

DUPLEX PUMP STATION W/ GENERATOR ELECTRICAL DRAWING INDEX

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GENERAL NOTES:

- 1.) SITE SPECIFIC CONDITIONS DETERMINE THE CLASSIFICATION OF PUMP STATION IN ACCORDANCE WITH FDEP STANDARDS AND MUST BE DETERMINED BY THE DESIGN ENGINEER FOR EACH SPECIFIC PROJECT.
- 2.) A PUMP STATION THAT RECEIVES FLOW FROM MORE THAN 1 LOCATION WILL BE CLASSIFIED AS EITHER A REPUMP STATION OR A MASTER PUMP STATION. THE DETERMINATION OF PUMP STATION CLASSIFICATION IS VERY SITE SPECIFIC. ENGINEER, DEVELOPER AND/OR CONTRACTOR MUST COORDINATE WITH LEE COUNTY UTILITIES TO CORRECTLY CATEGORIZE THE STATION. PUMP STATION CLASSIFICATION DETERMINES WHICH STANDARD TO REFERENCE. REPUMP STATIONS CAN BE UP TO 77HP, 2 OR 3 PUMPS AND WILL BE EQUIPPED WITH ACROSS THE LINE STARTERS CONTROLLED BY SCADA-PAK. REFERENCE LCU STANDARD DUPLEX 3-PHASE PUMP STATION WITH GENERATOR OR LCU STANDARD TRIPLEX 3-PHASE PUMP STATION WITH GENERATOR FOR GENERAL CONSTRUCTION STANDARDS. SIZE ELECTRICAL SERVICE AND EQUIPMENT SITE SPECIFIC TO REPUMP STATION HORSEPOWER. MASTER PUMP STATIONS WILL BE 35HP AND GREATER, MOST LIKELY 3 PUMPS. THEY WILL BE EQUIPPED WITH VFDS WHICH ARE LEVEL CONTROLLED THROUGH A PLC. REFERENCE LCU MASTER PUMP STATION STANDARD DRAWINGS. SIZE ELECTRICAL SERVICE AND EQUIPMENT SITE SPECIFIC TO MASTER PUMP STATION HORSEPOWER.

STAND-BY GENERATOR REQUIREMENT:

FDEP REQUIRES AN IN PLACE EMERGENCY GENERATOR TO PROVIDE UNINTERRUPTED PUMPING CAPABILITY FOR PUMP STATIONS RECEIVING FLOW FROM ONE OR MORE PUMP STATIONS THROUGH A FORCE MAIN OR PUMP STATIONS DISCHARGING THROUGH PIPES 12 INCHES OR LARGER. REFERENCE FDEP FORM 62-604.300(3)(a) EMERGENCY OPERATION OF PUMP STATIONS PARAGRAPH 71. IN ADDITION TO FDEP REQUIREMENTS, GENERATORS ARE REQUIRED BY LCU AT PUMP STATIONS BASED ON SITE SPECIFIC FLOWS. COORDINATE WITH LCU TO DETERMINE IF SITE SPECIFIC FLOWS AT PUMP STATION REQUIRE AN IN PLACE EMERGENCY GENERATOR.

SUBMITTAL REQUIREMENT:

LEE COUNTY UTILITIES REQUIRES PUMP STATION SUBMITTALS BE PROVIDED FOR THEIR REVIEW TO ENSURE COMPLIANCE WITH THE LCU PUMP STATION STANDARDS.

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LEE COUNTY UTILITIES WASTEWATER PUMP STATION STANDARDS	ISSUED FOR: RECORD
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ABBREVIATIONS LIST

A	AMPS
AF	AMP FRAME
AIC	AMPS INTERRUPTING CURRENT
ALUM	ALUMINUM
AT	AMP TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AVAIL	AVAILABLE
AWG	AMERICAN WIRE GAUGE
C.	CONDUIT
CAB	CABINET
CAT	CATEGORY
CONV	CONVERSION
CRCC	CELLULAR ROUTER COMMUNICATION CABINET
CU	COPPER
D	DEPTH
DIA	DIAMETER
DRGS	DRAWINGS
ENET	ETHERNET
EXT	EXTERNAL
FOCC	FIBER OPTIC CONVERSION CABINET
FPL	FLORIDA POWER AND LIGHT
GND OR GRD. OR G.	GROUND
H	HEIGHT
HZ	HERTZ
I&C	INSTRUMENTATION AND CONTROLS
I/O	INPUT/OUTPUT
INST	INSTRUMENT
INT	INTERNAL
KVA	KILOVOLT-AMPERES (1VA*10 ⁻³)
LCU	LEE COUNTY UTILITIES
LT	LIGHT
MA	MILLIAMPS (1A*10 ⁻³)
MCB	MAGNETIC CIRCUIT BREAKER
MIN	MINIMUM
NA	NOT APPLICABLE
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRIC MANUFACTURERS ASSOCIATION
NTS	NOT TO SCALE
P	POLE
PH	PHASE
P&ID	PROPORTIONAL INTEGRAL DERIVATIVE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PW	PRODUCTION WELL
MPZ	MINI POWER ZONE
SCH	SCHEDULE
SE	SERVICE ENTRANCE
SPD	SURGE PROTECTION DEVICE
SS	STAINLESS STEEL
TEMP	TEMPERATURE OR TEMPORARY
TSP	TWISTED SHIELDED PAIR
TYP	TYPICAL
U.G.	UNDERGROUND
UPS	UNINTERRUPTIBLE POWER SOURCE
V	VOLTS
VA	VOLT-AMPERES (APPARENT POWER)
VAC	VOLTS ALTERNATING CURRENT
VDC	VOLTS DIRECT CURRENT
VFD	VARIABLE FREQUENCY DRIVE
W	WATTS (REAL POWER)
PCP	PUMP CONTROL PANEL
W/	WITH
XFMR	TRANSFORMER
"	INCHES
' OR FT	FEET
# OR NO.	NUMBER
E# OR I#	11"x17" SHEET
ES-#	8.5"x11" SHEET
FDEP	FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

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ISSUED FOR: LEE COUNTY UTILITIES WASTEWATER PUMP STATION STANDARDS
ABBREVIATIONS LIST

RECORD
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CONTROL/ELEMENTARY SYMBOLS

- NORMALLY OPEN CONTACT
- NORMALLY CLOSED CONTACT
- LIMIT SWITCH, NORMALLY OPEN
- LIMIT SWITCH, NORMALLY CLOSED
- PRESSURE SWITCH, NORMALLY OPEN
- PRESSURE SWITCH, NORMALLY CLOSED
- FLOAT SWITCH, NORMALLY OPEN
- FLOAT SWITCH, NORMALLY CLOSED
- FLOW SWITCH, NORMALLY OPEN
- FLOW SWITCH, NORMALLY CLOSED
- TEMPERATURE SWITCH, NORMALLY OPEN
- TEMPERATURE SWITCH, NORMALLY CLOSED
- NORMALLY OPEN, TIMED TO CLOSE CONTACT
- NORMALLY CLOSED, TIMED TO OPEN CONTACT
- NORMALLY CLOSED, TIMED TO CLOSE CONTACT
- NORMALLY OPEN, TIMED TO OPEN CONTACT
- ANALYZER INDICATOR TRANSMITTER
- ALARM RELAY
- ALARM TIMER
- CONTROL RELAY
- FLOW INDICATOR TRANSMITTER (TOTALIZER)
- FLOW SWITCH HIGH/LOW
- LIQUID LEVEL SWITCH
- LEVEL INDICATOR TRANSMITTER
- LIMIT SWITCH OR LEVEL SWITCH
- MOTOR SWITCH MANUAL
- MOTOR STARTER
- PRESSURE GAUGE
- PROCESS FLOW TIMER
- PRESSURE SWITCH
- TEMPERATURE SWITCH
- TIMING RELAY
- SURGE SUPPRESSION DEVICE
- SOLENOID VALVE
- VIBRATION SWITCH
- TORQUE SWITCH
- ZERO SPEED SWITCH
- ALARM INDICATING LIGHT
- RUN INDICATING LIGHT
- MOMENTARY CONTACT PUSHBUTTON
- MOMENTARY BREAK PUSHBUTTON OR RESET
- KEYED SWITCH
- MAINTAINED CONTACT ON-OFF SWITCH
- START/STOP (S/S) CONTROL SWITCH
- MAINTAINED CONTACT
- FUSE
- MOLDED CASE CIRCUIT BREAKER
- CONTROL POWER TRANSFORMER
- REMOTE TERMINAL BLOCK POINT

ELECTRICAL PLAN SYMBOLS

- WALL OUTLET BOX AND 20 AMP SINGLE POLE SWITCH ('a' INDICATES SWITCHES) 48" TO CENTERLINE
- WALL OUTLET BOX AND 20 AMP 3-WAY SWITCH ('a' INDICATES SWITCHES) 48" TO CTR LINE.
- MANUAL MOTOR STARTING SWITCH WITH OVERLOADS AND PILOT LIGHT. NEMA 4X TYPICAL
- WALL OUTLET BOX AND 20 AMP SWITCH WITH WEATHERPROOF COVER OR ENCLOSURE.
- WALL OUTLET BOX AND 20 AMP DUPLEX RECEPTACLE 18" TO CENTERLINE
- WALL OUTLET BOX AND 20 AMP DUPLEX RECEPT MOUNTED 48" AFF OR AS NOTED.
- WALL OUTLET BOX AND 20 AMP GFCI DUPLEX RECEPTACLE AT 18" TO CENTERLINE. WP INDICATES WEATHERPROOF COVER PLATE.
- WALL OUTLET BOX AND 20 AMP GFCI RECEPTACLE MOUNTED 48" AFF OR AS NOTED.
- WALL OUTLET BOX AND DOUBLE 20 AMP DUPLEX RECEPTACLES 18" TO CENTERLINE
- FLUSH MOUNTED JUNCTION BOX (SURFACE IN MECH/ELEC SPACES OR ABOVE CEILINGS).
- BRANCH CIRCUIT CONDUIT AND WIRE GENERALLY SURFACE MOUNTED, CONCEALED ABOVE CEILINGS SLASH MARKS INDICATE NUMBER OF CONDUCTORS; (MARKS SHOWN TO AID CONTRACTOR IN BIDDING, THE CONTRACTOR SHALL PROVIDE THE REQUIRED CONDUCTORS UNDER THE CONTRACT SUM WHETHER OR NOT SHOWN). SHORT SLASHES INDICATE PHASE CONDUCTOR OR SWITCH LEG, LONG INDICATE NEUTRAL CONDUCTOR. GREEN GROUND CONDUCTOR NOT SHOWN; ALL CONDUITS REQUIRE COPPER GROUND CONDUCTOR. TWO CONDUCTORS PLUS GROUND REQUIRED, MINIMUM.
- CONDUIT AND WIRE CONCEALED IN FLOOR SLAB OR UNDERGROUND.
- BRANCH CIRCUIT PANELBOARD AS NOTED; SEE PANEL SCHEDULES
- DISCONNECT SWITCH SIZE PER EQUIPMENT NAME PLATE OR AS NOTED: FOR DISCONNECTS SERVING MOTOR LOADS OF 10HP OR GREATER AND FOR ALL MOTOR LOADS SERVED THROUGH VARIABLE FREQUENCY DRIVES; PROVIDE SURGE SUPPRESSION DEVICE EQUAL TO SQ.-D. SDSA4040 OR EQUAL AT DISCONNECT.
- MOTOR CONNECTION
- MANUAL TRANSFER SWITCH OR REVERSING SWITCH

LIGHTING FIXTURES SYMBOLS

- LED FIXTURE POLE MOUNTED SEE DETAIL
- COPPERWELD GRD. ROD
- HAND OFF REMOTE CONTROL STATION
- HAND OFF AUTO CONTROL STATION
- MOTOR STRIP HEATER

SYSTEM SYMBOL LEGEND

- SYSTEMS CABINET AS NOTED OR MARKED.
- LIGHTNING PROTECTION AIR TERMINAL STREAMER RETARDING TYPE.
- STREAMER RETARDING AIR TERMINAL MOUNTED TO LIGHT POLE.

SINGLE LINE DIAGRAM SYMBOLS

- VOLTMETER
- POWER FACTOR METER
- KILOWATT METER
- AMMETER
- THREE PHASE VOLT SWITCH
- THREE PHASE AMP SWITCH
- CURRENT TRANSMITTER
- KILOWATT TRANSMITTER
- POWER FACTOR TRANSMITTER
- LOCAL CONTROL PANEL
- GROUND FAULT INTERRUPTER
- WATT HOUR METER
- FUSE
- CAPACITOR
- DRAW-OUT CIRCUIT BREAKER
- MOULDED CASE CIRCUIT BREAKER
- TYPICAL STARTER CONTROL. SEE SWITCHGEAR CONTROL DIAGRAMS FOR EXACT TYPE.
- ELECTRIC A.C. MOTOR, NO. INDICATES HORSEPOWER.
- ELECTRIC D.C. MOTOR, NO. INDICATES HORSEPOWER.
- SERVICE OR EQUIPMENT GROUND.
- NON-FUSIBLE DISCONNECT SWITCH, 30A,3P UNLESS OTHERWISE INDICATED.
- NON-FUSIBLE DISCONNECT SWITCH, 30A,3P UNLESS OTHERWISE INDICATED, WITH REMOTE CONTROL STATION AS REQUIRED BY ELEMENTARY DIAGRAMS OR SPECS.
- LIGHTING PANELBOARD
- POWER PANELBOARD
- KIRK KEY INTERLOCK
- CURRENT TRANSFORMERS
- POTENTIAL TRANSFORMERS
- MANUAL OR AUTOMATIC TRANSFER SWITCH

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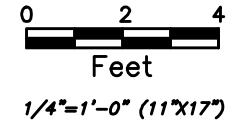
LEE COUNTY UTILITIES WASTEWATER PUMP STATION STANDARDS
ELECTRICAL SYMBOLS LEGEND

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MINIMUM EQUIPMENT RACK LAYOUT BASED ON THE FOLLOWING:

ADJUST EQUIPMENT RATINGS AND DIMENSIONS FOR SPECIFIC PUMP STATION HORSEPOWER AND SERVICE SIZE (MINIMUM 100A SERVICE SIZE). IN NO CASE SHALL DIMENSIONS BE PERMITTED TO BE REDUCED IN SIZE.

EQUIPMENT	SIZE	H(IN)	W(IN)	D(IN)	EQUIPMENT	SIZE	H(IN)	W(IN)	D(IN)
UTILITY MAIN BREAKER (0-15HP)	100A	33	10	8	AUTOMATIC TRANSFER SWITCH (0-25HP)	125A	46	32	16
UTILITY MAIN BREAKER (20-30HP)	200A	33	10	8	AUTOMATIC TRANSFER SWITCH (30HP)	225A	46	32	16
PUMP STATION CONTROL PANEL (0HP-15HP)	125AF 100AT	48	60	16	MINI POWERZONE PANEL (0-30HP)	15KVA	49	28	14
PUMP STATION CONTROL PANEL (20HP-30HP)	150AF 150AT	48	60	16					

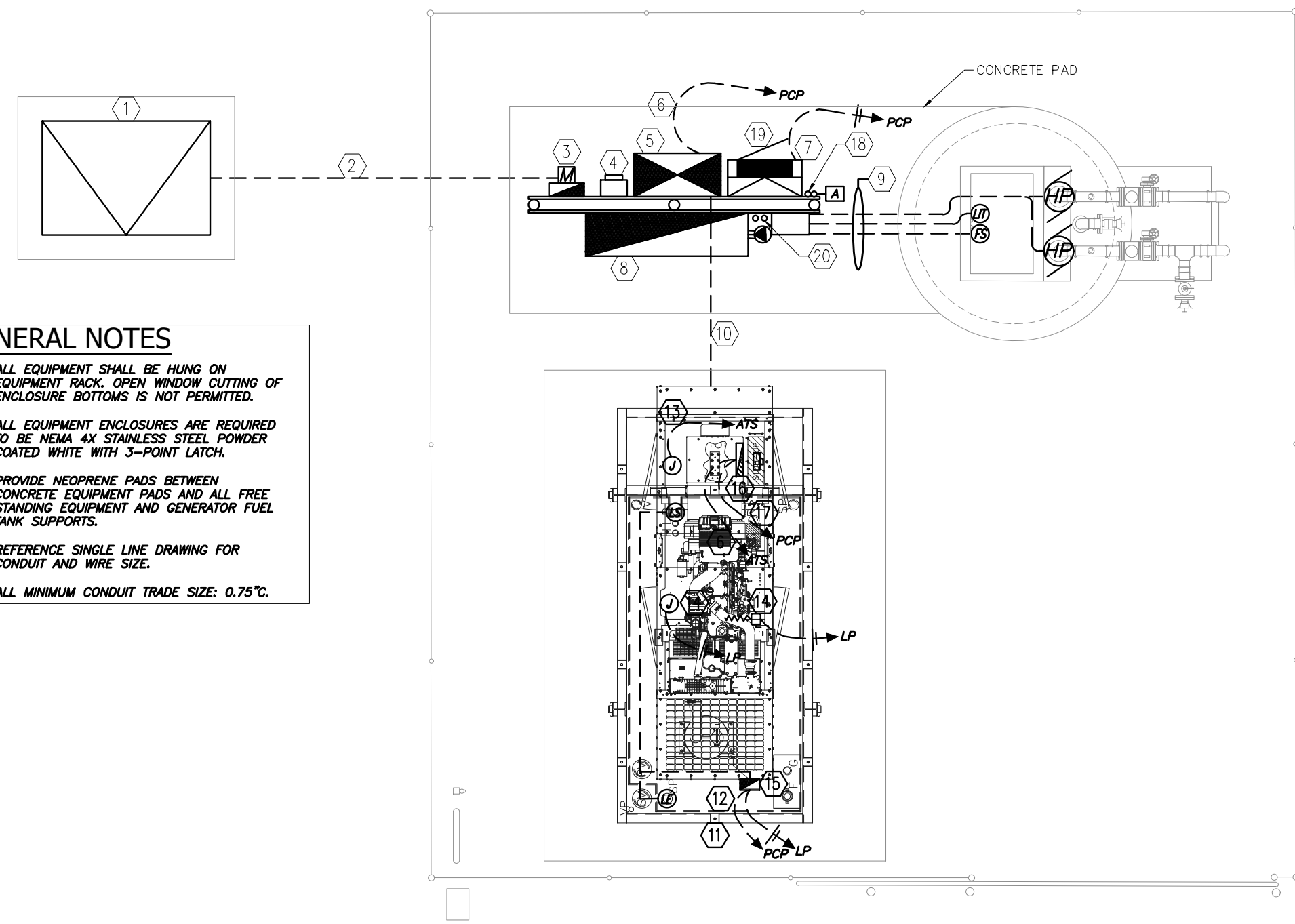


KEYNOTES

- 1.) UTILITY PADMOUNT TRANSFORMER OR AERIAL TRANSFORMER BANK. COORDINATE SERVICE CHARACTERISTICS, EXACT LOCATION AND PRIMARY FEEDER DETAILS WITH UTILITY, PROVIDE GROUNDING, TRANSFORMER PAD AND CONDUIT ENTRY PER UTILITY REQUIREMENTS.
- 2.) UNDERGROUND SERVICE LATERAL.
- 3.) ALUMINUM DIRECT READING UTILITY METER.
- 4.) NEMA 4XSS SE RATED ENCLOSED CIRCUIT BREAKER.
- 5.) NEMA 4XSS AUTOMATIC TRANSFER SWITCH.
- 6.) DEDICATED 2 WIRE UTP CABLE FOR REMOTE GEN-START COMMAND IN 1" C.
- 7.) NEMA 3R, SS 15KVA MINI POWERZONE. 480V 3PH DELTA PRIMARY 120/208V 3PH SECONDARY. NQ INTERIOR WITH BOLT ON BREAKERS.
- 8.) DEP COMPLIANT, POWDER COATED WHITE, STAINLESS STEEL, PUMP CONTROL PANEL (PCP).
- 9.) (3) MINIMUM 2" CONDUITS INTO WETWELL. (2) FOR SUBMERSIBLE PUMP CABLES, (1) FOR FLOATS AND LIT CABLES. CORE DRILL NEW PENETRATIONS THROUGH WETWELL. PATCH ALL WITH HYDROCEMENT.
- 10.) STAND-BY POWER UNDERGROUND SERVICE LATERAL.
- 11.) GENSET WITH SUBBASE FUEL TANK.
- 12.) (2) PAIR #16 TSP INSTRUMENTATION CABLE IN 1" C. AND (9) CONDUCTOR #14 CONTROL CABLE IN 1.25" C.
- 13.) (2)#8 AND #10G IN 1" C. TO BATTERY CHARGER. FIELD COORDINATE EXACT LOCATION OF BATTERY.
- 14.) GENSET STRIP HEATER AND JACKET WATER HEATER. MINIMUM (3)#10 IN 0.75" C. COORDINATE EXACT LOCATION OF HEATERS.
- 15.) GENERATOR FUEL FILL PANEL WITH FUEL LEVEL TRANSMITTER & TANK LEAK ALARM PANEL MOUNTED WITHIN NEMA4X SS POWDER COATED WHITE ENCLOSURE.
- 16.) GENERATOR CONTROL PANEL; (GCP). COORDINATE EXACT LOCATION PRIOR TO ROUGH-IN. PROGRAM TO PROVIDE MONITORING CONTACTS FOR: GENERATOR FAULT GENERATOR RUNNING
- 17.) (2)1.25" C. (1) SPARE, (1) WITH (13) CONDUCTOR #14 CONTROL CABLE.
- 18.) DATA COLLECTOR AND MAST; INSTALL ALL CONDUIT AND WIRE AS SHOWN ON SITE, ELEMENTARY'S & SINGLE LINES.
- 19.) NEMA 4XSS JUNCTION BOX.
- 20.) (2)2" SPARES TO WETWELL.

GENERAL NOTES

- 1.) ALL EQUIPMENT SHALL BE HUNG ON EQUIPMENT RACK. OPEN WINDOW CUTTING OF ENCLOSURE BOTTOMS IS NOT PERMITTED.
- 2.) ALL EQUIPMENT ENCLOSURES ARE REQUIRED TO BE NEMA 4X STAINLESS STEEL POWDER COATED WHITE WITH 3-POINT LATCH.
- 3.) PROVIDE NEOPRENE PADS BETWEEN CONCRETE EQUIPMENT PADS AND ALL FREE STANDING EQUIPMENT AND GENERATOR FUEL TANK SUPPORTS.
- 4.) REFERENCE SINGLE LINE DRAWING FOR CONDUIT AND WIRE SIZE.
- 5.) ALL MINIMUM CONDUIT TRADE SIZE: 0.75" C.



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LEE COUNTY UTILITIES WASTEWATER PUMP STATION STANDARDS
 STANDARD 480V-3Ø (0-30HP) DUPLEX PUMP STATION W/ GENERATOR POWER, INSTRUMENTATION AND CONTROL PLAN

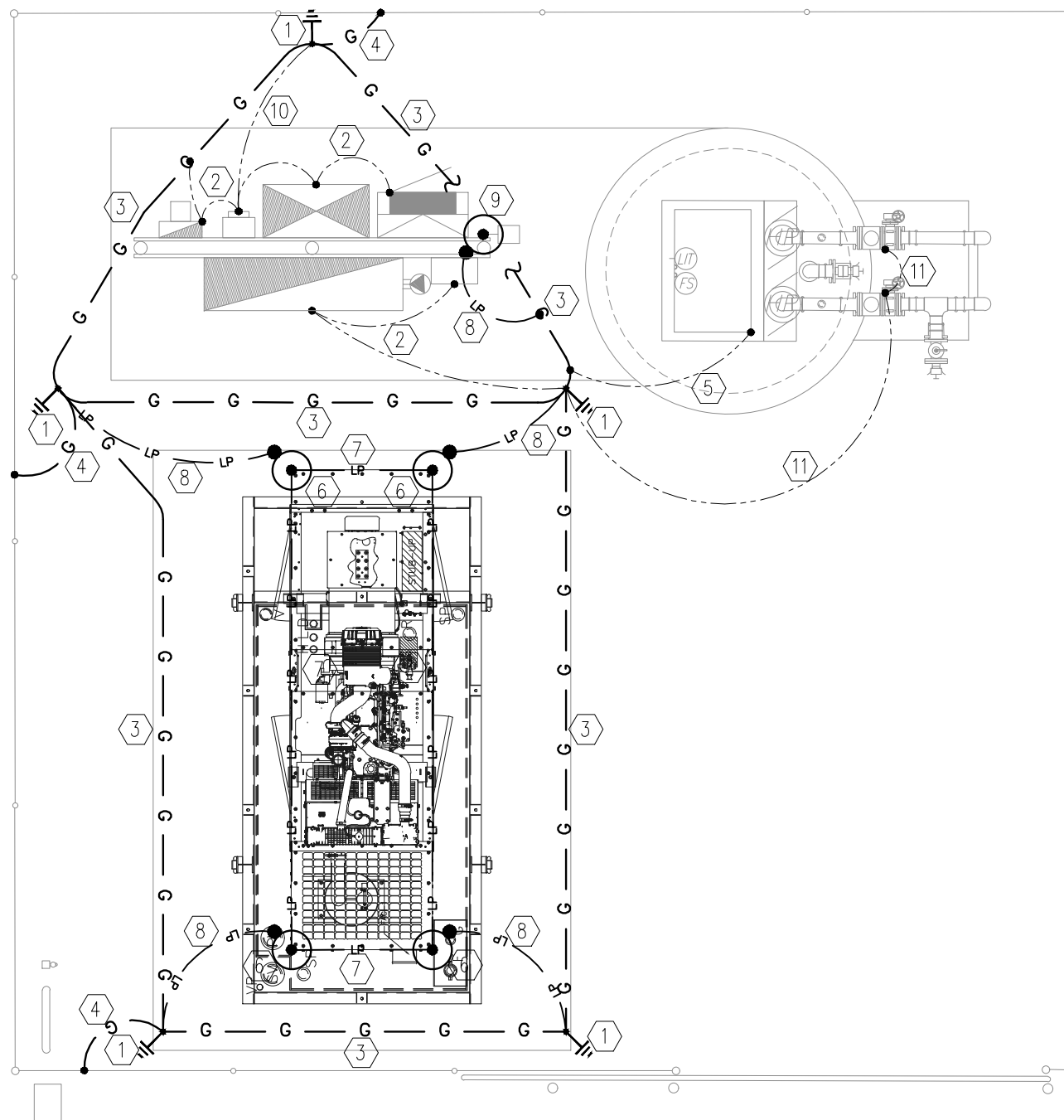
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GENERAL NOTES

- 1.) ALL U.G. CONNECTIONS TO BE VIA EXOTHERMIC WELD (CADWELD) UNLESS INDICATED OTHERWISE.
- 2.) ALL REQUIRED BONDS MAY NOT BE SHOWN; PROVIDE ADDITIONAL BONDS TO ALL DEVICES, INSTRUMENTS, CABINETS, CONTROL VALVES, ETC. AS REQUIRED TO COMPLY WITH UL AND NEC.

KEYNOTES

- 1.) 20' DRIVEN GROUND ROD WITH INSPECTION TEST WELL (SEE DETAIL). TYPICAL.
- 2.) #2 TINNED SOLID COPPER BOND. TYPICAL.
- 3.) #2/0 TINNED STRANDED COPPER COUNTERPOISE LOOP GROUND. TYPICAL.
- 4.) #2/0 TINNED SOLID BARE BOND TO GROUND GRID.
- 5.) BOND TO HINGE CORNER OF HATCH FRAME. DRILL TAP AS REQUIRED.
- 6.) STREAMER RETARDING ROOF MOUNTED AIR TERMINAL. TYPICAL.
- 7.) MAIN ROOF CONDUCTOR. TYPICAL.
- 8.) ROOF DOWN CONDUCTOR TO GROUND GRID.
- 9.) STREAMER RETARDING LIGHT POLE MOUNTED AIR TERMINAL. TYPICAL.
- 10.) TINNED STRANDED COPPER ELECTRIC SERVICE MAIN GROUNDING ELECTRODE CONDUCTOR. SIZE PER SITE SPECIFIC SERVICE REQUIREMENTS.
- 11.) #2 TINNED SOLID COPPER BOND WHERE METALLIC DISCHARGE PIPING IS UTILIZED. OMIT FOR HDPE DISCHARGE PIPING.



LIGHTNING PROTECTION LEGEND:

- LP — LP — MAIN ROOF/DOWN CONDUCTOR TYPICAL
- G — G — #2/0 TINNED BARE COPPER COUNTERPOISE LOOP GROUND.
- - - - - #2 TINNED SOLID COPPER BOND TO EQUIPMENT/CABINETS ETC.

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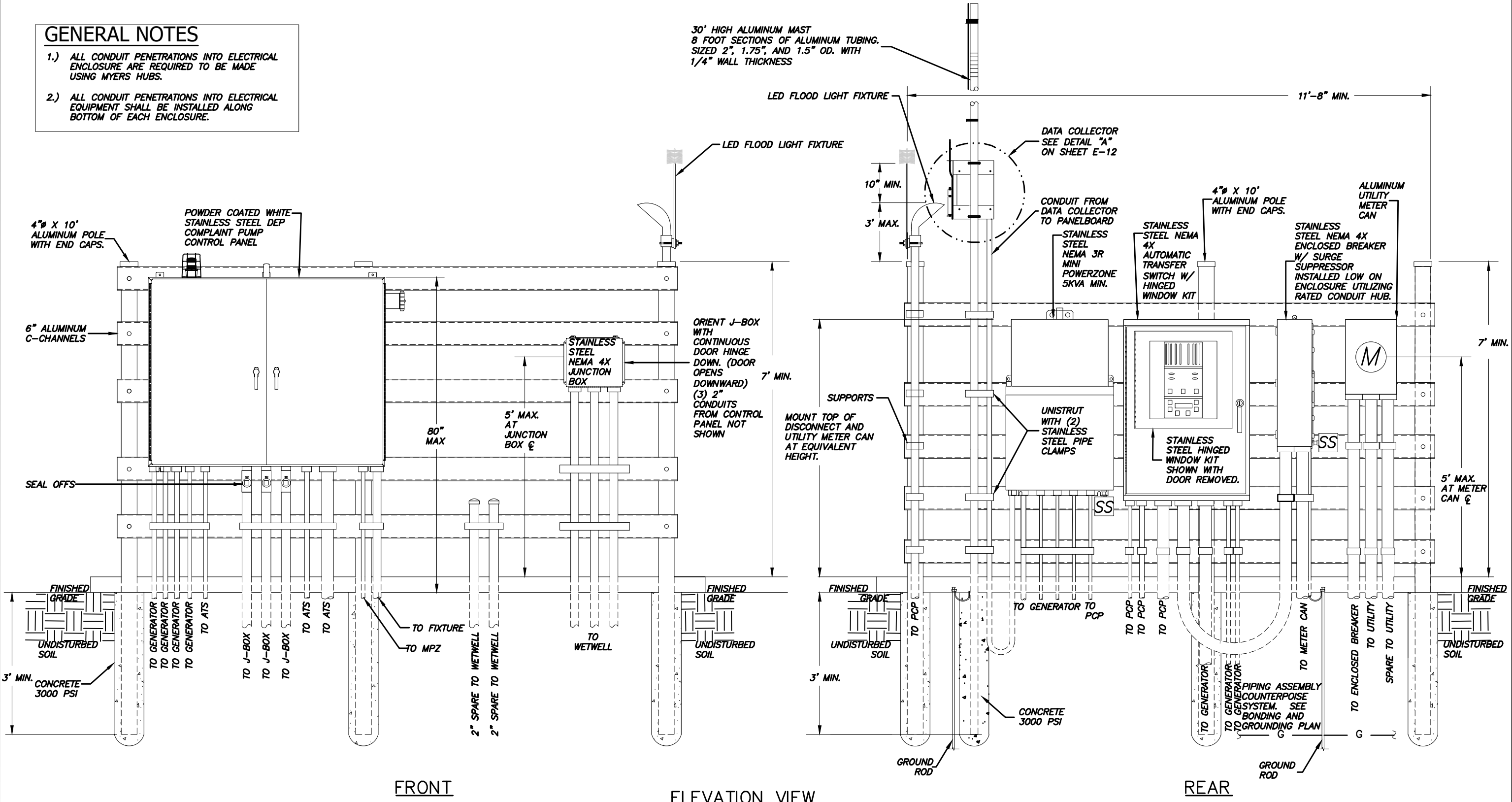
LEE COUNTY UTILITIES WASTEWATER PUMP STATION STANDARDS
STANDARD 480V-3Ø (0-30HP) DUPLEX PUMP STATION W/ GENERATOR LIGHTNING PROTECTION, BONDING & GROUNDING PLAN

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GENERAL NOTES

- 1.) ALL CONDUIT PENETRATIONS INTO ELECTRICAL ENCLOSURE ARE REQUIRED TO BE MADE USING MYERS HUBS.
- 2.) ALL CONDUIT PENETRATIONS INTO ELECTRICAL EQUIPMENT SHALL BE INSTALLED ALONG BOTTOM OF EACH ENCLOSURE.

30' HIGH ALUMINUM MAST
8 FOOT SECTIONS OF ALUMINUM TUBING.
SIZED 2", 1.75", AND 1.5" OD. WITH
1/4" WALL THICKNESS



ELEVATION VIEW

PROVIDE SHOP DRAWINGS FROM A FLORIDA REGISTERED PROFESSIONAL ENGINEER CERTIFYING THAT THE ALUMINUM POST FOUNDATION AND RACK MEET CURRENT FLORIDA BUILDING CODE AND WIND LOAD REQUIREMENTS.

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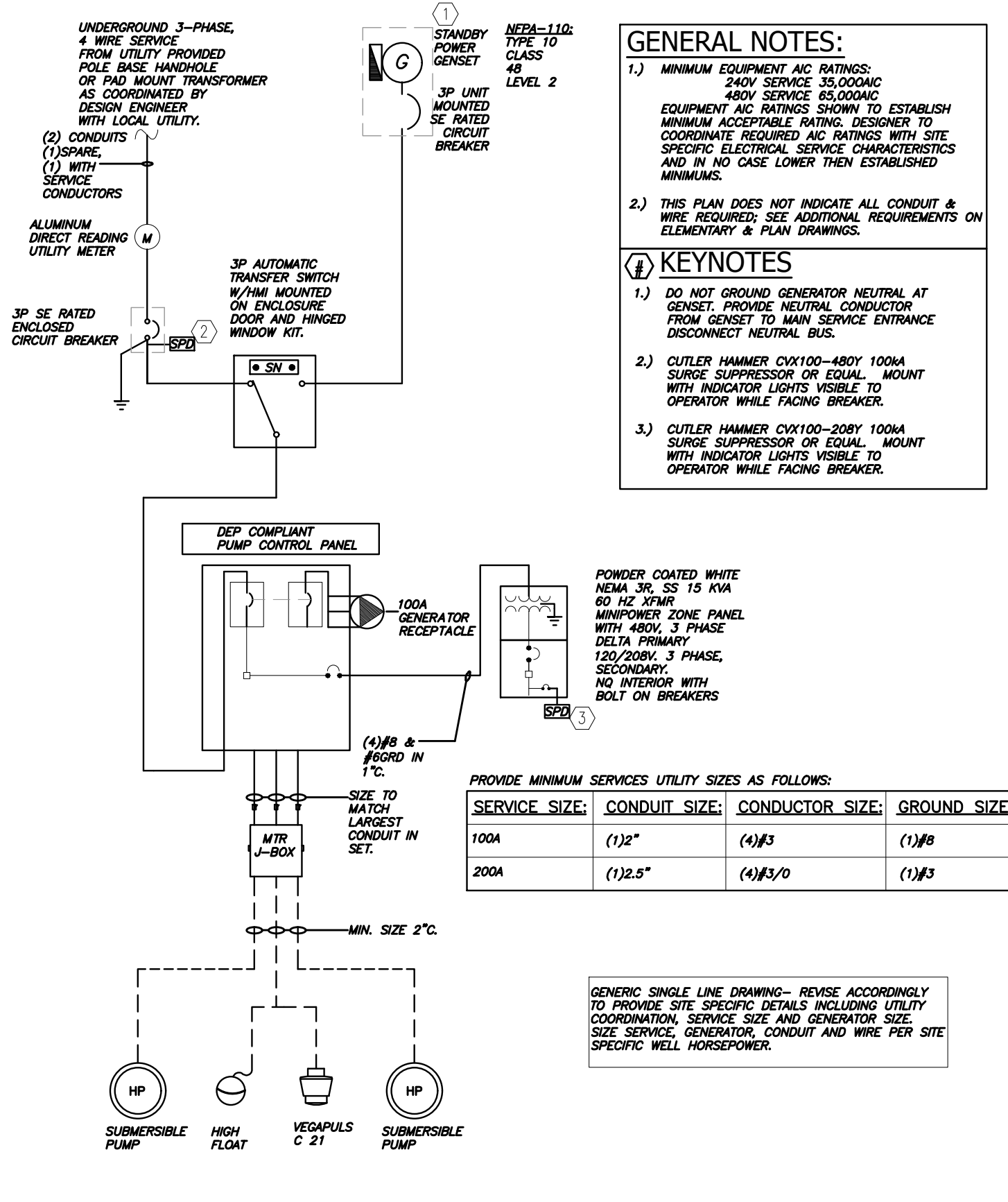
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LEE COUNTY UTILITIES WASTEWATER PUMP STATION STANDARDS
STANDARD 480V-3Ø (0-30HP) DUPLEX PUMP STATION W/ GENERATOR ELECTRICAL EQUIPMENT RACK ELEVATION

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GENERAL NOTES:

- 1.) MINIMUM EQUIPMENT AIC RATINGS:
240V SERVICE 35,000AIC
480V SERVICE 65,000AIC
EQUIPMENT AIC RATINGS SHOWN TO ESTABLISH MINIMUM ACCEPTABLE RATING. DESIGNER TO COORDINATE REQUIRED AIC RATINGS WITH SITE SPECIFIC ELECTRICAL SERVICE CHARACTERISTICS AND IN NO CASE LOWER THEN ESTABLISHED MINIMUMS.
- 2.) THIS PLAN DOES NOT INDICATE ALL CONDUIT & WIRE REQUIRED; SEE ADDITIONAL REQUIREMENTS ON ELEMENTARY & PLAN DRAWINGS.

KEYNOTES

- 1.) DO NOT GROUND GENERATOR NEUTRAL AT GENSET. PROVIDE NEUTRAL CONDUCTOR FROM GENSET TO MAIN SERVICE ENTRANCE DISCONNECT NEUTRAL BUS.
- 2.) CUTLER HAMMER CVX100-480Y 100kA SURGE SUPPRESSOR OR EQUAL. MOUNT WITH INDICATOR LIGHTS VISIBLE TO OPERATOR WHILE FACING BREAKER.
- 3.) CUTLER HAMMER CVX100-208Y 100kA SURGE SUPPRESSOR OR EQUAL. MOUNT WITH INDICATOR LIGHTS VISIBLE TO OPERATOR WHILE FACING BREAKER.

PROVIDE MINIMUM SERVICES UTILITY SIZES AS FOLLOWS:

SERVICE SIZE:	CONDUIT SIZE:	CONDUCTOR SIZE:	GROUND SIZE:
100A	(1)2"	(4)#3	(1)#8
200A	(1)2.5"	(4)#3/0	(1)#3

GENERIC SINGLE LINE DRAWING- REVISE ACCORDINGLY TO PROVIDE SITE SPECIFIC DETAILS INCLUDING UTILITY COORDINATION, SERVICE SIZE AND GENERATOR SIZE. SIZE SERVICE, GENERATOR, CONDUIT AND WIRE PER SITE SPECIFIC WELL HORSEPOWER.

ELECTRICAL RISER DIAGRAM (480/277V 3-PHASE)
N.T.S.

PANEL: MPZ 15KVA POWER ZONE, MCB:INCLUDED VOLTAGE: 480V/208/120V,3P,4W

MOUNTING: WALL POLES: 18 25,000AIC MIN

LOCATION: EQUIPMENT RACK NEMA 3R SS ENCLOSURE

CIR. NO.	DESCRIPTION	TRIP	POLES	REMARKS
1	GENERATOR BATTERY CHARGER	20	1	
2	GENERATOR STRIP HEATER	20	1	
3	GENERATOR WATER HEATER	20	1	
4	DATA COLLECTOR HUB (AMI)	20	1	
5	SPARE	20	1	
6	SPARE	20	1	
7	SPARE	20	1	
8	SPARE	20	1	
9-17	SPACE	-	1	
10-12	SPACE	-	1	
14,16,18	SURGE SUPPRESSION	30	1	

PROVIDE PANEL WITH 35KAIC RATING.
PROVIDE PANEL WITH EXTERNAL CUTLER HAMMER CVX100 SERIES SPD

PANEL SCHEDULE
N.T.S.

K:\LCU Wastewater PS Standards Update\Duplex W Gen\480V_3PH W GEN\E-7.dwg Plotted: Apr 14, 2026 - 11:35am by fernando

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ELECTRICAL * INSTRUMENTATION * CONTROL
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239.481.6775 | Certificate of Authorization #8212

FERNANDO E. FUENTES JR. P.E. #86514

REV	DATE	DESCRIPTION	BY

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CAD FILE: E-7.dwg



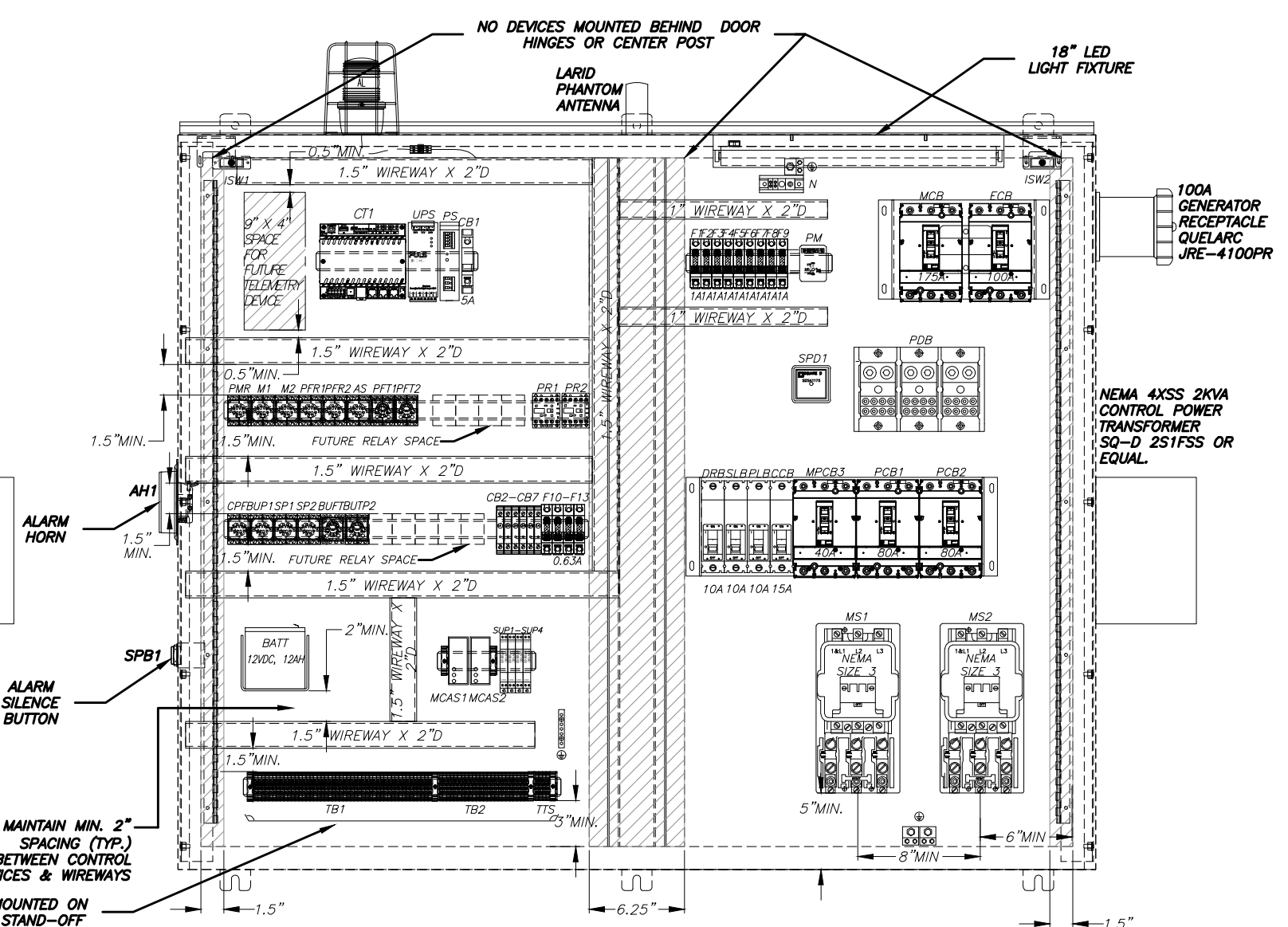
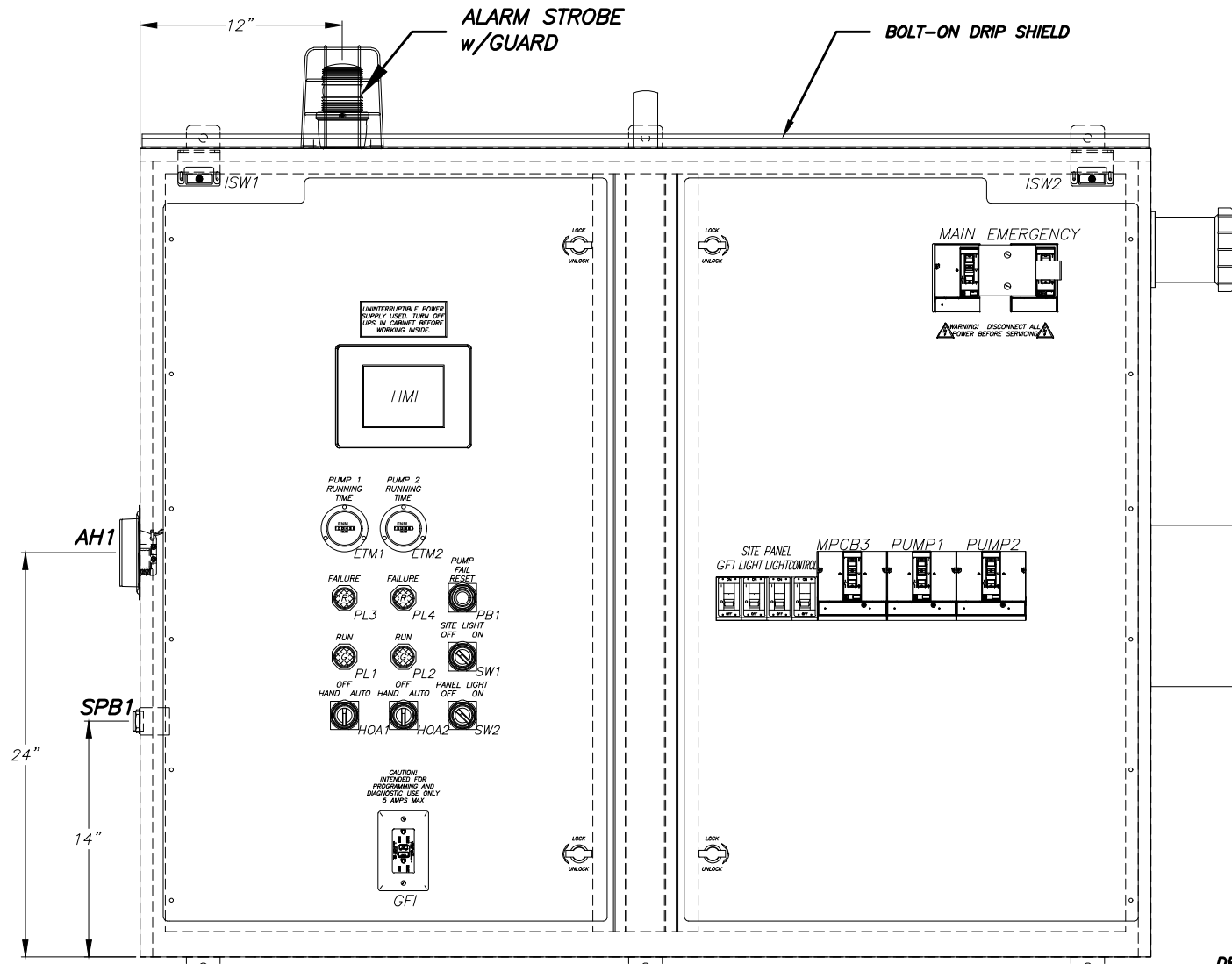
LEE COUNTY UTILITIES WASTEWATER PUMP STATION STANDARDS

STANDARD 480V-3Ø (0-30HP) DUPLEX PUMP STATION W/ GENERATOR ELECTRICAL RISER DIAGRAM & PANEL SCHEDULE

ISSUED FOR: RECORD
DATE: 04/2026
SHEET NO. : E-7

CONTROL WIRE COLOR CODE:

FUNCTION DESCRIPTION	WIRE COLOR	FUNCTION DESCRIPTION	WIRE COLOR	FUNCTION DESCRIPTION	WIRE COLOR	FUNCTION DESCRIPTION	WIRE COLOR	FUNCTION DESCRIPTION	WIRE COLOR
120VAC FEED	BLACK	H-O-A 1 SCADA	BROWN	PUMP 2 RUN SCADA	ORANGE/BLACK	PUMP 3 FAIL SCADA	BLUE/RED	START PUMP 3	BLACK/BLUE
120VAC LOAD	RED	H-O-A 1 COMMON SCADA	BROWN	PUMP 2 RUN COMMON SCADA	ORANGE/BLACK	PUMP 3 FAIL COMMON SCADA	BLUE/RED	START PUMP 3 COMMON	BLACK/BLUE
120VAC NEUTRAL	WHITE	H-O-A 2 SCADA	RED/BLACK	PUMP 3 RUN SCADA	YELLOW/BLACK	CONTROL POWER FAIL SCADA	YELLOW/RED	ALARM RESET	RED/BLUE
PHASE MONITOR FAIL	BLUE	H-O-A 2 COMMON SCADA	RED/BLACK	PUMP 3 RUN COMMON SCADA	YELLOW/BLACK	CONTROL POWER FAIL SCADA COMMON	YELLOW/RED	ALARM RESET COMMON	RED/BLUE
PHASE MONITOR COMMON	BLUE	H-O-A 3 SCADA	YELLOW	PUMP 1 RUN SCADA	BROWN/BLACK	START PUMP 1	ORANGE/RED	ALARM LIGHT HORN	ORANGE/BLUE
24VDC POSITIVE (+)	BLUE	H-O-A 3 COMMON SCADA	YELLOW	PUMP 1 FAIL COMMON SCADA	BROWN/BLACK	START PUMP 1 COMMON	ORANGE/RED	ALARM LIGHT HORN COMMON	ORANGE/BLUE
24VDC NEGATIVE (-)	WHITE/BLUE	PUMP 1 RUN SCADA	BLUE/BLACK	PUMP 2 FAIL SCADA	BLACK/RED	START PUMP 2	BROWN/RED	SCADA HIGH LEVEL FLOAT	YELLOW/BLUE
GROUND	GREEN	PUMP 1 RUN COMMON SCADA	BLUE/BLACK	PUMP 2 FAIL COMMON SCADA	BLACK/RED	START PUMP 2 COMMON	BROWN/RED	SCADA HIGH LEVEL FLOAT COMMON	YELLOW/BLUE



ENCLOSURE:
MIN. SPN4DSS-486016 (48"H x 60"W x 16"D) NEMA 4X RATED, WITH BOLT-ON DRIP SHIELD AND REMOVABLE CENTER POST. FABRICATED FROM TYPE 304 STAINLESS STEEL, WITH POWDER COATED WHITE FINISH. OUTER DOORS HAVE 3-POINT PAD-LOCKABLE HANDLES, AND 90° STOPS.

BACK PANEL:
SPPD-6048 (45"H x 57"W) FABRICATED FROM 12ga. CARBON STEEL PAINTED WHITE.

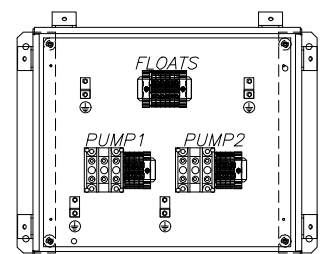
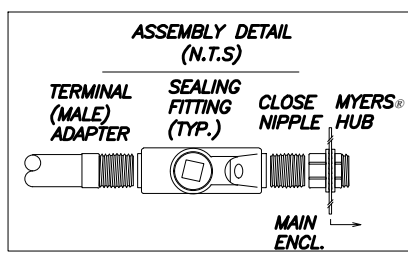
INNER DOOR:
(2) HID-4830 FABRICATED FROM .125 BLACK ENGRAVED ALUMINUM.

INNER DOOR LAYOUT
(OUTER DOOR REMOVED FOR CLARITY)

BACK PANEL LAYOUT

NOTES:

- TERMINAL ON CONTROL CIRCUIT TERMINAL STRIP
- TERMINAL ON POWER DISTRIBUTION BLOCK
- NEUTRAL AND GROUND LUGS
- FIELD WIRING (EXTERNAL TO CONTROL PANEL)
- PANEL WIRING
- SEAL ALL CONDUITS ENTERING CONTROL PANEL
- CONTROL PANEL IS UL508A LABELED
- INSTALL IN ACCORDANCE WITH ARTICLE 504 OF THE N.E.C.
- MINIMUM #14 AWG WIRE AT 600V
- MAINTAIN MIN. 2" SPACE BETWEEN CONTROL DEVICES & WIREWAYS
- MAINTAIN MAX. 6" EXTRA LENGTH ON CONTROL WIRES



JUNCTION BOX ENCLOSURE:
SPJH4SS-1412B (14"H x 12"W x 8"D) NEMA 4X RATED, JIC TYPE, FABRICATED FROM TYPE 304 STAINLESS STEEL, POLISHED FINISH. OUTER DOOR HAS JIC CLAMPS.

BACK PANEL:
SPPJ-1412 (12.88"H x 10.88"W) FABRICATED FROM 12ga. CARBON STEEL PAINTED WHITE.

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CHECKED BY: F.E.F.JR.
CAD FILE: E-8.dwg

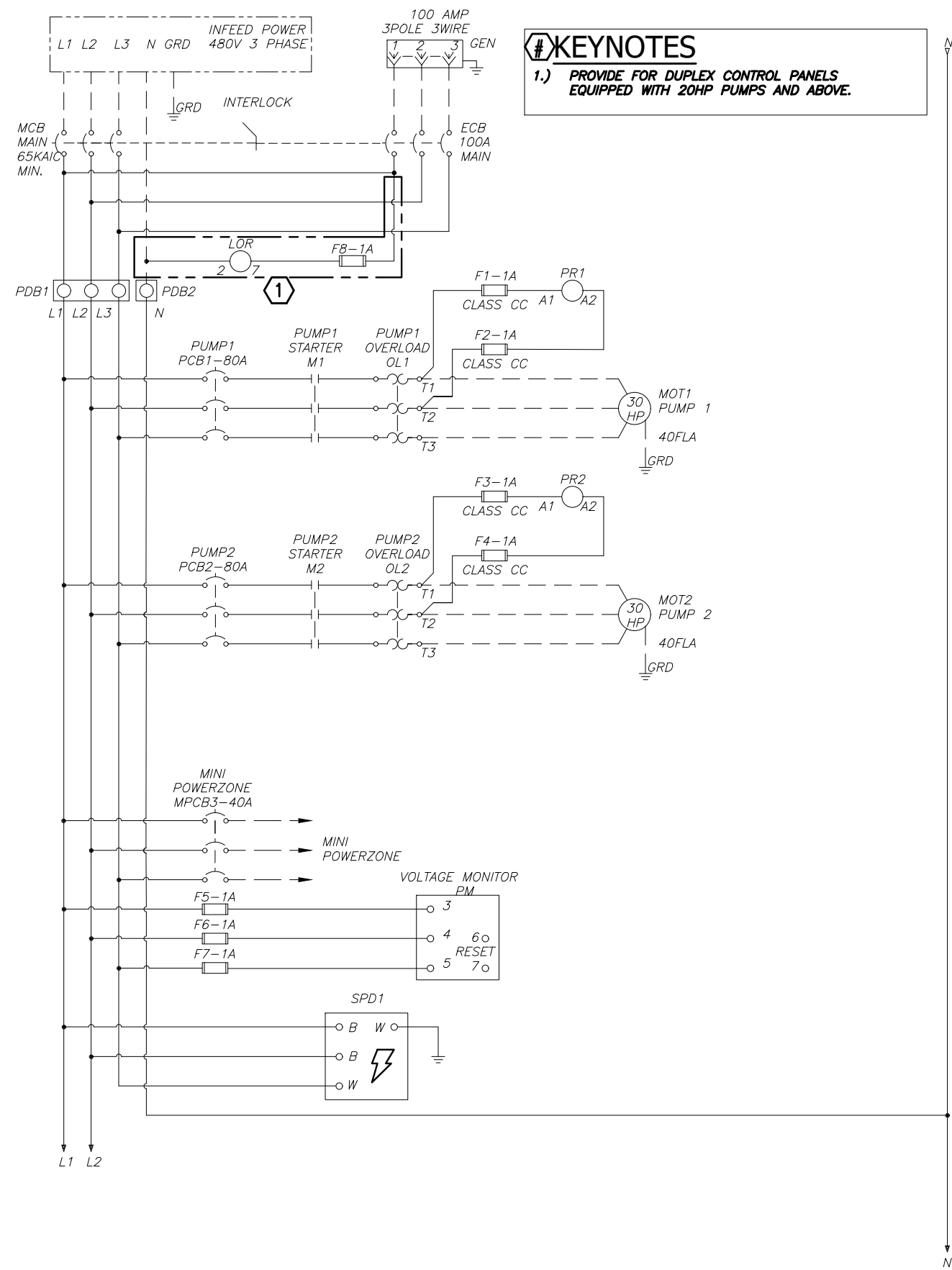


LEE COUNTY UTILITIES WASTEWATER PUMP STATION STANDARDS
STANDARD 480V-3Ø (0-30HP) DUPLEX PUMP STATION W/ GENERATOR CONTROL PANEL ELEVATION

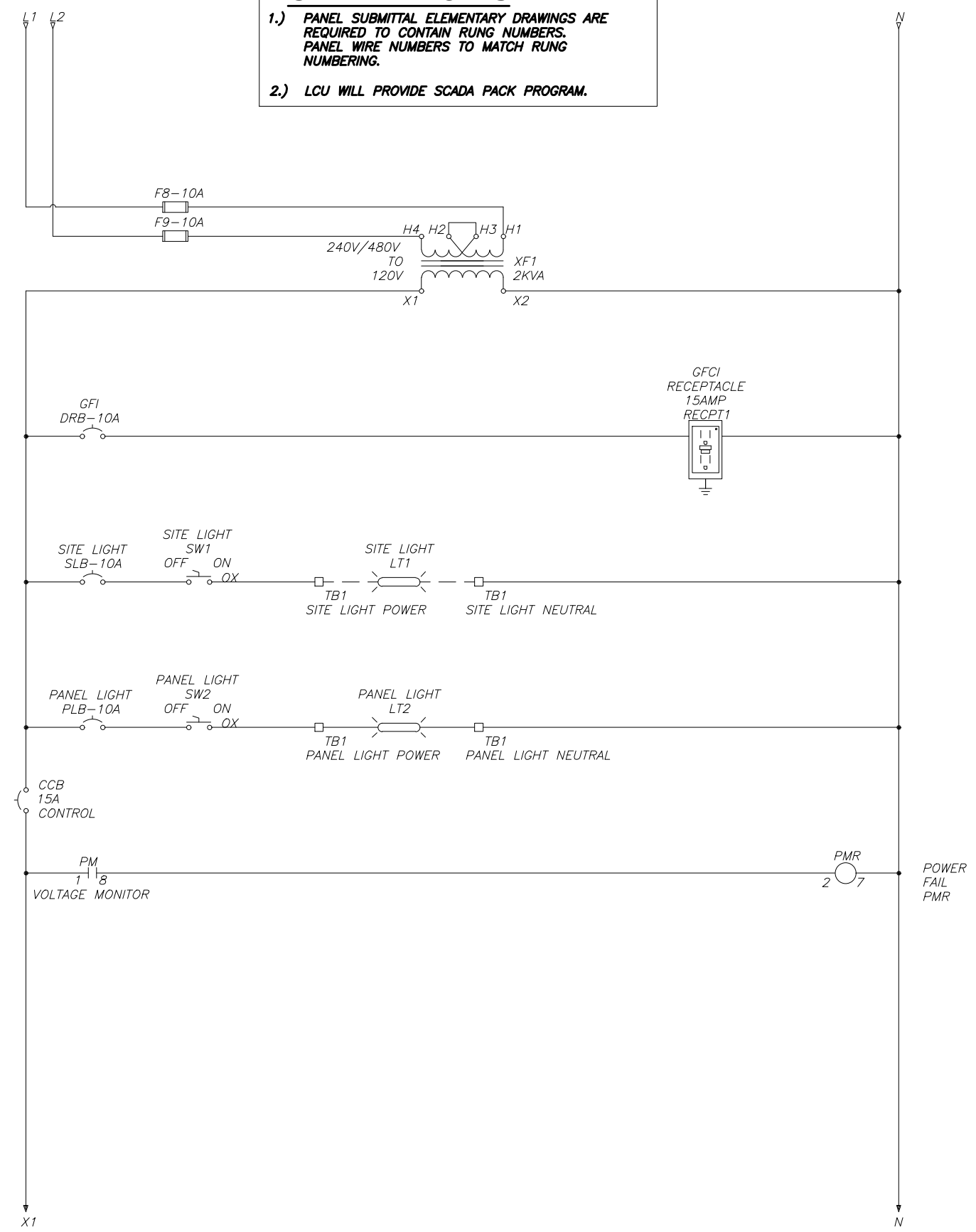
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RECORD
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SHEET NO.: E-8

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K:\LCU Wastewater PS Standards Update\Duplex W Gen\480V_3PH W GEN\E-9.dwg Plotted: Apr 14, 2026 - 11:35am by fernandof



GENERAL NOTES
 1.) PANEL SUBMITTAL ELEMENTARY DRAWINGS ARE REQUIRED TO CONTAIN RUNG NUMBERS. PANEL WIRE NUMBERS TO MATCH RUNG NUMBERING.
 2.) LCU WILL PROVIDE SCADA PACK PROGRAM.



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 CAD FILE: E-9.dwg

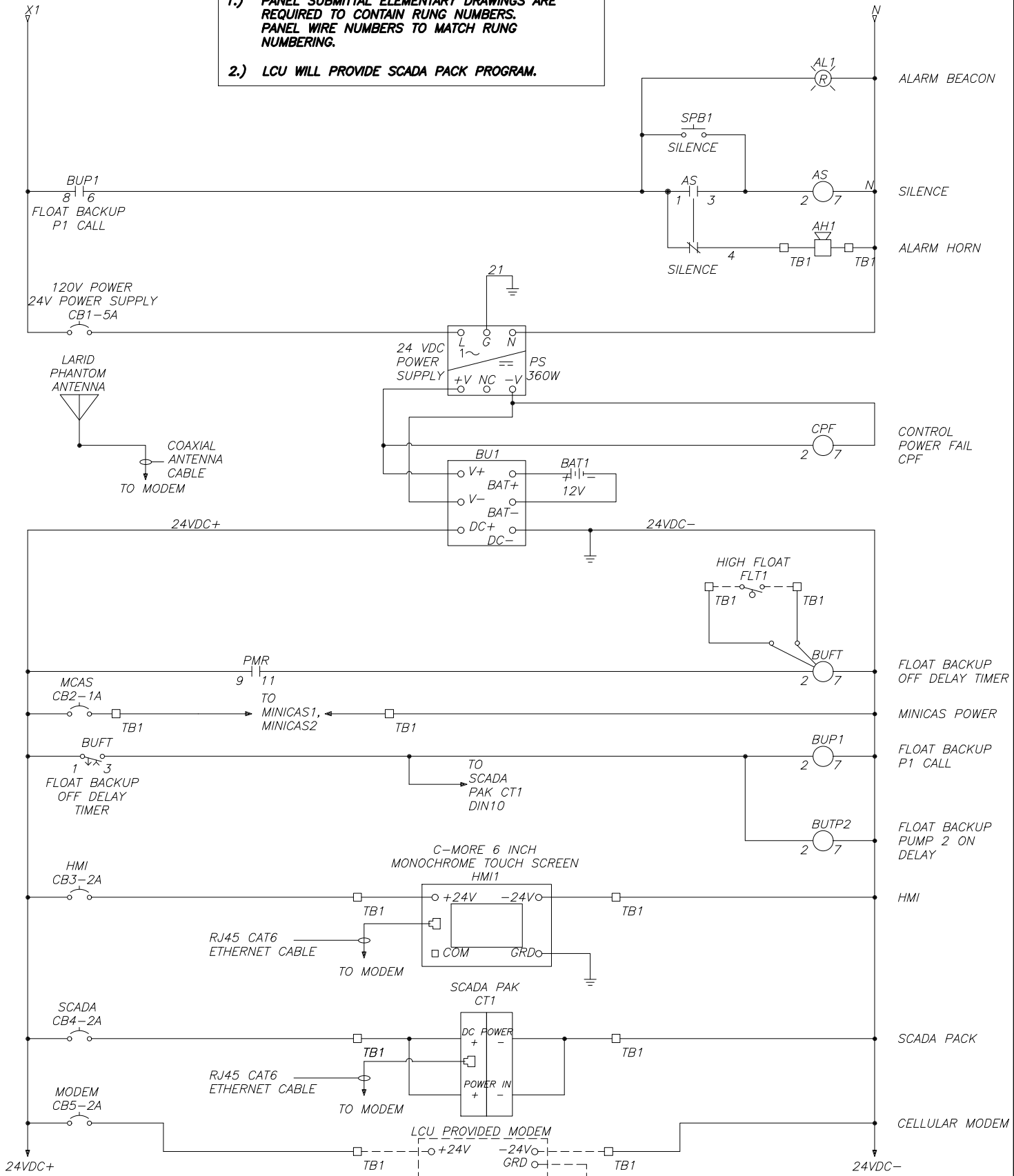
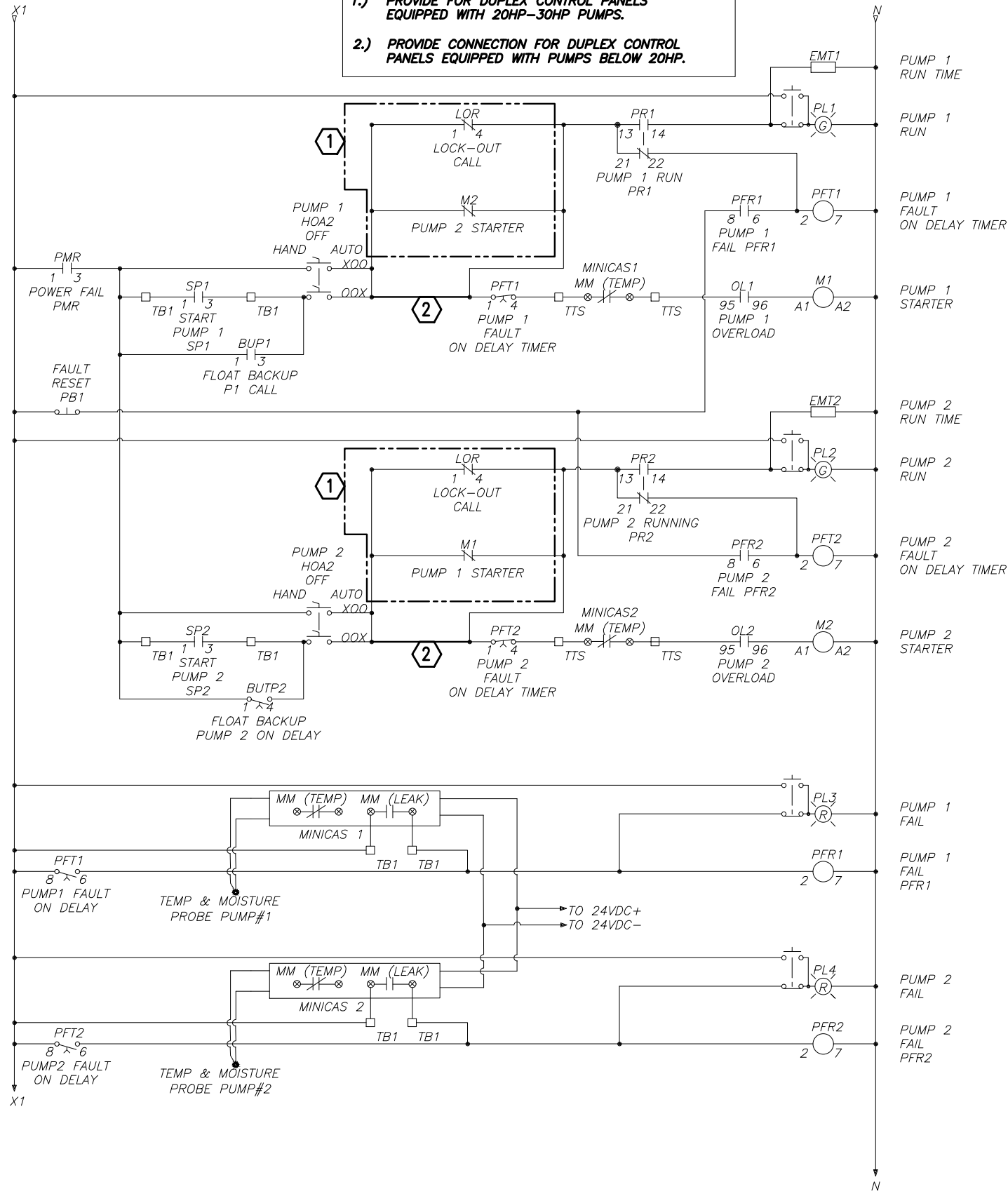


LEE COUNTY UTILITIES WASTEWATER PUMP STATION STANDARDS
 STANDARD 480V-3Ø (0-30HP) DUPLEX PUMP STATION W/ GENERATOR CONTROL PANEL ELEMENTARY

ISSUED FOR:
RECORD
 DATE: **04/2026**
 SHEET NO.: **E-9**

- KEYNOTES**
- 1.) PROVIDE FOR DUPLEX CONTROL PANELS EQUIPPED WITH 20HP-30HP PUMPS.
 - 2.) PROVIDE CONNECTION FOR DUPLEX CONTROL PANELS EQUIPPED WITH PUMPS BELOW 20HP.

- GENERAL NOTES**
- 1.) PANEL SUBMITTAL ELEMENTARY DRAWINGS ARE REQUIRED TO CONTAIN RUNG NUMBERS. PANEL WIRE NUMBERS TO MATCH RUNG NUMBERING.
 - 2.) LCU WILL PROVIDE SCADA PACK PROGRAM.



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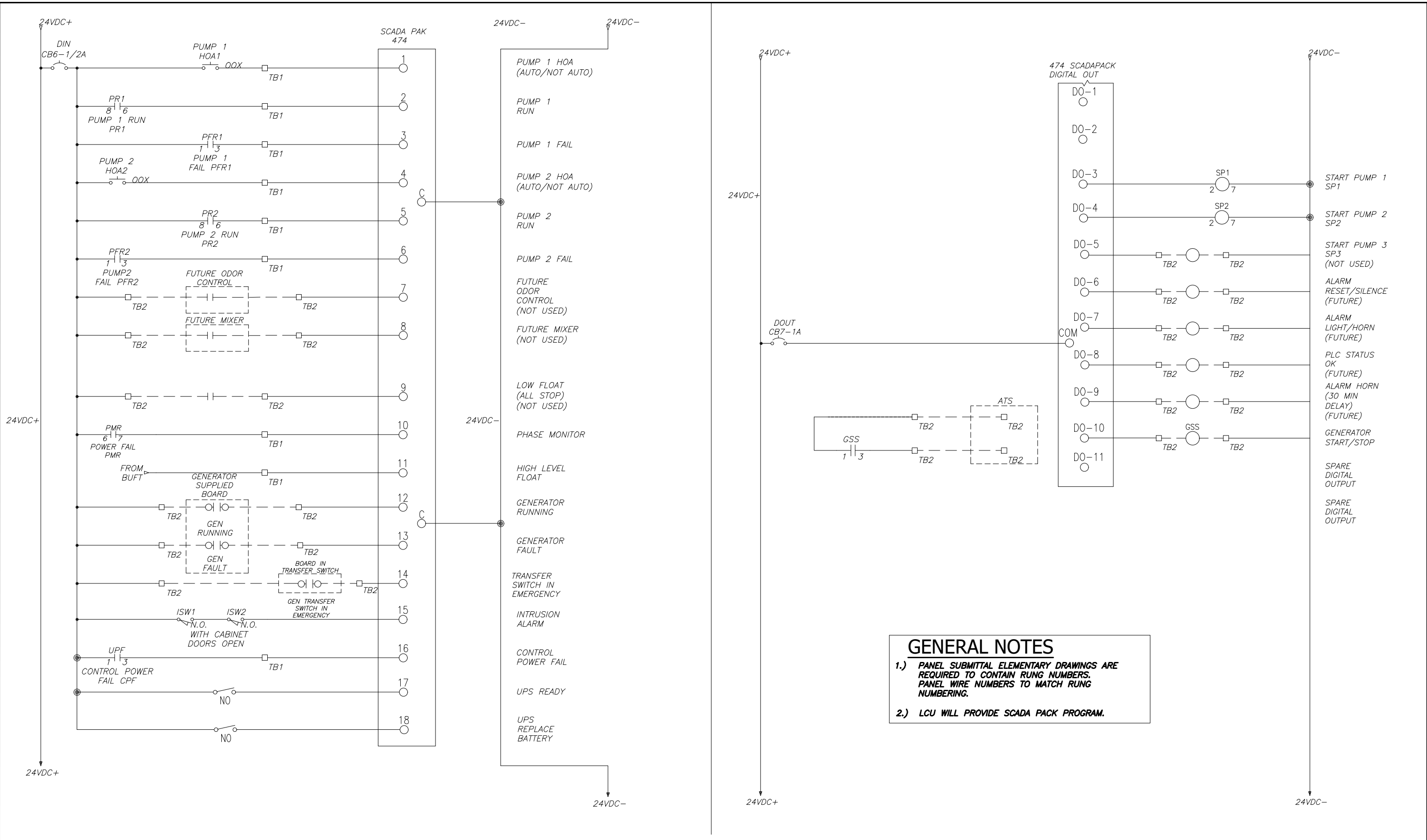
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 SHEET NO.: **E-10**

LEE COUNTY UTILITIES WASTEWATER PUMP STATION STANDARDS
 STANDARD 480V-3Ø (0-30HP) DUPLEX PUMP STATION W/ GENERATOR CONTROL PANEL ELEMENTARY



GENERAL NOTES

- 1.) PANEL SUBMITTAL ELEMENTARY DRAWINGS ARE REQUIRED TO CONTAIN RUNG NUMBERS. PANEL WIRE NUMBERS TO MATCH RUNG NUMBERING.
- 2.) LCU WILL PROVIDE SCADA PACK PROGRAM.

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 CAD FILE: E-11.dwg

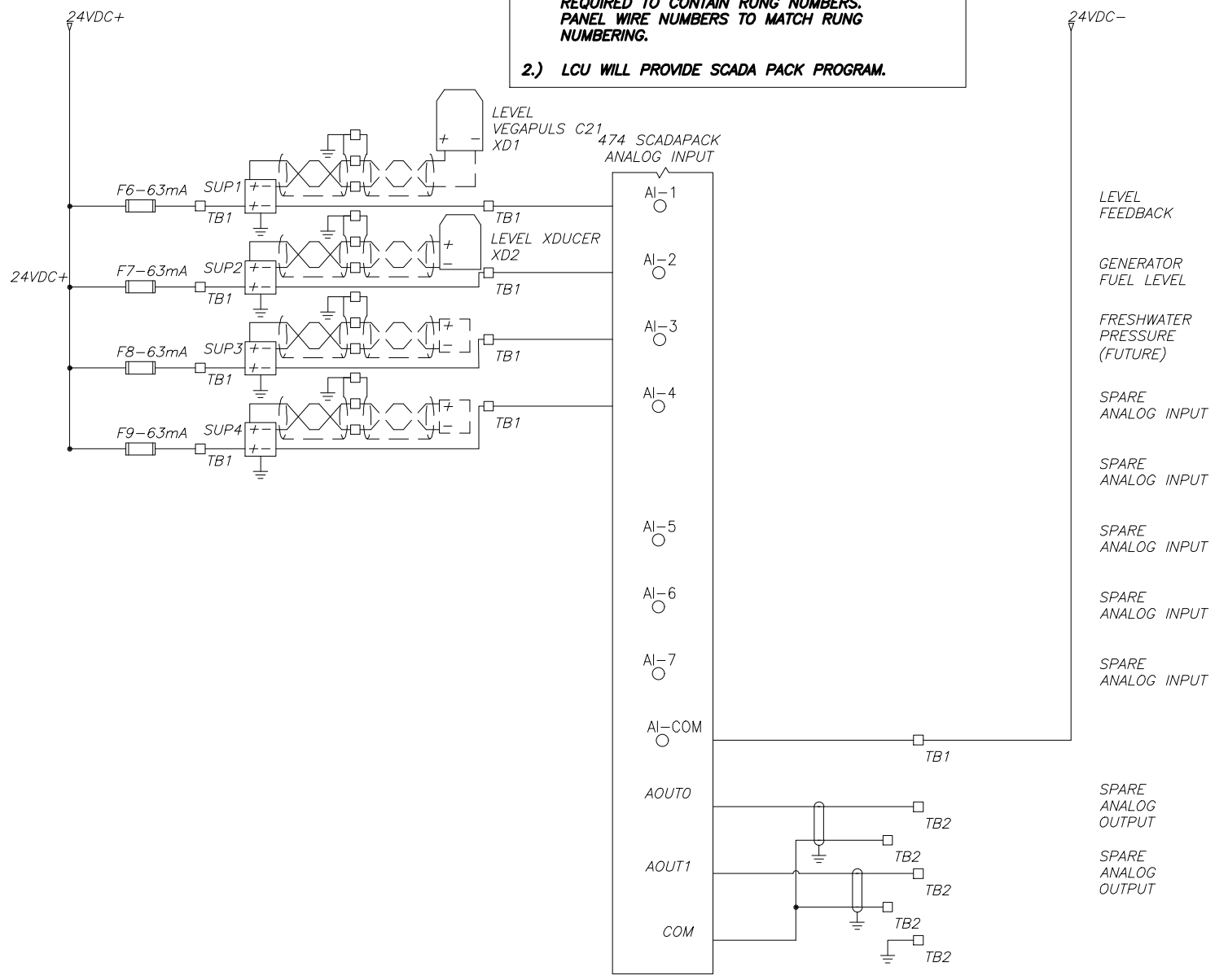


LEE COUNTY UTILITIES WASTEWATER PUMP STATION STANDARDS
 STANDARD 480V-3Ø (0-30HP) DUPLEX PUMP STATION W/ GENERATOR CONTROL PANEL ELEMENTARY

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RECORD
 DATE: **04/2026**
 SHEET NO.: **E-11**

GENERAL NOTES

- 1.) PANEL SUBMITTAL ELEMENTARY DRAWINGS ARE REQUIRED TO CONTAIN RUNG NUMBERS. PANEL WIRE NUMBERS TO MATCH RUNG NUMBERING.
- 2.) LCU WILL PROVIDE SCADA PACK PROGRAM.



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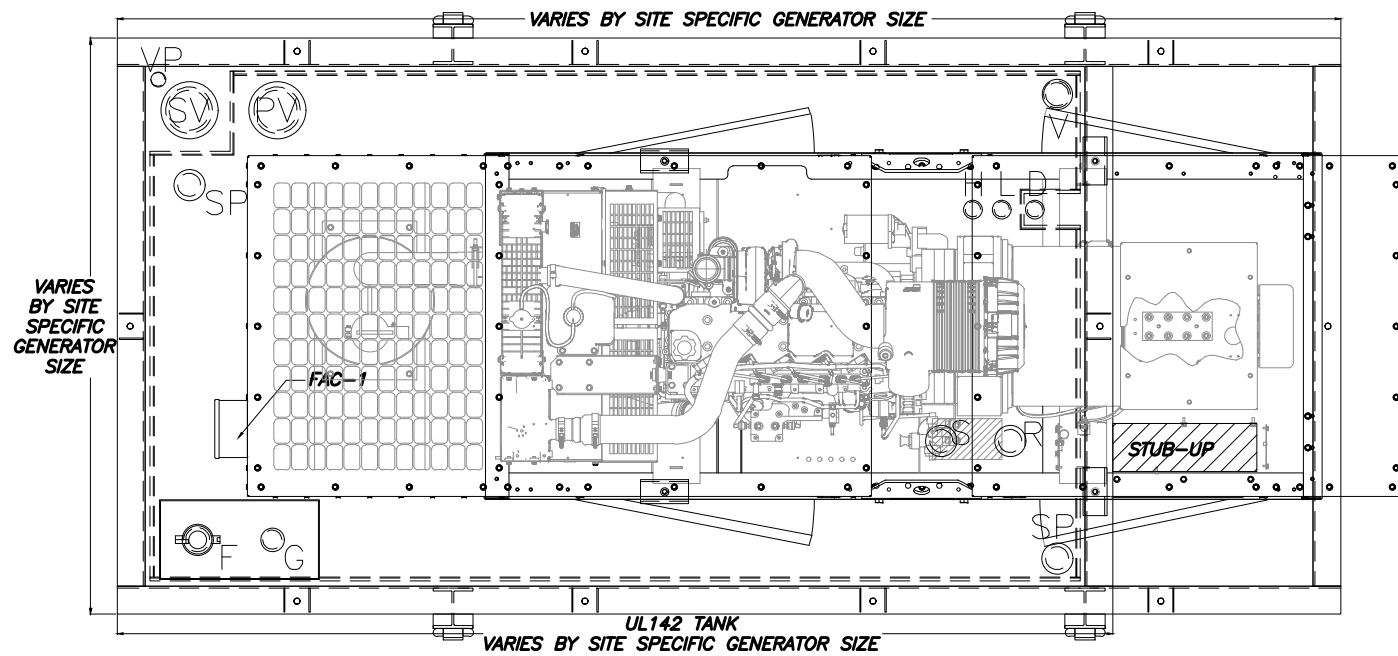
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LEE COUNTY UTILITIES WASTEWATER PUMP STATION STANDARDS

STANDARD 480V-3Ø (0-30HP) DUPLEX PUMP STATION W/GENERATOR CONTROL PANEL ELEMENTARY

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SHEET NO.:	E-12

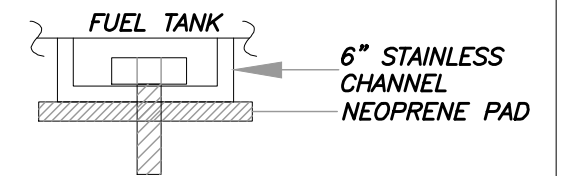


TANK FITTING LEGEND

- F - FUEL FILL
- FP - FUEL FILL PANEL
- G - MECH. FUEL GAUGE
- D - LEAK DETECTOR
- S - FUEL SUPPLY
- R - FUEL RETURN
- V - MAIN VENT
- SV - SECONDARY EMERGENCY VENT
- PV - PRIMARY EMERGENCY VENT
- H - HIGH FUEL LEVEL SENSOR
- L - LOW FUEL LEVEL SENSOR
- SP - SPARE
- VP - SECONDARY VACUUM PORT
- SS - 4-20ma ULTRASONIC SENSOR

GENERAL SHEET NOTES

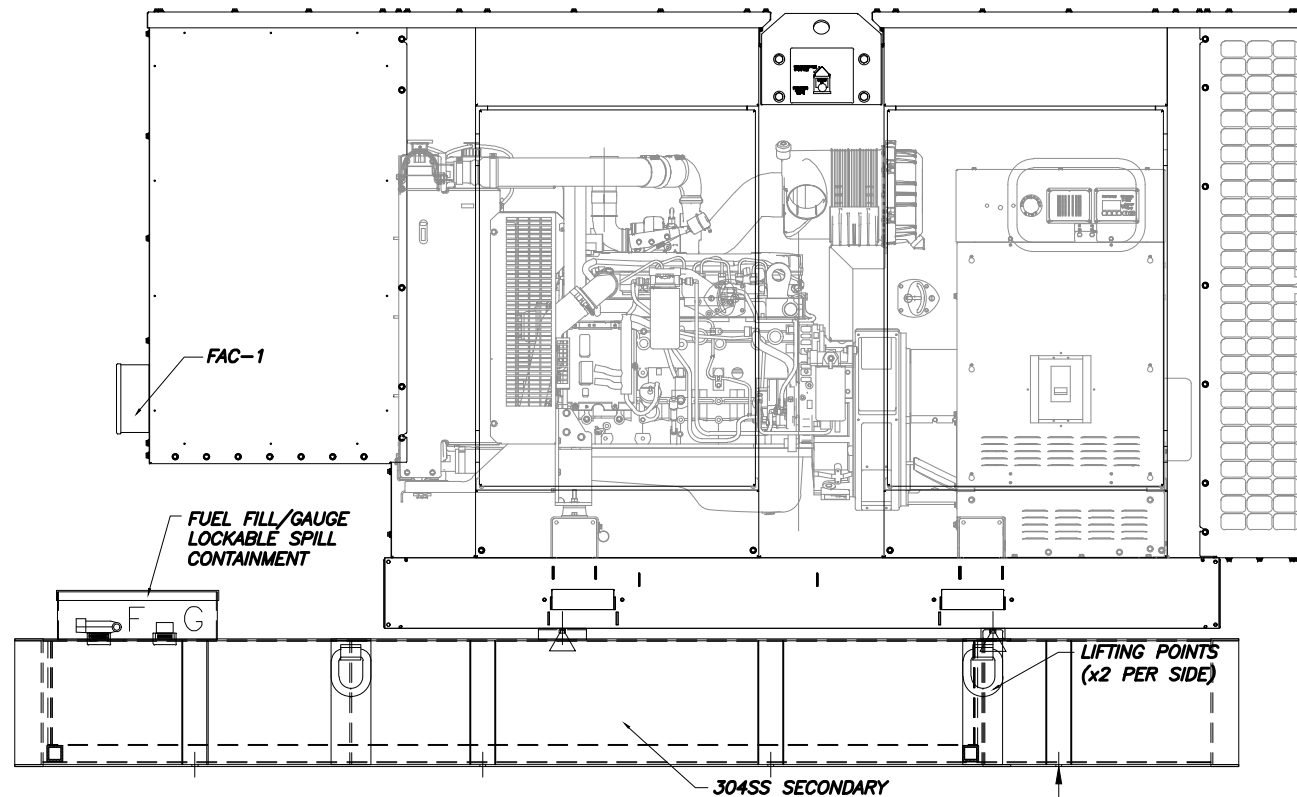
- 1.) ALL FITTINGS TO BE S.S. THREADED PIPE. (UNLESS OTHERWISE NOTED)
- 2.) EXTERIOR FINISH: COMM. WHITE METAL SANDBLAST, 12 TO 15 MIL INTERMEDIATE GLASS FLAKE EPOXY COAT & 2 TO 3 MIL POLYURETHANE TOP COAT
- 3.) TANK SHALL BE PROVIDED WITH 6" WIDE X 3/8" THICK; FULL LENGTH NEOPRENE PADS FOR EACH TANK SUPPORT FOOT.
- 4.) APPROXIMATE TANK VOLUME: SIZE FOR 48 HOUR FULLY LOADED RUN TIME.
- 5.) TANK CONSTRUCTION: STAINLESS STEEL OUTER SHELL; RATED UL-142 DOUBLE CONTAINMENT
- 6.) ENCLOSURE SOUND ATTENUATION LEVEL: MINIMUM -35DBA



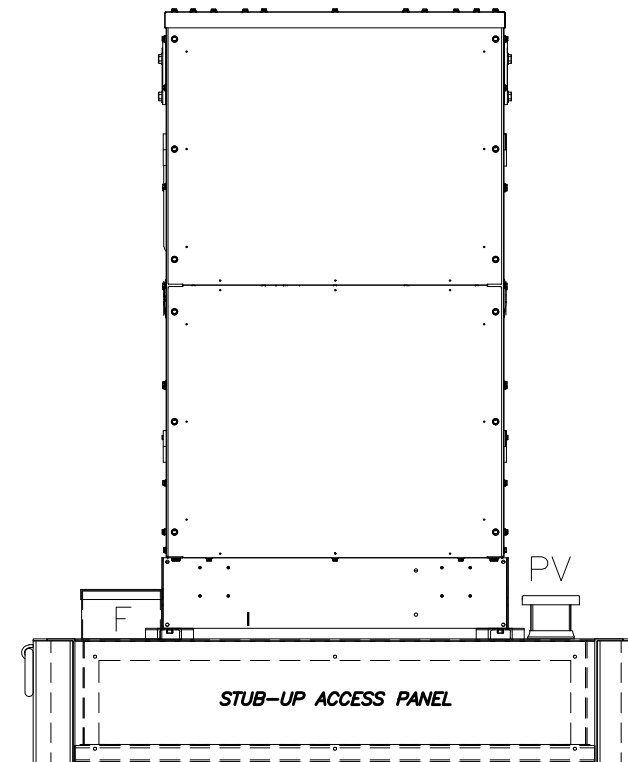
CHANNEL MOUNTING DETAIL

ACOUSTIC RATING: THE ENCLOSURE TO BE LINED WITH ACOUSTIC SOUND FOAM TO ACHIEVE 55 dbA @ 21 FT.

NOTE: WALK-IN ENCLOSURE MAY BE REQUIRED DEPENDING ON THE UNITS PROXIMITY TO PROPERTY LINE AND RESIDENCIES.



GENERATOR SIDE VIEW



GENERATOR INTAKE END VIEW

6" CHANNEL FEET WITH NEOPRENE PADS

304SS SECONDARY

LIFTING POINTS (x2 PER SIDE)

STUB-UP ACCESS PANEL

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LEE COUNTY UTILITIES WASTEWATER PUMP STATION STANDARDS
 GENERATOR LAYOUT & DETAILS

ISSUED FOR: RECORD
DATE: 04/2026
SHEET NO. : E-13

IDEAL TERMINAL STRIPS #ITB-300 RATED AT 30A. REPLACE ALL SCREWS W/ STAINLESS STEEL SCREWS.

FLOAT CABLE TERMINAL STRIP

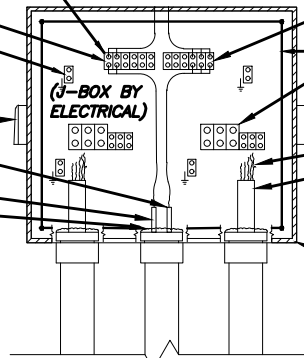
GROUND LUG

STAHLIN REBV4XKIT AIR VENT

LIT CABLES (TYP)

FLOAT CABLES (TYP)

DUCT SEAL AND APPLY THIN LAYER OF CHICCO



LIT CABLE TERMINAL STRIP

ALUMINUM BACK PLATE

PUMP CABLE POWER DISTRIBUTION BLOCKS SQ-D#LBA-361101 (3) BLOCK STRIP PER PUMP

STAHLIN REBV4XKIT AIR VENT

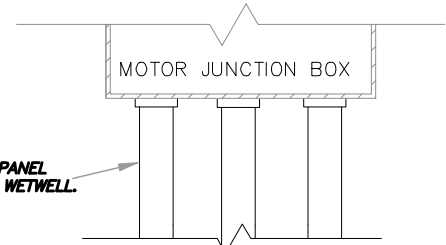
CONDUCTORS TO TERMINAL STRIPS

PUMP CABLE

14"x12"x8"D STAINLESS STEEL J-BOX HINGED AT BOTTOM

(3) 2" CONDUITS TO WETWELL IN FRONT OF CONTROL PANEL CONDUIT

DUPLEX JUNCTION BOX N.T.S.



(3) 2" C. TO CONTROL PANEL BEHIND CONDUITS TO WETWELL.

2" CONDUITS TO CONTROL PANEL

DUPLEX JUNCTION BOX AND TERMINAL STRIP INSTALLATION DETAIL N.T.S.

IDEAL TERMINAL STRIPS #ITB-300 RATED AT 30A. REPLACE ALL SCREWS W/ STAINLESS STEEL SCREWS.

FLOAT CABLE TERMINAL STRIP

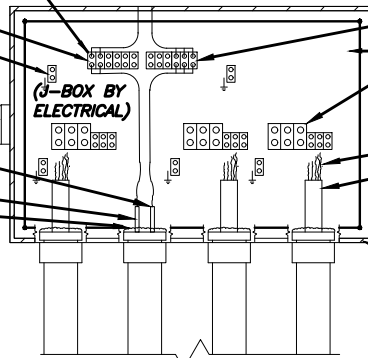
GROUND LUG

STAHLIN REBV4XKIT AIR VENT

LIT CABLES (TYP)

FLOAT CABLES (TYP)

DUCT SEAL AND APPLY THIN LAYER OF CHICCO



LIT CABLE TERMINAL STRIP

ALUMINUM BACK PLATE

PUMP CABLE POWER DISTRIBUTION BLOCKS SQ-D#LBA-361101 (3) BLOCK STRIP PER PUMP

STAHLIN REBV4XKIT AIR VENT

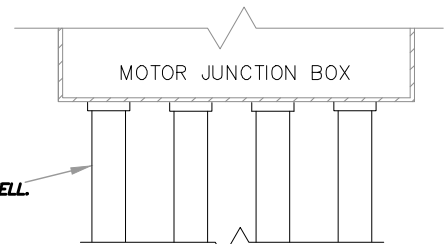
CONDUCTORS TO TERMINAL STRIPS

PUMP CABLE

16"x14"x8"D STAINLESS STEEL J-BOX HINGED AT BOTTOM

2" CONDUITS TO WETWELL.

TRIPLEX JUNCTION BOX N.T.S.



(4) 2" C. TO CONTROL PANEL BEHIND CONDUITS TO WETWELL.

2" CONDUITS TO CONTROL PANEL

TRIPLEX JUNCTION BOX AND TERMINAL STRIP INSTALLATION DETAIL N.T.S.

DATE: APRIL 2026



ELECTRICAL * INSTRUMENTATION * CONTROL DESIGN

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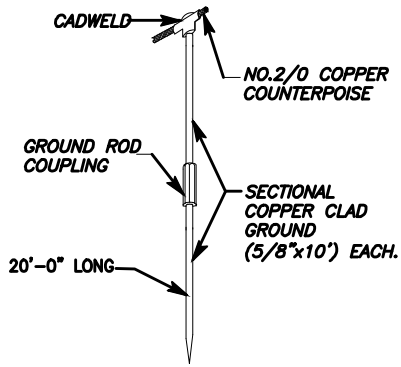
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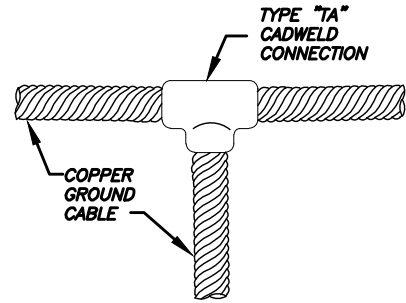
LEE COUNTY UTILITIES WASTEWATER PUMP STATION STANDARD

JUNCTION BOX & TERMINAL STRIP INSTALLATION AT CONTROL PANEL LOCATION

ES-1

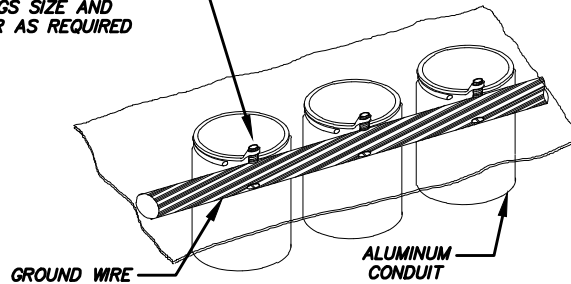


TYPICAL GROUND ROD CONNECTION DETAIL
N.T.S



GROUND CABLE CONNECTION
N.T.S

CONDUIT SHALL BE GROUNDED WITH INSULATED GROUNDING BUSHINGS SIZE AND NUMBER AS REQUIRED



PANEL CONDUIT GROUNDING DETAIL
N.T.S

DATE: APRIL 2026

LEE COUNTY UTILITIES WASTEWATER
 PUMP STATION STANDARD

GROUNDING DETAILS

ES-2



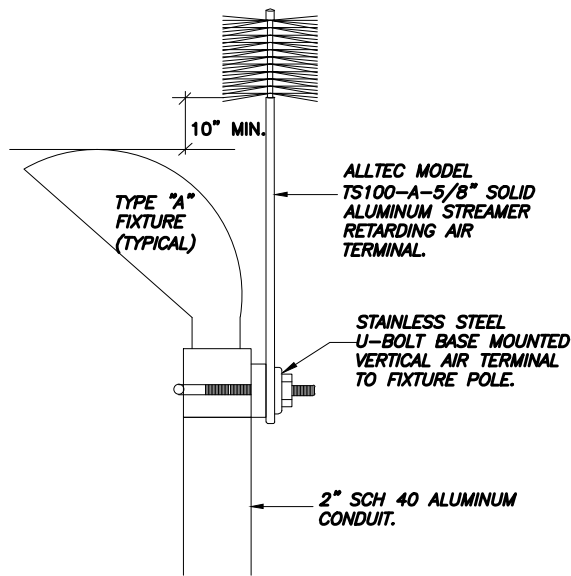
ELECTRICAL*INSTRUMENTATION*CONTROL DESIGN

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FERNANDO E. FUENTES JR. P.E. #886514





DATE: APRIL 2026

LEE COUNTY UTILITIES WASTEWATER
PUMP STATION STANDARD

STREAMER RETARDING AIR
TERMINAL FIXTURE POLE
MOUNTED

ES-3

RIS CONSULTING ENGINEERS

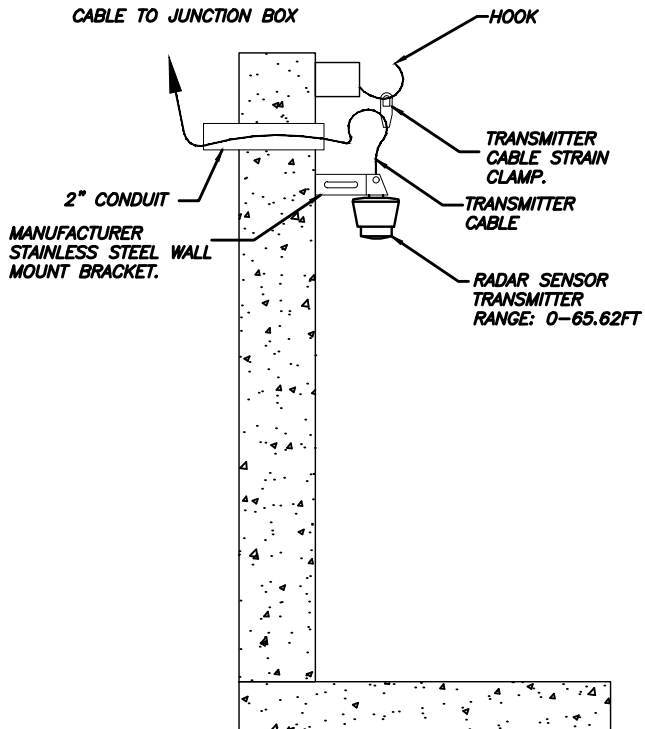
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DATE: APRIL 2026

LEE COUNTY UTILITIES WASTEWATER
PUMP STATION STANDARD

LEVEL TRANSMITTER
DETAIL

ES-4

RIE CONSULTING ENGINEERS

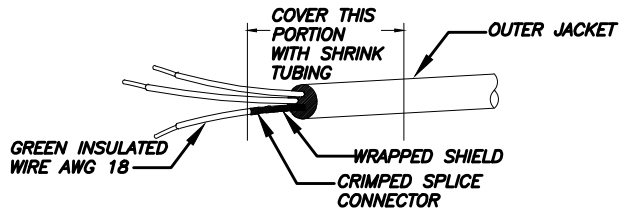
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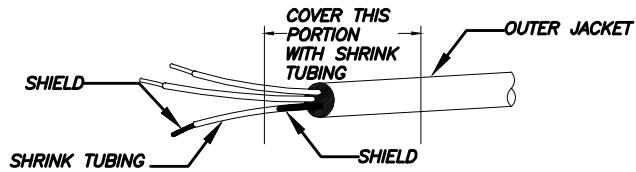
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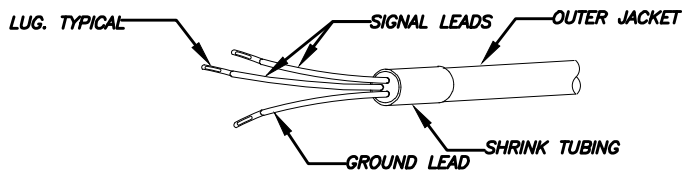




DIGITAL SIGNAL CABLE STRIPPING



ANALOG SIGNAL CABLE STRIPPING



NOTE: SHIELD GROUNDED AT TERMINATION

SIGNAL CABLE SHRINK TUBING

DATE: APRIL 2026

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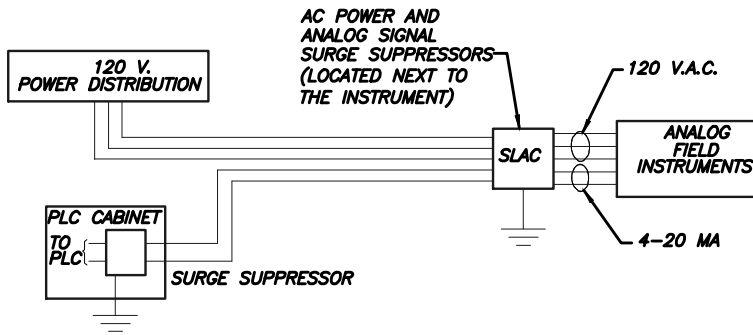
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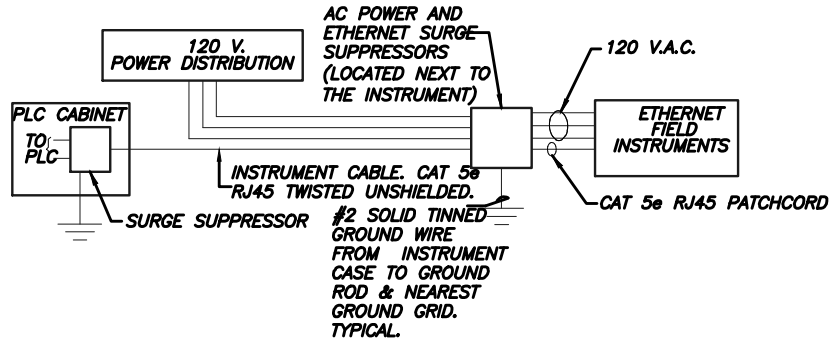
LEE COUNTY UTILITIES WASTEWATER PUMP STATION STANDARD

TERMINATION OF SHIELDED INSTRUMENT CONTROL CABLE DETAIL

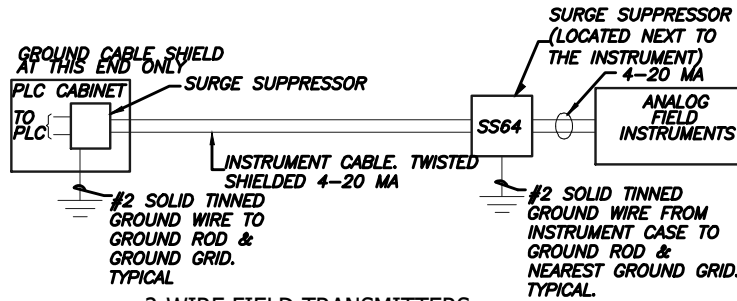
ES-5



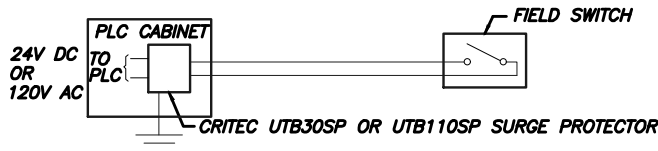
4-WIRE FIELD TRANSMITTERS
N.T.S.



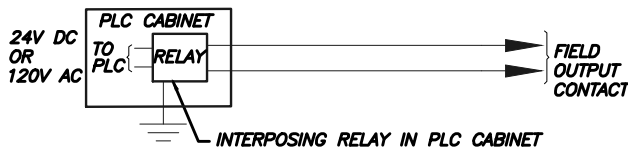
ETHERNET FIELD TRANSMITTERS
N.T.S.



2-WIRE FIELD TRANSMITTERS
N.T.S.



DISCRETE PLC/INPUT CIRCUIT
N.T.S.



DISCRETE PLC/OUTPUT CIRCUIT
N.T.S.

DATE: APRIL 2026



ELECTRICAL*INSTRUMENTATION*CONTROL DESIGN
12651 McGregor Blvd. | Unit 4-402
Fort Myers, FL 33919 | 239.481.6775
Certificate of Authorization #8212

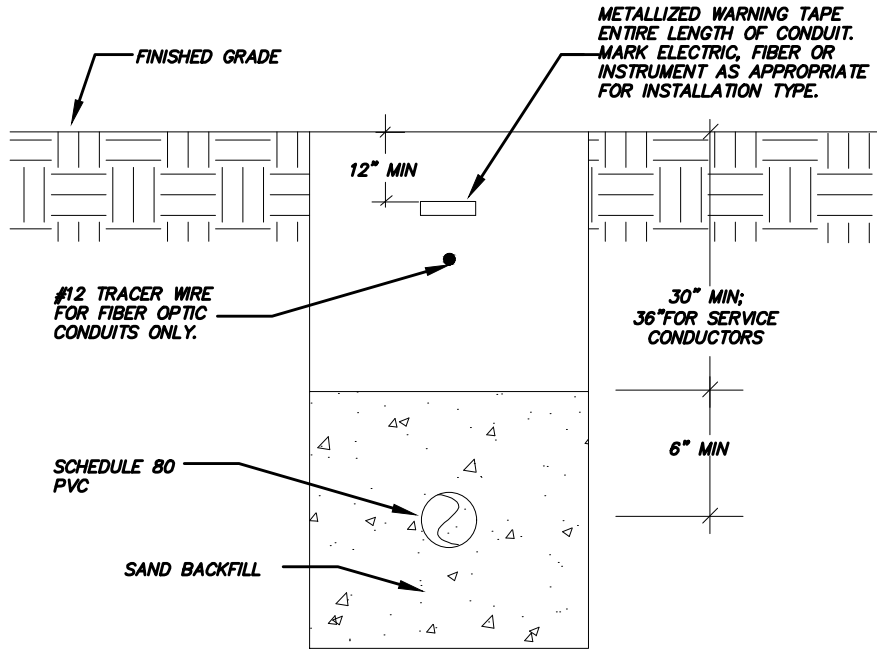


Date: _____
FERNANDO E. FUENTES JR. P.E. #86514

LEE COUNTY UTILITIES WASTEWATER
PUMP STATION STANDARD

INSTRUMENTATION
GROUNDING & SURGE
PROTECTION DETAIL

ES-6



DATE: APRIL 2026

LEE COUNTY UTILITIES WASTEWATER
PUMP STATION STANDARD

UNDERGROUND CONDUIT
INSTALLATION DETAIL

ES-7



ELECTRICAL*INSTRUMENTATION*CONTROL DESIGN

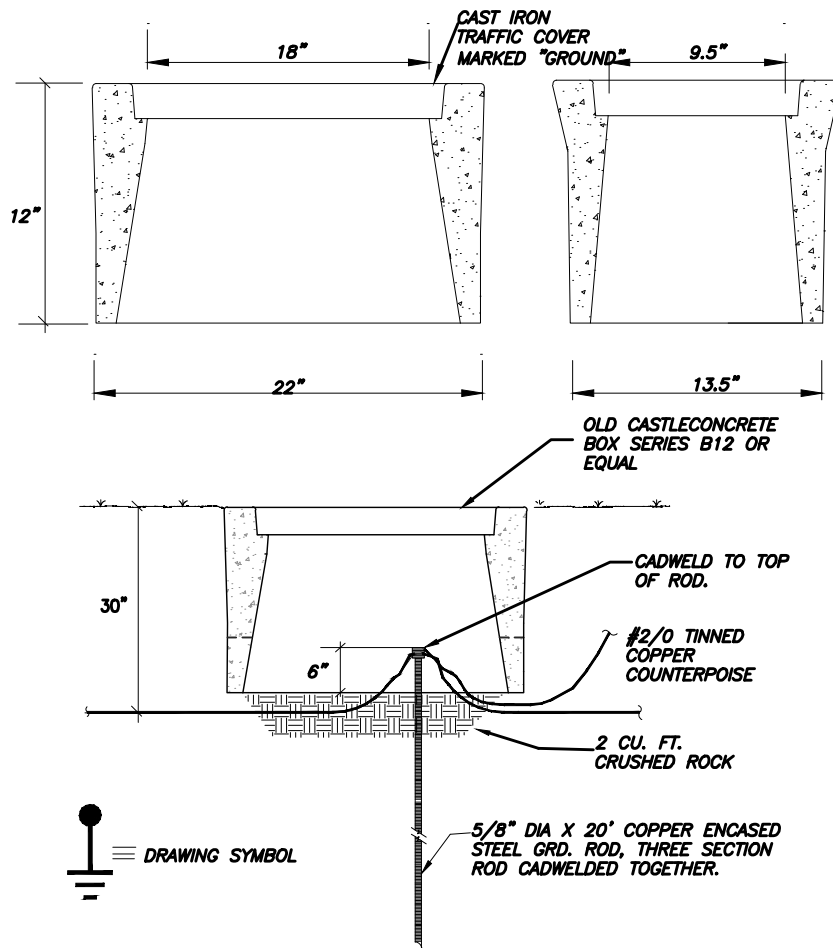
12651 McGregor Blvd. | Unit 4-402
Fort Myers, FL 33919 | 239.481.6775
Certificate of Authorization #8212

Date: _____

FERNANDO E. FUENTES JR. P.E. #886514



K:\LCU Wastewater PS Standards Update\Duplex W Gen\DETAILS\ES-8.dwg Plotted: Apr. 14, 2026 - 11:37am by fernandof



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Date: _____
 FERNANDO E. FUENTES JR. P.E. #86514

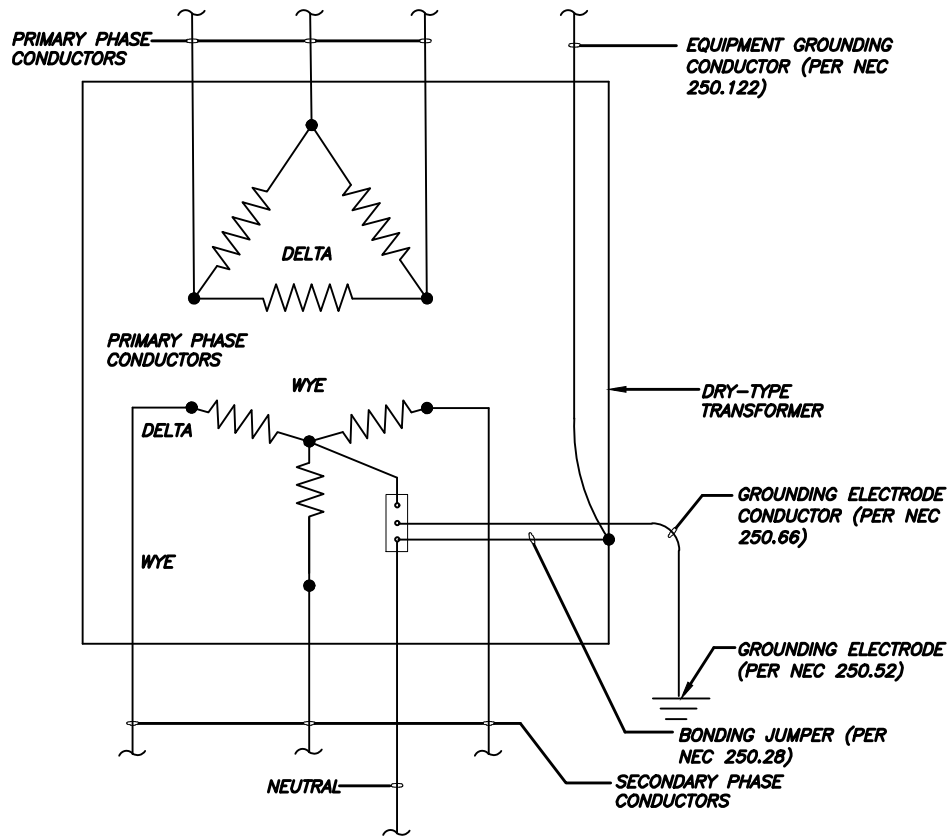


LEE COUNTY UTILITIES WASTEWATER PUMP STATION STANDARD

GROUND ROD INSTALLATION DETAIL

ES-8

K:\LCU Wastewater PS Standards Update\Duplex W Gen\DETAILS\ES-9.dwg Plotted: Apr 14, 2026 - 11:37am by fernandof



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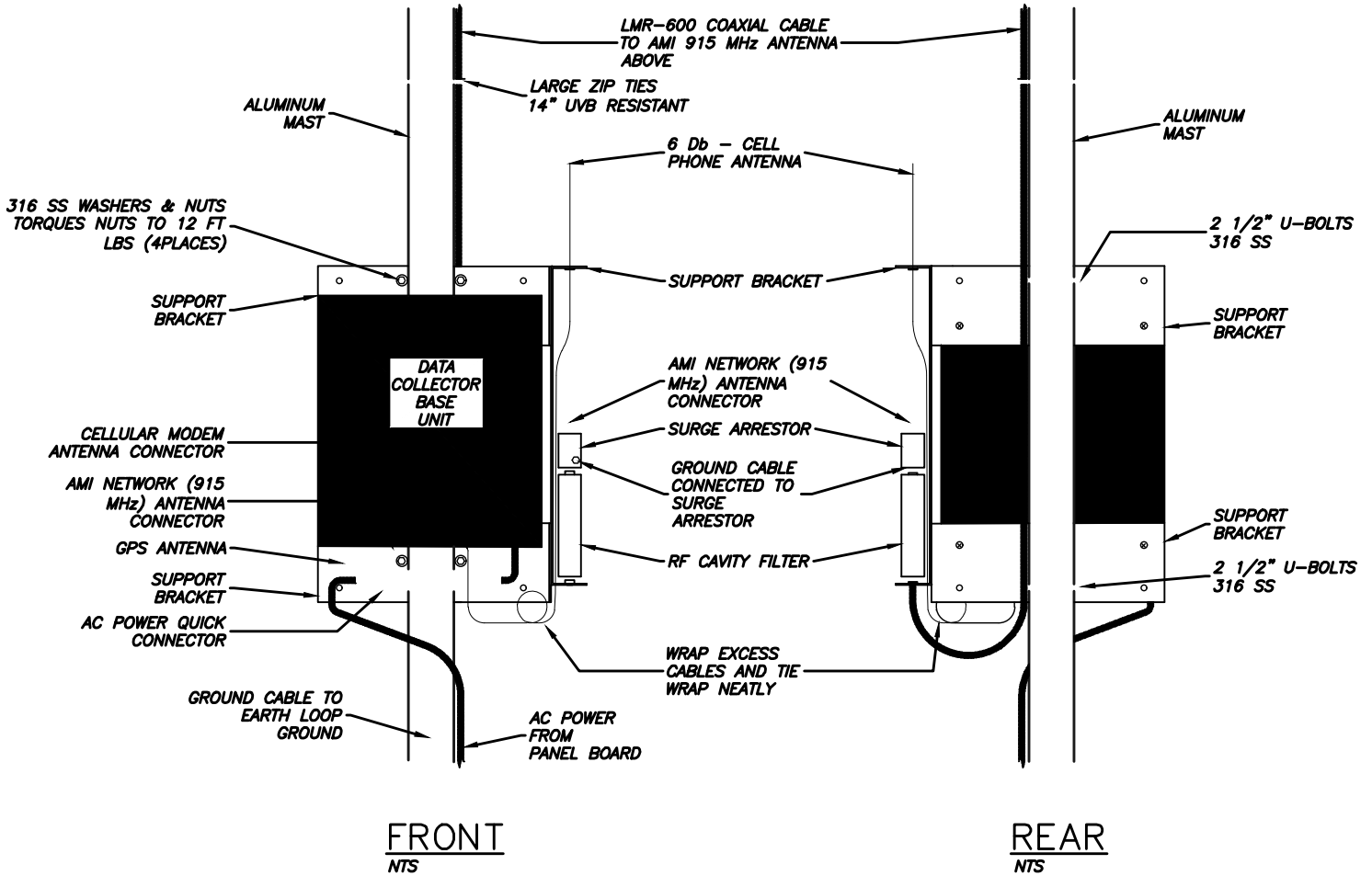
LEE COUNTY UTILITIES WASTEWATER PUMP STATION STANDARD

STEP DOWN XFMR GROUNDING FOR 3PH 3WIRE DELTA PRIMARY, 3PH 4WIRE WYE SECONDARY

ES-9

GENERAL NOTES

- 1.) ALL CONNECTORS TO BE WRAPPED WITH MASTIC AND TAPE.



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 **Lee County**
Southwest Florida

LEE COUNTY UTILITIES WASTEWATER
PUMP STATION STANDARD

DATA COLLECTOR
INSTALLATION DETAIL "A"

ES-10

Date: _____
FERNANDO E. FUENTES JR. P.E. #86514