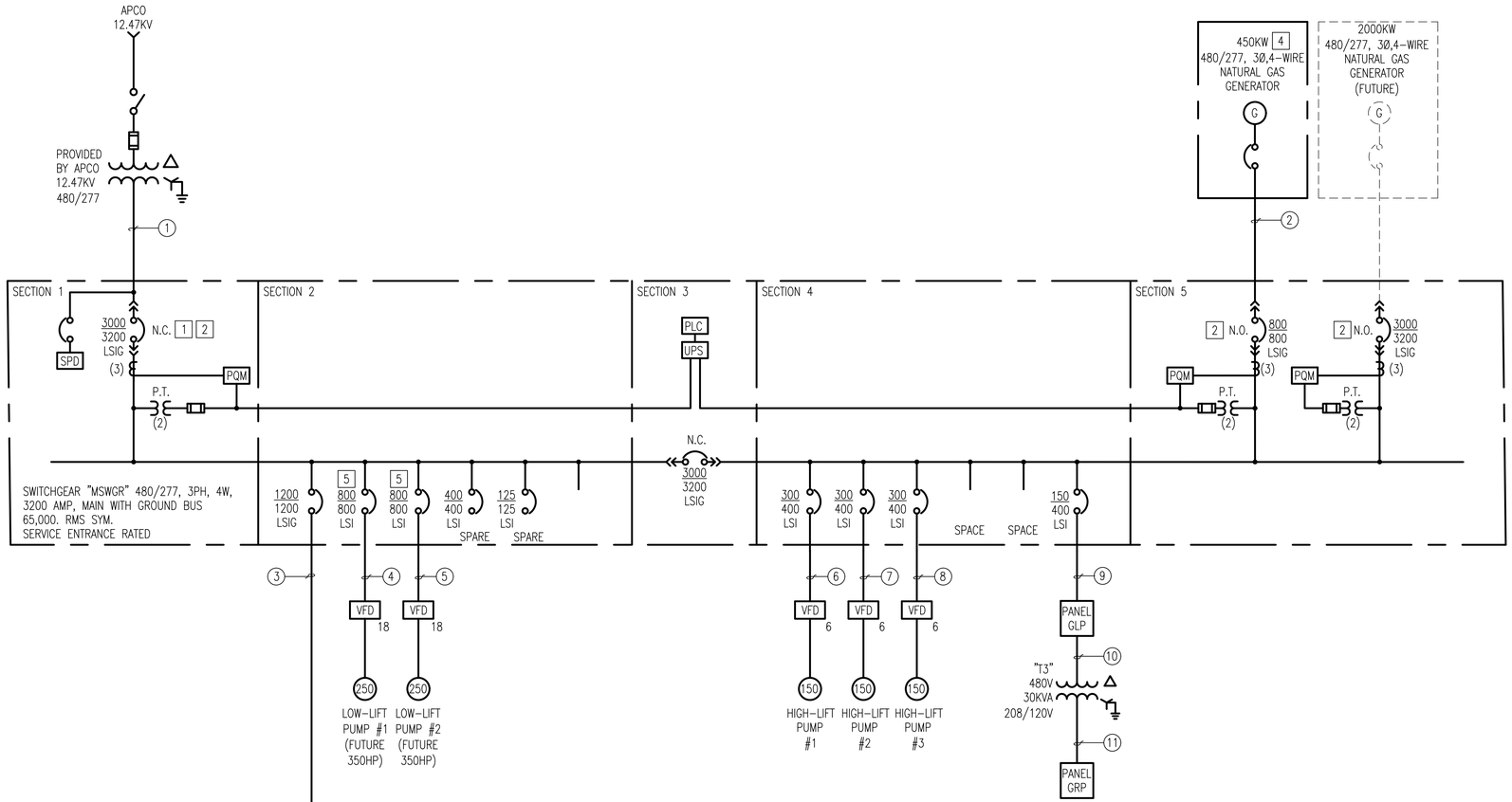

ELECTRICAL ONE-LINE DIAGRAM

SCALE: NONE

GENERAL SHEET NOTES

1. REFER TO DRAWINGS E0.01 FOR LEGEND AND ABBREVIATIONS AND E0.02 FOR DEFINITIONS AND GENERAL NOTES.
2. REFER TO DRAWING E1.01 FOR ELECTRICAL SITE PLAN.
3. REFER TO DRAWING E3.02 FOR ELECTRICAL FLOOR PLAN AND EQUIPMENT LAYOUT.
4. REFER TO DRAWING E6.02 DETAIL A FOR GROUNDING CONNECTION DIAGRAM.
5. REFER TO DRAWING E7.01 FOR ELECTRICAL CONDUIT, CONDUCTOR AND VFD DRIVE SCHEDULE.
6. COORDINATE ELECTRICAL SHUT-DOWN AND CUT-OVER WITH APPALACHIAN POWER COMPANY AND FACILITY OPERATIONS.
7. VFD'S MUST MEET IEEE 519 REQUIREMENTS WITH LESS THAN 5% THD ON VOLTAGE AND CURRENT AT POINT OF COMMON COUPLING.
8. PANELBOARD BUS INCLUDING PHASE, NEUTRAL AND GROUND MUST BE COPPER. ALUMINUM BUS ARE NOT PERMITTED.
9. COORDINATE NEW ELECTRICAL SERVICE AND EXISTING SERVICE CUT-OVER APPALACHIAN POWER COMPANY AND FACILITY OPERATIONS.
10. ALL MAIN AND TIE BREAKERS IN SWITCHGEAR MUST BE ADJUSTABLE TRIP ELECTRONIC TRIP LSIG.
11. ALL BREAKERS IN SWITCHGEAR MUST BE ADJUSTABLE TRIP ELECTRONIC TRIP LSI.

SHEET KEYNOTES

1. SERVICE ENTRANCE RATED SWITCHGEAR.
2. ADJUSTABLE GROUND FAULT ALARM.
3. CONNECT TO FEEDER TO EXISTING MCC. VERIFY PHASE ROTATION PRIOR TO START-UP.
4. NEW NATURAL GAS 450KW, 480/277V 3-PHASE 4-WIRE GENERATOR, WITH LEVEL 3 SOUND ACOUSTICAL ENCLOSURE.
5. ADJUST CIRCUIT BREAKER LONG TERM TRIP SETTING TO 400-AMPS.

450KW GENERATOR SEQUENCE OF OPERATION

1. STANDBY MODE- EVENT OF NORMAL POWER LOSS/FAILURES(LOAD TRANSFER FROM UTILITY TO GENERATOR)
   a. THE GENERATOR ISSUES A START COMMAND, TIME DELAY OF APPROXIMATELY 10 SECONDS. WHEN THE POWER IS LOST TO THE MAIN SWITCHGEAR. GENERATOR WILL START.
   b. WHEN THE GENERATOR HAS STARTED THE SWITCHGEAR PLC WILL OPEN THE SWITCHGEAR MAIN CIRCUIT BREAKER AND THEN OPEN THE MAIN SWITCHGEAR TIE BREAKER. SWITCHGEAR GENERATOR INPUT BREAKER WILL THEN CLOSE.
   c. 1ST HIGH LIFT PUMP WILL BE CONNECTED TO THE GENERATOR VIA INSTRUMENTATION AND CONTROL SCHEME.
   d. 2ND HIGH LIFT PUMP WILL BE CONNECTED TO THE GENERATOR WHEN THE 1ST HIGH LIFT PUMP IS RUNNING.
2. STANDBY NORMAL MODE – RETURN TO UTILITY POWER(LOAD TRANSFER FROM GENERATOR TO UTILITY).
   a. UPON RETURN OF FULL UTILITY POWER TO THE MAIN SWITCHGEAR, A RE-TRANSFER ADJUSTABLE TIME DELAY OF 10 MINUTES WILL START.
   b. AFTER 10 MINUTE ADJUSTABLE RETRANSFER TO UTILITY (NORMAL) TIME-OUT, THE SWITCHGEAR PLC WILL OPEN THE SWITCHGEAR GENERATOR INPUT BREAKER AND THEN CLOSE THE SWITCHGEAR MAIN BREAKER AND THE SWITCHGEAR TIE BREAKER.
   c. AFTER THE COMPLETION RETRANSFER TO UTILITY, THE GENERATOR WILL CONTINUE TO RUN FOR A COOL-DOWN CYCLE OF APPROXIMATELY 5 MINUTES ADJUSTABLE, TIME DELAY ENGINE COOL DOWN.
   d. THE SYSTEM WILL THEN BE IN A STANDYBY-READY MODE AGAIN WITH ALL LOADS CONNECTED TO THE SWITCHGEAR BUS AND THE GENERATOR IN STAND BY MODE.

REV	DATE	DESCRIPTION

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DES: T.P.B.	SCALE: NOT TO SCALE
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DATE: 1/24/20	

CRYSTAL SPRING
PUMP STATION RELOCATION

ELECTRICAL ONE-LINE DIAGRAM

DRAWING: E5.01
SHEET: 62

PLOT DATE: 1/24/2020 8:08:30 AM PAGE SETUP: WRA-PDF (36X24) PLOT STYLE: WRA_2006.CTB PAPER SIZE:ARCH FULL BLEED D (36.00 X 24.00 INCHES)
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