

STATE OF IOWA DEPARTMENT OF ADMINISTRATIVE SERVICES
DOC 3JD CBC NEW BACKUP GENERATOR
PROJECT #: RFB 946600-01
100% CD
07/18/2025



Iowa Department of
Administrative Services

OWNER
IOWA DEPARTMENT OF ADMINISTRATIVE SERVICES
109 SE 13TH STREET
DES MOINES, IA 50319
OWNER PROJECT NUMBER: 9466.00
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SHEET LIST	
Sheet Number	Sheet Name
AG00	TITLE SHEET
E000	ELECTRICAL GENERAL NOTES & SYMBOLS
E001	ELECTRICAL SITE PLAN
ED101	ELECTRICAL DEMO
E101	ELECTRICAL POWER
E401	ELECTRICAL ONE-LINE DIAGRAM
E501	ELECTRICAL DETAILS

	I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa	
		07-18-2025 (date)
	ERIC HEYNEN, P.E.	
	License Number : P24706	
	My license renewal date is December 31, 2025	

Pages or sheets covered by this seal: E. Sheets

ELECTRICAL ABBREVIATIONS			
A	DEVICE MOUNTED +8" ABOVE COUNTER TOP (VERIFY LOCATION)	NIC	NOT IN CONTRACT
AFF	ABOVE FINISHED FLOOR	NM	NONMETALLIC
ATS	AUTOMATIC TRANSFER SWITCH	NTS	NOT TO SCALE
C	CELLING	OC	ON CENTER
CB	CIRCUIT BREAKER	OCF	OWNER FURNISHED CONTRACTOR INSTALLED
CT	CURRENT TRANSFORMER	OFOI	OWNER FURNISHED, OWNER INSTALLED
E	EXISTING ITEM TO REMAIN	R	EXISTING ITEM TO BE REMOVED
EC	ELECTRICAL CONTRACTOR	RR	EXISTING ITEM TO BE REMOVED AND RELOCATED
EM	EMERGENCY LIGHT FIXTURE	RN	EXISTING ITEM TO BE REMOVED AND REPLACED WITH NEW
ER	NEW LOCATION OF EXISTING ITEM	SCOR	SHORT CIRCUIT CURRENT RATING
F	ROUGH IN FOR FUTURE DEVICE	T	TAMPER PROOF DEVICE
FAAP	FIRE ALARM ANNUNCIATOR PANEL	TCC	TEMPERATURE CONTROL CONTRACTOR
FACP	FIRE ALARM CONTROL PANEL	TV	TELEVISION
FSD	FIRE SMOKE DAMPER	TYP	TYPICAL
G	GROUND	UPS	UNINTERRUPTIBLE POWER SUPPLY
GND	GROUND	V	VOLTS
KVA	KILO-VOLT-AMPERES	VA	VOLT-AMPERES
KW	KILOWATTS	WG	WIREGUARD COVER
MC	MECHANICAL CONTRACTOR	WP	WEATHERPROOF DEVICE
MCB	MAIN CIRCUIT BREAKER	WR	WEATHER RESISTANT DEVICE
MDP	MAIN DISTRIBUTION PANEL	+24"	INDICATES MOUNTING HEIGHT CENTER LINE OF DEVICE TO FINISHED FLOOR
MLO	MAIN LUGS ONLY		
N	NEW DEVICE IN EXISTING LOCATION		

INSTALLATION NOTES - ELECTRICAL

- INCREASE CONDUCTOR SIZES ON 20A 120V-1 PHASE CIRCUITS EXCEEDING 100 FEET TO CENTER OF LOAD TO ACCOUNT FOR VOLTAGE DROP.
- RACEWAYS AND BOXES ARE SHOWN DIAGRAMMATICALLY ONLY AND INDICATE GENERAL AND APPROXIMATE LOCATIONS. LAYOUTS DO NOT ALWAYS SHOW THE TOTAL NUMBER OF RACEWAYS OR BOXES FOR THE CIRCUITS REQUIRED, NOR ARE THE LOCATIONS OF INDICATED RUNS INTENDED TO SHOW THE ACTUAL ROUTING OF THE RACEWAYS.
- LIGHT FIXTURES, SWITCHES, DEVICES, ETC. ARE SHOWN IN PREFERRED LOCATION. MODIFY CONDUIT, HANGERS, CIRCUITING, ETC. TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.
- PROVIDE A DEDICATED GREEN INSULATED GROUND CONDUCTOR TO ALL DEVICES. DO NOT USE CONDUIT SYSTEM AS THE ONLY EQUIPMENT GROUNDING METHOD.
- DO NOT INSTALL BOXES BACK-TO-BACK ON OPPOSITE SIDES OF THE SAME WALL. MAINTAIN MINIMUM OF 8" DISTANCE BETWEEN BOXES WHEREVER APPLICABLE.
- BALANCE PANEL LOADS DURING INSTALLATION. CIRCUIT NUMBERING SHOWN ON PLANS MAY BE ADJUSTED TO ACCOMMODATE.
- PROVIDE TYPED PANEL DIRECTORY AT PROJECT COMPLETION FOR NEW PANELS AND EXISTING PANELS WITH CIRCUITS MODIFIED DURING PROJECT. USE OWNER'S CURRENT ROOM NUMBERS AND EQUIPMENT NAMES. PROVIDE UNIQUE CIRCUIT IDENTIFICATION PER NEC 408.4(A)
- CONTRACTOR IS RESPONSIBLE FOR OPENINGS IN WALLS, FLOORS, CEILINGS, AND ROOFS THAT ARE REQUIRED TO COMPLETE THEIR SCOPE OF WORK. SEAL PENETRATIONS IN ACCORDANCE WITH THE RATING OF THE AFFECTED ASSEMBLY. REFER TO ARCHITECTURAL CODE PLAN FOR RATED WALLS, FLOORS, AND CEILINGS.

CODE NOTES - ELECTRICAL

- PROVIDE ELECTRICAL INSTALLATION IN ACCORDANCE WITH ALL STATE CODES.
- THE CURRENT ADOPTED EDITION OF THE ELECTRICAL CODE IS THE STANDARD FOR THE ELECTRICAL INSTALLATION. VERIFY WITH LOCAL OFFICIALS WHEN PERMITS ARE OBTAINED. NOTIFY DESIGN TEAM OF ANY DISCREPANCIES BETWEEN THE PROJECT MANUAL OR DRAWINGS AND THE GOVERNING CODE.
- INSTALLATION SHALL FOLLOW REQUIREMENTS OF THE ADAAG -AMERICANS WITH DISABILITIES ACT.

SCOPE

- INSTALL NEW STANDBY GENERATOR FOR THE ENTIRE BUILDING.
- GENERATOR TO COMPLY WITH NFPA 110 AND NEC SECTION 702. THIS GENERATOR IS NOT PROVIDED FOR LIFE SAFETY AND WILL ONLY BE UTILIZED FOR BACKUP POWER.
- EXISTING LIFE SAFETY SYSTEM (EMERGENCY LIGHTING AND FIRE ALARM) TO REMAIN INTACT AND OPERATIONAL DURING CONSTRUCTION.
- EXISTING ELECTRICAL SERVICE IS BEING DOWNSIZED FROM 2000A TO 1100A.
- RELOCATE CONDENSING UNIT TO MAKE WAY FOR NEW GENERATOR.
- THE OWNER WILL REPROGRAM SIEMENS DDC SYSTEM TO LAPSE START OF 60 TON CONDENSING UNIT WHEN ON GENERATOR POWER.
- ALTERNATE #1: SALVAGE EXISTING SERVICE CONDUCTORS NO LONGER IN USE. REFER TO MORE NOTES ON SHEET E401.
- AT PROJECT COMPLETION, ELECTRICAL CONTRACTOR WILL BE RESPONSIBLE TO PROVIDE ARC FLASH CALCULATIONS, LABELING, AND DOCUMENTATION FOR THE "MDP" AND "EXISTING" MDP.

POWER SYMBOLS	
	DUPLEX RECEPTACLE, WALL MOUNTED, TAMPER-RESISTANT
	EQUIPMENT CONNECTION, REFER TO EQUIPMENT CONNECTION SCHEDULE FOR CONNECTION TYPE. REFER TO PANEL SCHEDULES FOR GFCI PROTECTION WHERE REQUIRED
	MOTOR CONNECTION, REFER TO EQUIPMENT CONNECTION SCHEDULE FOR CONNECTION TYPE. REFER TO PANEL SCHEDULES FOR GFCI PROTECTION WHERE REQUIRED
	SAFETY DISCONNECT SWITCH
	UTILITY TRANSFORMER
	UTILITY METER
	SURGE PROTECTIVE DEVICE
	PANELBOARD - SURFACE MOUNTED
	PANELBOARD - RECESSED IN WALL
	DISTRIBUTION PANELBOARD/SWITCHBOARD - SURFACE MOUNTED AS NOTED.
	CORD REEL, CEILING MOUNTED - REFER TO DETAIL
	GENERATOR
	MULTI-GROUND ROD ELECTRODE SYSTEM
	AUTOMATIC TRANSFER SWITCH

GENERAL SYMBOLS	
	CONDUIT SLEEVE
	CONDUIT UP, REFER TO TAG ON DRAWING FOR SIZE
	CONDUIT DOWN, REFER TO TAG ON DRAWING FOR SIZE
	JUNCTION BOX, CEILING OR FLOOR MOUNTED.
	JUNCTION BOX, WALL MOUNTED, ELEVATION AS NOTED.
	CIRCUIT HOMERUN, CONCEALED CONDUIT OR CABLE
	CIRCUIT HOMERUN, UNDER FLOOR CONDUIT OR CABLE
	KEYNOTE
	EQUIPMENT IDENTIFICATION TAG. REFER TO EQUIPMENT CONNECTION SCHEDULE
	DETAIL DRAWING REFERENCE TAG, SIM-SIMILAR, TYP-TYPICAL, OPP-OPPOSITE SHEET REFERENCE
	SECTION CUT REFERENCE TAG, SIM-SIMILAR, TYP-TYPICAL, OPP-OPPOSITE SHEET REFERENCE
	INTERIOR ELEVATION DRAWING REFERENCE TAG
	DRAWINGS REVISION. REFER TO TITLEBLOCK FOR REVISION NAME AND DATE

Project No: 9466.00

Date: 07/18/25

100% CD

Revision Date

Drawing Name:
ELECTRICAL GENERAL
NOTES & SYMBOLS

Drawing #:

E000



GENERAL NOTE:

UNDERGROUND FACILITIES, STRUCTURES, AND UTILITIES HAVE BEEN SHOWN BASED UPON INFORMATION OBTAINED FROM FIELD LOCATIONS BY UTILITY COMPANIES, AVAILABLE SURVEYS AND RECORDS. THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. IT IS ALSO POSSIBLE THAT THERE MAY BE OTHER UNDERGROUND FACILITIES, STRUCTURES, AND UTILITIES IN EXISTENCE THAT ARE NOT SHOWN. IT IS THE RESPONSIBILITY OF EACH INDIVIDUAL PARTY REFERENCING THIS PLAN TO DETERMINE THE EXACT LOCATION AND TYPE OF UNDERGROUND FACILITIES ON THE SITE. HAND EXCAVATE AT CRITICAL POINTS AS NECESSARY TO VERIFY LOCATIONS, SIZES, ELEVATIONS, FLOW LINES, ETC. IF A PROBLEM OR INTERFERENCE EXISTS, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING.

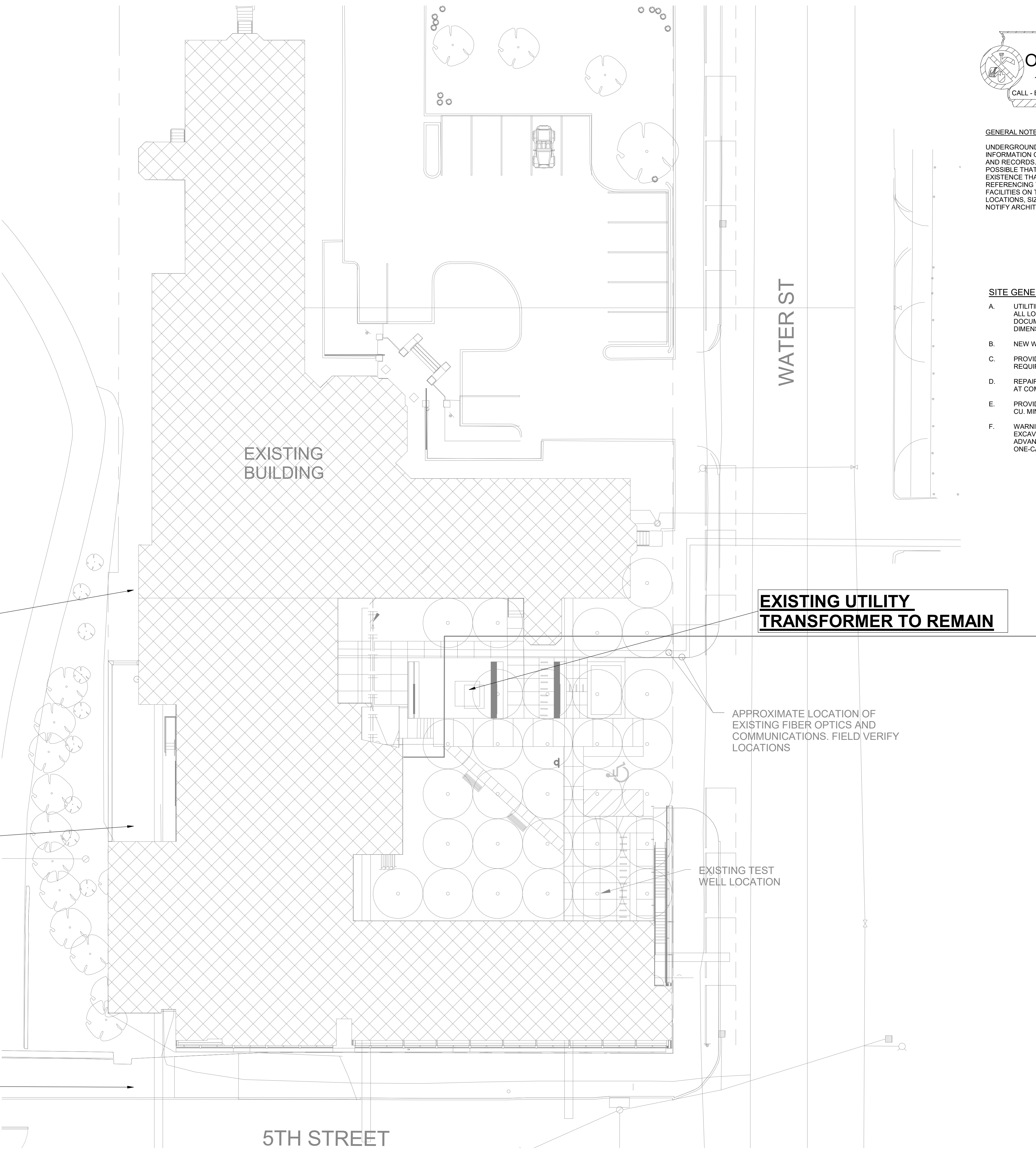
SITE GENERAL NOTES

- A. UTILITIES SHOWN ARE FROM THE PREVIOUS CONSTRUCTION DOCUMENTS. ALL LOCATIONS SHOULD BE CONSIDERED APPROXIMATE. AS-BUILT DOCUMENTS WERE NOT PROVIDED. VERIFY ALL SITE CONDITIONS AND DIMENSIONS ON SITE.
- B. NEW WORK SCOPE IS UNDERLINED AND BOLD ON PLAN.
- C. PROVIDE TRENCHING, PULL BOXES, BACKFILL, AND PATCHWORK AS REQUIRED TO COMPLETE SITE ELECTRICAL INSTALLATION.
- D. REPAIR ALL AFFECTED SURFACES AND RESTORE TO EXISTING CONDITIONS AT COMPLETION OF PROJECT.
- E. PROVIDE ALL SITE CONDUIT AS 1" MINIMUM, ALL CONDUCTORS AS #10 AWG CU. MINIMUM.
- F. WARNING - CALL BEFORE YOU DIG: LAW REQUIRES ANYONE DOING EXCAVATION, FENCING, PLANTING OR DRILLING TO CALL 48 HOURS IN ADVANCE. HAND DIG WITHIN 18 INCHES OF ANY LOCATE MARK OR FLAG. ONE-CALL 811

PROTECT LAWN FROM EQUIPMENT BEING USED

NEW LOCATION OF DIESEL GENERATOR

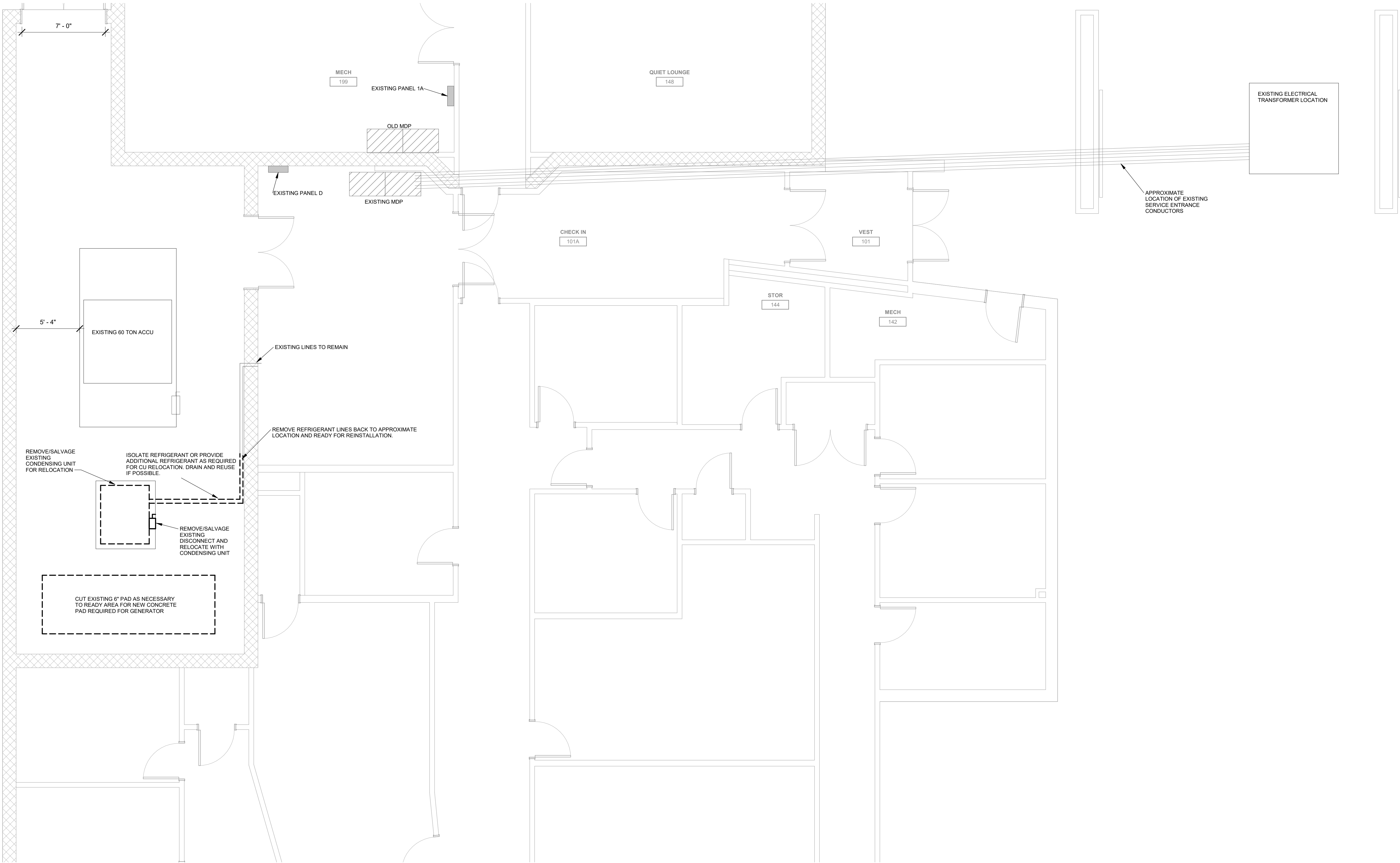
APPROXIMATE LOCATION OF CRANE AND FUEL TANK. COORDINATE TRAFFIC SIGNALING, TIMING, AND REQUIREMENTS WITH THE CITY OF SIOUX CITY.



1 EXISTING SITE PLAN
NOT TO SCALE

ELECTRICAL DEMOLITION NOTES

- A. DEMOLITION DRAWINGS PRESENT LAYOUT OF EXISTING CONDITIONS AND MAJOR ELECTRICAL ITEMS. FIELD VERIFY EXISTING CONDITIONS AND BECOME FAMILIAR WITH EXISTING ELECTRICAL SYSTEM AND DEMOLITION SCOPE BEFORE WORK BEGINS. CONTRACTOR SHALL NOTE EXISTING CONDITIONS AND NOTE DAMAGE BEFORE STARTING WORK.
- B. ADDITIONAL COMPONENTS MAY EXIST WHICH ARE NOT SHOWN. HANDLE SUCH ITEMS IN A MANNER SIMILAR TO THOSE ITEMS WHICH ARE SHOWN.
- C. REMOVE ELECTRICAL FACILITIES AND CLEAR THE AREA TO RECEIVE THE NEW WORK.
- a. REMOVE AND REINSTALL CEILING TILES AS REQUIRED TO REMOVE THE ELECTRICAL FACILITIES NOTED. REPLACE CEILINGSS TILES DAMAGED DURING DEMOLITION.
- b. KEEP EXISTING SYSTEMS OPERATIONAL DURING ALL PHASES OF CONSTRUCTION UNLESS NECESSARY FOR DEMOLITION.
- c. OBTAIN OWNER AND CM PERMISSION TO SHUT OFF SERVICES 2 WEEKS IN ADVANCE OR SYSTEMS WHICH MAY AFFECT OTHER AREAS BEYOND DEMOLITION AREA. INFORM OWNER AS TO THE REASON FOR AND THE DURATION OF THE SHUTDOWN.
- d. REPAIR AT CONTRACTORS EXPENSE ANY DAMAGED CONDUIT OR WIRE NOT IDENTIFIED FOR DEMOLITION.
- D. ALL WIRING FOR REMODELED AREAS SHALL BE NEW UNLESS SPECIFICALLY NOTED OTHERWISE.
- E. PROTECT EXISTING DEVICES IDENTIFIED TO REMAIN OR BE RELOCATED. IF AN EXISTING DEVICE CANNOT BE REINSTALLED NOTIFY DESIGN TEAM DURING DEMOLITION. REPLACE FUNCTIONING ITEMS DAMAGED DURING DEMOLITION.



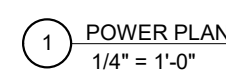
2 DEMO PLAN
1/4" = 1'-0"

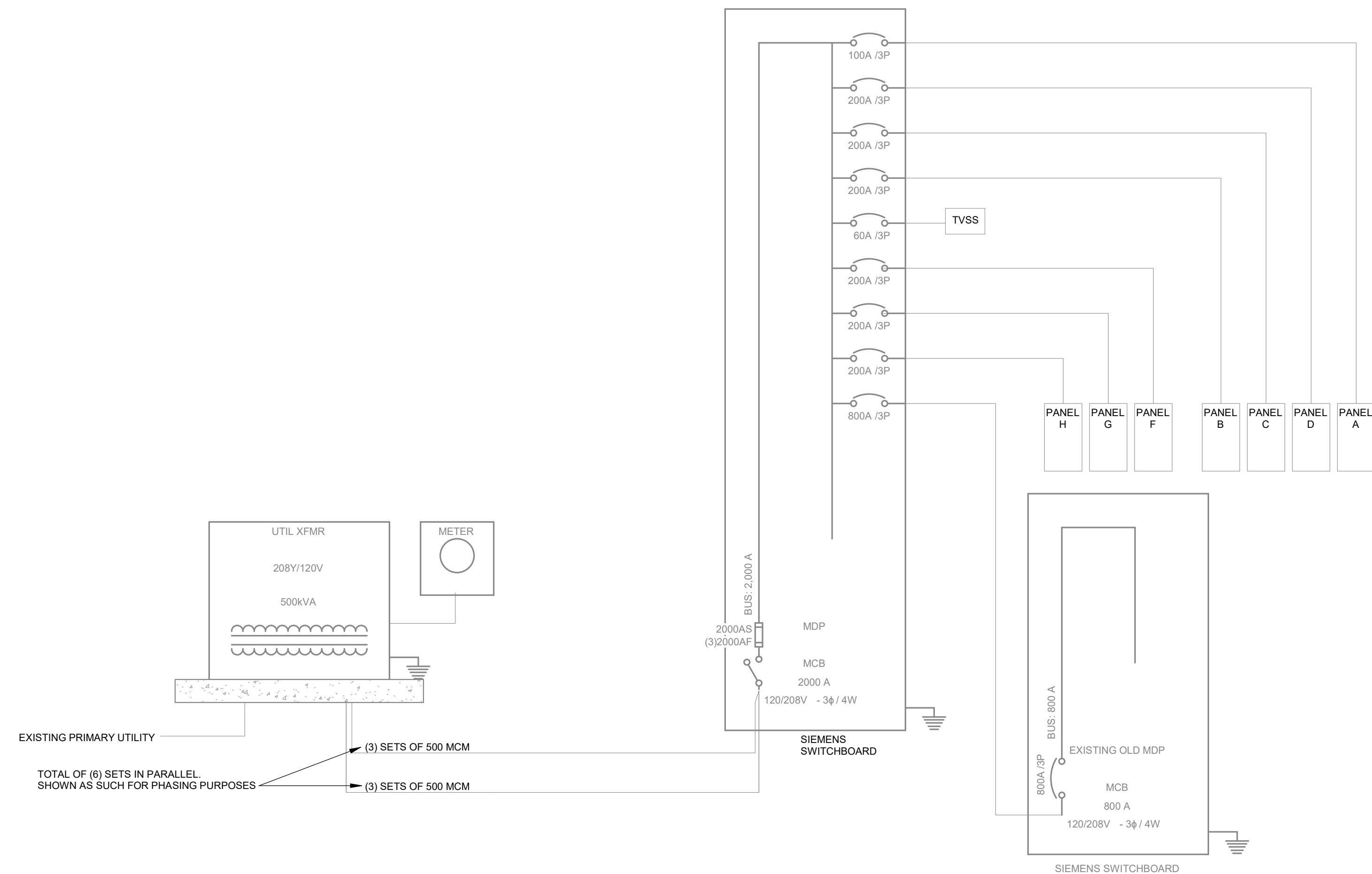
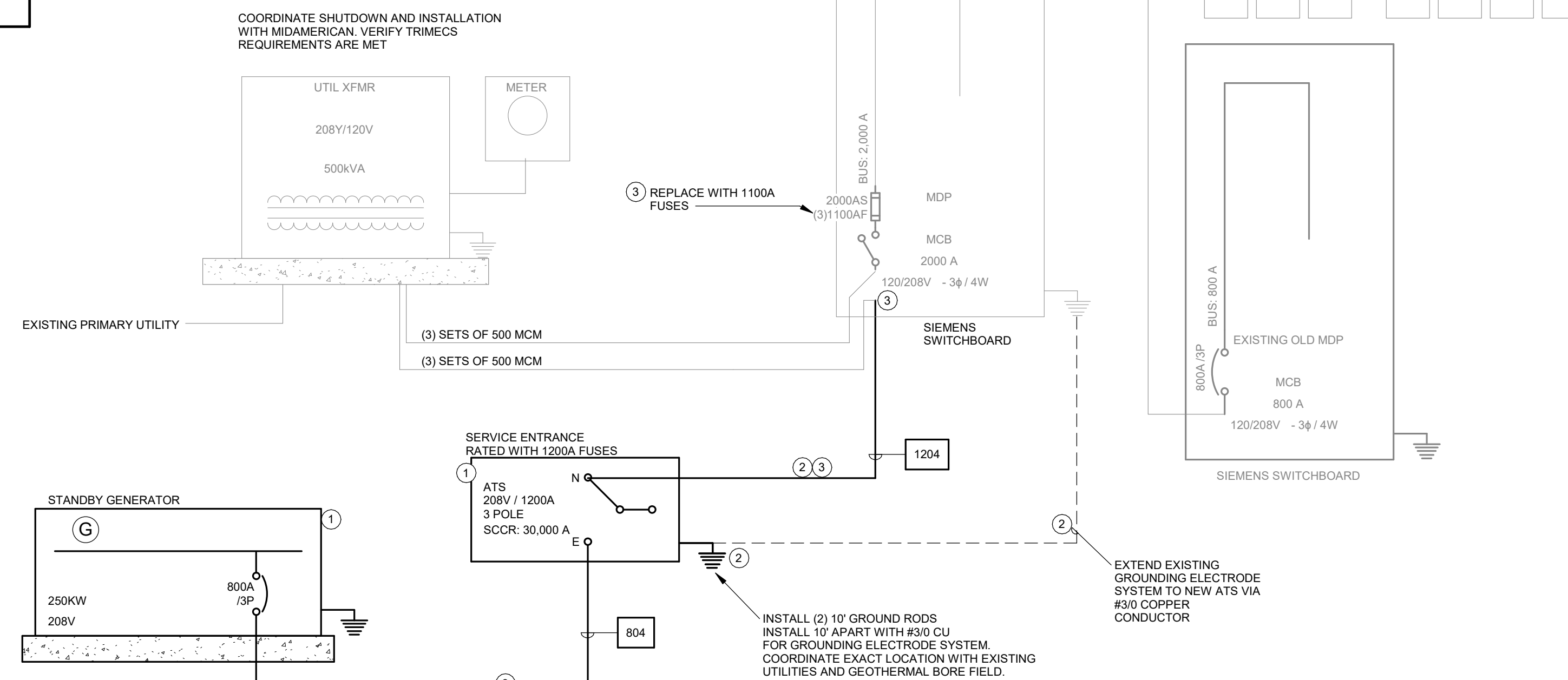
Project No:	9466.00
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Drawing Name:
ELECTRICAL POWER

POWER GENERAL NOTES

- A. COORDINATE LOCATION/INSTALLATION OF MECHANICAL AND ELECTRICAL WORK WITH ALL OTHER TRADES. NO ASPECT OF A SYSTEM INSTALLATION OR ITS ROUGH-IN SHALL COMMENCE UNTIL PROPER AND TIMELY COORDINATION WITH ALL OTHER TRADES HAS BEEN OBTAINED. INFORMATION NOT TRANSMITTED: ITEMS TO BE COORDINATED SHALL INCLUDE BUT NOT BE LIMITED TO: BUILDING STRUCTURE, SHEET METAL PIPING SYSTEMS, LIGHT FIXTURES, CONDUITS, CABLE TRAYS, ETC. REFER TO ALL GENERAL MECHANICAL AND ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
- B. COORDINATE ELECTRICAL REQUIREMENTS FOR MECHANICAL UNITS WITH MECHANICAL CONTRACTOR AND FINAL MECHANICAL SHOP DRAWINGS. PROVIDE PENETRATIONS REQUIRED FOR ROUTING RECAITS THROUGH ROOF OR FLOOR SLAB. COORDINATE WITH MECHANICAL CONTRACTOR TO PROVIDE CONDUIT SLEEVES AND FIRE STOPPING TO MAINTAIN RATING.



EXISTING SERVICE LOAD SUMMARY
(PER NEC 220.87)EXISTING MAXIMUM DEMAND: 189kW
PEAK DEMAND CALCULATION: $189\text{KW} \times 125\% \text{ (NEC 220.87)} = 236 \text{ kW}$
LOAD: $236\text{KW} / (208\text{V}/3\text{P}) = 656\text{A}$ 4 EXISTING ONE-LINE DIAGRAM
NOT TO SCALE1 SHUTDOWN #1 - ONE-LINE DIAGRAM
NOT TO SCALE

8 RECOMMENDED PHASING

PREP WORK

- REMOVE CONCRETE
- INSTALL NEW CONCRETE
- RELOCATE ACCU UNIT

- INSTALL NEW GENERATOR AND ATS ON PADS
- INSTALL NEW CONDUCTORS FROM GENERATOR TO ATS. INSTALL NEW CONDUIT FROM GENERATOR TO ATS AND ATS TO MDP MAIN SERVICE SECTION. INSTALL NEW GROUNDING CONDUCTORS AS SHOWN.
- SHUTDOWN #1 - MAXIMUM OF 4 HOUR DURATION
 - COORDINATE UTILITY SHUTDOWN WITH MIDAMERICAN ENERGY
 - REPLACE SERVICE FUSES IN MDP. INSTALL FUSE CLIPS AND ACCESSORIES AS NECESSARY TO FIT NEW FUSES.
 - REMOVE (3) CONDUCTOR SETS FROM TERMINALS.
 - EXTEND (3) CONDUCTOR SETS TO ATS LOCATION.
 - TURN UTILITY POWER BACK ON.
 - GROUND CLUSTER THE (3) EXISTING CONDUCTORS NO LONGER IN USE AT THE UTILITY TRANSFORMER AND AT THE MDP IF ALTERNATE #1 IS NOT SELECTED.
- ALTERNATE #1:
 - SHUTDOWN #2 - MAXIMUM OF 3 HOUR DURATION
 - COORDINATE UTILITY SHUTDOWN WITH MIDAMERICAN ENERGY
 - REMOVE (3) CONNECTED CONDUCTORS IN THE MDP THAT ARE NO LONGER IN USE.
 - TERMINATE (3) ATS CONNECTED CONDUCTORS ONTO FUSES IN THE MDP.
 - UTILIZE PERMANENT GENERATOR TO TURN POWER BACK ON.
 - REMOVE (3) SETS OF CONDUCTORS FROM TRANSFORMER SIDE. CONTRACTOR TO SALVAGE EXISTING COPPER.

NOTES:

SHUTDOWNS TO BE NO LONGER THAN MAXIMUM DURATIONS NOTED. SHUTDOWNS TO TAKE PLACE DURING THE DAY, BETWEEN THE HOURS OF 9AM AND 3PM. CONTRACTOR TO HAVE OAC MEETING TO COORDINATE SHUTDOWN. OBTAIN OWNER AND CM PERMISSION TO SHUT OFF SERVICES 1 WEEK IN ADVANCE OF SHUTDOWN.

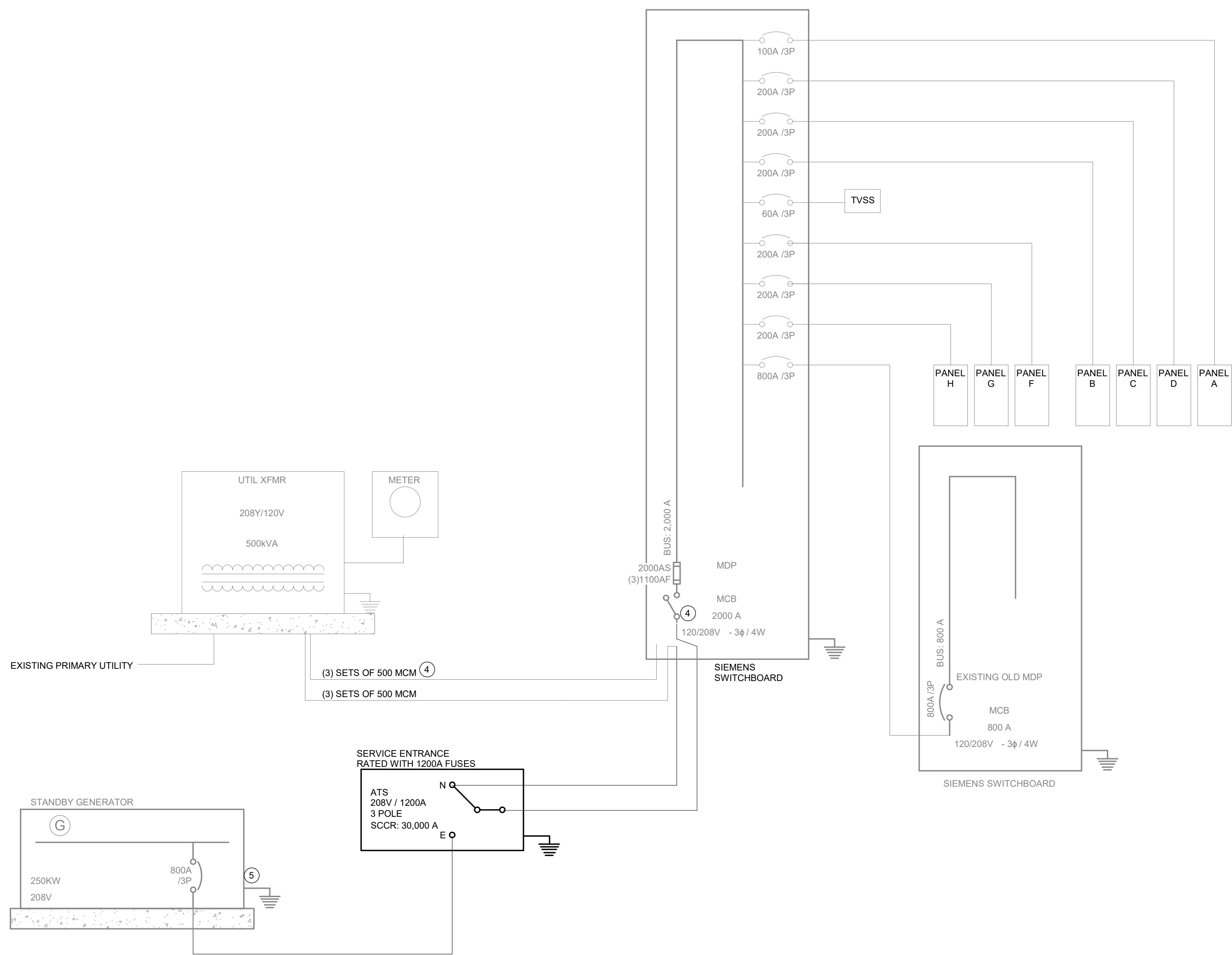
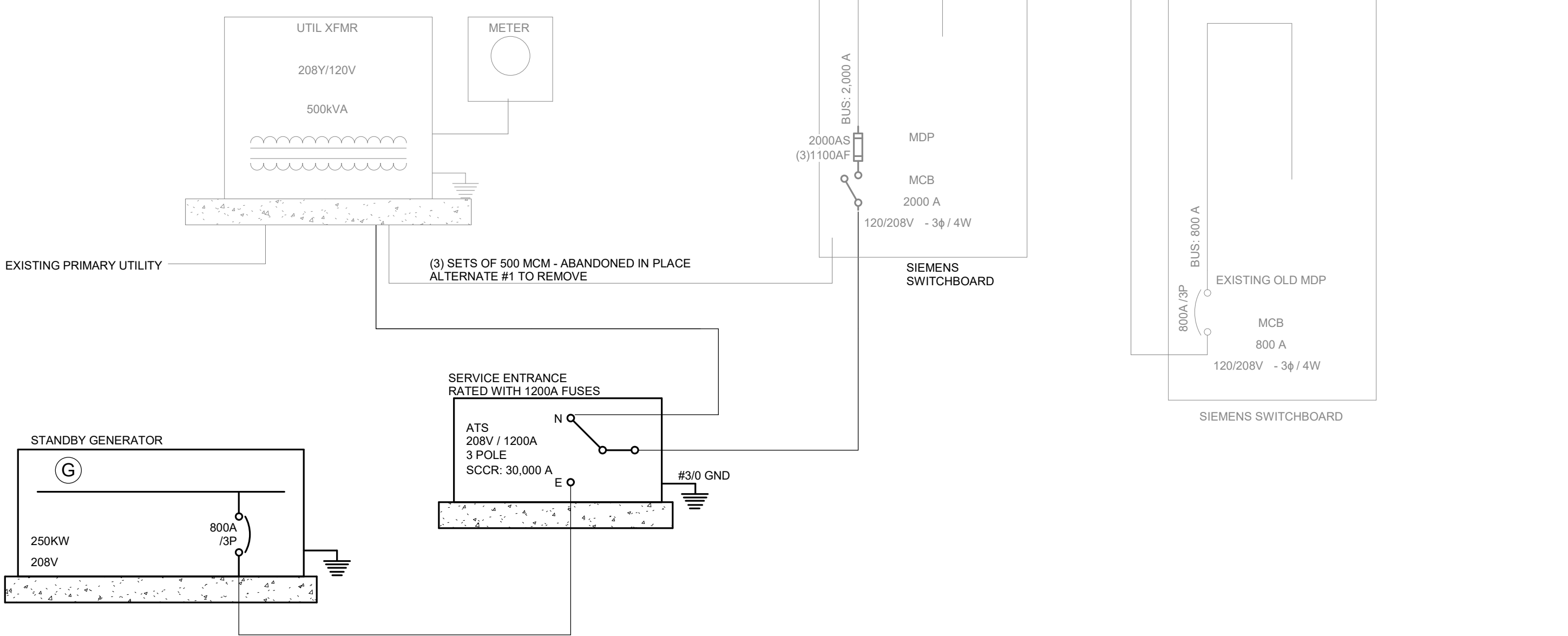
GENERATOR NOTES

- BASIS OF DESIGN IS 250KW DIESEL GENERATOR WITH A 24 HOUR BASE DAY TANK.
- SOUND ATTENUATING TYPE 1 ENCLOSURE

RISER DIAGRAM GENERAL NOTES

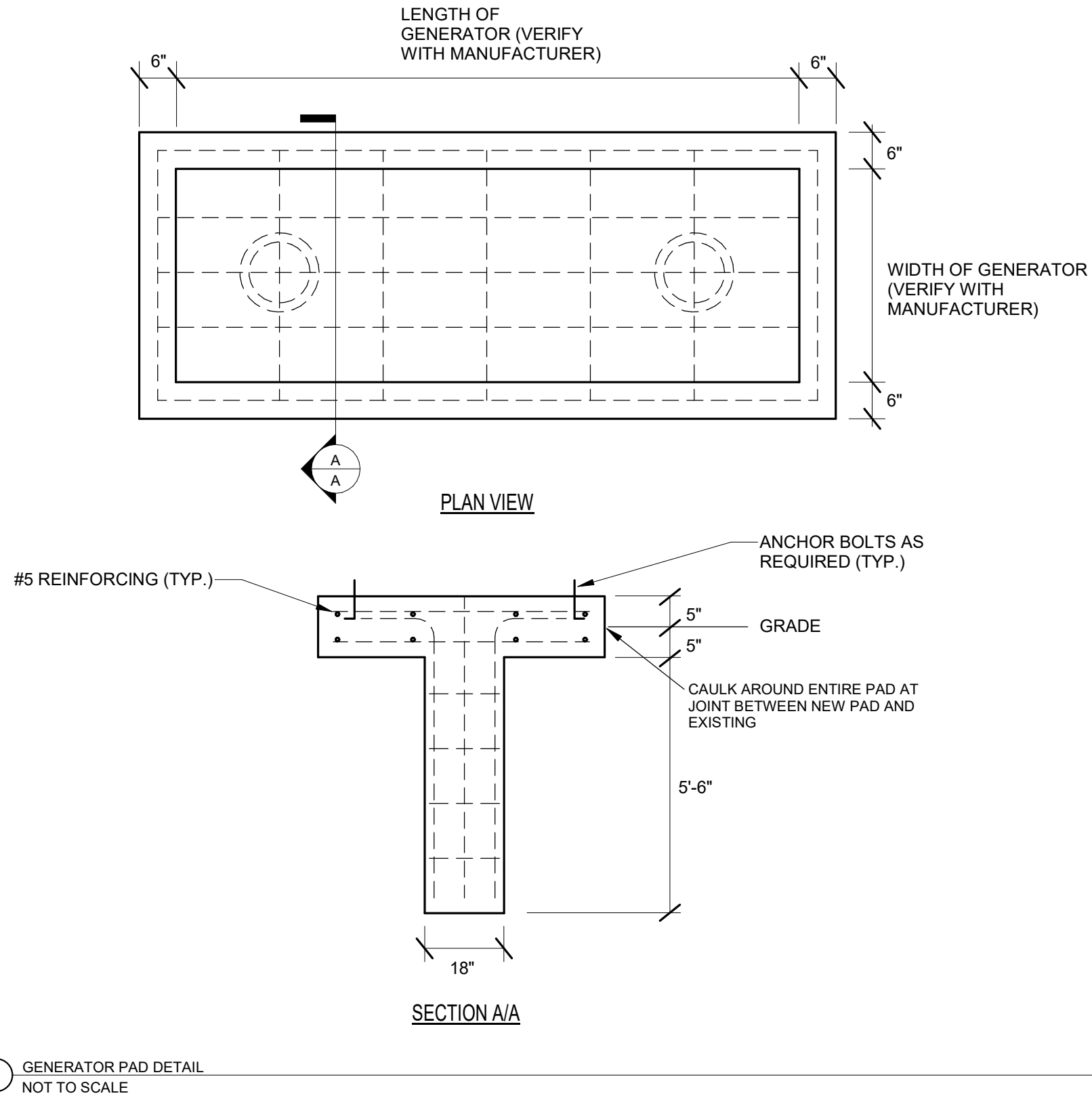
- DIAGRAM INDICATES OVERALL LAYOUT OF ELECTRICAL DISTRIBUTION SYSTEM. REFER TO FLOOR PLANS FOR EQUIPMENT LOCATIONS.
- USE COPPER CONDUCTORS UNLESS OTHERWISE INDICATED.
- MATCH NEUTRAL CONDUCTOR SIZE TO THE PHASE CONDUCTORS UNLESS OTHERWISE NOTED.
- ALL WIRING SHALL BE IN RACEWAY AS NOTED. REFER TO SPECIFICATIONS FOR CONDUIT APPLICATION REQUIREMENTS. INSTALL UTILITY TRANSFORMER PAD, METERING EQUIPMENT, AND SERVICE ENTRANCE FEEDERS IN ACCORDANCE WITH UTILITY COMPANY REQUIREMENTS.

FEEDER SCHEDULE				
TAG	PHASE	GROUND	CONDUCTOR MATERIAL	CONDUIT
804	2- SETS (4) 500 MCM	1/0	COPPER	(2) 4"
1204	3- SETS (3) 600 MCM	3/0	COPPER	(3) 4"

2 ALTERNATE - SHUTDOWN #2 - ONE-LINE DIAGRAM
NOT TO SCALE3 COMPLETE - ONE-LINE DIAGRAM
NOT TO SCALE



1 RELOCATE ACQU
1/4" = 1'-0"



3 CONDUIT ROUTING
1/4" = 1'-0"



4 CONDENSING UNIT EXISTING LOCATION
1/4" = 1'-0"