

# SERVICE GENERATOR, REPLACE ATS & RECONDITION SWITCHGEAR SOUTHEAST CORRECTIONAL CENTER CHARLESTON, MISSOURI

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OWNER: STATE OF MISSOURI  
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DEPARTMENT OF  
CORRECTIONS

DESIGNER: TODD KUNO

PROJECT NUMBER: C2329-01

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

SITE NUMBER: 7020  
ASSET NUMBER: 9327020021

SHEET NUMBER:

**G-00**

01 OF 06 SHEETS  
SEPTEMBER 09, 2024





Date: 09-09-2024  
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SOUTHEAST  
CORRECTIONAL CENTER  
300 PEDRO SIMMONS DR.  
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ISSUE DATE: 09/09/2024

CAD DWG FILE: E-00  
DRAWN BY: AO  
CHECKED BY: GF  
DESIGNED BY: TLK

SHEET TITLE:  
**ELECTRICAL  
SYMBOLS AND  
LEGEND**

SHEET NUMBER:

**E-00**

02 OF 6 SHEETS  
09/09/2024

## LEGEND AND ABBREVIATIONS (SEE SPECIFICATIONS & SCHEDULES)

NOTES: 1. ALL SYMBOLS AND ABBREVIATIONS ARE NOT NECESSARILY USED ON THESE PLANS.  
2. IN GENERAL, SYMBOLS SHOWN WITH LIGHT LINES DENOTE EXISTING WORK. SYMBOLS SHOWN WITH HEAVY LINES DENOTE NEW WORK.

DRAWING REFERENCES	
	PLAN DETAIL REFERENCE TITLE
	KEYED NOTE DESIGNATION
	NORTH ARROW

ABBREVIATIONS	
A.F.F	: ABOVE FINISHED FLOOR
C	: CONDUIT
E.C.	: ELECTRICAL CONTRACTOR
ER	: EXISTING RELOCATED
ETR	: EXISTING TO REMAIN
E.D.	: GENERAL CONTRACTOR
GND	: GROUND
TYP.	: TYPICAL
U.O.N.	: UNLESS OTHERWISE NOTED

LINE TYPE LEGEND	
	EXISTING TO REMAIN OR NEW WORK BY OTHERS (LIGHT, SOLID LINE)
	NEW WORK BY THIS CONTRACTOR (DARK, SOLID LINE)
	EXISTING TO BE REMOVED BY THIS CONTRACTOR (DARK, DASHED LINE, DEMOLITION PLANS)
	2-HOUR FIRE RATED WALL

POWER EQUIPMENT	
	PANELBOARD (SURFACE)
	PANELBOARD (FLUSH)

GENERAL NOTES	
1.	MAKE ALL INSTALLATIONS IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG).
2.	COORDINATE EXACT EQUIPMENT LOCATIONS WITH EXISTING CONDITIONS. EQUIPMENT LOCATIONS SHOWN ON ELECTRICAL PLANS ARE DIAGRAMMATICAL ONLY AND MIGHT NOT BE EXACT.
3.	CONCEAL ALL CONDUIT IN WALLS, PARTITIONS, ABOVE CEILINGS, ETC. UNLESS OTHERWISE INDICATED ON THE PLANS OR IN THE SPECIFICATIONS. CONDUIT ROUTED IN MECHANICAL ROOMS, ELECTRICAL ROOMS, AND STORAGE ROOMS WITHOUT CEILINGS MAY BE ROUTED EXPOSED.
4.	REPAIR ALL OPENINGS MADE IN EXISTING WALLS, PARTITIONS, ETC TO ACCOMMODATE WORK OF THIS DISCIPLINE TO MATCH THE SURROUNDING CONDITIONS, USING WORKERS QUALIFIED IN THE APPROPRIATE TRADE. APPROPRIATELY GROUT OR SEAL ALL CONDUITS THROUGH WALLS.
5.	ALL MATERIALS USED TO SEAL PENETRATIONS OF FIRE RATED WALLS AND FLOORS MUST HAVE BEEN TESTED AND CERTIFIED AS A SYSTEM PER ASTM E814 STANDARDS FOR FIRE TESTS OF THROUGH-PENETRATION FIRESTOPS.
6.	REPLACE OR REINSTALL ALL PORTIONS OF THE BUILDING (CEILING TILES, WALLS, ETC) REMOVED TO ACCOMMODATE THE INSTALLATION OF ANY FIRE ALARM DEVICE, EQUIPMENT, ETC., USING WORKERS QUALIFIED IN THE APPROPRIATE TRADE.
7.	TAKE PHOTOS OF ANY EXISTING CEILING TILE OR WALLS THAT ARE DAMAGED PRIOR TO THE COMMENCEMENT OF WORK. ANY DAMAGED WALLS OR CEILING SUSPECTED OF BEING DAMAGED DURING THE CONSTRUCTION OF THIS PROJECT WILL BE REPLACED/REPAIRED BY CONTRACTOR.

GENERATOR TESTING	
1.	GENERATOR SHALL BE TESTED PRIOR TO DEMO OF SWITCHGEAR RELAY, PLCS AND CONTROLS. THE CONTRACTOR IS RESPONSIBLE FOR DOCUMENTING THE AS FOUND CONDITIONS.
2.	CONTRACTOR RESPONSIBLE FOR OPERATIONAL LOAD BANK SYSTEM TESTING OF GENERATOR AFTER INSTALLATION OF NEW SWITCHGEAR RELAY, PLCS AND CONTROLS.

DEMOLITION NOTES	
1.	REMOVE, CAP AND RELOCATE EQUIPMENT, DEVICES, CONDUIT, WIRE, ETC., AS SHOWN AND SPECIFIED ON DRAWINGS, AND AS MAY BECOME NECESSARY BECAUSE OF EXISTING FIELD CONDITIONS. FAILURE TO VISIT THE SITE AND TO TAKE ALL EXISTING CONDITIONS INTO ACCOUNT WILL NOT ALLOW FOR CHANGES TO THE SCOPE OF WORK.
2.	MAINTAIN CIRCUIT CONTINUITY TO ALL EXISTING FIXTURES, EQUIPMENT, OUTLETS, ETC., TO REMAIN IN USE WHETHER NOTED ON THE PLANS OR NOT. FIELD VERIFY EXISTING ITEMS TO REMAIN IN USE. RECONNECT RACEWAYS AND WIRING FOR EXISTING CIRCUITS WHICH MUST BE RE-ROUTED OR WHICH ARE PARTIALLY ABANDONED TO POWER THE REMAINING OUTLETS ON THE CIRCUIT.
3.	FOR ALL WORK SHOWN TO BE REMOVED DURING THE DEMOLITION PHASE, REMOVE ALL WIRING AND CABLES BACK TO THEIR SOURCE UNLESS NOTED OTHERWISE TO BE RE-USED FOR NEW WORK. REMOVE ALL UNUSED CONDUIT THAT IS EXPOSED OR ABOVE ACCESSIBLE CEILINGS WHICH IS AFFECTED BY OR IS IN THE AREA OF THE DEMOLITION WORK.
4.	WHERE EQUIPMENT, DEVICES, CONDUIT, BOXES, AND SUPPORTING HARDWARE ARE REMOVED, PATCH AND FINISH THE SURFACE AS REQUIRED TO MATCH THE EXISTING, USING WORKERS QUALIFIED IN THE APPROPRIATE TRADE.
5.	TAKE ALL REMOVED MATERIALS FROM THE PROJECT SITE, EXCEPT FOR THOSE TO BE RELOCATED, STORED, OR TURNED OVER TO THE USING AGENCY.
6.	ACCEPTANCE OF CONTRACT MEANS INSTALLER ACCEPTS EXISTING CONDITIONS.
7.	PROVIDE A BLANK COVER PLATE WHERE A FLUSH DEVICE IS BEING REMOVED FROM WALLS THAT ARE TO REMAIN. MATCH THE COLOR, MATERIAL AND FIRE RATING TO THE EXISTING SURFACE IN THE ROOM OR SPACE.
8.	LEGALLY DISPOSE OF HAZARDOUS MATERIALS OR OTHER EQUIPMENT CONTAINING PCBs. COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS.
9.	MODIFY EXISTING PANEL DIRECTORIES (OR REPLACE) FOR PANELBOARDS WHICH HAVE HAD ALTERATIONS TO THE CIRCUITS ORIGINATING THEREIN. DESCRIBE THE LOAD AND LOCATION. TYPE, DO NOT HAND LETTER NEW PANELBOARD DIRECTORIES.
10.	PATCH OR FILL ANY EXPOSED GAP BETWEEN CONDUIT AND WALL WERE NEW HOLES ARE DRILLED IN EXISTING WALLS.
11.	PAINT TO A MINIMUM OF 1 FT ALL SIDE OF PATCH OR REMOVED SURFACE CONDUIT.

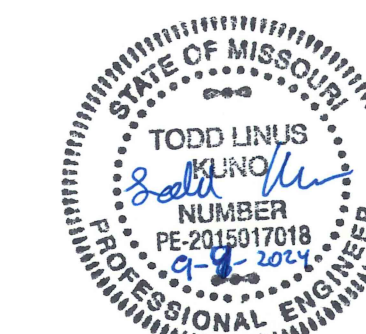


DRAWING INDEX	
NUMBER	TITLE
G-00	COVER SHEET
E-00	ELECTRICAL SYMBOLS AND LEGEND
E-10	DEMO ENLARGED ELECTRICAL PLAN
E-11	NEW WORK - ENLARGED ELECTRICAL PLAN
E-60	DEMO CAMPUS ONE-LINE
E-61	NEW WORK CAMPUS ONE-LINE

BASE BID / ALT BID	
BASE BID:	REPLACE GENERATOR MV METAL CLAD AND CONTROLS, GENERATOR BATTERY SYSTEM, AND GENERATOR CONTROLLER.
ADD ALT 1:	MAINTENANCE GENERATOR.
ADD ALT 2:	MAINTENANCE G&W PAD MOUNT SWITCH.
ADD ALT 3:	ADD LOAD CHILLER SHEDDING.
ADD ALT 4:	ADD REMOTE GENERATOR ANNUNCIATOR PANEL.

BID DOCUMENTS





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CHECKED BY: GF  
DESIGNED BY: TLK

SHEET TITLE:

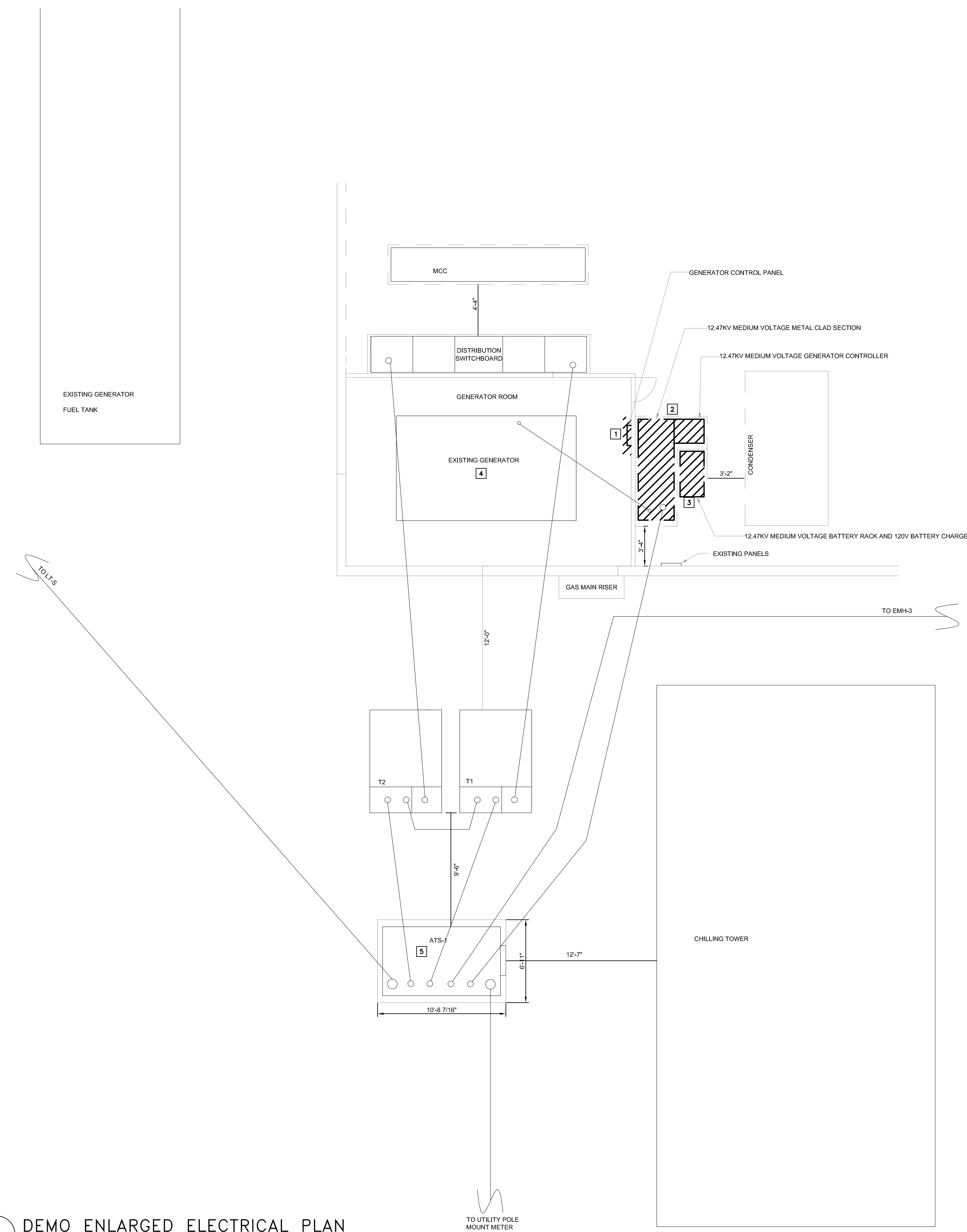
DEMO  
ENLARGED  
ELECTRICAL PLAN

SHEET NUMBER:

E-10

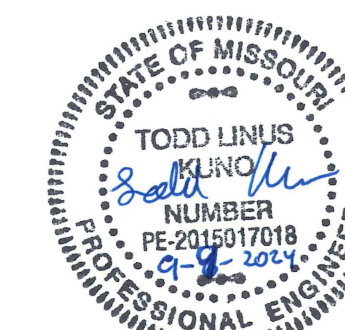
03 OF 6 SHEETS  
09/09/2024

- # KEYED NOTES:**
1. DEMO AND REPLACE GENERATOR CONTROL PANEL.
  2. DEMO AND REPLACE MEDIUM VOLTAGE GENERATOR METAL CLAD SWITCHGEAR AND CONTROL SECTION.
  3. DEMO AND REPLACE MEDIUM VOLTAGE BATTERY RACK AND CHARGER.
  4. PROVIDE MAINTENANCE FOR EXISTING GENERATOR UNDER ALT BID 1. REFER TO SPEC APPENDIX B FOR GENERATOR INSPECTION RECOMMENDED MAINTENANCE.
  5. PROVIDE MAINTENANCE FOR EXISTING PAD MOUNT AIR INSULATED SWITCH UNDER ALT BID 2. REFER TO SPEC APPENDIX A FOR MANUFACTURE RECOMMENDED MAINTENANCE.



**DEMO ENLARGED ELECTRICAL PLAN**  
SCALE: 3/16"=1'-0"

BID DOCUMENTS



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ISSUE DATE: 09/09/2024

CAD DWG FILE: E-11  
DRAWN BY: AO  
CHECKED BY: GF  
DESIGNED BY: TLK

SHEET TITLE:  
NEW WORK -  
ENLARGED  
ELECTRICAL PLAN

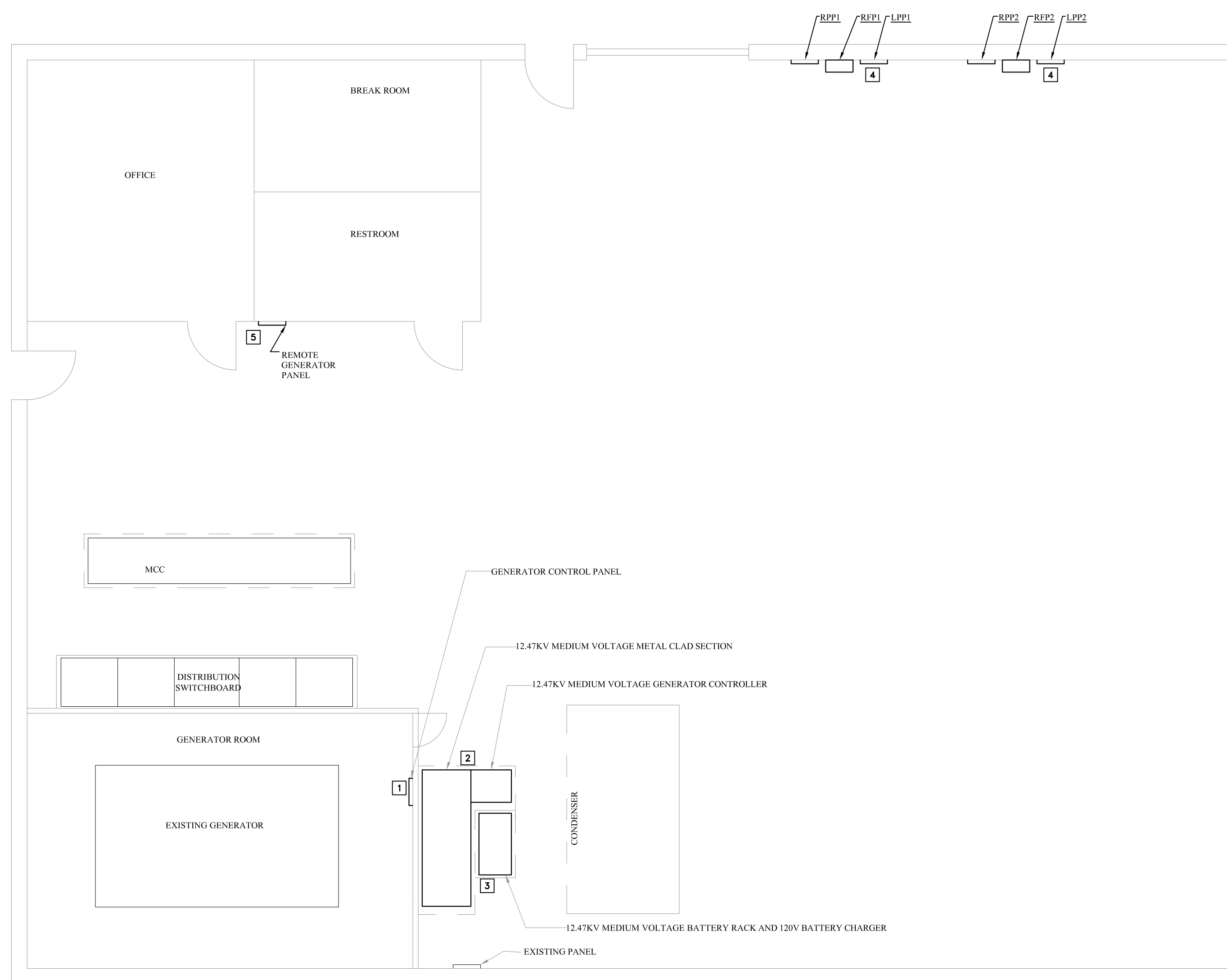
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E-11

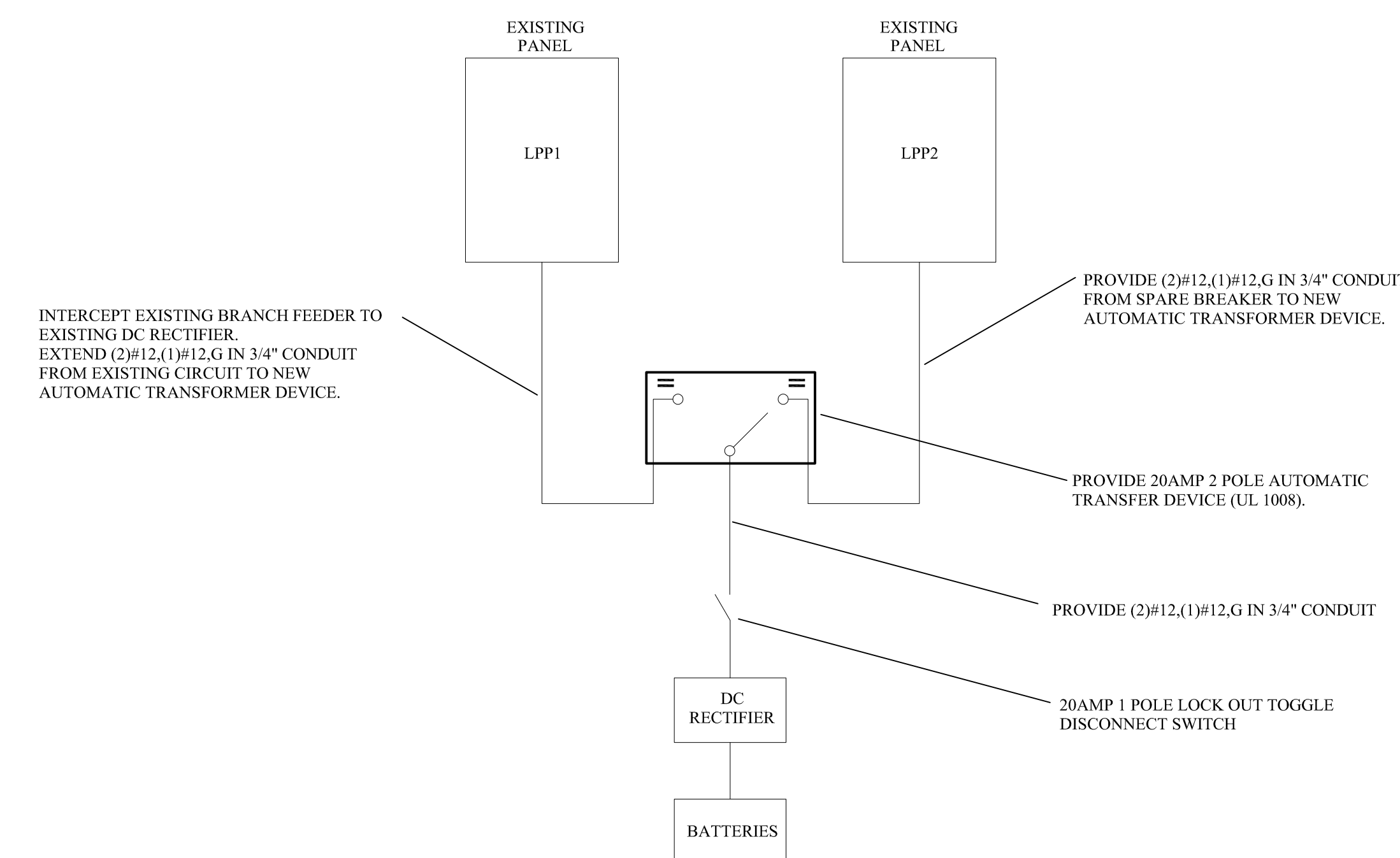
04 OF 6 SHEETS  
09/09/2024

**KEYED NOTES:**

1. PROVIDE NEW CAT EMCP 4.2 GENERATOR CONTROL PANEL.
2. PROVIDE NEW MEDIUM VOLTAGE GENERATOR METAL CLAD SECTION.
3. PROVIDE NEW DC RECTIFIER FOR MV RELAY AND CIRCUIT BREAKER. THE RECTIFIER SHALL HAVE 2 SOURCES OF POWER. REFER TO DETAIL ON SHEET.
4. CONNECT TO EXISTING CABLE FROM MEDIUM VOLTAGE GEAR.
5. PROVIDE NEW REMOTE GENERATOR PANEL UNDER ALTERNATE BID #4.



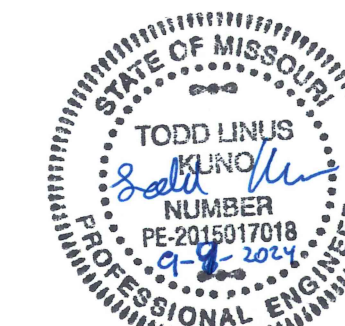
**A** NEW WORK - ENLARGED ELECTRICAL PLAN  
SCALE: 3/16"=1'-0"



**B** DC RECTIFIER DETAIL  
SCALE: NOT TO SCALE

BID DOCUMENTS





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REVISION: \_\_\_\_\_  
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DRAWN BY: AO  
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DESIGNED BY: TLK

SHEET TITLE:

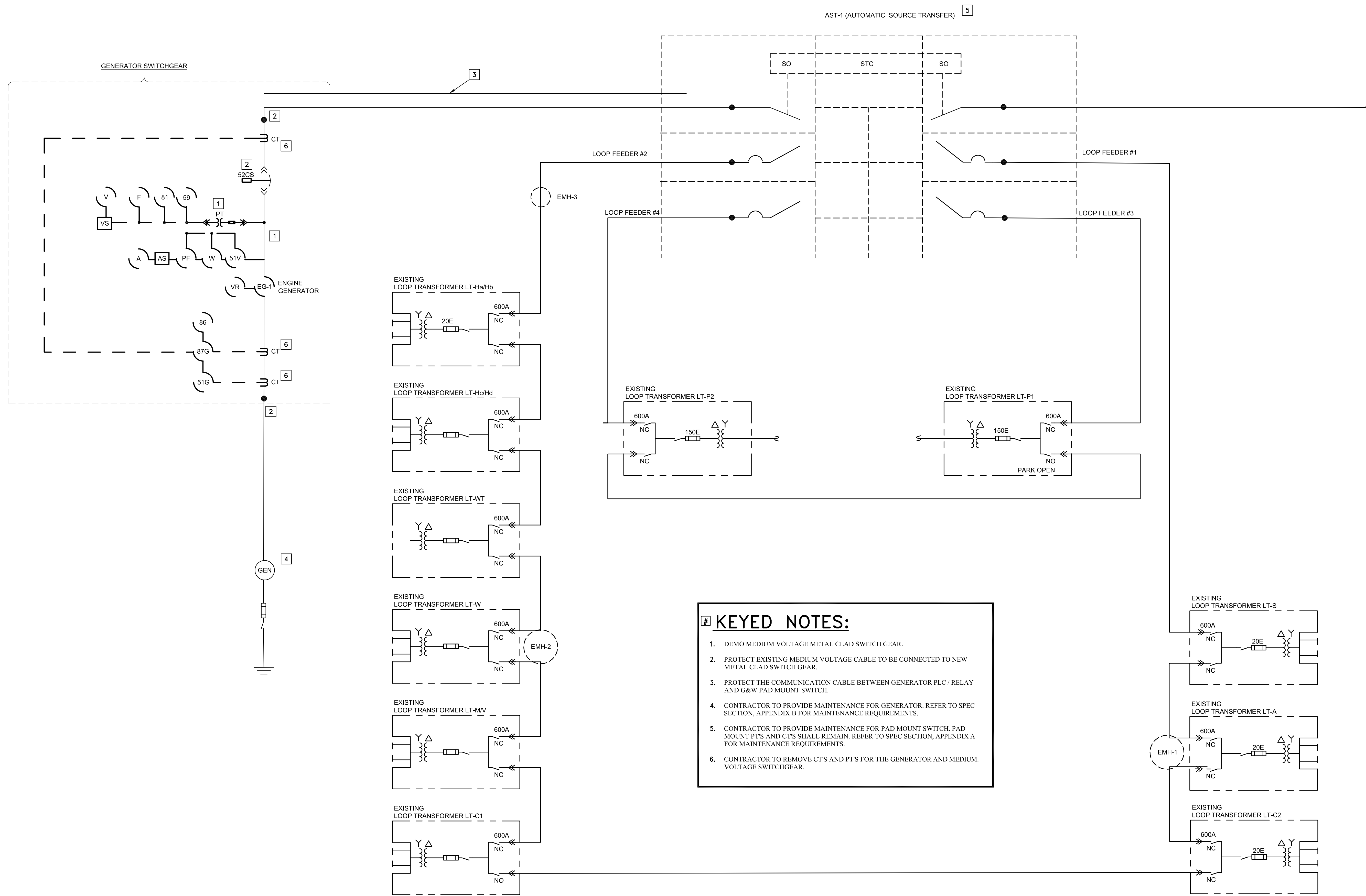
DEMO  
CAMPUS  
ONE-LINE

SHEET NUMBER:

E-60

5 OF 6 SHEETS  
09/09/2024

BID DOCUMENTS

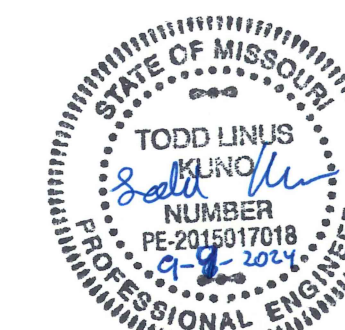


**KEYED NOTES:**

1. DEMO MEDIUM VOLTAGE METAL CLAD SWITCH GEAR.
2. PROTECT EXISTING MEDIUM VOLTAGE CABLE TO BE CONNECTED TO NEW METAL CLAD SWITCH GEAR.
3. PROTECT THE COMMUNICATION CABLE BETWEEN GENERATOR PLC / RELAY AND G&W PAD MOUNT SWITCH.
4. CONTRACTOR TO PROVIDE MAINTENANCE FOR GENERATOR. REFER TO SPEC SECTION, APPENDIX B FOR MAINTENANCE REQUIREMENTS.
5. CONTRACTOR TO PROVIDE MAINTENANCE FOR PAD MOUNT SWITCH. PAD MOUNT PTS AND CT'S SHALL REMAIN. REFER TO SPEC SECTION, APPENDIX A FOR MAINTENANCE REQUIREMENTS.
6. CONTRACTOR TO REMOVE CT'S AND PT'S FOR THE GENERATOR AND MEDIUM VOLTAGE SWITCHGEAR.

**A DEMO CAMPUS ONE-LINE**  
SCALE: NOT TO SCALE





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ISSUE DATE: 09/09/2024

CAD DWG FILE: E-61  
DRAWN BY: AO  
CHECKED BY: GF  
DESIGNED BY: TLK

SHEET TITLE:

NEW MEDIUM  
VOLTAGE ONE-LINE  
AND ELEVATION

SHEET NUMBER:

E-61

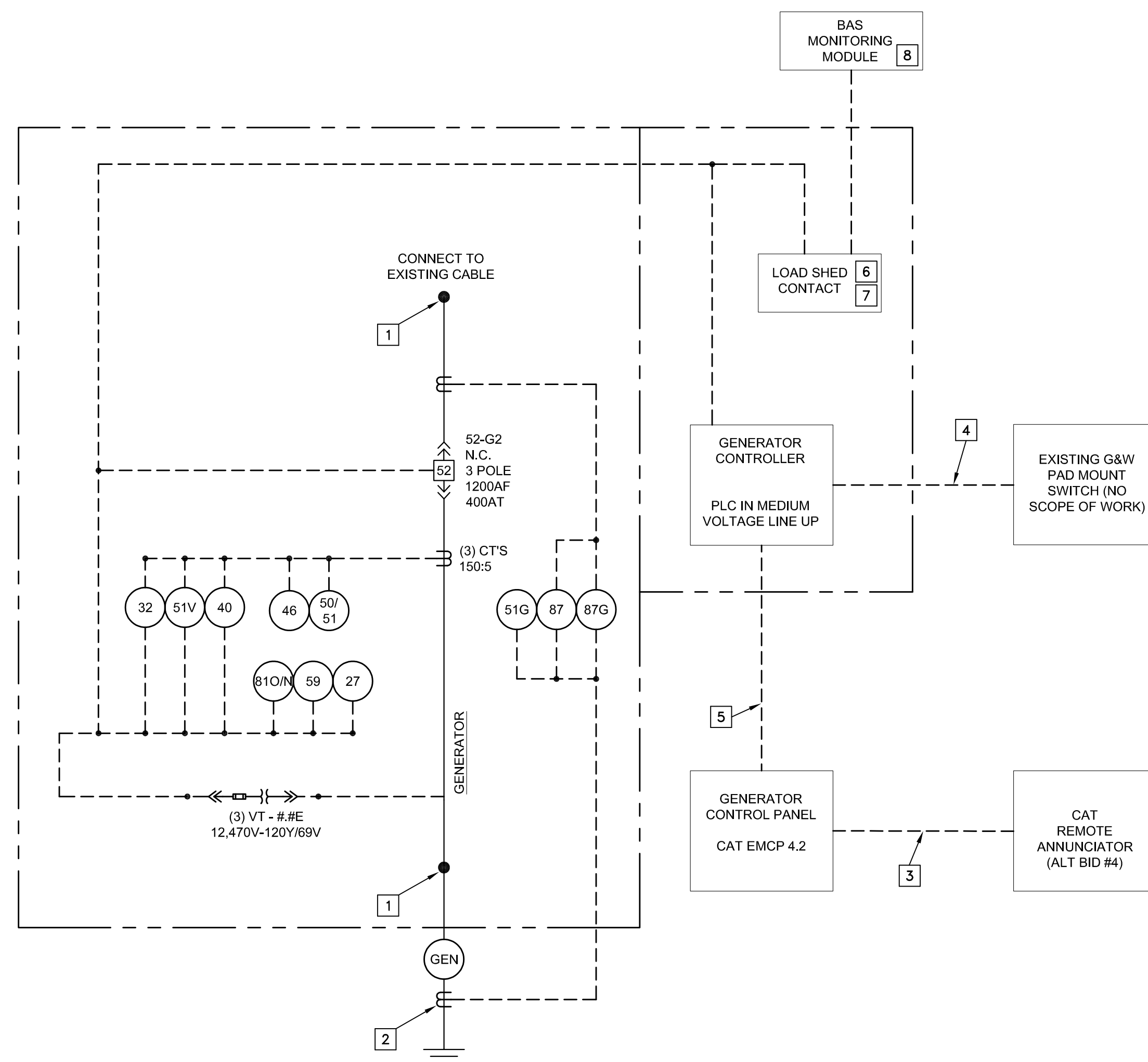
6 OF 6 SHEETS  
09/09/2024

**KEYED NOTES:**

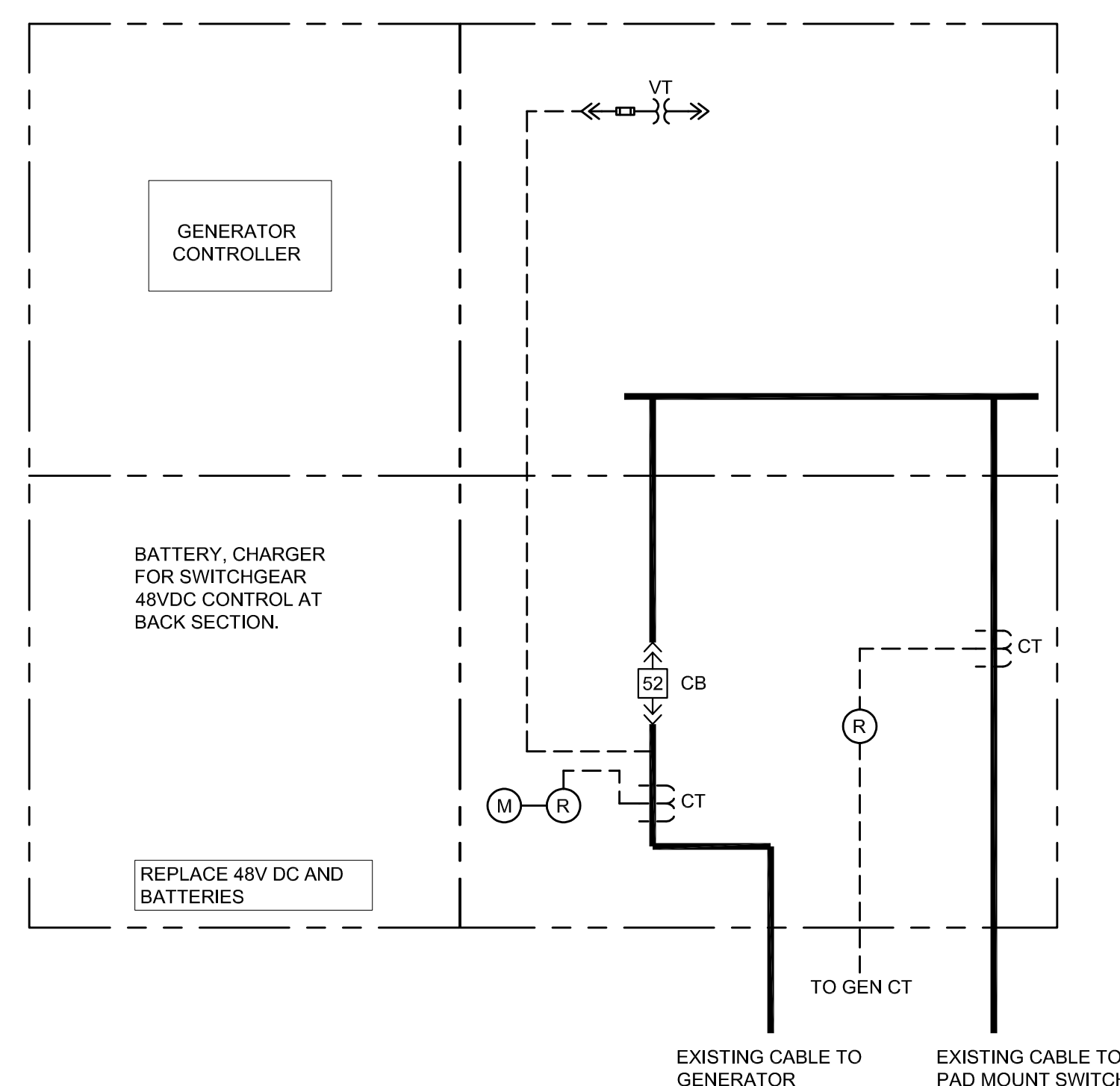
- CONTRACTOR TO EXTEND AND RECONNECT EXISTING CONDUCTORS TO NEW MEDIUM VOLTAGE SWITCH.
- PROVIDE NEW CT AND CONTROL WIRE (DEMO EXISTING CT) FOR GENERATOR CURRENT DIFFERENTIAL.
- PROVIDE COMMUNICATION CABLE IN 1" CONDUIT BETWEEN GENERATOR CONTROLLER AND REMOTE GENERATOR ANNUNCIATOR.
- EXTEND EXISTING COMMUNICATION CABLE BETWEEN MEDIUM VOLTAGE GENERATOR PLC AND G&W SWITCH. NEW MEDIUM VOLTAGE RELAY AND PLC SHALL MAINTAIN EXISTING COMMUNICATION REQUIREMENTS FOR G&W SWITCH. REQUIREMENTS ARE LISTED ON THIS PAGE.
- CONTRACTOR TO PROVIDE COMMUNICATION CABLE BETWEEN GENERATOR CONTROLLER AND MEDIUM VOLTAGE PLC CONTROLLER. CABLE SHALL BE INSTALLED IN EMT CONDUIT.
- CONTRACTOR SHALL PROVIDE (6) DRY CONTACTS LEVELS OF LOAD SHED RELAYS FOR FUTURE USE. CONTROLLER AND RELAY SHALL BE CAPABLE CONTROLLING EACH RELAY INDEPENDENTLY OF THE OTHER RELAYS. PROGRAMMING NOT REQUIRED UNDER BASE BID.
- UNDER ALTERNATE BID #3, CONTRACTOR SHALL PROVIDE PROGRAMMING FOR TWO LEVELS OF LOAD SHEDDING AND LOAD RESTORING BY GROUPING THE 6 CONTRACTOR IN THREE LEVELS OF PRIORITIES. PROGRAMMING SHALL INCLUDE BAS PROGRAMMING AND GENERATOR EMOP 4.2.
  - PRIORITY 1 SHALL BE BASE LOADS AND NOT LOAD SHED.
  - PRIORITY 2 SHALL LOAD SHED WHEN GENERATOR IS AT OR ABOVE 85% LOAD FOR 2 MINUTES.
  - PRIORITY 3 SHALL LOAD SHED WHEN GENERATOR IS AT OR ABOVE 85% LOAD FOR 3 MINUTES.
  - LOAD RESTORE SHALL ADD PRIORITY 2 AND 3 WHEN AT OR BELOW 60% FOR 5 MINUTES.
- UNDER ALTERNATE BID #3, CONTRACTOR SHALL PROVIDE NEW BAS MONITORING MODULE. PROVIDE COMMUNICATION CABLES AND CONDUIT BETWEEN BAS MONITORING LOAD SHED CONTROLLER AND CABLES TO EACH CONTRACTOR TO LOAD CONTROLLER FOR EQUIPMENT TO BE SHED (ASSUME 100' FOR EACH CONTRACT). INCLUDE TIME FOR COORDINATION DISCUSSION WITH ENGINEER OF RECORD, FACILITY ENGINEER AND THE CONTRACTORS BAS AND SWITCHGEAR PROGRAMMER TO LOAD SHED LOAD RESTORED PRIORITY 2 AND 3 LOADS.

EXISTING ENGINE CONTROLS BETWEEN MEDIUM VOLTAGE SWITCH AND G&W PAD MOUNT

OUTPUT (FROM PAD MOUNT)	INPUT (FROM PAD MOUNT)
ENGINE START CONTACT	READY TO TRANSFER SIGNAL
SWITCH IN NORMAL	CLOSED TRANSITION (CAP, LABEL WIRE)
SWITCH IN EMERGENCY	OPEN TRANSITION
NORMAL SOURCE AVAILABLE	TEST MODE



**A** NEW MEDIUM VOLTAGE ONE-LINE  
SCALE: NOT TO SCALE



**B** NEW MEDIUM VOLTAGE DIAGRAM  
SCALE: NOT TO SCALE

BID DOCUMENTS