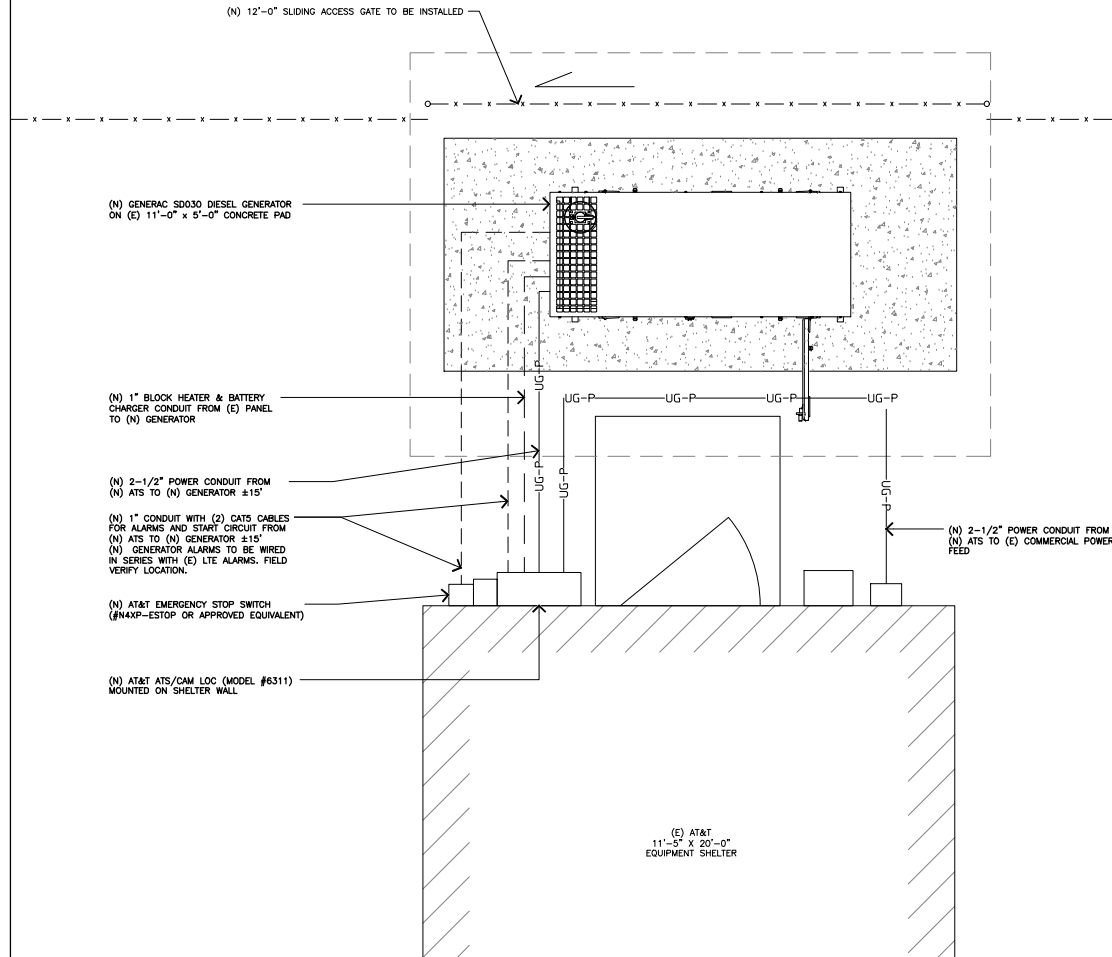


NOTES AND SPECIFICATIONS

- ALL ELECTRICAL WORK SHALL COMPLY WITH NEC, STATE, AND LOCAL CODES.
- CONTRACTOR SHALL OBTAIN OWNER/TENANT SPECIFICATIONS AND REVIEW FOR ADDITIONAL DETAILS AND REQUIREMENTS THAT MAY NOT BE SHOWN IN THESE DRAWINGS. CONTRACTOR SHALL COMPLY WITH ANY ADDITIONAL OWNER/TENANT SPECIFICATIONS AND REQUIREMENTS.
- CONTRACTOR SHALL COORDINATE WITH THE ELECTRIC UTILITY FOR THE EXACT TRANSFORMER LOCATION, METERING REQUIREMENTS, AND SERVICE ROUTING. CONTRACTOR SHALL COORDINATE WITH THE TELEPHONE UTILITY FOR THE EXACT TELEPHONE REQUIREMENTS AND SERVICE ROUTING.
- PRIOR TO PURCHASING EQUIPMENT, THE CONTRACTOR SHALL CONTACT THE ELECTRIC COMPANY AND OBTAIN IN WRITING THE MAXIMUM AVAILABLE FAULT CURRENT AT THE UTILITY SERVICE POINT. THE CONTRACTOR SHALL ENSURE ALL ELECTRICAL EQUIPMENT, CIRCUIT BREAKERS, DISCONNECTS, FUSES, AND PANELBOARDS HAVE A FAULT CURRENT INTERRUPTING RATING GREATER THAN THE AVAILABLE FAULT CURRENT. IN NO CASE SHALL THE FAULT CURRENT INTERRUPTING RATING BE LESS THAN 10,000 AMPS.
- CONTRACTOR TO PROVIDE 2-200 LB TEST POLYETHYLENE PULL CORDS SECURELY FASTENED AT EACH END OF POWER AND TELCO CONDUIT. PROVIDE CAPS ON END OF UNUSED CONDUIT.
- CONTRACTOR TO PROVIDE A REBAR MARKER WITH AT LEAST 2 FEET EXPOSED ABOVE GRADE AND PAINTED BRIGHT ORANGE TO INDICATE LOCATION OF CONDUIT CAPPED BELOW GRADE.
- PRIOR TO TRENCHING CONTRACTOR SHALL LOCATE ALL EXISTING UNDERGROUND UTILITIES. CONTRACTOR SHALL REPAIR AT CONTRACTOR'S EXPENSE ANY DAMAGE TO EXISTING UTILITIES.
- CONTRACTOR TO VERIFY EXACT ROUTING OF POWER AND TELCO CONDUIT WITH LOCAL UTILITIES AND OWNER/TENANT. ENSURE ALL CONDUIT STUB-UPS ACCOMMODATE EQUIPMENT REQUIREMENTS.
- UNDERGROUND CONDUITS SHALL BE SCHEDULE 40 PVC UNLESS NOTED OTHERWISE. USE SCHEDULE 80 PVC UNDER ROADS.
- CONDUIT RUNS SHALL HAVE A CONTINUOUS SLOPE DOWNWARDS AND AWAY FROM THE EQUIPMENT TO ALLOW WATER TO FLOW AWAY FROM THE EQUIPMENT AND SHELTER. EXCAVATE TRENCHES ALONG STRAIGHT LINES PRIOR TO INSTALLING CONDUIT TO ACCOMMODATE ADJUSTING THE ELEVATION, AS NEEDED.
- CONDUIT ENTERING EQUIPMENT SHALL BE SEALED WITH A SEALANT THAT IS IDENTIFIED FOR USE WITH THE CABLE/CONDUCTOR INSULATION, SHIELDING, ETC.
- THE OWNER SHALL FURNISH AND THE CONTRACTOR SHALL INSTALL ADDITIONAL SIGNAGE TO BE LOCATED AT THE COMPOUND FENCE. CONTRACTOR SHALL COORDINATE WITH OWNER/TENANT CONSTRUCTION MANAGER FOR PLACEMENT OF SIGNAGE.
- UPON COMPLETION OF CONSTRUCTION, CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE CAUSED BY CONSTRUCTION ACTIVITIES TO THE LANDSCAPING AREA.
- CONTRACTOR TO ENSURE A MIN. 3' CLEARANCE IN FRONT OF ELECTRICAL PANELS PER NEC.
- ALL ELECTRICAL MATERIALS, DEVICES, APPLIANCES AND EQUIPMENT SHALL BE LABEL TESTED BY AN APPROVED THIRD PARTY TESTING AGENCY.

CONDUCTOR COLOR CODE		
SYSTEM	CONDUCTOR	COLOR
120/240V, 1ø	A PHASE	BLACK
	B PHASE	RED
	NEUTRAL	WHITE
	GROUND	GREEN
120/208V, 3ø	A PHASE	BLACK
	B PHASE	RED
	C PHASE	BLUE
	NEUTRAL	WHITE
277/480V, 3ø	A PHASE	BROWN
	B PHASE	ORANGE OR PURPLE
	C PHASE	YELLOW
	NEUTRAL	GREY
GROUND	GROUND	GREEN
	POS (+)	RED**
	NEG (-)	BLACK**

* SEE NEC 210.5(C)(1) AND (2)
** POLARITY MARKED AT TERMINATION



ELECTRICAL PLAN

NOTE:
AT&T PORTABLE GEN INTERFACE
TO BE REMOVED ONLY IF
NECESSARY

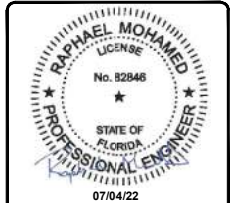


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Network Solutions

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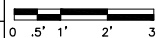
SHEET TITLE
**ELECTRICAL & LTE
SCHEMATIC DIAGRAM**

SHEET NUMBER

E-1

11x17 SCALE: 3/8"=1'-0"

24x36 SCALE: 3/4"=1'-0"



1

NOT USED

SCALE:
NONE

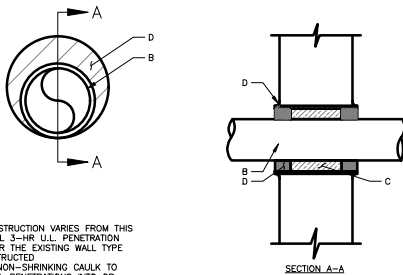
7

U.L. SYSTEM NO. C-AJ-1150
CONDUIT THROUGH BEARING WALL SIMILAR TO U.L. DESIGN NO. U902
F RATING = 3 HR
T RATING = 0 HR

- A. FLOOR OR WALL ASSEMBLY: MINIMUM 4-1/2" THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAX DIAMETER OF OPENING IS 4". (SEE CONCRETE BLOCKS CATZ) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
- B. THROUGH PENETRATIONS: ONE METALLIC PIPE OR CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE ANNULAR SPACE SHALL BE MINIMUM 0" (POINT CONTACT) TO MAXIMUM 1-3/8". THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES OR CONDUITS MAY BE USED:
- a. STEEL PIPE-NOMINAL 6" DIAMETER (OR SMALLER) SCHEDULE 40 (OR HEAVIER) STEEL PIPE
 - b. IRON PIPE-NOMINAL 6" DIAMETER (OR SMALLER) CAST OR DUCTILE IRON PIPE
 - c. CONDUIT - NOMINAL 4" DIAMETER (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR NOMINAL 3-1/2" DIAMETER (OR SMALLER) STEEL CONDUIT.
- C. PACKING MATERIAL: MINIMUM 6" THICKNESS OF MIN 4.0 PCF MINERAL WOOL BATTING INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.
- D. FILL VOID, OR CAVITY MATERIAL*: SEALANT: MINIMUM 1/4" THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS. FLUSH WITH TOP SURFACE OF FLOOR AND WITH BOTH SURFACES OF WALL. AT THE POINT CONTACT LOCATION BETWEEN PIPE AND CONCRETE, A MINIMUM 1/2" DIAMETER BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE CONCRETE/PIPE INTERFACE ON THE TOP SURFACE OF FLOOR AND ON BOTH SURFACES OF WALL. W-RATING APPLIES ONLY WHEN CP601S OR CP604 SEALANT IS USED.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC.: CP601S, CP604, CP606, OR FS-ONE SEALANT.

* BEARING THE UL CLASSIFICATION MARK



INSTALLER NOTES:

- IF EXISTING CONSTRUCTION VARIES FROM THIS DETAIL, AN EQUAL 3-HR U.L. PENETRATION APPROPRIATE FOR THE EXISTING WALL TYPE SHALL BE CONSTRUCTED
- GC SHALL USE NON-SHRINKING CAULK TO WEATHERSEAL ALL PENETRATIONS INTO OR THRU SHELTER WALL.

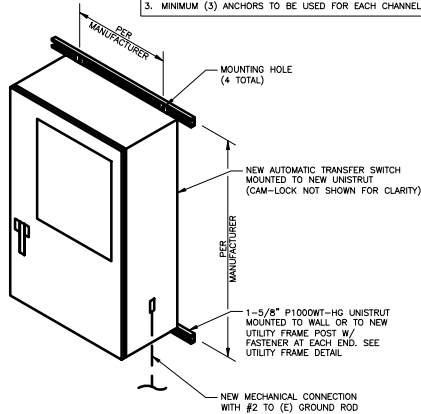
SCALE:
NONE

6

OUTER WALL PENETRATION DETAIL

UNISTRUT WALL ATTACHMENT:		
WALL CONSTRUCTION TYPE	FASTENER	ANCHOR SPACING
WOOD STUD	3/8" DIA. LAG SCREW	16"
CONCRETE BLOCK (HOLLOW)	-	6"
CONCRETE BLOCK (SOLID)	3/8" SIMPSON TITEN HD ANCHOR MINIMUM EMBEDMENT 2-3/4"	24"

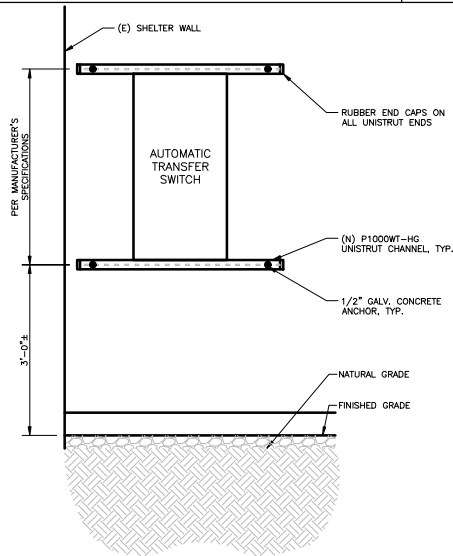
NOTES:
1. USE GALVANIZED OR STAINLESS STEEL HARDWARE FOR WALL MOUNT AND CONNECTION OF CHANNELS.
2. GC SHALL USE NON-SHRINKING CAULK TO WEATHER SEAL ALL PENETRATIONS INTO OR THROUGH SHELTER WALL.
3. MINIMUM (3) ANCHORS TO BE USED FOR EACH CHANNEL.



SCALE:
NONE

5

ATS MOUNTING DETAIL



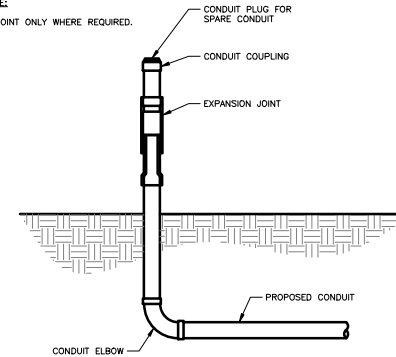
SCALE:
NONE

4

UTILITY FRAME ELEVATION

INSTALLER NOTE:

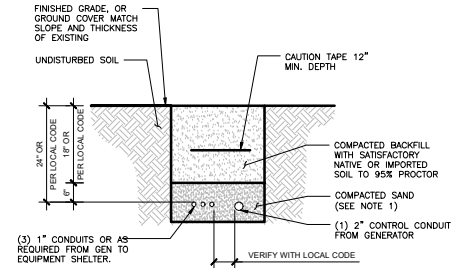
INSTALL SLIP JOINT ONLY WHERE REQUIRED.



SLIP JOINT DETAIL

SCALE:
NONE

3



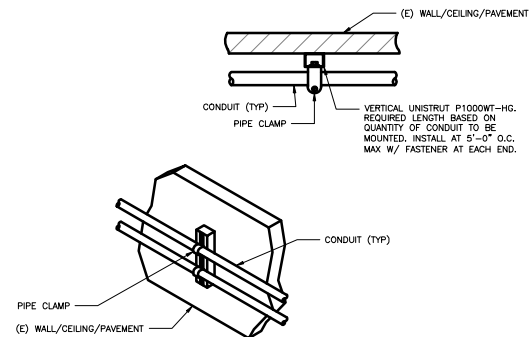
NOTES:

- SEPARATION DIMENSIONS TO BE VERIFIED WITH LOCAL UTILITY CO. REQUIREMENTS.
- PROVIDE PVC CONDUIT BELOW GRADE EXCEPT AS NOTED BELOW.
- PROVIDE RGS CONDUIT AND ELBOWS AT STUB UP LOCATIONS IF REQUIRED.
- INSTALL UTILITY PULLBOXES PER NEC IF REQUIRED.
- FOLLOW MINIMUM COVER REQUIREMENTS PER NEC 300-5

TRENCH DETAIL

SCALE:
NONE

2



SCALE:
NONE

1

CONDUIT WALL MOUNT DETAIL



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SHEET TITLE
**EQUIPMENT &
CONDUIT DETAILS**

SHEET NUMBER
E-2

-48V PRIMARY VOLTAGE DC PLANT SPECIFIED					
+24VDC EQUIPMENT LOAD:	200 WATTS	=	8 AMPS	at +24V	
-48VDC EQUIPMENT LOAD:	9560 WATTS	=	178 AMPS	at -48V	
6 AMPS (201 Watts) AT PRIMARY 48V REQUIRED TO SUPPORT 24V DC CONVERTER SYSTEM					
TOTAL PRIMARY 48V LOAD:	9641 WATTS	=	183 AMPS	at -48V	

(DC PLANT CONFIGURATION CAN BE REVIEWED ON DC PLANT WORKSHEET)					
DC PLANT: Verity STD -48VDC NetSure 700 Plant 1000A					
-48V RECTIFIERS REQUIRED (N=1):	7				
-48V RECTIFIER SLOTS:	22				
CONV. TYPE: UNIVERSAL SLOTS - RIGHT 3 RECT SLOTS/SHELF CAN BE USED FOR CONV					
+24V CONVERTERS REQUIRED:	2				
+24V CONVERTER SLOTS:	9				
ESTIMATED BATTERY RESERVE TIME					
2 180 AH 48V STRINGS =	2.85	HOURS	(ON-SITE GENERATOR - 2 HOUR MINIMUM)		

LOAD CALCULATIONS

SCALE: 1
NONE

GENERATOR ALARM IDENTIFICATION CHART	
NAME	DESCRIPTION
CF	CRITICAL FAILURE
FL	FUEL LEAK OVERFILL
GR	GENERATOR RUNNING
FL	LOW FUEL
MAF	MAJOR FAULT
MF	MINOR FAULT
FL	GEN FUEL LEAK TANK WHT/SLATE

NOTE: CONTRACTOR TO LABEL WIRES W/ P-TOUCH OR SIMILAR LABELS ONLY. ABSOLUTELY NO HANDWRITTEN LABELS.

ALARM REQUIREMENTS
AT&T REQUIRES FOUR ALARMS CONFIRMED WORKING; NORMALLY CLOSED VOLT-FREE CONTACT FOR:

1. GENERATOR RUN
2. GENERATOR FAIL
3. LOW FUEL
4. FUEL LEAK
5. RBS GENERATOR MJ

COLOR CODE
GENERATOR:
A. CABLE - (2) CATS
B. COLOR CODE
1. GENERATOR RUN - ALARM PORT #14 (ORANGE & WHITE)
2. GENERATOR FAIL - ALARM PORT #15 (BLUE & WHITE)
3. LOW FUEL - ALARM (PORT P32) ON I/O BOARD (GREEN & WHITE)
4. FUEL LEAK - P32 ON I/O BOARD (BROWN & WHITE)

AUTOMATIC TRANSFER SWITCH (IF APPLICABLE)
A. CABLE - cat5e
B. COLOR CODE
1. COMMERCIAL POWER FAIL IF REQUIRED (BLUE WHITE)
2. TRANSFER SWITCH POSITION (BROWN WHITE)
CAM LOCK ALARM
A. CABLE - cat5e
B. COLOR CODE
1. PORTABLE GENERATOR RUNNING (ORANGE WHITE)
(IF REQUIRED)

ALARM DETAILS

SCALE: 2
NONE



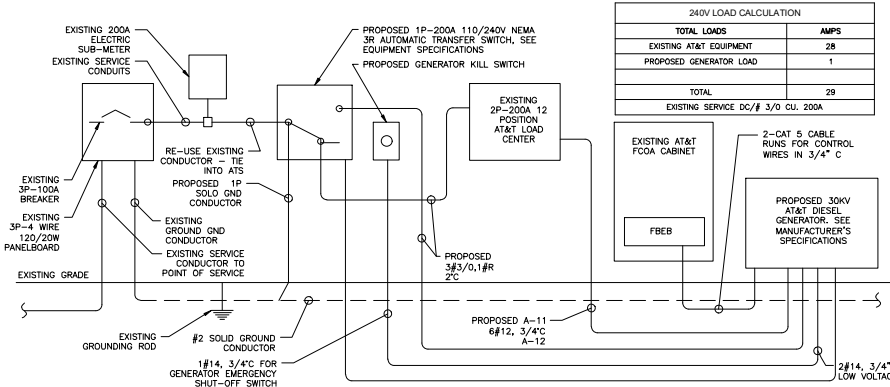
PROPOSED (2) 1P-20A BREAKERS IN POSITION 2 AND 4

PANELBOARD DIRECTORY - 120/240 V - 200 AMP			
1	RECTIFIER #1	2	SPARE
3	RECTIFIER #1	4	SPARE
5	RECTIFIER #2	6	HVAC
7	RECTIFIER #2	8	HVAC
9	RECTIFIER #3	10	HVAC
11	RECTIFIER #3	12	SPARE
13	RECTIFIER #4	14	INTERIOR RECEPTACLE
15	RECTIFIER #4	16	INTERIOR LIGHTS
17	RECTIFIER #5	18	EXTERIOR LIGHTS
19	RECTIFIER #5	20	RECTIFIER #11(OPTIONAL)
21	RECTIFIER #6	22	RECTIFIER #11(OPTIONAL)
23	RECTIFIER #6	24	RECTIFIER #12(OPTIONAL)
25	RECTIFIER #7	26	RECTIFIER #12(OPTIONAL)
27	RECTIFIER #7	28	RECTIFIER #13(OPTIONAL)

29	RECTIFIER #8	30	RECTIFIER #13(OPTIONAL)
31	RECTIFIER #8	32	RECTIFIER #14(OPTIONAL)
33	RECTIFIER #9	34	RECTIFIER #14(OPTIONAL)
35	RECTIFIER #9	36	RECTIFIER #15(OPTIONAL)
37	RECTIFIER #10(OPTIONAL)	38	RECTIFIER #15(OPTIONAL)
39	RECTIFIER #10(OPTIONAL)	40	RECTIFIER #16(OPTIONAL)
41	EXTERIOR RECEPTACLE	42	RECTIFIER #16(OPTIONAL)

EXISTING PANELBOARD

SCALE: 3
NONE



ALARM IDENTIFICATION DIAGRAM

SCALE: 4
NONE

NOTES:

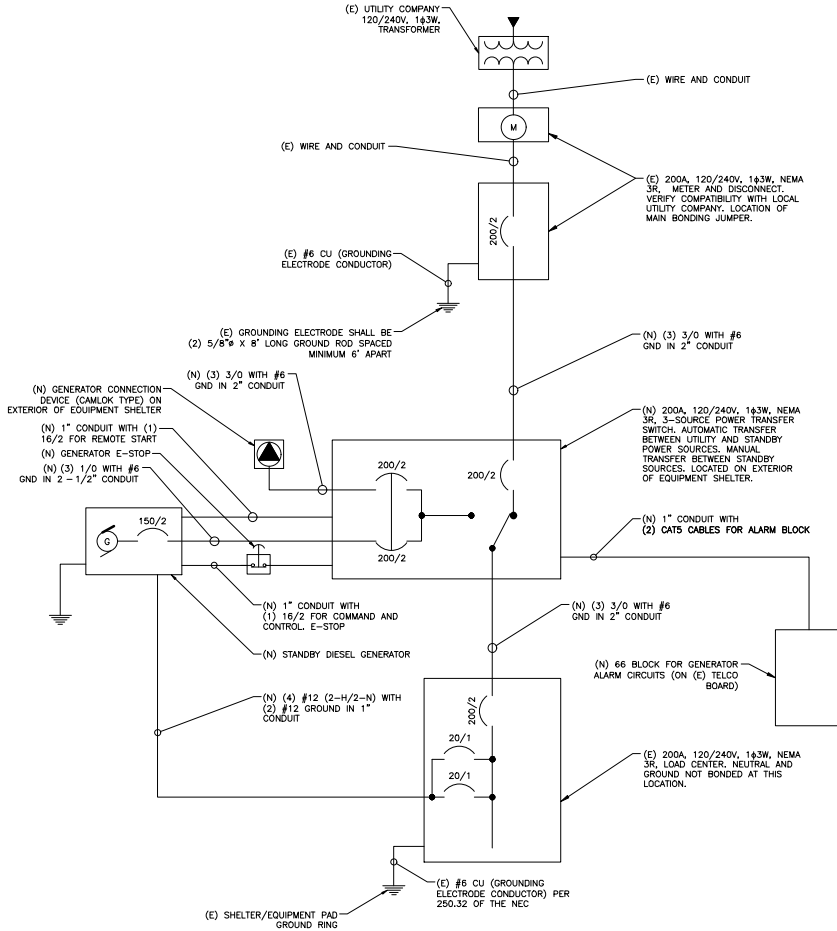
1. ALL NEW CONDUCTORS TO BE INSTALLED SHALL BE COPPER. ALL CONDUCTORS SHALL BE THW, THWN, THWN-2, XHHW, OR XHHW-2 UNLESS NOTED OTHERWISE.
2. CONTRACTOR IS TO FIELD VERIFY ALL EXISTING ITEMS SHOWN ON THE ELECTRICAL ONE-LINE DIAGRAM AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
3. ALL GROUNDING AND BONDING PER THE NEC.
4. INSTALL ATS ALARM RELAY

INSTALLER NOTE:

CONTRACTOR TO VERIFY EXISTING LOAD PANEL AND INSTALL NEW 20A BREAKER FOR BLOCK HEATER AND NEW 20A BREAKER FOR BATTERY CHARGER (IF REQUIRED).

INSTALLER NOTES:

1. THE GENERATOR SIZE HAS BEEN DETERMINED BY AT&T BASED ON AN INTERNAL LOAD ANALYSIS OF THEIR EQUIPMENT. THE GENERATOR SIZE WAS PROVIDED AS PART OF THE SCOPING ANALYSIS. AT&T SHALL BE RESPONSIBLE FOR ENSURING THAT THEIR SYSTEM CONFIGURATION DOES NOT EXCEED THE MANUFACTURER POWER RATING OF THE SPECIFIED GENERATOR.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING A SPOT READING OF THE PANEL AT PEAK OPERATING HOURS TO VERIFY THE AT&T PANEL SCHEDULE CALCULATIONS ARE NOT EXCEEDED. IN THE EVENT THE READING EXCEEDS THE CALCULATED PANEL SCHEDULE LOADS, RECORD THE READING AND CONSULT AT&T ENGINEERING MANAGER PRIOR TO PROCEEDING WITH GENERATOR INSTALLATION.



ONE LINE DIAGRAM

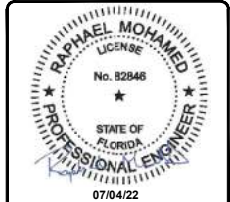
SCALE: 2
NONE



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SHEET TITLE
ALARM DETAILS &
ONE LINE DIAGRAM

SHEET NUMBER

E-3