES IN AUTO POSITION (FROM CONTACTS ON SWITCHES)
PUMP SEAL LEAKAGE
MOTOR OVER TEMPERATURE
MOTOR OVERLOAD RELAY TRIPPED
LAG PUMP START
THREE PHASE POWER FAILURE (FROM PHASE/VOLTAGE MONITOR)
CONTROL POWER FAILURE

DRY CONTACTS AND TERMINAL STRIPS SHALL BE PROVIDED IN THE GENERATOR CONTROL PANEL FOR THE FOLLOWING INPUTS TO THE SCADA RTU:

GENERATOR IN AUTOMATIC MODE
GENERATOR RUNNING
COMMON ENGINE TROUBLE/FAILURE ALARM
LOW FUEL LEVEL
AUTOMATIC TRANSFER SWITCH POSITION
AUTOMATIC TRANSFER SWITCH

WET WELL LEVEL SHALL BE MEASURED BY A SUBMERSIBLE PRESSURE TRANSDUCER PROVIDED WITH THE SCADA RTU AND FURNISHED BY HARNETT REGIONAL WATER (HRW). THE CONTRACTOR SHALL INSTALL THE REQUIRED CONDUITS FROM THE WETWELL TO THE SCADA RTU, AS REQUIRED FOR THE TRANSDUCER CABLE AND TSP REQUIRED FOR THE ANALOG SIGNAL.

ANALOG SIGNAL (4-20 Ma) FROM THE FLOWMETER TRANSMITTER SHALL BE INPUT TO THE SCADA RTU. CONTRACTOR SHALL PROVIDE AND INSTALL THE MAGMETER, TRANSMITTER, AND REQUIRED CONDUIT AND WIRING.

CONTRACTOR SHALL INSTALL ALL CONDUITS AND WIRING REQUIRED FOR THE INPUTS TO THE SCADA RTU. THE RTU INSTALLATION, CONDUIT CONNECTIONS INTO THE RTU CABINET, AND WIRE TERMINATIONS IN THE RTU SHALL BE BY HRW.

ISSUED FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 10130 ENGINEER JOHN F. PHILLIPS

DESIGN JFP
DRAWN JLB
CHECKED JFP
SCALE AS SHOWN
FILE BRPS-SPR2

REVISIONS
1 11/21/22 ADDED FLOWMETER INFORMATION
2 7/27/23 UPDATED PUMP INFORMATION

DIEHL & PHILLIPS, P.A.
CONSULTING ENGINEERS, LIC. NO. C-0466
1500 PINEY PLAINS RD., SUITE 200
CARY, N.C. 27518 • (919) 467-9972

BRICK MILL ESTATES
HARNETT COUNTY
COATS, NORTH CAROLINA

WASTEWATER PUMP STATION - ONE LINE DIAGRAM AND MISCELLANEOUS ELECTRICAL DETAILS

SHEET PS5 OF 5