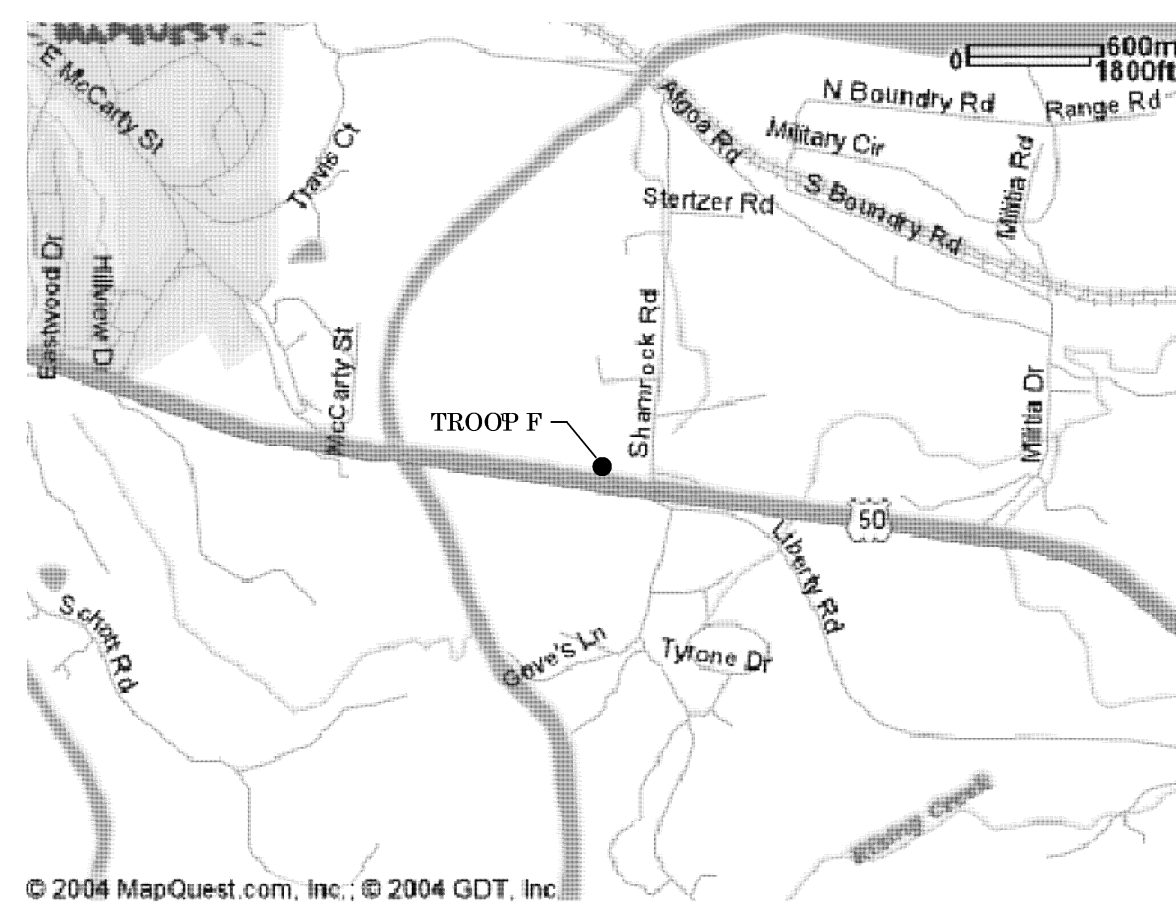
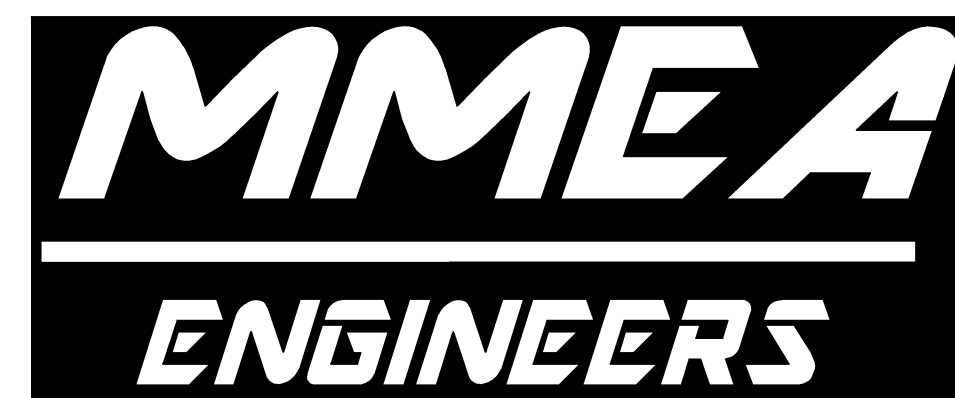


R2311-01 REPLACE STANDBY GENERATOR TROOP F HEADQUARTERS MISSOURI STATE HIGHWAY PATROL



MECH / ELEC ENGINEER:



MID MISSOURI ENGINEERING ALLIANCE
203 Eastland Dr.,
Jefferson City, MO 65101
PHONE: 573.636.2116
EMAIL: WAYNE@MMEAENG.COM
Missouri Certificate of Authority Number:
2018019632



Wayne A. Strobe

The Engineer, whose signature appears on the mechanical, plumbing, & electrical drawings, assumes responsibility only for what appears on the drawings, and disclaims (pursuant to Section 327.11 RSMo) any responsibility for all other plans, specifications, estimates, reports, or other documents or instruments not sealed by the above Engineer relating to, or intended to be used for, any part or parts of the project to which these drawings refer.

SHEET INDEX

G-001	COVER SHEET
E-101	BASEMENT ELECTRICAL DEMOLITION AND RENOVATION PLANS
E-102	FIRST FLOOR ELECTRICAL PLAN AND RISERS
E-201	ELECTRICAL EQUIPMENT SCHEDULES

OWNER: STATE OF MISSOURI
MICHAEL L. PARSONS, GOVERNOR
MISSOURI STATE HIGHWAY PATROL

PROJECT MANAGEMENT: OFFICE OF ADMINISTRATION DIVISION
OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

CODE SUMMARY:

- 2020 NATIONAL ELECTRIC CODE (NFPA 70)
- 2021 NATIONAL FIRE PROTECTION AGENCY (NFPA 101)
- 2019 EMERGENCY AND STANDBY POWER SYSTEMS (NFPA 110)

DESIGNER: MID MO ENGINEERING ALLIANCE

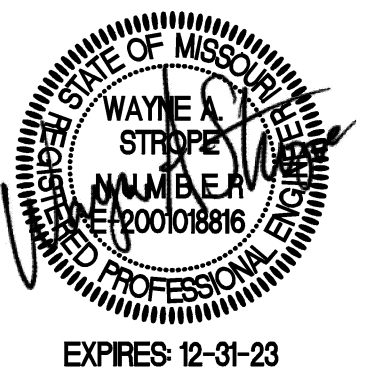
PROJECT NUMBER: R2311-01

SITE NUMBER: 6007
FACILITY NUMBER: 55129-HEADQUARTERS BUILDING
ASSET NUMBER: 8136007001

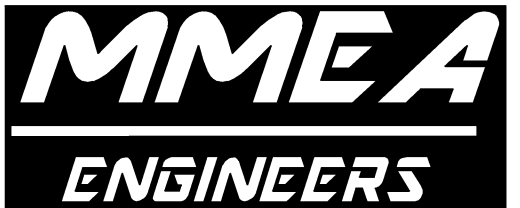
SHEET NUMBER:

G-001

1 OF 4 SHEETS
DEC 18, 2023



DESIGN DEVELOPMENT
NOT FOR
CONSTRUCTION



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OFFICE OF
ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT, DESIGN
AND CONSTRUCTION

Replace Standby Generator
Troop F Headquarters
Missouri State Highway Patrol

Jefferson City, Missouri

PROJECT: R2311-01
SITE: 6007
FACILITY: 55129 OFFICE

REVISION	DATE

CAD DWG FILE: 23004
DRAWN BY: JS
CHECKED BY: WS
DESIGNED BY: WS

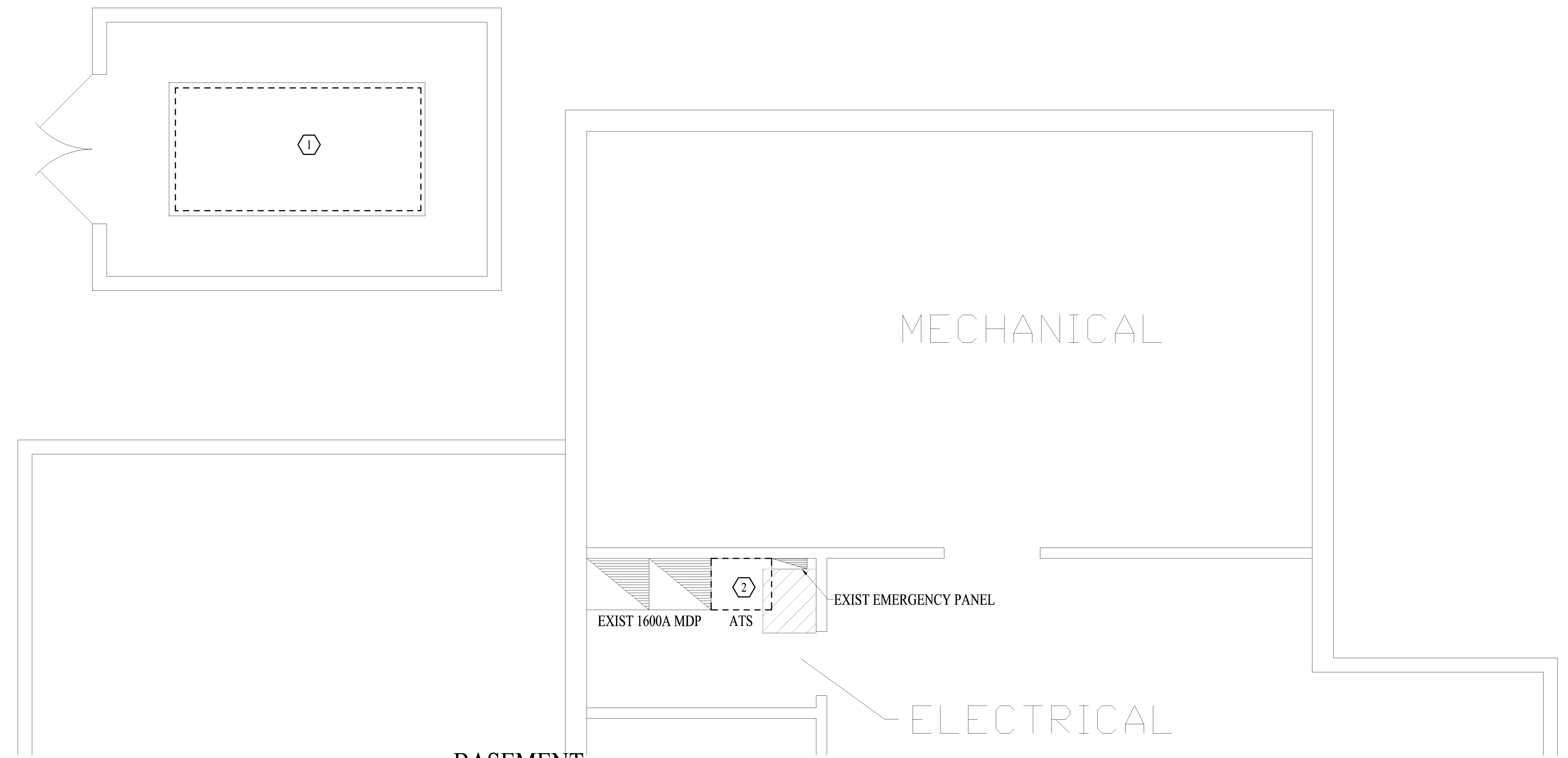
SHEET TITLE:
BASEMENT
ELECTRICAL
DEMO / RENO
FLOOR PLANS

SHEET NUMBER:

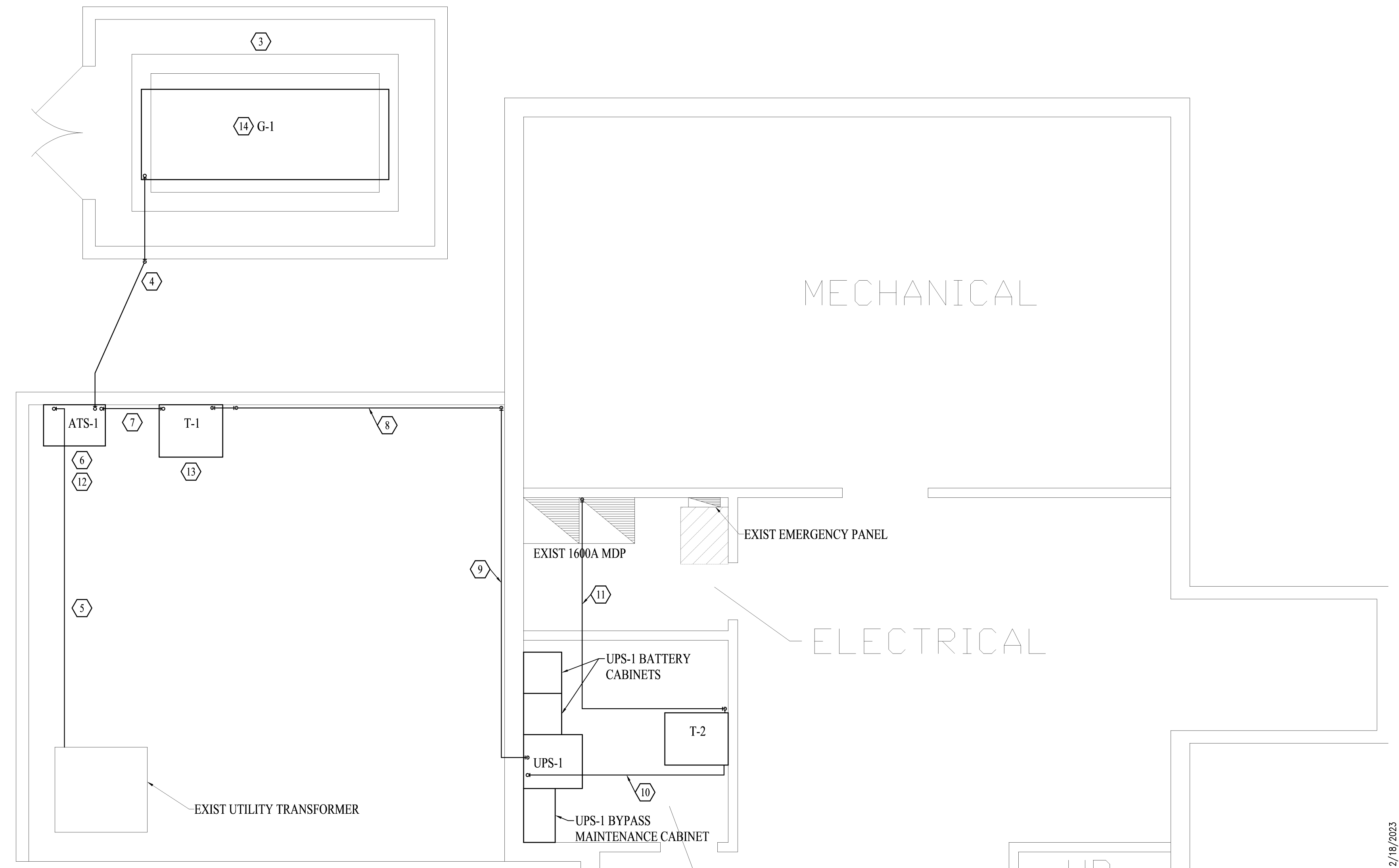
E-101

SHEET 2 OF 4
ISSUE DATE: DEC 18, 2023

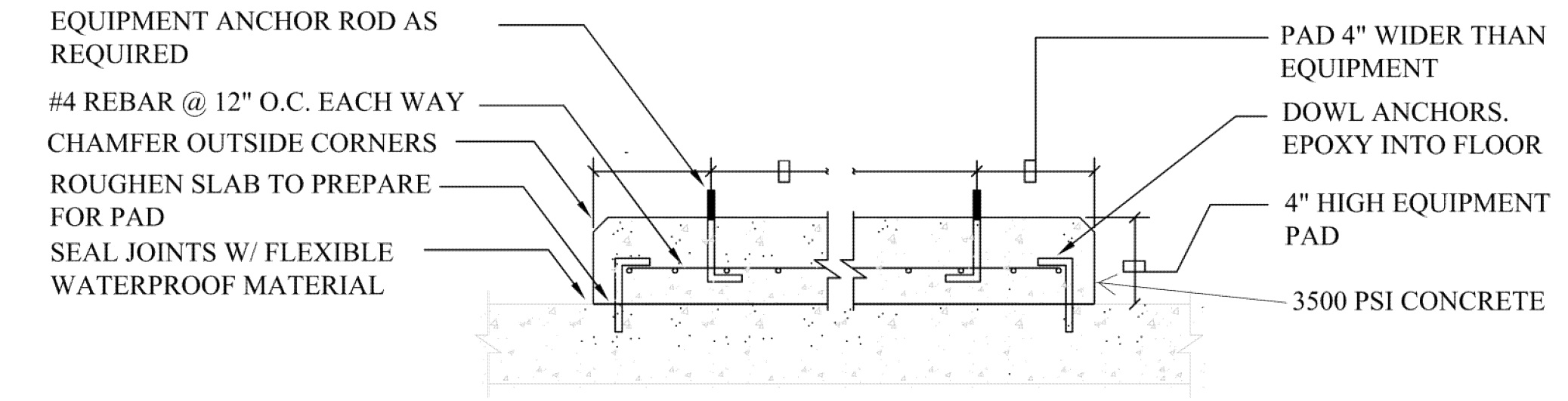
JOB# 23004 P.L.D. 12/18/2023



01 BASEMENT ELECTRICAL DEMOLITION FLOOR PLAN
SCALE: 1/4"=1'-0"

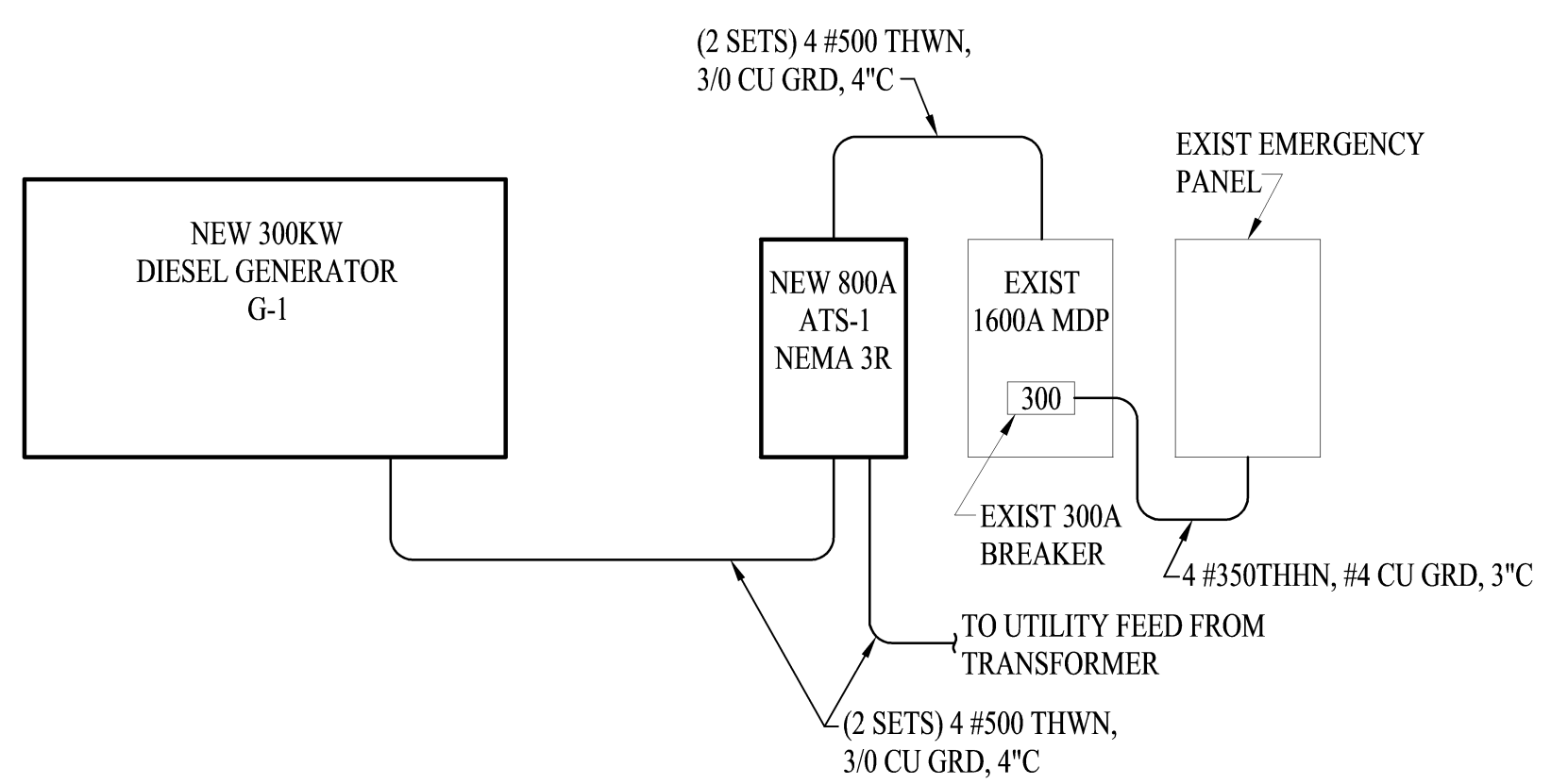


02 BASEMENT ELECTRICAL RENOVATION FLOOR PLAN
SCALE: 1/4"=1'-0"

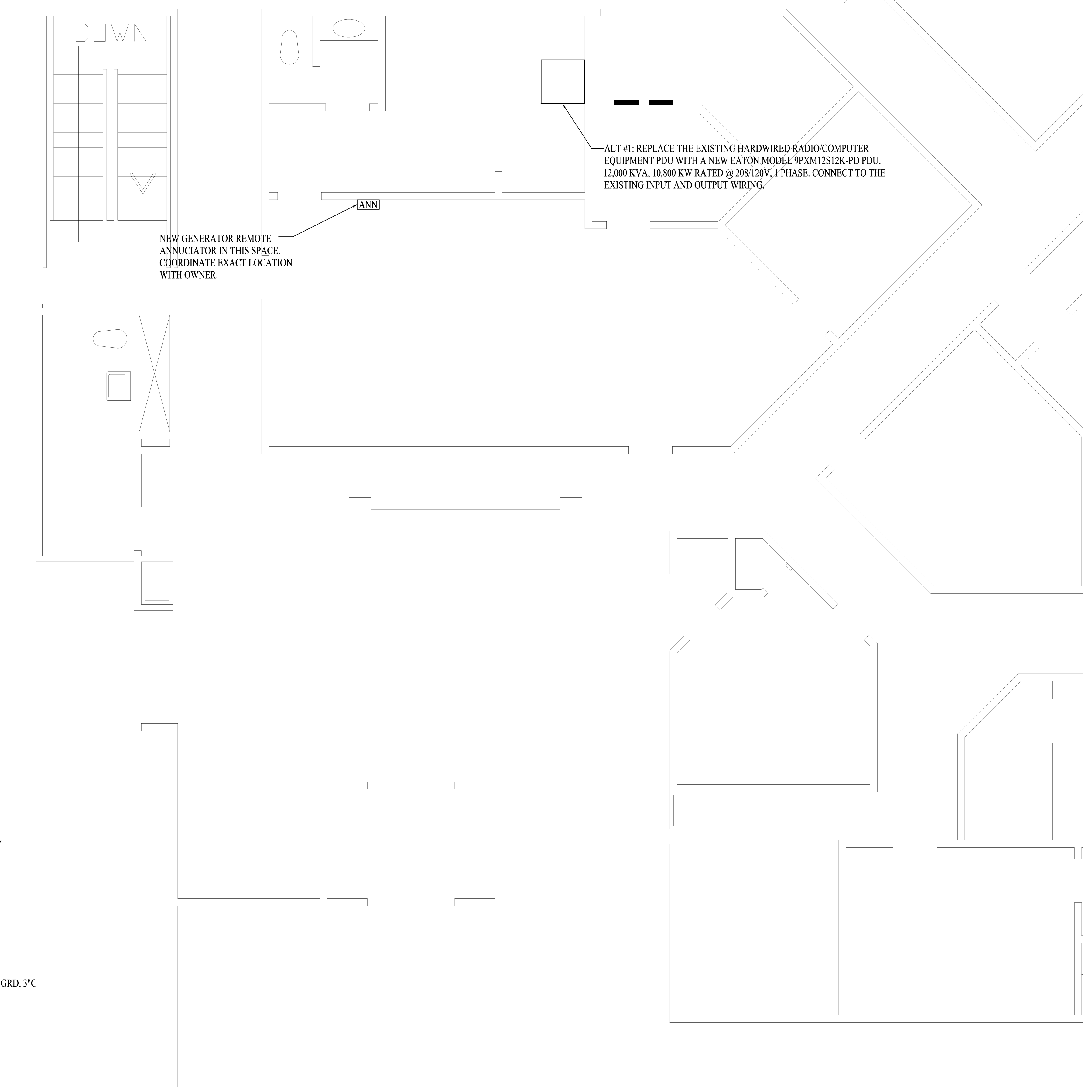


03 EQUIPMENT PAD DETAIL
SCALE: NO SCALE

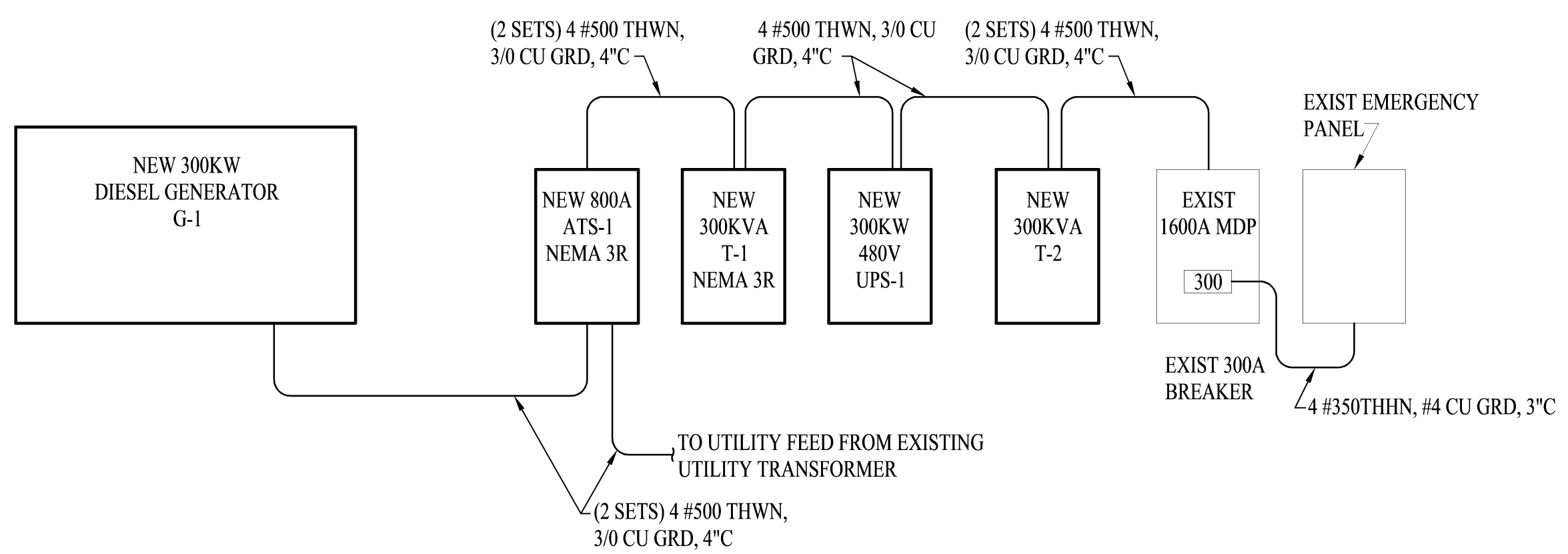
- NOTES:
- 1 REMOVE THE EXISTING GENERATOR AND ASSOCIATED CONDUITS AND CONDUCTORS. ENCLOSURE AND PAD TO REMAIN FOR REUSE. TURN GENERATOR OVER TO OWNER FOR REUSE AT ANOTHER FACILITY.
 - 2 REMOVE THE EXISTING ATS AND ASSOCIATED CONDUITS AND CONDUCTORS. TURN ATS OVER TO OWNER FOR REUSE AT ANOTHER FACILITY.
 - 3 EXTEND THE EXISTING 6" HIGH CONCRETE EQUIPMENT PAD EQUALLY ON ALL SIDES AS REQUIRED TO ACCOMMODATE NEW GENERATOR AND KEEP THE GENERATOR CENTERED ON THE PAD.
 - 4 ROUTE CONDUITS FROM G-1 ON TOP OF SLAB OUT OF GENERATOR ENCLOSURE, THEN UNDERGROUND TO ATS-1. SEE ELECTRIC RISER FOR CONDUITS AND CONDUCTORS.
 - 5 ROUTE CONDUITS UNDER SLAB FROM UTILITY TRANSFORMER TO ATS-1. SAW CUT, REMOVE, AND REPLACE CONCRETE TO ALLOW FOR CONDUIT INSTALLATION. SEE ELECTRIC RISER FOR CONDUITS AND CONDUCTORS.
 - 6 MOUNT ATS-1 ON UNISTRUT RACK ATTACHED TO CONCRETE WALL.
 - 7 ROUTE CONDUITS UNDER SLAB FROM ATS-1 TO T-1. SAW CUT, REMOVE, AND REPLACE CONCRETE TO ALLOW FOR CONDUIT INSTALLATION. SEE ELECTRIC RISER FOR CONDUITS AND CONDUCTORS.
 - 8 ROUTE CONDUITS ALONG FACE OF CONCRETE WALL OVER TO BUILDING.
 - 9 ROUTE CONDUITS ALONG FACE OF BUILDING AT A HEIGHT TO ALLOW FOR ENTRY INTO THE TOP OF UPS-1.
 - 10 ROUTE CONDUITS OVERHEAD FROM UPS-1 TO T-2.
 - 11 ROUTE CONDUITS OVERHEAD FROM T-2 TO THE EXISTING 1600A MDP.
 - 12 T-1, UPS-1, AND T-2 ARE INSTALLED UNDER ALTERNATE #2. IF THE ALTERNATE #2 IS NOT ACCEPTED, ROUTE CONDUITS ABOVE GRADE ALONG CONCRETE WALL AND BUILDING WALL FROM ATS-1 TO THE EXISTING 1600A MDP. SEE ELECTRIC RISER FOR CONDUITS AND CONDUCTORS.
 - 13 MOUNT T-1 ON A 4" HIGH CONCRETE EQUIPMENT PAD.
 - 14 NEW GENERATOR G-1 AND SUBBASE FUEL TANK SHALL FIT WITHIN THE CONFINES OF THE EXISTING CONCRETE BLOCK ENCLOSURE WITH THE REQUIRED SERVICE CLEARANCES AROUND THE GENERATOR. SEE SPECS FOR SIZING REQUIREMENTS. CONNECT THE GENERATOR EXHAUST TO THE EXISTING 8" EXHAUST PIPING ROUTED UP THE SIDE OF THE BUILDING.



02 BASE BID ELECTRIC RISER DIAGRAM
NO SCALE



01 PARTIAL 1ST FLOOR ELECTRICAL RENOVATION FLOOR PLAN
SCALE: 1/4"=1'-0"



03 ALT #2 ELECTRIC RISER DIAGRAM
NO SCALE

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Replace Standby Generator
Troop F Headquarters
Missouri State Highway Patrol

Jefferson City, Missouri

PROJECT: R2311-01
SITE: 6007
FACILITY: 55129 OFFICE

REVISION	DATE

CAD DWG FILE: 23004
DRAWN BY: JS
CHECKED BY: WS
DESIGNED BY: WS

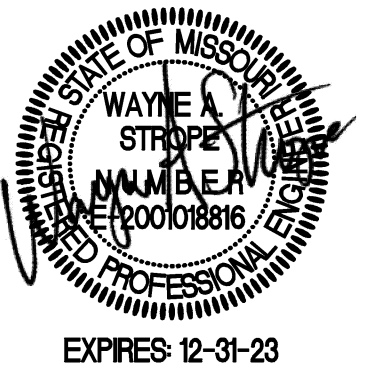
SHEET TITLE:
**1ST FLOOR
ELECTRICAL
FLOOR PLAN &
RISERS**

SHEET NUMBER:

E-102

SHEET 3 OF 4
ISSUE DATE: DEC 18, 2023

JOB# 23004 PLD: 12/18/2023



GENERATOR SCHEDULE						
MARK	MANUFACTURER	MODEL	KW	OUTPUT VOLTAGE	FUEL	REMARKS
G-1	CATERPILLAR	DC300 GC	300	208/120, 3 Ø	DIESEL	NOTES 1,2,3

- NOTES:
1. CATERPILLAR IS BASIS OF DESIGN, SEE SPECS FOR OTHER ACCEPTABLE MANUFACTURERS.
 2. SEE SPECS FOR ADDITIONAL REQUIREMENTS AND ACCESSORIES.
 3. GENERATOR AND SUBBASE FUEL TANK SHALL FIT WITHIN EXISTING CONCRETE BLOCK ENCLOSURE.

AUTOMATIC TRANSFER SWITCH SCHEDULE					
MARK	MANUFACTURER	MODEL	AMPS	VOLTAGE	REMARKS
ATS-1	ASCO	7000 SERIES	800	208/120, 3Ø	NOTES 1,2,3

- NOTES:
1. ASCO IS BASIS OF DESIGN, SEE SPECS FOR OTHER ACCEPTABLE MANUFACTURERS.
 2. SEE SPECS FOR ADDITIONAL REQUIREMENTS AND ACCESSORIES.
 3. SERVICE ENTRANCE RATED, NEMA 3R ENCLOSURE, W/ BYPASS ISOLATION.

UPS SCHEDULE						
MARK	MANUFACTURER	MODEL	KW	VOLTAGE	RUN TIME AT FULL LOAD	REMARKS
UPS-1	SCHNEIDER ELECTRIC	GALAXY VL	300	480/277, 3Ø	480/277, 3Ø	NOTES 1,2,3,4

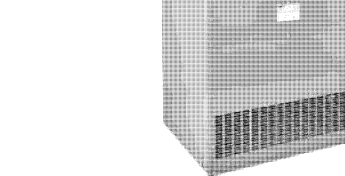
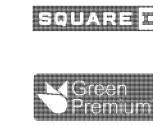
- NOTES:
1. SCHNEIDER ELECTRIC IS BASIS OF DESIGN, SEE SPECS FOR OTHER ACCEPTABLE MANUFACTURERS.
 2. SEE SPECS FOR ADDITIONAL INFORMATION AND ACCESSORIES.
 3. PROVIDE W/ MAINTENANCE BYPASS CABINET AND DUAL LITHIUM ION BATTERY CABINETS.
 4. THIS EQUIPMENT IS PART OF ALTERNATE #2.

TRANSFORMER SCHEDULE						
MARK	MANUFACTURER	MODEL	KVA	INPUT VOLTAGE	OUTPUT VOLTAGE	REMARKS
T1	SQUARE D	EX300T212H	300	208/120, 3Ø	480/277, 3Ø	NOTES 1,2,3,4
T2	SQUARE D	EX300T3H	300	480/277, 3Ø	208/120, 3Ø	NOTES 1,2,4

- NOTES:
1. SQUARE D IS BASIS OF DESIGN, ABB OR EATON ARE OTHER ACCEPTABLE MANUFACTURERS.
 2. SEE SPEC CUTSHEETS ON DRAWINGS.
 3. NEMA 3R ENCLOSURE.
 4. THIS EQUIPMENT IS PART OF ALTERNATE #2.

Product data sheet

Specifications



Low voltage transformer, DOE 2016, dry type, 3 phase, 300kVA, Al, 150C rise, Type 1

EX300T212H / EX300T3H

Main

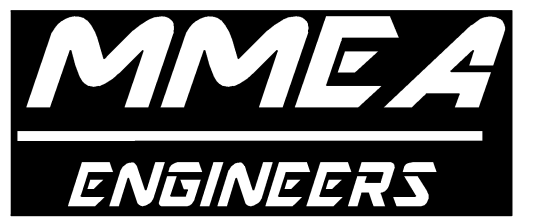
Range of Product	Square D
Product or Component Type	Transformer
Device short name	DOE 2016
Transformer type	Energy efficient
Device Application	Low voltage electrical distribution

Complementary

Box number	25J
Phase	3 phase
Rated operational power in VA	300 kVA
Network Frequency	60 Hz
Type of cooling	Natural convection
Primary Voltage	208 V delta / 480 V DELTA
Number of tap-offs	1.5 % FCAN 2.5 % FCBN
Secondary voltage	480V/277 V / 208V/277 V
Coil Material	Aluminium
Basic IMP level (BIL)	10 kV
Temperature Rise	150 °C 220 °C insulated
DOE Efficiency	99.14 % at 95 % load factor, 167 °F (75.0 °C)
Sound Level	6 dB NEMA ST-20 49 dB
%Iz	5.2 %
%Ix	0.0499 %
X/R Ratio	3.24
Let Through Current	6.9 kA
Transformer Losses	445.0 no load (core loss) 4625.0 load loss (coil loss)
Transformer BTU/HR	1953.268745403 16.6 % 2504.7254868749997 0.25 % 5463.6923775 0.5 %

Weight	10395.303961875 0.75 % 17299.55994 1.0 %
Height	57.52 in (1461 mm)
Depth	32.76 in (832 mm)
Width	40.08 in (1018 mm)
Net Weight	1960.00 lb(US) (843.68 kg)
Mounting support	Floor, with 7400FMB
Degree of protection	UL type 1 UL type 2, with 7400D525J UL type 3R, with 7400V525J
Electrical connection	6 Hole Nema Pad secondary 0.44 in (11.1 mm) 8 Hole Nema Pad sec - HO 0.44 in (11.1 mm) 2 x 4 Hole Nema Pad primary 0.44 in (11.1 mm)
Environment	
Ambient air temperature for operation	104 °F (40 °C)
Average ambient air temperature for operation	30 °C
Standards	UL 1561 CSA C22.2 No. 47 NEMA ST-20

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DESIGNED BY: WS

SHEET TITLE:
ELECTRICAL
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SCHEDULES

SHEET NUMBER:

E-201

SHEET 4 OF 4
ISSUE DATE: DEC 18, 2023