

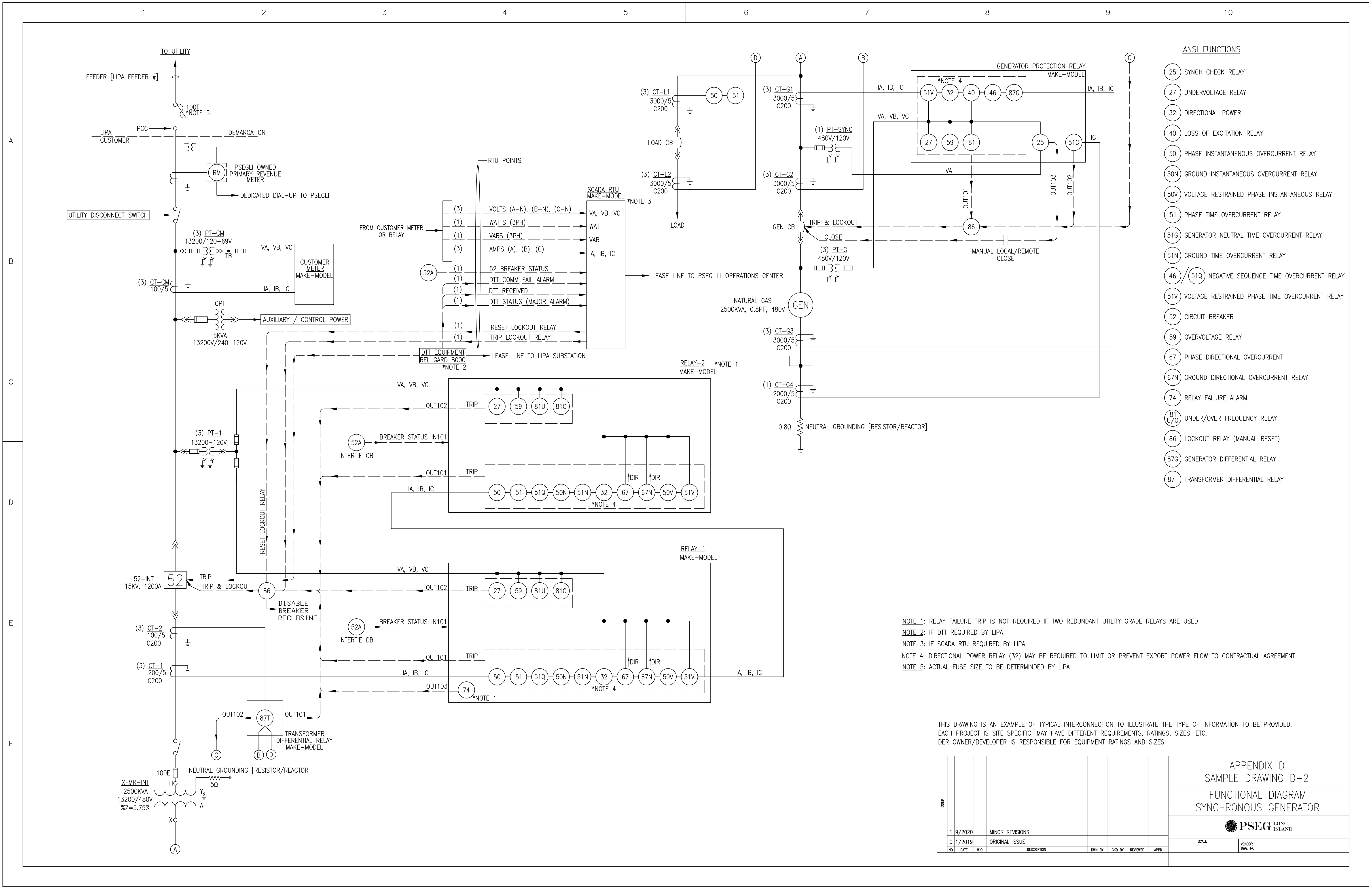
- ANSI FUNCTIONS**
- 2 TIME DELAY CLOSING RELAY
  - 25 SYNCH CHECK RELAY
  - 27 UNDERVOLTAGE RELAY
  - 32 DIRECTIONAL POWER
  - 50 PHASE INSTANTANEOUS OVERCURRENT RELAY
  - 50N GROUND INSTANTANEOUS OVERCURRENT RELAY
  - 51 PHASE TIME OVERCURRENT RELAY
  - 51N GROUND TIME OVERCURRENT RELAY
  - 52 CIRCUIT BREAKER
  - 59 OVERVOLTAGE RELAY
  - 59G ZERO SEQUENCE OVER VOLTAGE (3V0)
  - 69 PERMISSIVE CONTROL DEVICE
  - 74 RELAY FAILURE ALARM
  - 79 RECLOSING RELAY
  - 81U/O UNDER/OVER FREQUENCY RELAY
  - 86 LOCKOUT RELAY (MANUAL RESET)

INTEGRATED INVERTER SETTINGS			
VOLTAGE SETTINGS			
ANSI NO.	TRIP	PICKUP (%)	TIME DELAY (SEC)
27-1	UNDERVOLTAGE	50	0.16
27-2	UNDERVOLTAGE	88	5
59-1	OVERVOLTAGE	110	1
59-2	OVERVOLTAGE	120	0.16
FREQUENCY SETTINGS			
ANSI NO.	TRIP	PICKUP (HZ)	TIME DELAY (SEC)
81/U-1	UNDERFREQUENCY	56.5	0.16
81/U-2	UNDERFREQUENCY	58	180
81/O-1	OVERFREQUENCY	61	180
81/O-2	OVERFREQUENCY	62	0.16

- NOTE 1:** RELAY FAILURE TRIP IS NOT REQUIRED IF TWO REDUNDANT UTILITY GRADE RELAYS ARE USED
- NOTE 2:** IF DTT REQUIRED BY LIPA
- NOTE 3:** IF SCADA RTU REQUIRED BY LIPA
- NOTE 4:** DIRECTIONAL POWER RELAY (32) MAY BE REQUIRED TO LIMIT OR PREVENT EXPORT POWER FLOW TO CONTRACTUAL AGREEMENT
- NOTE 5:** ACTUAL FUSE SIZE TO BE DETERMINED BY LIPA
- NOTE 6:** SYNCH CHECK RELAY (25) MUST BE SHOWN FOR GRID FORMING INVERTERS

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ISSUE		APPENDIX D SAMPLE DRAWING D-1 FUNCTIONAL DIAGRAM INVERTER BASED DER	
1 9/2020		MINOR REVISIONS	
0 1/2019		ORIGINAL ISSUE	
NO.	DATE	W.O.	DESCRIPTION
			OWN BY
			CKD BY
			REVIEWED
			APPD
SCALE		PSEGLONG ISLAND	
VENDOR		DRC. NO.	

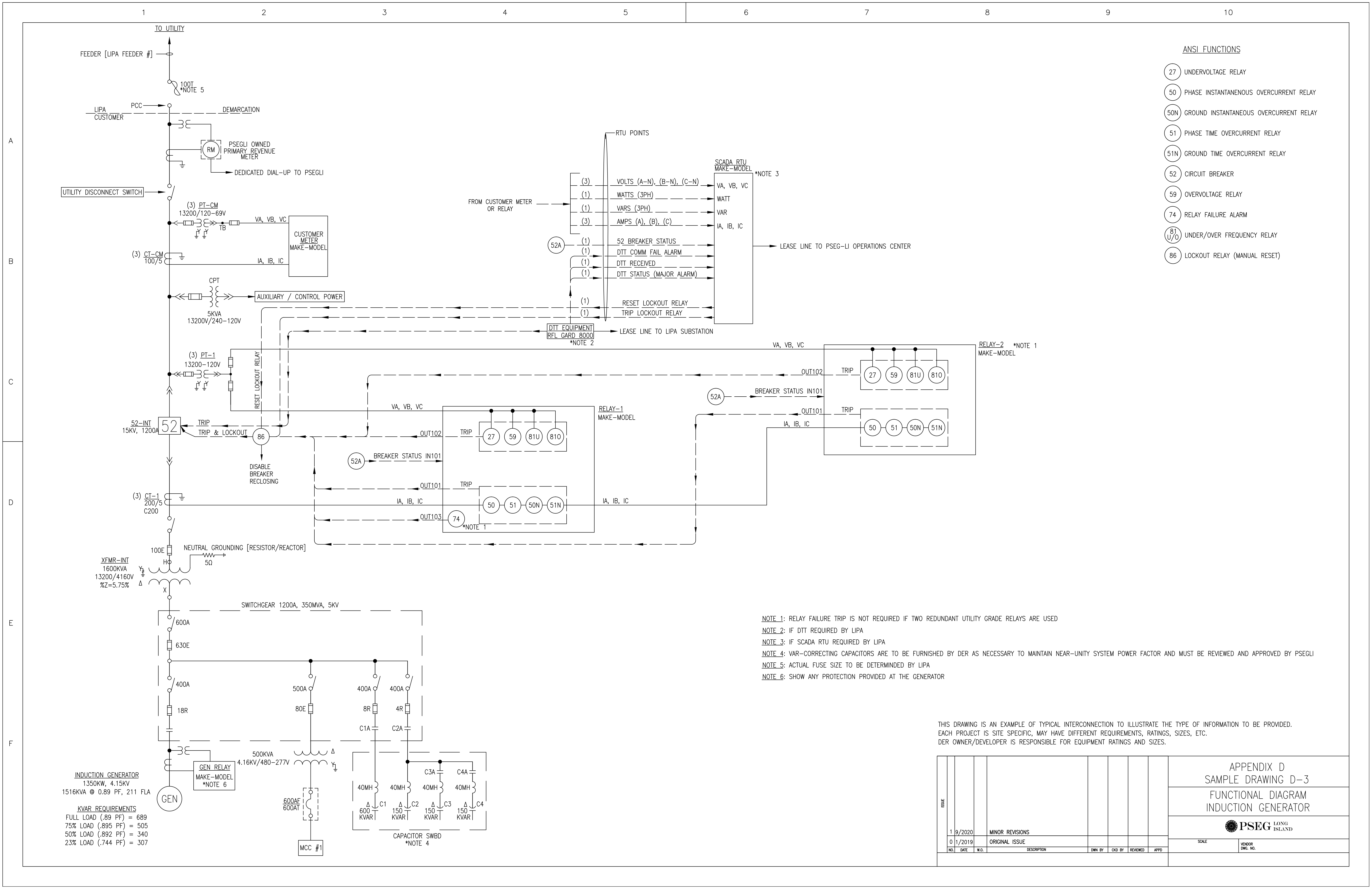


- ANSI FUNCTIONS**
- 25 SYNCH CHECK RELAY
  - 27 UNDERVOLTAGE RELAY
  - 32 DIRECTIONAL POWER
  - 40 LOSS OF EXCITATION RELAY
  - 50 PHASE INSTANTANENOUS OVERCURRENT RELAY
  - 50N GROUND INSTANTANEOUS OVERCURRENT RELAY
  - 50V VOLTAGE RESTRAINED PHASE INSTANTANEOUS RELAY
  - 51 PHASE TIME OVERCURRENT RELAY
  - 51G GENERATOR NEUTRAL TIME OVERCURRENT RELAY
  - 51N GROUND TIME OVERCURRENT RELAY
  - 46 / 51Q NEGATIVE SEQUENCE TIME OVERCURRENT RELAY
  - 51V VOLTAGE RESTRAINED PHASE TIME OVERCURRENT RELAY
  - 52 CIRCUIT BREAKER
  - 59 OVERVOLTAGE RELAY
  - 67 PHASE DIRECTIONAL OVERCURRENT
  - 67N GROUND DIRECTIONAL OVERCURRENT RELAY
  - 74 RELAY FAILURE ALARM
  - 81 U/O UNDER/OVER FREQUENCY RELAY
  - 86 LOCKOUT RELAY (MANUAL RESET)
  - 87G GENERATOR DIFFERENTIAL RELAY
  - 87T TRANSFORMER DIFFERENTIAL RELAY

**NOTE 1:** RELAY FAILURE TRIP IS NOT REQUIRED IF TWO REDUNDANT UTILITY GRADE RELAYS ARE USED  
**NOTE 2:** IF DTT REQUIRED BY LIPA  
**NOTE 3:** IF SCADA RTU REQUIRED BY LIPA  
**NOTE 4:** DIRECTIONAL POWER RELAY (32) MAY BE REQUIRED TO LIMIT OR PREVENT EXPORT POWER FLOW TO CONTRACTUAL AGREEMENT  
**NOTE 5:** ACTUAL FUSE SIZE TO BE DETERMINED BY LIPA

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ISSUE						APPENDIX D SAMPLE DRAWING D-2 FUNCTIONAL DIAGRAM SYNCHRONOUS GENERATOR			
1	9/2020	MINOR REVISIONS							
0	1/2019	ORIGINAL ISSUE							
NO.	DATE	W.O.	DESCRIPTION	DWN BY	CRD BY	REVIEWED	APPD	SCALE	VENDOR DWC. NO.



- ANSI FUNCTIONS**
- 27 UNDERVOLTAGE RELAY
  - 50 PHASE INSTANTANENOUS OVERCURRENT RELAY
  - 50N GROUND INSTANTANEOUS OVERCURRENT RELAY
  - 51 PHASE TIME OVERCURRENT RELAY
  - 51N GROUND TIME OVERCURRENT RELAY
  - 52 CIRCUIT BREAKER
  - 59 OVERVOLTAGE RELAY
  - 74 RELAY FAILURE ALARM
  - 81/0 UNDER/OVER FREQUENCY RELAY
  - 86 LOCKOUT RELAY (MANUAL RESET)

- NOTE 1:** RELAY FAILURE TRIP IS NOT REQUIRED IF TWO REDUNDANT UTILITY GRADE RELAYS ARE USED  
**NOTE 2:** IF DTT REQUIRED BY LIPA  
**NOTE 3:** IF SCADA RTU REQUIRED BY LIPA  
**NOTE 4:** VAR-CORRECTING CAPACITORS ARE TO BE FURNISHED BY DER AS NECESSARY TO MAINTAIN NEAR-UNITY SYSTEM POWER FACTOR AND MUST BE REVIEWED AND APPROVED BY PSEGLI  
**NOTE 5:** ACTUAL FUSE SIZE TO BE DETERMINED BY LIPA  
**NOTE 6:** SHOW ANY PROTECTION PROVIDED AT THE GENERATOR

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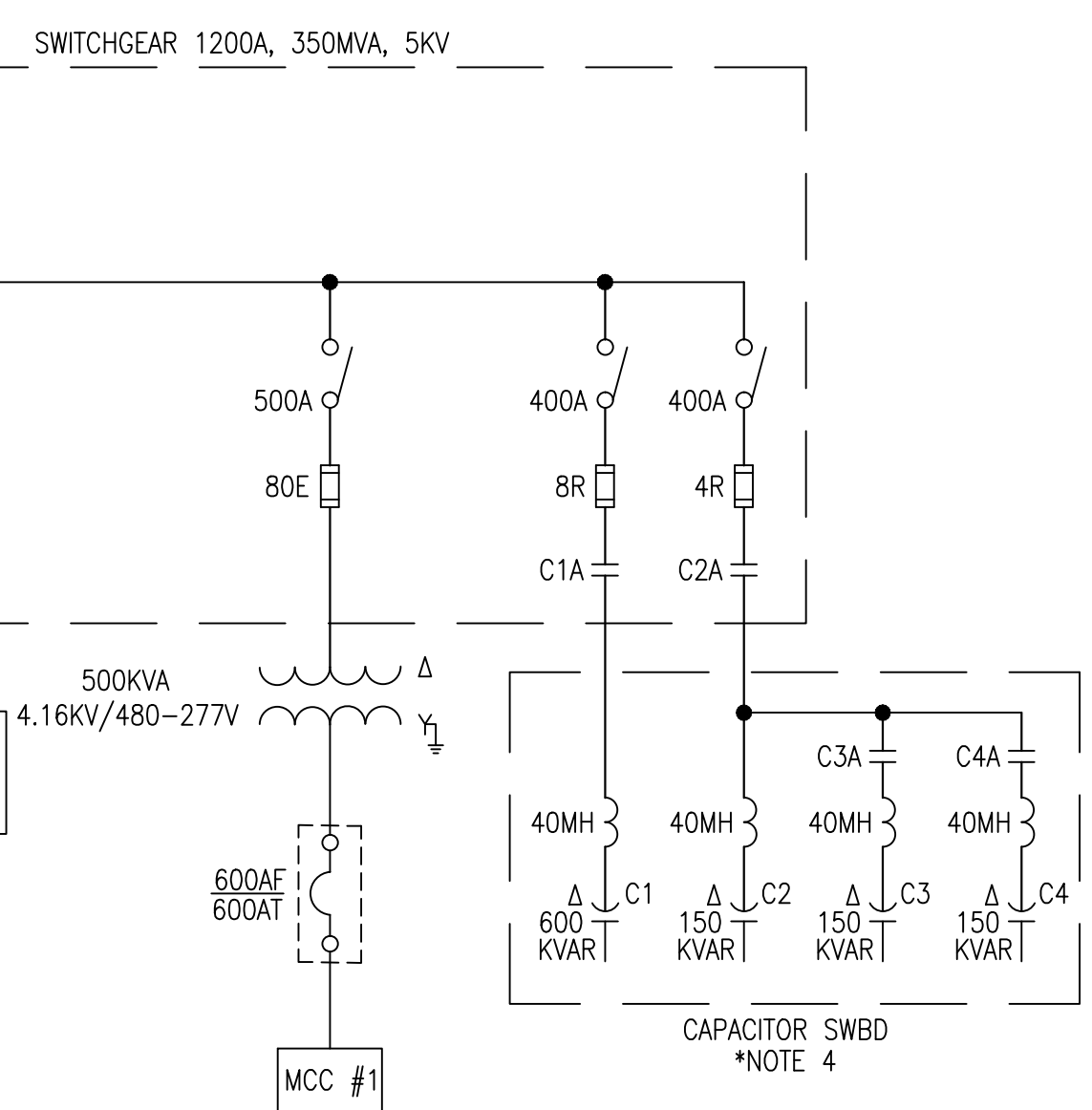
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1	9/2020	MINOR REVISIONS							
0	1/2019	ORIGINAL ISSUE							
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APPENDIX D  
SAMPLE DRAWING D-3  
FUNCTIONAL DIAGRAM  
INDUCTION GENERATOR



**INDUCTION GENERATOR**  
1350KW, 4.15KV  
1516KVA @ 0.89 PF, 211 FLA

**KVAR REQUIREMENTS**  
FULL LOAD (.89 PF) = 689  
75% LOAD (.895 PF) = 505  
50% LOAD (.892 PF) = 340  
23% LOAD (.744 PF) = 307



**52-INT**  
15KV, 1200A

**52**

**52A**

**CUSTOMER METER**  
MAKE-MODEL

VA, VB, VC  
IA, IB, IC

**SCADA RTU**  
MAKE-MODEL \*NOTE 3

VA, VB, VC  
WATT  
VAR  
IA, IB, IC

52 BREAKER STATUS  
DTT COMM FAIL ALARM  
DTT RECEIVED  
DTT STATUS (MAJOR ALARM)

RESET LOCKOUT RELAY  
TRIP LOCKOUT RELAY

**RELAY-1**  
MAKE-MODEL

TRIP (27, 59, 81U, 81O)  
TRIP (50, 51, 50N, 51N)

74 \*NOTE 1

**RELAY-2** \*NOTE 1  
MAKE-MODEL

TRIP (27, 59, 81U, 81O)  
TRIP (50, 51, 50N, 51N)

**SWITCHGEAR** 1200A, 350MVA, 5KV

**XEMR-INT**  
1600KVA  
13200/4160V  
%Z=5.75%

**CT-1**  
200/5  
C200

**PT-1**  
13200-120V

**PT-CM**  
13200/120-69V

**CT-CM**  
100/5

**PT-CM**  
13200/120-69V

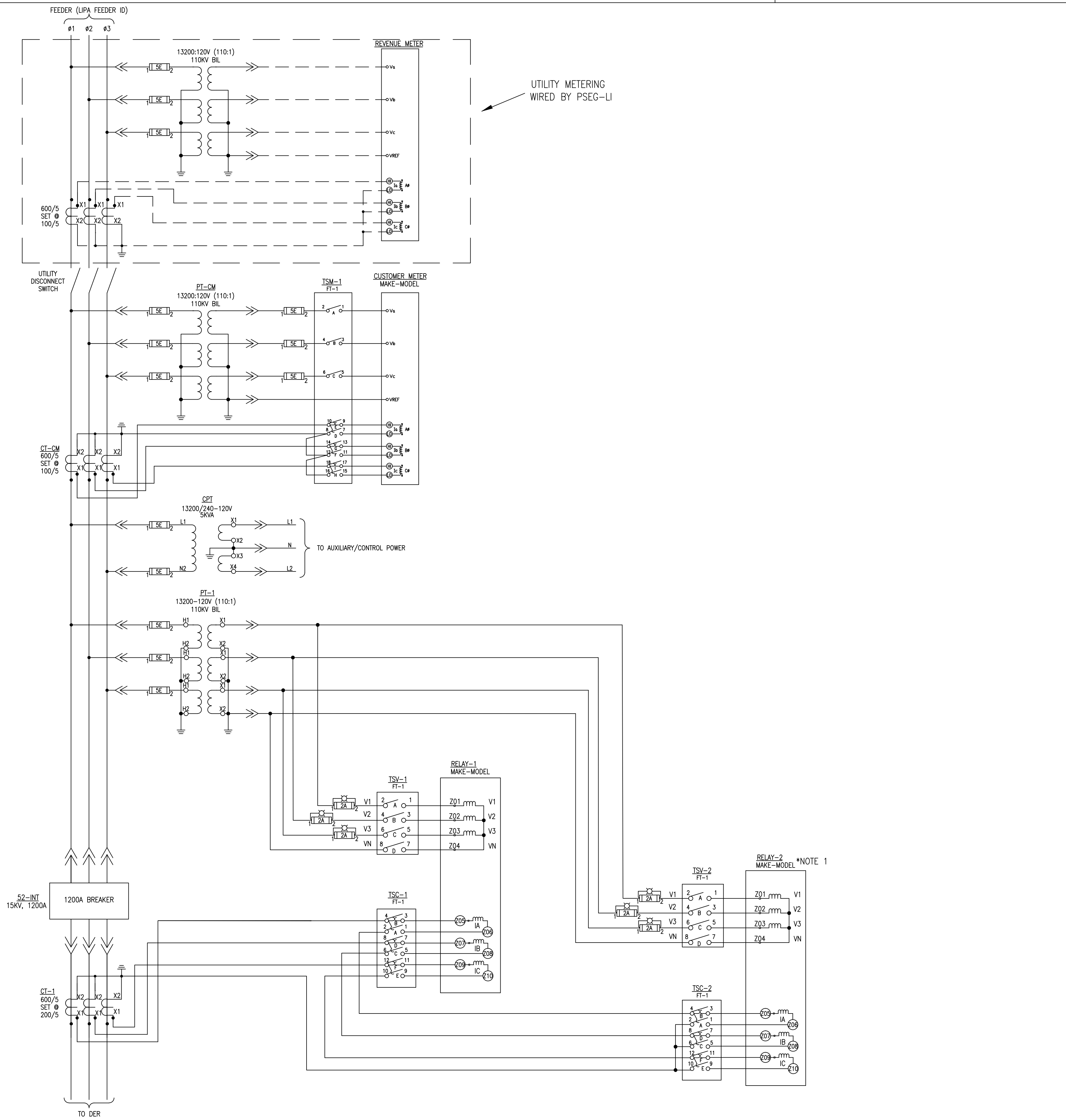
**RM**  
PSEGLI OWNED  
PRIMARY REVENUE  
METER

**LIPA CUSTOMER**

**FEEDER** (LIPA FEEDER #)

**TO UTILITY**

A  
B  
C  
D  
E  
F

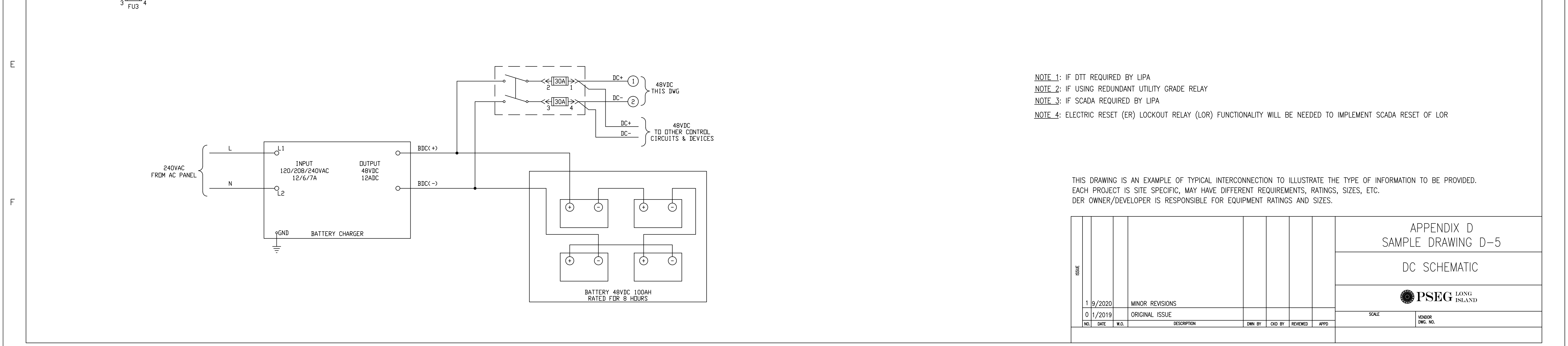
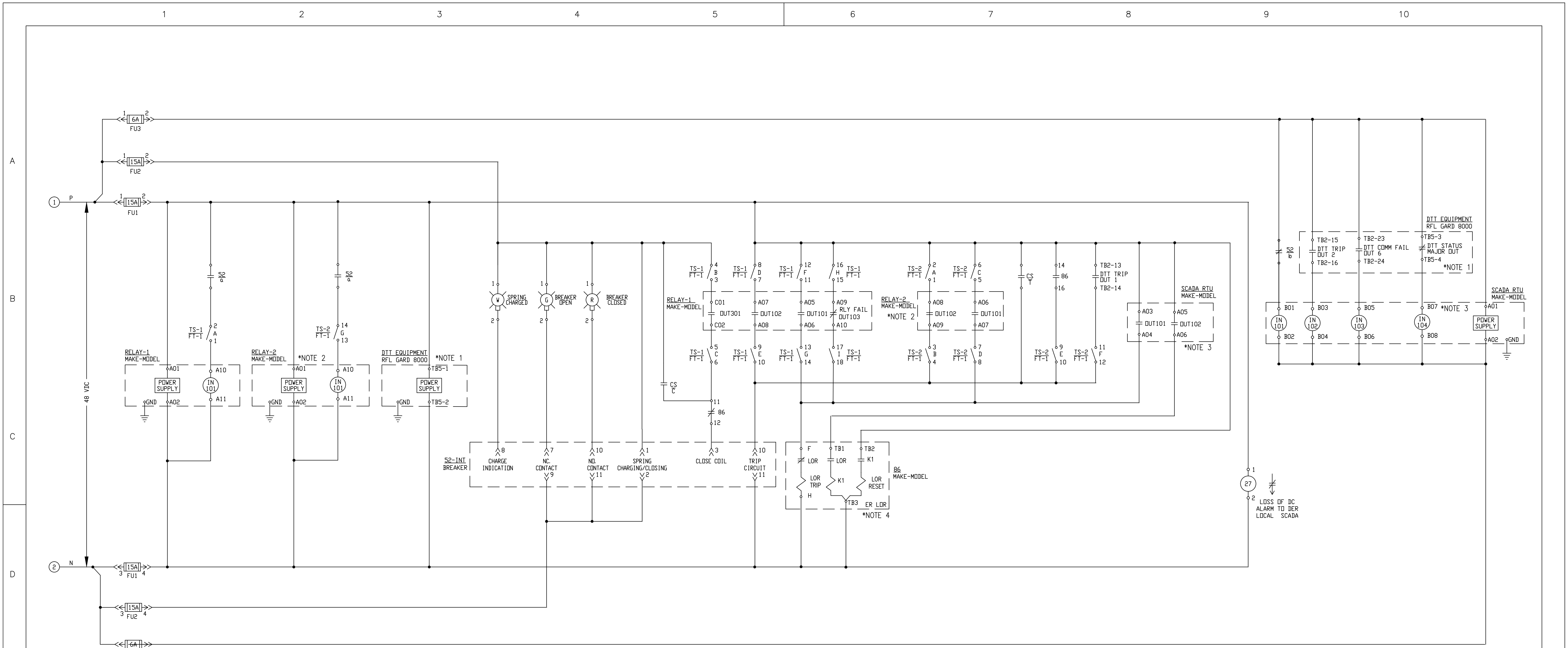


UTILITY METERING WIRED BY PSEG-LI

NOTE 1: IF USING REDUNDANT UTILITY GRADE RELAY

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						APPENDIX D SAMPLE DRAWING D-4	
						THREE LINE DIAGRAM	
						SCALE	
						VENDOR Dwg. NO.	
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	0	1/2019		ORIGINAL ISSUE			



- NOTE 1: IF DTT REQUIRED BY LIPA  
 NOTE 2: IF USING REDUNDANT UTILITY GRADE RELAY  
 NOTE 3: IF SCADA REQUIRED BY LIPA  
 NOTE 4: ELECTRIC RESET (ER) LOCKOUT RELAY (LOR) FUNCTIONALITY WILL BE NEEDED TO IMPLEMENT SCADA RESET OF LOR

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ISSUE						APPENDIX D SAMPLE DRAWING D-5	
						DC SCHEMATIC	
						PSEG LONG ISLAND	
						SCALE	
						VENDOR Dwg. NO.	
1	9/2020	MINOR REVISIONS					
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