

PHASE II ELECTRICAL REPLACEMENT & REPLACE GENERATORS & TRANSFER SWITCHES, INFRASTRUCTURE

ALGOA CORRECTIONAL CENTER

JEFFERSON CITY, MISSOURI

OWNER: STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR
DEPARTMENT OF CORRECTIONS

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



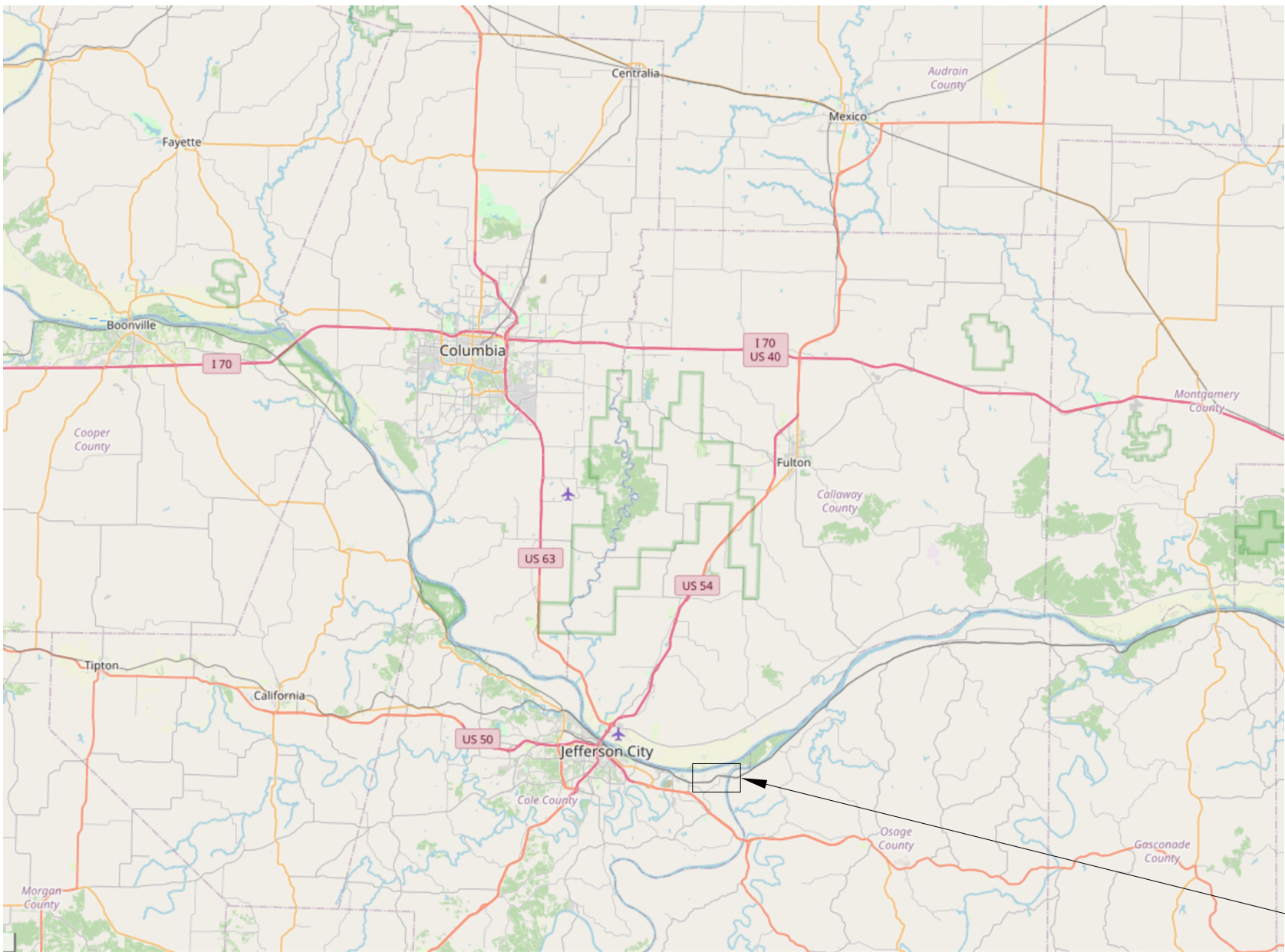
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PROJECT
NUMBER: C2402-01
SITE NUMBER: 7006
FACILITY NUMBER: 9327006056



PROJECT
LOCATION

STATE MAP



PROJECT
LOCATION

REGIONAL MAP

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PROJECT SCOPE - BASE BID AND ALTERNATES

BASE BID WORK INCLUDES:

1. PROVIDE NEW 1.5MW GENERATOR WITH WEATHERPROOF ENCLOSURE AND 72-HOUR BASE TANK. WORK INCLUDES, BUT IS NOT LIMITED TO: SHOP DRAWINGS, ENGINEERING SERVICES FOR COORDINATION WITH ATS SWITCHGEAR, BREAKER COORDINATION, DELIVERY, HOISTING, FUEL (INCLUDING FUEL FOR TESTING AND FINAL TOP-OFF), CONCRETE PAD, GROUNDING, LOAD SIDE FEEDERS TO ATS SWITCHGEAR, PANEL IN GENERATOR ENCLOSURE FOR PREWIRED AUXILIARY CIRCUITS AND CONVENIENCE POWER AND LIGHTING, FEEDER FOR PREWIRED PANEL IN GENERATOR ENCLOSURE, TESTING, AND COMMISSIONING. THE OPERATION OF THE GENERATOR SHALL BE A SLAVE TO THE CONTROLS PROVIDED IN THE MV/ATS SWITCHGEAR.
2. PROVIDE ALL FUEL FOR THE GENERATOR TO INCLUDE USAGE FOR TESTING AND COMMISSIONING, AND TOPPING OFF TO PROVIDE A FULL TANK WHEN THE GENERATOR IS TURNED OVER TO THE OWNER.
3. PROVIDE GENERATOR ANNUNCIATOR IN THE MAINTENANCE OFFICE TO DISPLAY INFORMATION REQUIRED BY NFPA 110. PROVIDE SIGNAL CABLING PER MANUFACTURER'S REQUIREMENTS. SEE SHEET E-101 FOR MORE INFORMATION.
4. PROVIDE NEW MEDIUM VOLTAGE/AUTOMATIC TRANSFER SWITCH (MV/ATS) SWITCHGEAR TO INCLUDE THE FOLLOWING:
 - ATS BREAKER #1: UTILITY MAIN BREAKER, ELECTRICALLY OPERATED AND CONTROLLED BY PLC FOR ATS OPERATION.
 - ATS BREAKER #2: GENERATOR SOURCE ISOLATION BREAKER, ELECTRICALLY OPERATED AND CONTROLLED BY PLC FOR ATS OPERATION.
 - MEDIUM VOLTAGE BUS TAP FOR LOAD FEEDER TO EXISTING 12.47KV EXTERIOR SERVICE ENTRANCE SWITCHGEAR.
 - CT/METERING EQUIPMENT, COLD SEQUENCING OPERATION PER AMEREN CE-10 STANDARDS.
 - POTENTIAL TRANSFORMERS (PT'S) FOR BREAKER OPERATION.
 - POTENTIAL TRANSFORMERS FOR SWITCHGEAR AUXILIARY POWER (I.E. HEATERS, PLC POWER, ETC).
 - BATTERY BACKUP POWER FOR PLC AND BREAKER OPERATION.
 - ALL REQUIRED ACCESSORIES TO INCLUDE CABINET HEATERS, CONVENIENCE POWER, ETC.
 - PLC, SOFTWARE, RELAYS, AND CONTROLS TO PROVIDE MONITORING OF NORMAL (UTILITY) AND GENERATOR POWER SOURCES AND PROVIDE CONTROL OF GENERATOR AND AUTOMATIC TRANSFER CONTROLS, SUPERVISORY FUNCTIONS, AND REPORTING CAPABILITY TO THE STATE OF MISSOURI'S BUILDING AUTOMATION SYSTEMS.
 - HUMAN MACHINE INTERFACE (HMI) TO ALLOW MANUAL GENERATOR OPERATION AND TRANSFER, SCHEDULING FOR WEEKLY AND MONTHLY TESTING, MONITORING AND REPORTING OF GENERATOR STATUS INFORMATION POINTS REQUIRED PER NFPA 110.
 - DUPLICATE HMI DISPLAY AT SECURITY OFFICE TO MIRROR SUPERVISORY STATUS ONLY FOR INFORMATION DISPLAYED AT THE MV/ATS SWITCHGEAR. PROVIDE DATA TIE-IN FROM MV/ATS SWITCHGEAR TO EXISTING DATA RACK IN SERVICE BUILDING. UTILIZING EXISTING FIBER PAIR FROM DATA RACK TO ADMIN BUILDING. EXTEND TO HMI DISPLAY AT SECURITY OFFICE. PROVIDE ANY NECESSARY EQUIPMENT TO CONVERT BETWEEN COPPER AND FIBER CABLING INFRASTRUCTURE AND SIGNALING.
 - ALL REQUIRED CONTROLS, RELAYS, WIRING, TESTING, AND COMMISSIONING.
5. PROVIDE NEW 2000KVA PAD-MOUNTED, OIL-FILLED TRANSFORMER, 480V (WYE) PRIMARY, 12.47KV (DELTA) SECONDARY.
6. PROVIDE NEW LOW VOLTAGE (LV) SWITCHGEAR TO INCLUDE THE FOLLOWING:
 - CIRCUIT BREAKER FOR GENERATOR SOURCE. PROVIDE KIRK KEY TO INTERLOCK WITH ACCESS DOOR AT CAMLOCKS FOR TEMPORARY GENERATOR CONNECTION IN THE GENERATOR DOCKING STATION (GDS).
 - CIRCUIT BREAKER FOR GENERATOR DOCKING STATION SOURCE.
7. PROVIDE NEW GENERATOR DOCKING STATION (GDS) TO INCLUDE THE FOLLOWING:
 - MALE CAM-LOCK CONNECTIONS FOR TEMPORARY GENERATOR. PROVIDE KIRK KEY ON ACCESS DOOR TO INTERLOCK WITH GENERATOR BREAKER IN LV SWITCHGEAR.
 - FEMALE CAM-LOCK CONNECTIONS FOR LOAD BANK.
 - CABINET HEATER AND AUXILIARY POWER FROM THE 277/480V PANELBOARD IN THE GENERATOR ENCLOSURE.
8. KIRK KEY INTERLOCK FOR GENERATOR MCB AND DOOR LOCK FOR ACCESS TO TEMPORARY GENERATOR CAM-LOCK COMPARTMENT.
9. ALL REQUIRED CONTROLS, RELAYS, WIRING, TESTING AND COMMISSIONING.
10. DEVELOPMENT AND SUBMITTALS FOR MV/ATS SWITCHGEAR AND LV SWITCHGEAR PER AMEREN "SPECIFICATIONS & REQUIREMENTS FOR MULTIPLE & SINGLE PRIMARY METERED SERVICE" STANDARDS CE-10.
11. COORDINATION WITH AMEREN TO PROVIDE NEW MEDIUM VOLTAGE SERVICE ENTRANCE FEEDER CONDUCTORS IN UNDERGROUND CONDUIT PROVIDED BY THE CONTRACTOR TO NEW MV/ATS SWITCHGEAR, CT AND METERING EQUIPMENT. COORDINATE OUTAGES TO TRANSFER POWER FROM EXISTING MEDIUM VOLTAGE SWITCHGEAR TO THE NEW MV/ATS SWITCHGEAR AND LV SWITCHGEAR.

12. COORDINATE WITH AMEREN TO PROVIDE COMMISSIONING SERVICES TO THE MV/ATS SWITCHGEAR AND LV SWITCHGEAR PRIOR TO MAKING CONNECTIONS TO THE EXISTING MEDIUM VOLTAGE SERVICE EQUIPMENT.
13. ALL REQUIRED EXCAVATION AND INSTALLATION OF UNDERGROUND MEDIUM VOLTAGE FEEDERS, LOW VOLTAGE FEEDERS, CONTROLS, ETC.
14. DEMOLITION OF FOUR EXISTING GENERATORS, INCLUDING HOISTING AND TRANSPORTATION TO REMOVE FROM THE SITE. CONTRACTOR SHALL APPLY SALVAGE VALUES FOR THE GENERATORS TO OFFSET ASSOCIATED SAVINGS TOWARD THE OVERALL COST OF THE PROJECT.
15. REMOVAL AND DISPOSAL OF EXISTING FUEL IN GENERATOR TANKS.
16. DEMOLISH EXISTING FEEDERS FROM THE FOUR EXISTING GENERATORS TO THEIR AUTOMATIC TRANSFER SWITCHES. REMOVE INTERIOR COMPONENTS FROM THE AUTOMATIC TRANSFER SWITCHES AND SPLICE EXISTING NORMAL POWER AND LOAD FEEDER CONDUCTORS IN THE ATS ENCLOSURE UTILIZING UL LISTED SPLICES.
17. CLEAN EXISTING LINE-SIDE FEEDER CONNECTIONS AT KITCHEN PANEL PP1 IN THE SERVICE BUILDING BY DISCONNECTING THE FEEDER CONDUCTORS, CLEANING THEM, AND RECONNECTING THEM UTILIZING ANTI-OXIDATION COMPOUND AND TORQUING THE CONNECTIONS TO FACTORY SPECS.

ALTERNATE BID #1 WORK INCLUDES:

1. INTERCEPT EXISTING 480V FEEDERS TO HOUSING UNITS 6 THRU 10 IN THE EXISTING TUNNEL SYSTEM AND INSTALL A JUNCTION/SPLICE BOX FOR EACH FEEDER. PROVIDE NEW FEEDERS FROM EXISTING DISTRIBUTION PANELBOARD DP1 IN THE SERVICE BUILDING TO THE JUNCTION/SPLICE BOXES AND SPLICE TO THE EXISTING FEEDER CONDUCTORS UTILIZING UL LISTED INSULATED SPLICES. AFTER SPLICES ARE MADE, PERFORM MEGGER TESTS ON ALL FEEDER CONDUCTORS PER CURRENT ANSI MAINTENANCE TESTING SPECIFICATIONS AND PROVIDE TEST REPORTS FOR EACH TEST. DEMOLISH EXISTING FEEDER CONDUCTORS, CONDUITS, AND SUPPORTS FROM DISTRIBUTION PANELBOARD DP1 TO THE POINT WHERE EACH FEEDER WAS INTERCEPTED. EXISTING CONDUITS BELOW SLAB OR GRADE SHALL BE CUT OFF AT THE FLOOR, ABANDONED, AND SEALED. SEE SHEET E-101.
- OUTAGES RELATED TO ALTERNATE BID #1 SHALL BE LIMITED TO DAYLIGHT HOURS ONLY. CONTRACTOR SHALL PROVIDE ALL WORK IN PREPARATION TO LIMIT THE OUTAGES TO THE SHORTEST DURATIONS POSSIBLE. CONTRACTOR SHALL BE LIMITED TO TWO HOUSING UNITS PER OUTAGE WITHOUT PRIOR AUTHORIZATION BY ALGOA CORRECTIONAL CENTER.
- IF OUTAGES ARE ANTICIPATED TO EXTEND BEYOND DAYLIGHT HOURS FOR ANY HOUSING UNIT FEEDER BEING REPLACED, CONTRACTOR SHALL PROVIDE A TEMPORARY GENERATOR, FUEL, CABLING AND CONNECTIONS TO SUPPORT THE HOUSING UNIT UNTIL THE OUTAGE IS COMPLETE.

ALTERNATE BID #2 WORK INCLUDES:

1. INTERCEPT EXISTING 480V FEEDERS TO HOUSING UNITS 1 THRU 5 IN THE EXISTING TUNNEL SYSTEM AND INSTALL A JUNCTION/SPLICE BOX FOR EACH FEEDER. PROVIDE NEW FEEDERS FROM EXISTING DISTRIBUTION PANELBOARD DP1 IN THE SERVICE BUILDING TO THE JUNCTION/SPLICE BOXES AND SPLICE TO THE EXISTING FEEDER CONDUCTORS UTILIZING UL LISTED INSULATED SPLICES. AFTER SPLICES ARE MADE, PERFORM MEGGER TESTS ON ALL FEEDER CONDUCTORS PER CURRENT ANSI MAINTENANCE TESTING SPECIFICATIONS AND PROVIDE TEST REPORTS FOR EACH TEST. DEMOLISH EXISTING FEEDER CONDUCTORS, CONDUITS, AND SUPPORTS FROM DISTRIBUTION PANELBOARD DP1 TO THE POINT WHERE EACH FEEDER WAS INTERCEPTED. EXISTING CONDUITS BELOW SLAB OR GRADE SHALL BE CUT OFF AT THE FLOOR, ABANDONED, AND SEALED. SEE SHEET E-101.
- OUTAGES RELATED TO ALTERNATE BID #2 SHALL BE LIMITED TO DAYLIGHT HOURS ONLY. CONTRACTOR SHALL PROVIDE ALL WORK IN PREPARATION TO LIMIT THE OUTAGES TO THE SHORTEST DURATIONS POSSIBLE. CONTRACTOR SHALL BE LIMITED TO TWO HOUSING UNITS PER OUTAGE WITHOUT PRIOR AUTHORIZATION BY ALGOA CORRECTIONAL CENTER.
- IF OUTAGES ARE ANTICIPATED TO EXTEND BEYOND DAYLIGHT HOURS FOR ANY HOUSING UNIT FEEDER BEING REPLACED, CONTRACTOR SHALL PROVIDE A TEMPORARY GENERATOR, FUEL, CABLING AND CONNECTIONS TO SUPPORT THE HOUSING UNIT UNTIL THE OUTAGE IS COMPLETE.

ALTERNATE BID #3 WORK INCLUDES:

1. REPLACE EXISTING KITCHEN PANELBOARD PP1 IN THE SERVICE BUILDING AT ITS CURRENT LOCATION. UTILIZING THE EXISTING PANELBOARD ENCLOSURE, PROVIDE A NEW 400-AMP, 3-PHASE, 3-WIRE, MAIN CIRCUIT BREAKER, COPPER BUS ASSEMBLY, COPPER GROUND BAR, CIRCUIT BREAKERS, AND DEAD FRONT. PROVIDE CUSTOM-FABRICATED, PAINTED COVER WITH RETURNED EDGES TO TRIM THE COVER TO THE EXISTING FINISHED WALL. SEE SHEET E-103.
- OUTAGES RELATED TO ALTERNATE BID #3 SHALL BE LIMITED 8 HOURS.

PHASING SEQUENCE:

NOTES:

- A. THIS IS A PROPOSED PHASING SEQUENCE. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL WORK TO MEET THE INTENT OF THE SEQUENCE AND OVERALL PROJECT DESIGN.
- B. OTHER PROPOSED SEQUENCES FROM THE CONTRACTOR WILL BE CONSIDERED, PROVIDING THERE IS NO ADDITIONAL COST IMPACT.
- C. CONTRACTOR SHALL REVIEW AND UNDERSTAND THE SEQUENCE OF CONSTRUCTION AND HOW IT AFFECTS THE CAMPUS MEDIUM VOLTAGE AND LOW VOLTAGE DISTRIBUTION SYSTEMS. ALL MEASURES SHALL BE TAKEN TO AVOID UNNECESSARY OUTAGES.
- D. WORK REQUIRED BUT NOT LISTED IN THIS PHASING SEQUENCE MAY BE PERFORMED AT ANY TIME DURING THE CONSTRUCTION PROJECT.
- E. CONTRACTOR SHALL GIVE THE FACILITY A MINIMUM OF 2 WEEKS NOTICE PRIOR TO BEGINNING ANY OUTAGE. ALL OUTAGE REQUESTS SHALL BE COORDINATED WITH, AND APPROVED BY ALGOA CORRECTIONAL CENTER IN WRITING PRIOR TO BEGINNING THE OUTAGES.
- F. FOR SECURITY REASONS, OUTAGES SHALL BE KEPT CONFIDENTIAL TO KEY PERSONNEL OF ALGOA CORRECTIONAL CENTER, OA/FMDC, RTM (A/E), THE CONTRACTOR, AND THE CONTRACTOR'S EMPLOYEES AND VENDORS.
- G. AFTER AN OUTAGE BEGINS, WORK SHALL CONTINUE UNTIL THE OUTAGE IS COMPLETED AND POWER IS RESTORED.
- H. CONTRACTOR SHALL PROVIDE ALL NECESSARY COORDINATION WITH AMEREN TO DE-ENERGIZE AND RE-ENERGIZE UTILITY CONNECTIONS.

PHASE 1: PROCUREMENT AND NON-CRITICAL PATH WORK

1. UPON NOTICE TO PROCEED, CONTRACTOR SHALL DILIGENTLY PURSUE SHOP DRAWINGS FOR LONG-LEAD ITEMS, SUCH AS THE GENERATOR, MV/ATS SWITCHGEAR, 2000KVA PADMOUNT TRANSFORMER, LV SWITCHGEAR, AND GENERATOR DOCKING STATION. CONTRACTOR ACKNOWLEDGES THE URGENCY OF CRITICAL PATH ACTIVITIES AND THEIR IMPACT ON THE OVERALL CONSTRUCTION SCHEDULE.
2. THE MV/ATS SWITCHGEAR SHALL COMPLY WITH AMEREN STANDARD CE-10.
3. COORDINATE WITH AMEREN TO PROVIDE AMEREN-FURNISHED CT EQUIPMENT TO BE SHIPPED TO FACTORY AND INSTALLED AT FACTORY.
4. CONTRACTOR SHALL PURSUE AND COMPLETE WORK THAT IS NOT RELATED TO CRITICAL PATH ACTIVITIES INCLUDING, BUT NOT LIMITED TO:
 - INTERCEPT EXISTING FEEDERS TO HOUSING UNITS 6 THRU 10 AND PROVIDE PARTIAL NEW FEEDERS FROM DISTRIBUTION PANELBOARD DP1. (ALTERNATE BID #1)
 - INTERCEPT EXISTING FEEDERS TO HOUSING UNITES 1 THRU 5 AND PROVIDE PARTIAL NEW FEEDERS FROM DISTRIBUTION PANELBOARD DP1. (ALTERNATE BID #2)
 - CLEAN EXISTING CONNECTIONS AT KITCHEN PANELBOARD PP1 (BASE BID), OR REPLACE PANELBOARD PP1 (ALTERNATE BID #3).

PHASE 2: PREPARATION FOR INSTALLATION OF GENERATOR, MV / ATS SWITCHGEAR, PADMOUNT TRANSFORMER, LV SWITCHGEAR, AND GDS.

PHASE 2 WORK SHALL BE COMPLETED PRIOR TO THE SCHEDULED DELIVERY OF THE MEDIUM VOLTAGE / ATS (MV/ATS) SWITCHGEAR AND LOW VOLTAGE (LV) SWITCHGEAR AND THE GENERATOR ASSEMBLY.

1. INSTALL UNDERGROUND CONDUIT BETWEEN THE NEW UTILITY POLE PROVIDED BY AMEREN AND THE NEW MV/ATS SWITCHGEAR/
2. INSTALL UNDERGROUND CONDUITS BETWEEN THE MEDIUM VOLTAGE / ATS SWITCHGEAR AND THE EXISTING MEDIUM VOLTAGE SWITCHGEAR IN PREPARATION FOR INTERCEPTING THE UTILITY SERVICE ENTRANCE CONDUIT.
3. INSTALL UNDERGROUND FEEDER CONDUITS BETWEEN THE GENERATOR AND THE LOW VOLTAGE (LV) SWITCHGEAR.
4. INSTALL UNDERGROUND FEEDER CONDUITS BETWEEN THE LV SWITCHGEAR, 2000KVA TRANSFORMER, AND MV/ATS SWITCHGEAR.
5. INSTALL UNDERGROUND CONDUITS FOR AUXILIARY CIRCUITS AND CONTROLS BETWEEN THE GENERATOR AND THE MV/ATS SWITCHGEAR AND LV SWITCHGEAR.
6. INSTALL UNDERGROUND FEEDER CONDUITS FOR THE GENERATOR AUXILIARY POWER PANEL (277/480V).
7. INSTALL GROUNDING GRIDS AROUND THE GENERATOR AND ATS SWITCHGEAR.
8. PROVIDE CONCRETE PADS IN PREPARATION FOR INSTALLATION OF THE GENERATOR AND THE ATS SWITCHGEAR.

PHASE 3: INSTALL NEW GENERATOR, MV/ATS SWITCHGEAR, 2000KVA PADMOUNT TRANSFORMER, AND LV SWITCHGEAR.

1. INSTALL THE GENERATOR AND COMPLETE THE INSTALLATION OF FEEDER CONDUCTORS, AUXILIARY CIRCUITS, AND CONTROL CIRCUITS.
2. INSTALL THE MV/ATS SWITCHGEAR, PADMOUNT TRANSFORMER AND LV SWITCHGEAR.
3. COMPLETE INSTALLATION OF FEEDER CONDUCTORS, EXCEPT FOR THE LOAD-SIDE MEDIUM VOLTAGE FEEDER CONDUCTORS TO THE EXISTING MEDIUM VOLTAGE SERVICE SWITCHGEAR.
4. BOND THE MV/ATS SWITCHGEAR TO THE GROUNDING GRID.
5. PROVIDE ALL BREAKER COORDINATION AND ADJUST SETTINGS FOR ATS SWITCHGEAR.
6. COORDINATE WITH AMEREN TO INSTALL METERING EQUIPMENT AT THE NEW ATS SWITCHGEAR.

7. COORDINATE WITH AMEREN TO PROVIDE NEW MEDIUM VOLTAGE FEEDER CONDUCTORS IN CONTRACTOR-INSTALLED CONDUIT FROM NEW UTILITY POLE TO MV/ATS SWITCHGEAR.
8. COORDINATE WITH AMEREN TO ENERGIZE THE MV/ATS SWITCHGEAR.
9. PROVIDE GENERATOR LOAD BANK TESTING AND COMMISSIONING BY FACTORY AUTHORIZED TECHNICIAN.
10. PROVIDE PRE-TESTING OF THE MV/ATS SWITCHGEAR AND LV SWITCHGEAR BY FACTORY AUTHORIZED TECHNICIAN. PROVIDE ACCEPTANCE TEST CERTIFICATION TO A/E.
11. COORDINATE WITH AMEREN TO PROVIDE COMMISSIONING OF MV/ATS SWITCHGEAR, GENERATOR AND LV SWITCHGEAR PER AMEREN STANDARD CE-10.

PHASE 4: TRANSFER UTILITY POWER TO THE MV/ATS SWITCHGEAR.

ALL WORK FOR PHASE 3 SHALL BE COMPLETE PRIOR TO BEGINNING PHASE 4 WORK.

THE MAXIMUM ALLOWABLE TIME FOR THIS PHASE SHALL BE 12 HOURS. ONCE THE OUTAGE FOR PHASE 4 HAS BEGUN, CONTRACTOR SHALL WORK CONTINUOUSLY UNTIL OUTAGE WORK IS COMPLETED.

1. COORDINATE OUTAGE WITH AMEREN. REMOVE EXISTING MEDIUM VOLTAGE SERVICE ENTRANCE FEEDER CONDUCTORS FROM EXISTING AMEREN UTILITY POWER POLE TO THE EXISTING MEDIUM VOLTAGE SWITCHGEAR.
2. INTERCEPT THE EXISTING CONDUIT STUBBED OUT FROM THE EXISTING MEDIUM VOLTAGE SWITCHGEAR TOWARDS THE AMEREN POLE. CONNECT THE NEW CONDUIT FROM THE NEW MV/ATS SWITCHGEAR.
3. PROVIDE NEW MEDIUM VOLTAGE FEEDER CONDUCTORS FROM THE MV/ATS SWITCHGEAR TO THE EXISTING MEDIUM VOLTAGE SWITCHGEAR.
4. PROVIDE TERMINATIONS AND HI-POT TESTING FOR NEW MEDIUM VOLTAGE CABLES PRIOR TO CONNECTING THE CABLES. AFTER CABLES SUCCESSFULLY PASS TESTING, TERMINATE THEM TO THE MV/ATS SWITCHGEAR AND EXISTING MEDIUM VOLTAGE SWITCHGEAR.
5. CONFIRM PROPER ROTATION FOR MEDIUM VOLTAGE CABLES.
6. ENERGIZE EXISTING MEDIUM VOLTAGE SWITCHGEAR.
7. COORDINATE WITH AMEREN TO DEMOLISH THE EXISTING UTILITY POLE CURRENTLY SERVING THE EXISTING MEDIUM VOLTAGE SWITCHGEAR.

PHASE 5: DEMOLITION OF EXISTING GENERATORS

1. DISCONNECT, REMOVE, AND SALVAGE EXISTING GENERATORS #2, #3, #4 AND #5, THEIR ENCLOSURES, AND THEIR BASE FUEL TANKS. LEGALLY DISPOSE OF FUEL IN THE EXISTING BASE TANKS.
2. DEMOLISH EXISTING FEEDERS BETWEEN GENERATORS AND THEIR RESPECTIVE AUTOMATIC TRANSFER SWITCHES.
3. DEMOLISH AUXILIARY POWER CIRCUITS FOR GENERATORS (I.E. BATTERY CHARGER, BLOCK HEATER).
4. DEMOLISH GENERATOR CONTROLS CIRCUITS.
5. COORDINATE OUTAGE TO DEMOLISH INTERIOR COMPONENTS OF EXISTING AUTOMATIC TRANSFER SWITCHES. SPLICE NORMAL POWER FEEDER AND LOAD FEEDER TOGETHER IN THE ATS ENCLOSURE. THE MAXIMUM DURATION FOR ANY OUTAGE IS 8 HOURS.

STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR

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OFFICE OF ADMINISTRATION
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MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF CORRECTIONS

PHASE II
ELECTRICAL REPLACEMENT &
REPLACE GENERATORS &
TRANSFER SWITCHES

ALGOA CORRECTIONAL CENTER

8501 NO MORE VICTIMS ROAD
JEFFERSON CITY, MO 65101

PROJECT # C2402-01

SITE # 7006

FACILITY # 9327006056

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 04/16/2025

CAD DWG FILE: _____
DRAWN BY: HQT _____
CHECKED BY: CVH _____
DESIGNED BY: MAC _____

SHEET TITLE:

PROJECT PHASING
INFORMATION &
DRAWING INDEX

SHEET NUMBER:

G-002

ELECTRICAL LEGEND AND ABBREVIATIONS (SEE SPECIFICATIONS & SCHEDULES)

NOT ALL SYMBOLS AND ABBREVIATIONS ARE USED ON THESE PLANS.
ALL MOUNTING HEIGHTS ARE TO CENTERLINE OF DEVICES AND EQUIPMENT U.O.N.
IN GENERAL, SYMBOLS SHOWN WITH LIGHT LINES DENOTE EXISTING WORK. SYMBOLS SHOWN WITH HEAVY LINES DENOTE PROPOSED WORK.

JUNCTION AND PULL BOXES

- JUNCTION BOX
- PULL BOX

WIRING PLANS

- CONDUIT RUN CONCEALED IN CEILING OR WALL CONSTRUCTION
- CONDUIT RUN IN FLOOR CONSTRUCTION OR UNDERGROUND
- CONDUIT RUN EXPOSED
- CONDUIT TURNING UP
- CONDUIT TURNING DOWN
- FLEXIBLE CONDUIT
- CONDUIT CAPPED FOR FUTURE.
- HOMERUN TO PANEL OR DESTINATION NOTED
- HACHURES INDICATE NUMBER OF CONDUCTORS IN CONDUIT
NOTE: LONG HACHURE - NEUTRAL CONDUCTOR
SHORT HACHURE - HOT OR SWITCHED CONDUCTORS
LONG HACHURE WITH DOT - GROUND CONDUCTOR
LONG HACHURE WITH DOT & RETURN LINE - ISOLATED GROUND CONDUCTOR. WHEN HACHURES ARE NOT SHOWN AND WIRING IS FOR POWER OR LIGHTING CIRCUITS, PROVIDE HOT, NEUTRAL AND GROUND. WHEN FOR MULTIPLE CIRCUITS, PROVIDE NO. OF PHASE CONDUCTORS, NEUTRAL CONDUCTORS AND A GROUND CONDUCTOR. HACHURES ARE SHOWN AS A GUIDE AND MAY NOT BE EXACT COUNTS IN ALL CASES. PROVIDE WIRING REQUIRED BY THE CIRCUITING AND SWITCHING REQUIREMENTS FOR THE PARTICULAR CIRCUITS INVOLVED.

GENERAL NOTES - DEMOLITION

- A. THE ELECTRICAL CONTRACTOR SHALL REMOVE, CAP AND/OR RELOCATE EQUIPMENT, OUTLETS, CONDUIT, WIRE, ETC., WHETHER INDICATED ON THE DRAWINGS OR NOT, AND AS MAY BECOME NECESSARY BECAUSE OF EXISTING FIELD CONDITIONS. IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO VISIBLY EXAMINE ALL EXISTING WALLS DESIGNATED FOR REMOVAL OR MODIFICATION TO DETERMINE THE CONDUIT AND THE WIRING THAT WILL REQUIRE CAPPING AND/OR REMOVAL. THE CONTRACTOR SHALL BE HELD TO HAVING VISITED THE SITE AND TAKEN ALL EXISTING CONDITIONS INTO CONSIDERATION.
- B. WHERE FEEDERS ARE INDICATED TO BE DEMOLISHED, REMOVE CONDUCTORS AND ACCESSIBLE CONDUIT SYSTEMS AND SUPPORTS. ABANDON CONDUITS AT INACCESSIBLE AREAS OR BELOW GRADE.
- C. WHERE BURIED CONDUITS EXTENDING OUT OF A CONCRETE SLAB BECOME ABANDONED, CUT AND GRIND THE CONDUITS OFF FLUSH WITH TOP OF SLAB AND PLUG WITH NON-SHRINK WATERPROOF GROUT FILL.
- D. LOCATE, IDENTIFY, AND PROTECT ELECTRICAL SERVICES PASSING THROUGH DEMOLITION AREA AND SERVING OTHER AREAS OUTSIDE THE DEMOLITION LIMITS. MAINTAIN SERVICES TO AREAS OUTSIDE DEMOLITION LIMITS. WHEN SERVICES MUST BE INTERRUPTED, INSTALL TEMPORARY SERVICES FOR AFFECTED AREAS.
- E. MAINTAIN AND PROTECT EXISTING BUILDING SERVICES WHICH TRANSIT THE AREA AFFECTED BY SELECTIVE DEMOLITION.
- F. 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. WIRING FOR EXISTING CIRCUITS WHICH MUST BE RE-ROUTED OR WHICH ARE PARTIALLY ABANDONED, SHALL BE RECONNECTED TO SERVICE THE REMAINING OUTLETS ON THE CIRCUIT.
- G. IN THE DEMOLITION WORK, REMOVE ALL UNUSED WIRING AND CABLES AND UNUSED CONDUIT THAT IS EXPOSED OR WITHIN ACCESSIBLE CEILINGS WHICH IS AFFECTED BY AND IS IN THE AREA OF THE WORK OF THIS CONTRACT.
- H. THE INTENTION OF THE ELECTRICAL DEMOLITION IS TO DISCONNECT AND REMOVE ALL ELECTRICAL WORK MADE VOID BY THE SCOPE OF THE CONSTRUCTION AND ALTERATION. FIELD VERIFY EXACT MATERIAL QUANTITIES REQUIRED TO BE REMOVED.
- I. WHERE ELECTRICAL EQUIPMENT, CONDUIT, BOXES, AND SUPPORTING HARDWARE ARE REMOVED, PATCH, AND FINISH THE SURFACE AS REQUIRED TO MATCH THE EXISTING, UNLESS OTHERWISE NOTED.
- J. PROVIDE KNOCKOUT CLOSURES FOR HOLES AT EXISTING ELECTRICAL ENCLOSURES RESULTING FROM DEMOLITION OF FEEDERS.
- K. ALL REMOVED MATERIALS, OTHER THAN REMOVED MATERIALS TO BE RELOCATED, OR STORED, OR TURNED OVER TO THE OWNER, SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE PROJECT SITE.
- L. ACCEPTANCE OF CONTRACT MEANS INSTALLER ACCEPTS EXISTING CONDITIONS.
- M. CONTRACTOR SHALL COORDINATE ALL DEMOLITION WORK WITH ALL OTHER TRADES.

GENERAL NOTES - NEW WORK

- A. THE ELECTRICAL DRAWINGS HAVE BEEN PREPARED UTILIZING EXISTING DRAWINGS AND BUILDING/ SITE OBSERVATIONS AND MAY NOT SHOW ALL CONDITIONS. CONTRACTOR SHALL VISIT THE BUILDING/ SITE PRIOR TO BID SUBMISSION AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS. CONTRACTOR WILL NOT BE ALLOWED ADDITIONAL FUNDS OR TIME DUE TO THE CONTRACTOR'S FAILURE TO BECOME FAMILIAR WITH ALL EXISTING CONDITIONS.
- B. ACCEPTANCE OF CONTRACT MEANS INSTALLER ACCEPTS EXISTING CONDITIONS.
- C. COORDINATE INSTALLATION WITH EXISTING CONDITIONS. FIELD VERIFY EXISTING CONDITIONS.
- D. CONTRACTOR SHALL SCHEDULE ALL ELECTRICAL SYSTEM POWER OUTAGES WITH THE OWNER'S REPRESENTATIVE AT LEAST 14 CALENDAR DAYS IN ADVANCE OF A SHUTDOWN.
- E. ALL PENETRATIONS THROUGH CONCRETE OR MASONRY WALLS AND FLOOR SLABS SHALL BE CORE DRILLED. AFTER CONDUITS HAVE BEEN INSTALLED, SEAL WALL AROUND CONDUIT TO MAINTAIN 2-HOUR FIRE RATING USING UL LISTED METHODS AND MATERIALS. EXTERIOR WALLS SHALL BE SEALED WATERTIGHT.
- F. CONTRACTOR SHALL UPDATE EXISTING PANELBOARD CIRCUIT DIRECTORIES TO REFLECT ALL CHANGES MADE TO EXISTING PANELBOARDS DURING THIS PROJECT.
- G. WHEN INSTALLING CIRCUIT BREAKERS IN EXISTING PANELBOARDS, MATCH EXISTING CIRCUIT BREAKER TYPES AND INTERRUPTING RATINGS.
- H. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING EXISTING DIVISION 26 RELATED ITEMS TO REMAIN IN PLACE WITH THE INSTALLATION OF GENERAL CONSTRUCTION WORK, DUCTWORK, PIPING, ETC. ALL ATTEMPTS SHALL BE MADE PRIOR TO THE START OF CONSTRUCTION TO AVOID THE REMOVAL AND RELOCATION OF EXISTING DIVISION 26 RELATED ITEMS WHICH ARE NOT AFFECTED BY WORK OF THIS CONTRACT.
- I. CONTRACTOR SHALL PROVIDE A SET OF HAND MARKED RECORD DRAWINGS TO THE ENGINEER AT THE COMPLETION OF THE PROJECT INDICATING ACTUAL INSTALLED CONDITIONS. THE HAND MARKING SHALL BE CLEARLY LEGIBLE AND SHALL BE MARKED IN RED. MARKS SHALL INCLUDE ITEMS SUCH AS CIRCUITING CHANGES, DEVICE AND EQUIPMENT LOCATION CHANGES, MAJOR FEEDER AND CABLING ROUTING CHANGES, ETC.
- J. CONTRACTOR SHALL LOCATE ALL EXISTING UNDERGROUND UTILITIES PRIOR TO THE START OF EXCAVATION. DAMAGE TO EXISTING UNDERGROUND UTILITIES RESULTING FROM A FAILURE TO LOCATE UTILITIES SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER.
- K. WHERE CIRCUIT NUMBERS ONLY ARE SHOWN ON THE DRAWINGS, THE CONTRACTOR SHALL PROVIDE CONDUIT AND CONDUCTORS AND SHALL MAKE FINAL CONNECTIONS FOR A COMPLETE INSTALLATION.
- L. PROVIDE #10 CONDUCTORS FOR ALL 120V, 20A CIRCUITS EXCEEDING 75'-0" IN LENGTH. PROVIDE #8 CONDUCTORS FOR ALL 120V, 20A CIRCUITS EXCEEDING 150'-0" IN LENGTH.
- M. PROVIDE A SEPARATE INSULATED NEUTRAL CONDUCTOR FOR EACH UNGROUNDED CONDUCTOR IN A MULTI-WIRE BRANCH CIRCUIT SERVING LINE-TO-NEUTRAL LOADS PER NEC ARTICLE 210.4(B). DO NOT USE HANDLE TIES TO SATISFY THIS REQUIREMENT.

POWER EQUIPMENT

- MOTOR - SEE EQUIPMENT DATA SCHEDULE FOR HORSEPOWER
- STARTERS (MANUAL, MAGNETIC & COMB. MAGNETIC WITH DISC.)
- SWITCHBOARD
- CONTROL CABINET
- ELECTRIC HEATING EQUIPMENT
- TRANSFORMER
- UNINTERRUPTABLE POWER SUPPLY SYSTEM
- DISCONNECT SWITCH. FUSED OR UNFUSED AS NOTED
- HANDHOLE
- MANHOLE
- ELECTRICAL SERVICE METER

ABBREVIATIONS

- | | | | |
|--------|------------------------------------|--------|--------------------------------|
| A.C.S. | - ACCESS CONTROL SYSTEM | IMC | - INTERMEDIATE METAL CONDUIT |
| A.F.F. | - ABOVE FINISHED FLOOR | I/O | - INPUT/OUTPUT |
| ATS | - AUTOMATIC TRANSFER SWITCH | LAN | - LOCAL AREA NETWORK |
| B.C. | - BELOW CEILING | LP | - LIGHTING PANEL |
| C | - CONDUIT | MATV | - MASTER ANTENNA TELEVISION |
| CAM | - CAMERA | MC | - METAL CLAD |
| CB | - CIRCUIT BREAKER | MCC | - MOTOR CONTROL CENTER |
| CC | - CONTROL CONTACTOR | MCP | - MOTOR CONTROL PANEL |
| CCTV | - CLOSED CIRCUIT TELEVISION | MH | - MANHOLE |
| CCW | - COUNTER CLOCKWISE | MT | - EMPTY CONDUIT |
| CW | - CLOCKWISE | NC | - NURSE CALL |
| DCU | - DISTRIBUTED CONTROLLER UNIT | NL | - NIGHT LIGHT |
| DN | - DOWN | PA | - PUBLIC ADDRESS |
| DP | - DISTRIBUTION PANEL | PI | - PORTABLE INTERFACE |
| DT | - DUSTTIGHT | P.I.R. | - PASSIVE INFRA RED |
| DWG | - DRAWING | PP | - POWER PANEL |
| E.C. | - ELECTRICAL CONTRACTOR | PR | - PAIR |
| ELEC | - ELECTRIC OR ELECTRICAL | PVC | - POLYVINYL CHLORIDE CONDUIT |
| EMT | - ELECTRICAL METALLIC TUBING | R | - RECESSED |
| ER | - EXISTING RELOCATED | RF | - RADIO FREQUENCY |
| ETR | - EXISTING TO REMAIN | RGS | - RIGID GALVANISED STEEL |
| EWC | - ELECTRIC WATER COOLER | RT | - RAINLIGHT |
| FA | - FIRE ALARM | SHLD | - SHIELDED (AS IN CABLE) |
| FM | - F/O MODEM | SWBD | - SWITCHBOARD |
| F/O | - FIBER OPTIC | T | - TELEPHONE |
| FS | - FUSIBLE SWITCH | TYP. | - TYPICAL |
| G.C. | - GENERAL CONTRACTOR | UL | - UNDERWRITER LABORATORIES |
| GF | - GROUND FAULT | UNG | - UNGROUNDED |
| GFCI | - GROUND FAULT CIRCUIT INTERRUPTER | UPS | - UNINTERRUPTIBLE POWER SUPPLY |
| GRD | - GROUND | U.O.N. | - UNLESS OTHERWISE NOTED |
| GRS | - GALVANIZED RIGID STEEL | VT | - VAPORTIGHT |
| HH | - HANDHOLE | WT | - WATERTIGHT |
| HMI | - HUMAN MACHINE INTERFACE | XP | - EXPLOSION PROOF |
| ILSM | - INTERIM LIFE SAFETY MEASURES | WP | - WEATHER-PROOF |

DRAWING REFERENCES

- DETAIL NUMBER
- PLAN DETAIL REFERENCE TITLE
- DRAWING NUMBER
- KEYED NOTE DESIGNATION
- NORTH ARROW
- SECTION NUMBER
- SECTION REFERENCE TITLE
- DRAWING NUMBER

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SITE # 7006
FACILITY # 9327006056

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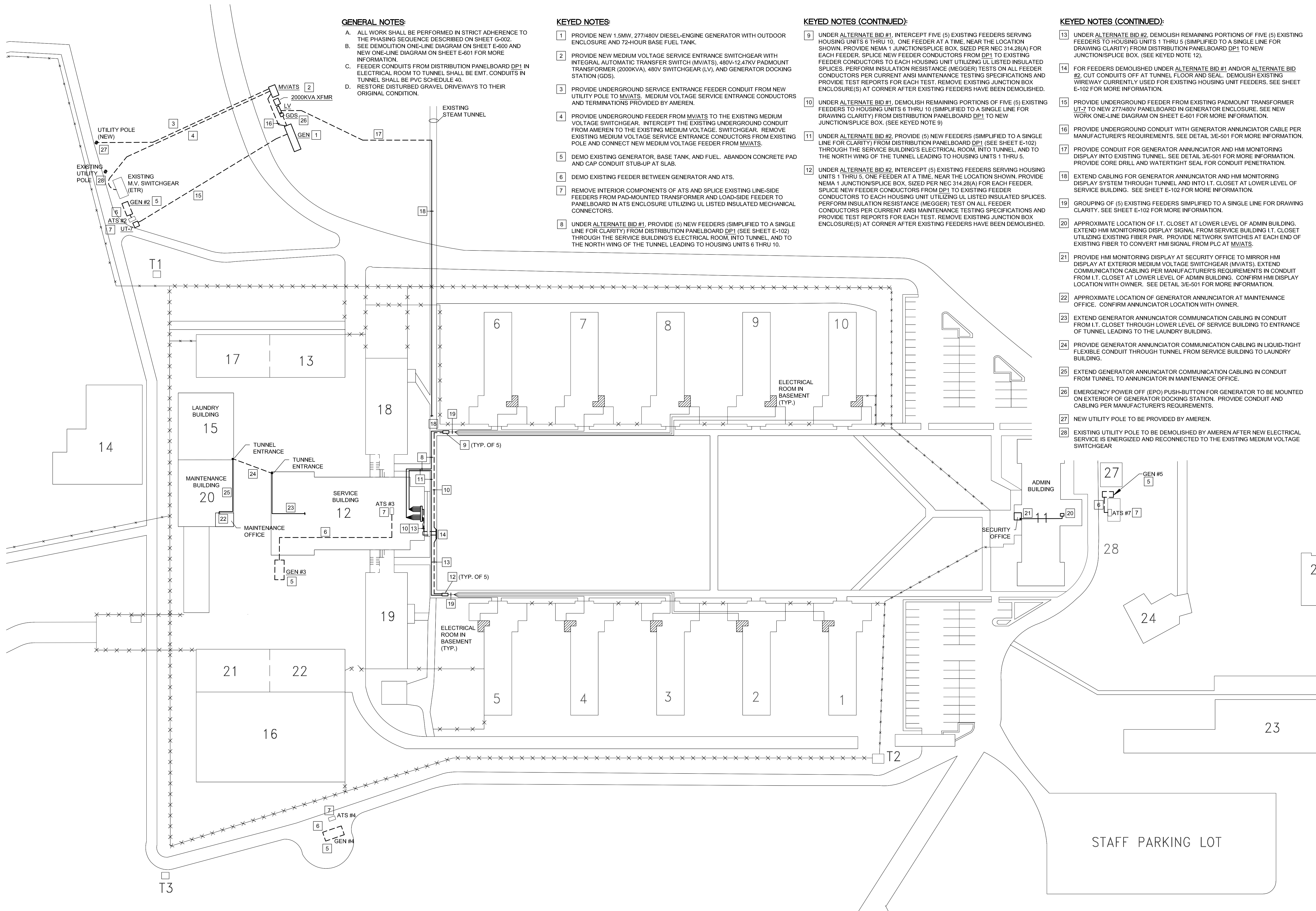
SHEET TITLE:

ELECTRICAL
LEGEND
AND NOTES

SHEET NUMBER:

E-001

3 OF 10 SHEETS



GENERAL NOTES:

- A. ALL WORK SHALL BE PERFORMED IN STRICT ADHERENCE TO THE PHASING SEQUENCE DESCRIBED ON SHEET G-002.
- B. SEE DEMOLITION ONE-LINE DIAGRAM ON SHEET E-600 AND NEW ONE-LINE DIAGRAM ON SHEET E-601 FOR MORE INFORMATION.
- C. FEEDER CONDUITS FROM DISTRIBUTION PANELBOARD DP1 IN ELECTRICAL ROOM TO TUNNEL SHALL BE EMT. CONDUITS IN TUNNEL SHALL BE PVC SCHEDULE 40.
- D. RESTORE DISTURBED GRAVEL DRIVEWAYS TO THEIR ORIGINAL CONDITION.

KEYED NOTES:

- 1 PROVIDE NEW 1.5MW, 277/480V DIESEL-ENGINE GENERATOR WITH OUTDOOR ENCLOSURE AND 72-HOUR BASE FUEL TANK.
- 2 PROVIDE NEW MEDIUM VOLTAGE SERVICE ENTRANCE SWITCHGEAR WITH INTEGRAL AUTOMATIC TRANSFER SWITCH (M/V/ATS), 480V-12.47KV PADMOUNT TRANSFORMER (2000KVA), 480V SWITCHGEAR (LV), AND GENERATOR DOCKING STATION (GDS).
- 3 PROVIDE UNDERGROUND SERVICE ENTRANCE FEEDER CONDUIT FROM NEW UTILITY POLE TO M/V/ATS. MEDIUM VOLTAGE SERVICE ENTRANCE CONDUCTORS AND TERMINATIONS PROVIDED BY AMEREN.
- 4 PROVIDE UNDERGROUND FEEDER FROM M/V/ATS TO THE EXISTING MEDIUM VOLTAGE SWITCHGEAR. INTERCEPT THE EXISTING UNDERGROUND CONDUIT FROM AMEREN TO THE EXISTING MEDIUM VOLTAGE SWITCHGEAR. REMOVE EXISTING MEDIUM VOLTAGE SERVICE ENTRANCE CONDUCTORS FROM EXISTING POLE AND CONNECT NEW MEDIUM VOLTAGE FEEDER FROM M/V/ATS.
- 5 DEMO EXISTING GENERATOR, BASE TANK, AND FUEL. ABANDON CONCRETE PAD AND CAP CONDUIT STUB-UP AT SLAB.
- 6 DEMO EXISTING FEEDER BETWEEN GENERATOR AND ATS.
- 7 REMOVE INTERIOR COMPONENTS OF ATS AND SPLICE EXISTING LINE-SIDE FEEDERS FROM PAD-MOUNTED TRANSFORMER AND LOAD-SIDE FEEDER TO PANELBOARD IN ATS ENCLOSURE UTILIZING UL LISTED INSULATED MECHANICAL CONNECTORS.
- 8 UNDER ALTERNATE BID #1, PROVIDE (5) NEW FEEDERS (SIMPLIFIED TO A SINGLE LINE FOR CLARITY) FROM DISTRIBUTION PANELBOARD DP1 (SEE SHEET E-102) THROUGH THE SERVICE BUILDING'S ELECTRICAL ROOM, INTO TUNNEL, AND TO THE NORTH WING OF THE TUNNEL LEADING TO HOUSING UNITS 6 THRU 10.

KEYED NOTES (CONTINUED):

- 9 UNDER ALTERNATE BID #1, INTERCEPT FIVE (5) EXISTING FEEDERS SERVING HOUSING UNITS 6 THRU 10. ONE FEEDER AT A TIME, NEAR THE LOCATION SHOWN, PROVIDE NEMA 1 JUNCTION/SPLICE BOX, SIZED PER NEC 314.28(A) FOR EACH FEEDER. SPLICE NEW FEEDER CONDUCTORS FROM DP1 TO EXISTING FEEDER CONDUCTORS TO EACH HOUSING UNIT UTILIZING UL LISTED INSULATED SPLICES. PERFORM INSULATION RESISTANCE (MEGGER) TESTS ON ALL FEEDER CONDUCTORS PER CURRENT ANSI MAINTENANCE TESTING SPECIFICATIONS AND PROVIDE TEST REPORTS FOR EACH TEST. REMOVE EXISTING JUNCTION BOX ENCLOSURE(S) AT CORNER AFTER EXISTING FEEDERS HAVE BEEN DEMOLISHED.
- 10 UNDER ALTERNATE BID #1, DEMOLISH REMAINING PORTIONS OF FIVE (5) EXISTING FEEDERS TO HOUSING UNITS 6 THRU 10 (SIMPLIFIED TO A SINGLE LINE FOR DRAWING CLARITY) FROM DISTRIBUTION PANELBOARD DP1 TO NEW JUNCTION/SPLICE BOX. (SEE KEYED NOTE 9)
- 11 UNDER ALTERNATE BID #2, PROVIDE (5) NEW FEEDERS (SIMPLIFIED TO A SINGLE LINE FOR CLARITY) FROM DISTRIBUTION PANELBOARD DP1 (SEE SHEET E-102) THROUGH THE SERVICE BUILDING'S ELECTRICAL ROOM, INTO TUNNEL, AND TO THE NORTH WING OF THE TUNNEL LEADING TO HOUSING UNITS 1 THRU 5.
- 12 UNDER ALTERNATE BID #2, INTERCEPT (5) EXISTING FEEDERS SERVING HOUSING UNITS 1 THRU 5. ONE FEEDER AT A TIME, NEAR THE LOCATION SHOWN, PROVIDE NEMA 1 JUNCTION/SPLICE BOX, SIZED PER NEC 314.28(A) FOR EACH FEEDER. SPLICE NEW FEEDER CONDUCTORS FROM DP1 TO EXISTING FEEDER CONDUCTORS TO EACH HOUSING UNIT UTILIZING UL LISTED INSULATED SPLICES. PERFORM INSULATION RESISTANCE (MEGGER) TEST ON ALL FEEDER CONDUCTORS PER CURRENT ANSI MAINTENANCE TESTING SPECIFICATIONS AND PROVIDE TEST REPORTS FOR EACH TEST. REMOVE EXISTING JUNCTION BOX ENCLOSURE(S) AT CORNER AFTER EXISTING FEEDERS HAVE BEEN DEMOLISHED.

KEYED NOTES (CONTINUED):

- 13 UNDER ALTERNATE BID #2, DEMOLISH REMAINING PORTIONS OF FIVE (5) EXISTING FEEDERS TO HOUSING UNITS 1 THRU 5 (SIMPLIFIED TO A SINGLE LINE FOR DRAWING CLARITY) FROM DISTRIBUTION PANELBOARD DP1 TO NEW JUNCTION/SPLICE BOX. (SEE KEYED NOTE 12).
- 14 FOR FEEDERS DEMOLISHED UNDER ALTERNATE BID #1 AND/OR ALTERNATE BID #2, CUT CONDUITS OFF AT TUNNEL FLOOR AND SEAL. DEMOLISH EXISTING WIREWAY CURRENTLY USED FOR EXISTING HOUSING UNIT FEEDERS. SEE SHEET E-102 FOR MORE INFORMATION.
- 15 PROVIDE UNDERGROUND FEEDER FROM EXISTING PADMOUNT TRANSFORMER UT-7 TO NEW 277/480V PANELBOARD IN GENERATOR ENCLOSURE. SEE NEW WORK ONE-LINE DIAGRAM ON SHEET E-601 FOR MORE INFORMATION.
- 16 PROVIDE UNDERGROUND CONDUIT WITH GENERATOR ANNUNCIATOR CABLE PER MANUFACTURER'S REQUIREMENTS. SEE DETAIL 3/E-501 FOR MORE INFORMATION.
- 17 PROVIDE CONDUIT FOR GENERATOR ANNUNCIATOR AND HMI MONITORING DISPLAY INTO EXISTING TUNNEL. SEE DETAIL 3/E-501 FOR MORE INFORMATION. PROVIDE CORE DRILL AND WATERTIGHT SEAL FOR CONDUIT PENETRATION.
- 18 EXTEND CABLING FOR GENERATOR ANNUNCIATOR AND HMI MONITORING DISPLAY INTO EXISTING TUNNEL. SEE DETAIL 3/E-501 FOR MORE INFORMATION. EXISTING FIBER TO CONVERT HMI SIGNAL FROM PLC AT M/V/ATS.
- 19 GROUPING OF (5) EXISTING FEEDERS SIMPLIFIED TO A SINGLE LINE FOR DRAWING CLARITY. SEE SHEET E-102 FOR MORE INFORMATION.
- 20 APPROXIMATE LOCATION OF I.T. CLOSET AT LOWER LEVEL OF ADMIN BUILDING. EXTEND HMI MONITORING DISPLAY SIGNAL FROM SERVICE BUILDING I.T. CLOSET UTILIZING EXISTING FIBER PAIR. PROVIDE NETWORK SWITCHES AT EACH END OF EXISTING FIBER TO CONVERT HMI SIGNAL FROM PLC AT M/V/ATS.
- 21 PROVIDE HMI MONITORING DISPLAY AT SECURITY OFFICE TO MIRROR HMI DISPLAY AT EXTERIOR MEDIUM VOLTAGE SWITCHGEAR (M/V/ATS). EXTEND COMMUNICATION CABLING PER MANUFACTURER'S REQUIREMENTS IN CONDUIT FROM I.T. CLOSET AT LOWER LEVEL OF ADMIN BUILDING. CONFIRM HMI DISPLAY LOCATION WITH OWNER. SEE DETAIL 3/E-501 FOR MORE INFORMATION.
- 22 APPROXIMATE LOCATION OF GENERATOR ANNUNCIATOR AT MAINTENANCE OFFICE. CONFIRM ANNUNCIATOR LOCATION WITH OWNER.
- 23 EXTEND GENERATOR ANNUNCIATOR COMMUNICATION CABLING IN CONDUIT FROM I.T. CLOSET THROUGH LOWER LEVEL OF SERVICE BUILDING TO ENTRANCE OF TUNNEL LEADING TO THE LAUNDRY BUILDING.
- 24 PROVIDE GENERATOR ANNUNCIATOR COMMUNICATION CABLING IN LIQUID-TIGHT FLEXIBLE CONDUIT THROUGH TUNNEL FROM SERVICE BUILDING TO LAUNDRY BUILDING.
- 25 EXTEND GENERATOR ANNUNCIATOR COMMUNICATION CABLING IN CONDUIT FROM TUNNEL TO ANNUNCIATOR IN MAINTENANCE OFFICE.
- 26 EMERGENCY POWER OFF (EPO) PUSH-BUTTON FOR GENERATOR TO BE MOUNTED ON EXTERIOR OF GENERATOR DOCKING STATION. PROVIDE CONDUIT AND CABLING PER MANUFACTURER'S REQUIREMENTS.
- 27 NEW UTILITY POLE TO BE PROVIDED BY AMEREN.
- 28 EXISTING UTILITY POLE TO BE DEMOLISHED BY AMEREN AFTER NEW ELECTRICAL SERVICE IS ENERGIZED AND RECONNECTED TO THE EXISTING MEDIUM VOLTAGE SWITCHGEAR

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SITE # 7006
FACILITY # 9327006056

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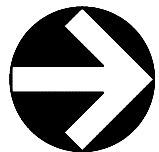
SHEET TITLE:

SITE PLAN -
ELECTRICAL

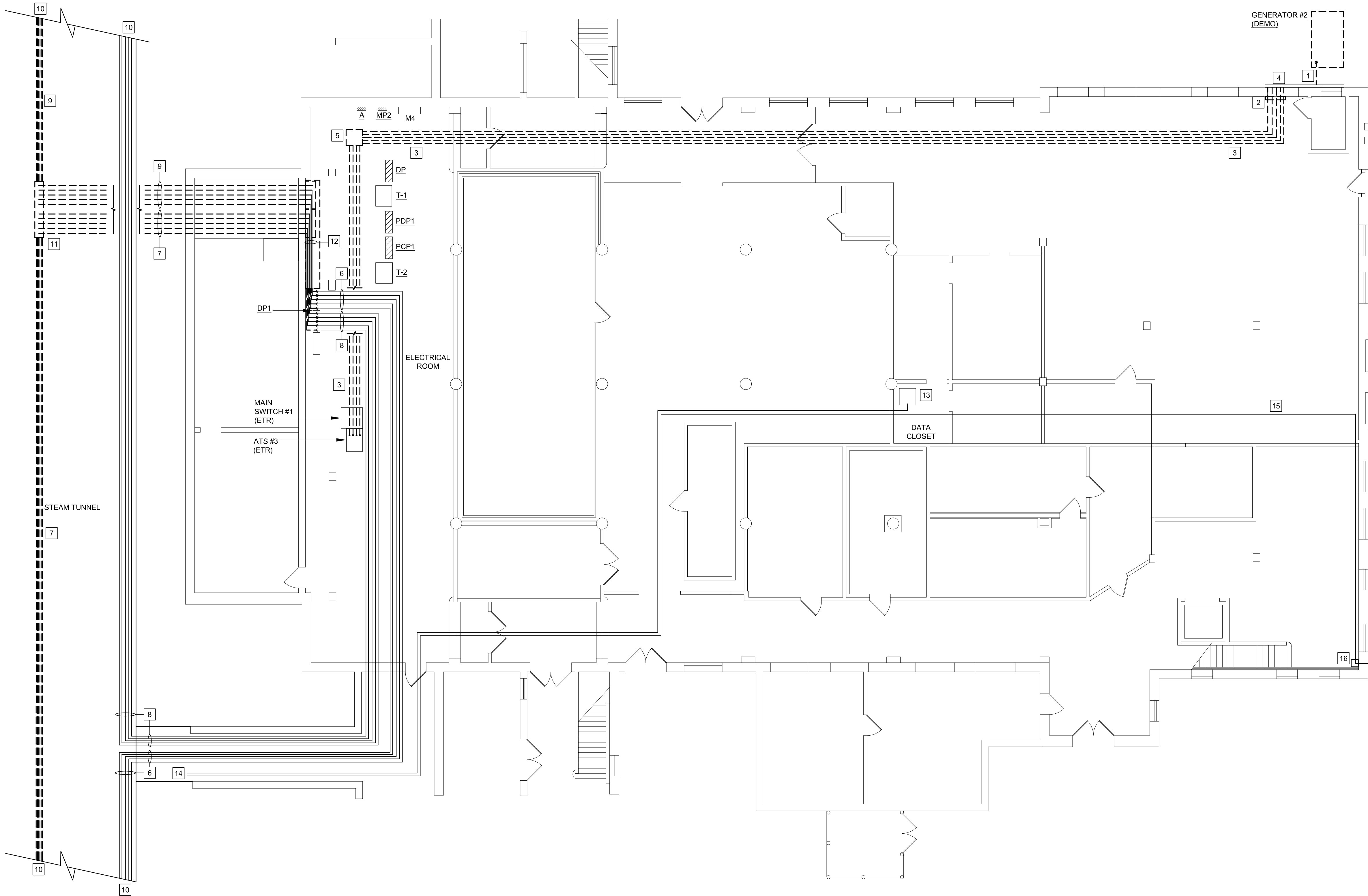
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E-101

4 OF 10 SHEETS



1 SITE PLAN - ELECTRICAL
E-101 1" = 50'-0"



- GENERAL NOTES:**
- A. ALL WORK SHALL BE PERFORMED IN STRICT ADHERENCE TO THE PHASING SEQUENCE DESCRIBED ON SHEET G-202.
 - B. SEE DEMOLITION ONE-LINE DIAGRAM ON SHEET E-600 AND NEW ONE-LINE DIAGRAM ON SHEET E-601 FOR MORE INFORMATION.
 - C. FEEDER CONDUITS FROM DISTRIBUTION PANELBOARD DP1 IN ELECTRICAL ROOM TO TUNNEL SHALL BE EMT. CONDUITS IN TUNNEL SHALL BE PVC SCHEDULE 40.
 - D. ROUTING OF NEW FEEDERS IS SHOWN FOR REFERENCE ONLY, CONTRACTOR SHALL DETERMINE ACTUAL ROUTING AND CONFIGURATION IN THE FIELD.

- KEYED NOTES:**
- 1 DEMO EXISTING UNDERGROUND GENERATOR FEEDER, CHARGER AND HEATER CIRCUITS, AND ATS COMMUNICATION CIRCUIT. CUT CONDUITS OFF AT CONCRETE PAD AND SEAL.
 - 2 DEMO EXISTING WALL-MOUNTED JUNCTION BOX. CUT OFF CONDUITS AT WALL AND SEAL.
 - 3 DEMO EXISTING OVERHEAD GENERATOR FEEDERS AND COMMUNICATION CIRCUIT TO ATS #3 AND CHARGER/HEATER CIRCUITS, INCLUDING CONDUIT SYSTEMS. TRAPEZE HANGARS BEING UTILIZED BY OTHER SYSTEMS SHALL REMAIN.
 - 4 EXISTING NEMA 3R WIREWAY TO REMAIN.
 - 5 DEMO EXISTING JUNCTION / PULL BOX.
 - 6 UNDER ALTERNATE BID #1, PROVIDE (5) NEW FEEDERS FROM DISTRIBUTION PANELBOARD DP1 THROUGH THE ELECTRICAL ROOM, INTO TUNNEL, AND TO THE NORTH WING OF THE TUNNEL LEADING TO HOUSING UNITS 6 THRU 10. SEE SHEET E-101 FOR MORE INFORMATION.
 - 7 UNDER ALTERNATE BID #1, DEMOLISH REMAINING PORTIONS OF EXISTING FEEDERS FOR HOUSING UNITS 6 THRU 10 FROM DISTRIBUTION PANELBOARD DP1.
 - 8 UNDER ALTERNATE BID #2, PROVIDE (5) NEW FEEDERS FROM DISTRIBUTION PANELBOARD DP1 THROUGH THE ELECTRICAL ROOM, INTO TUNNEL, AND TO THE NORTH WING OF THE TUNNEL LEADING TO HOUSING UNITS 1 THRU 5. SEE SHEET E-101 FOR MORE INFORMATION.
 - 9 UNDER ALTERNATE BID #2, DEMOLISH REMAINING PORTIONS OF EXISTING FEEDERS FOR HOUSING UNITS 1 THRU 5 FROM DISTRIBUTION PANELBOARD DP1.
 - 10 SEE SHEET E-101 FOR CONTINUATION.
 - 11 FOR EXISTING FEEDERS DEMOLISHED UNDER ALTERNATE BID #1 AND/OR ALTERNATE BID #2, CUT CONDUITS OFF AT TUNNEL FLOOR AND SEAL. DEMOLISH EXISTING WIREWAY CURRENTLY USED FOR EXISTING HOUSING UNIT FEEDERS AFTER ALL CONDUITS HAVE BEEN DEMOLISHED.
 - 12 UNDER ALTERNATE BID #1 AND/OR ALTERNATE BID #2, DEMOLISH FEEDER CONDUCTORS FROM EXISTING WIREWAY. WIREWAY TO REMAIN.
 - 13 EXISTING DATA RACK CONTAINS (2) SPARE FIBERS TO I.T. CLOSET AT ADMIN BUILDING FOR COMMUNICATION TO HMI DISPLAY AT SECURITY OFFICE. PROVIDE FIBER CONVERTERS AT EACH END OF FIBERS SERVING THE HMI DISPLAY SYSTEM. PROVIDE CABLING FROM FIBER CONVERTER AT ADMIN BUILDING TO THE HMI DISPLAY. SEE SHEET E-101 FOR MORE INFORMATION.
 - 14 CABLING FOR HMI (AT SECURITY OFFICE) AND GENERATOR ANNUNCIATOR (AT MAINTENANCE OFFICE) EXTEND FROM MEDIUM VOLTAGE SWITCHGEAR (MV/ATS). CABLING SHALL BE INSTALLED IN CONDUIT. SEE SHEET E-101 FOR MORE INFORMATION. CABLING SHALL BE INSTALLED IN CONDUIT. SEE DETAIL 3/E-501 FOR MORE INFORMATION.
 - 15 EXTEND GENERATOR ANNUNCIATOR COMMUNICATION CABLING IN CONDUIT FROM I.T. CLOSET THROUGH LOWER LEVEL OF SERVICE BUILDING TO ENTRANCE OF TUNNEL LEADING TO THE LAUNDRY BUILDING.
 - 16 PROVIDE GENERATOR ANNUNCIATOR COMMUNICATION CABLING IN LIQUID-TIGHT FLEXIBLE CONDUIT THROUGH TUNNEL FROM SERVICE BUILDING TO LAUNDRY BUILDING. SEE SHEET E-101 FOR CONTINUATION TO ANNUNCIATOR LOCATION AT MAINTENANCE OFFICE.

 **1** **SERVICE BUILDING - FIRST FLOOR PLAN - ELECTRICAL**
E-102 1/8" = 1'-0"

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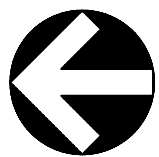
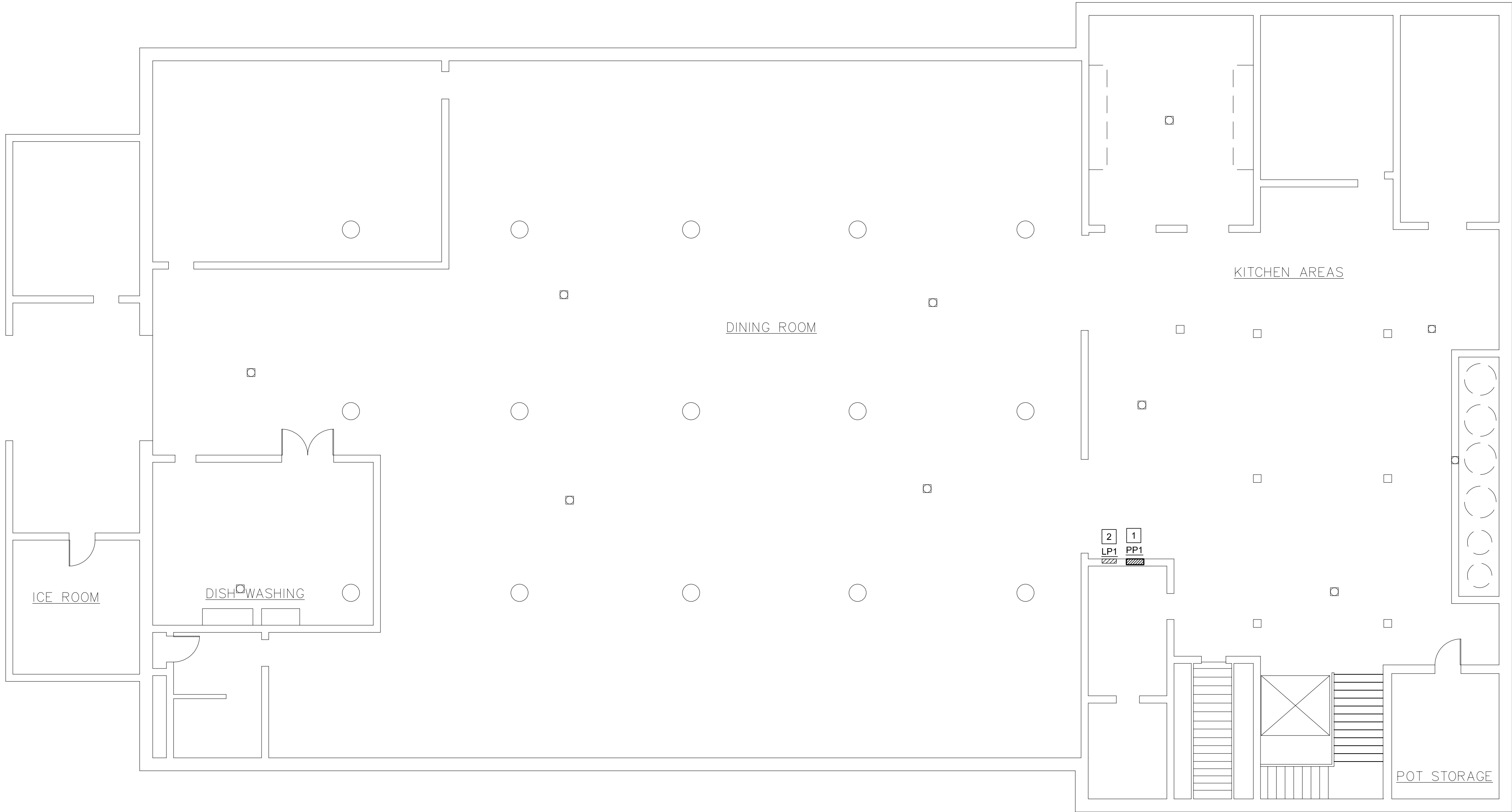
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SHEET TITLE:
**SERVICE BUILDING
FIRST FLOOR PLAN
- ELECTRICAL**

SHEET NUMBER:
E-102

5 OF 10 SHEETS



1
E-103

1/8" = 1'-0"

SERVICE BUILDING - SECOND FLOOR PLAN - ELECTRICAL

GENERAL NOTES:

- A. ALL WORK SHALL BE PERFORMED IN STRICT ADHERENCE TO THE PHASING SEQUENCE DESCRIBED ON SHEET G-002.

KEYED NOTES:

- 1 UNDER BASE BID, CLEAN EXISTING LINE-SIDE FEEDER CONNECTIONS AT KITCHEN PANELBOARD PP1 BY DISCONNECTING THE FEEDER CONDUCTORS, CLEANING THEM, AND RECONNECTING THEM UTILIZING ANTI-OXIDATION COMPOUND AND TORQUING THE CONNECTIONS TO FACTORY SPECS.
- UNDER ALTERNATE BID #3, REPLACE PANELBOARD PP1 IN THE SERVICE BUILDING AT ITS CURRENT LOCATIONS. UTILIZING THE EXISTING PANELBOARD ENCLOSURE, PROVIDE A NEW 400-AMP, 3-PHASE, 3-WIRE, MAIN CIRCUIT BREAKER (400A), COPPER BUS ASSEMBLY, COPPER GROUND BAR, CIRCUIT BREAKERS, AND DEAD FRONT. PROVIDE CUSTOM-FABRICATED, PAINTED COVER WITH RETURNED EDGES TO TRIM THE COVER TO THE EXISTING FINISHED WALL. PROVIDE THE FOLLOWING BRANCH BREAKERS
- (3) 50A/3P
 - (7) 40A/3P
 - (11) 20A/3P
 - (1) 20A/2P
- 2 EXISTING PANELBOARD TO REMAIN AND BE REUSED WITHOUT MODIFICATIONS.

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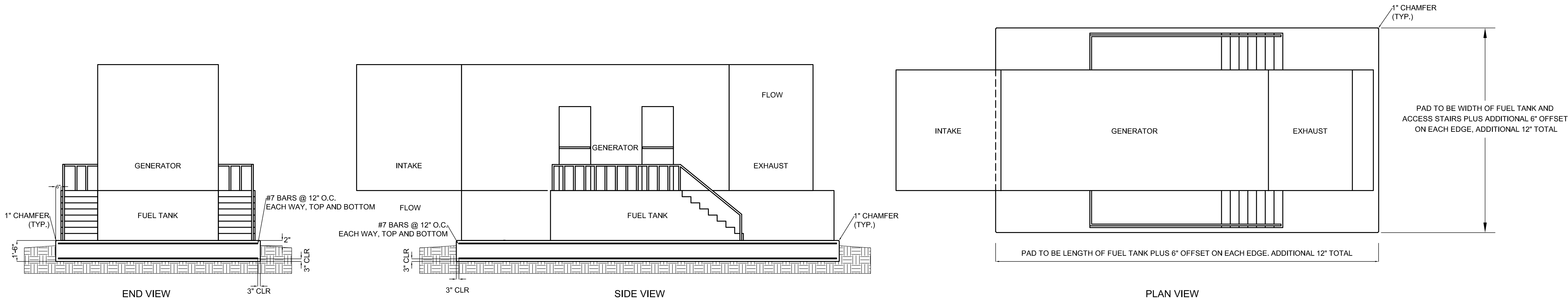
SHEET TITLE:

SERVICE BUILDING
SECOND FLOOR PLAN
- ELECTRICAL

SHEET NUMBER:

E-103

6 OF 10 SHEETS



1
E-500

GENERATOR PAD DETAIL

NO SCALE

FOUNDATION NOTES:

- EXISTING ORGANIC MATERIAL, UNSUITABLE SOIL, ABANDONED FOOTINGS AND ANY OTHER EXISTING UNSUITABLE MATERIALS SHALL BE REMOVED. ANY FILL MATERIAL REQUIRED AT THE SITE SHALL BE OF A SIMILAR TYPE SOIL THAT IS PRESENT AT THIS SITE EXHIBITING LIQUID LIMIT VALUES BELOW 50 AND PLASTIC INDEX VALUES BELOW 10. ROCKS GREATER THAN 6 IN. SHALL BE EXCLUDED FROM STRUCTURAL FILL LIFTS. FILL MATERIAL SHALL BE PLACED IN LOOSE LIFTS NO GREATER THAN 8 INCHES IN DEPTH AND SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY BASED ON STANDARD PROCTOR DENSITIES (ASTM D-698). ADEQUATE FIELD DENSITY AND MOISTURE CONTENT TESTS SHALL BE PERFORMED TO ENSURE COMPLIANCE WITH REQUIREMENTS.
- TESTING OF CONTROLLED STRUCTURAL FILL SHALL BE DONE BY A QUALIFIED TESTING LABORATORY RETAINED BY THE OWNER. SEE STRUCTURAL DRAWINGS FOR REQUIRED TESTING. CONTRACTOR IS RESPONSIBLE FOR COORDINATING WORK WITH INSPECTOR.
- AFTER STRIPPING SITE AND PRIOR TO PLACEMENT OF ANY FILL, NOTIFY SPECIAL INSPECTOR/TESTING AGENCY FOR INSPECTION OF SOIL CONDITIONS. INSPECTION SHALL INCLUDE PROOF ROLLING SITE WITH HEAVY EQUIPMENT PROVIDED BY THE CONTRACTOR.
- EXCAVATION FOR FOOTINGS SHALL BE CUT TO ACCURATE SIZE AND DIMENSIONS AS SHOWN ON PLANS. ALL SOIL BELOW SLABS AND FOOTINGS SHALL BE PROPERLY COMPACTED AND SUBGRADE BROUGHT TO A REASONABLE TRUE AND LEVEL PLANE BEFORE PLACING CONCRETE.
- SLABS ARE DESIGNED FOR A NET ALLOWABLE SOIL BEARING OF 1500 PSF.
- CONTRACTOR IS RESPONSIBLE TO MAINTAIN EXCAVATIONS AND BACKFILL MATERIALS AT AN APPROPRIATE MOISTURE CONTENT FOR PROPER SOIL BEARING CAPACITY AND COMPACTION

CONCRETE NOTES:

- CONCRETE FOR EXTERIOR USES SHALL HAVE 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI AND SHALL BE AIR-ENTRAINED TO 6% PLUS OR MINUS 1% WITH AN AIR-ENTRAINING ADMIXTURE CONFORMING TO ASTM C260. THE MAXIMUM WATER TO CEMENT RATIO SHALL BE 0.45 BY WEIGHT WITH A SLUMP OF 4"±1"
- NO LIME SAND FINE AGGREGATE MAY BE USED IN CONCRETE EXPOSED TO WEATHER, VIEW, OR IN HORIZONTAL APPLICATIONS.
- ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60.
- WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185. LAP FABRIC 9" ON SIDES AND ENDS. MAINTAIN WIRE 1" TO 2" BELOW TOP SURFACE OF SLABS ON GRADE. PROVIDE CHAIRS, BOLSTERS OR OTHER APPROVED MEANS TO PROPERLY LOCATE REINFORCING.
- IF ADDITIONAL FLOWABILITY IS REQUIRED FOR PLACEMENT OF ANY CONCRETE MIX, A WATER-REDUCING ADDITIVE CONFORMING TO ASTM C494, TYPE A, D, E OR F SHALL BE USED. NO ADDITIONAL WATER MAY BE ADDED TO THE MIX AT THE SITE. SLUMP FOR CONCRETE CONTAINING WATER-REDUCING OR HIGH-RANGE WATER-REDUCING ADMIXTURE SHALL NOT EXCEED 8" AFTER ADMIXTURE IS ADDED TO CONCRETE WITH A 2'-4" SLUMP.
- EXTERIOR SLABS SHALL HAVE LIGHT BROOM FINISH, UNO. ALL SLABS SHALL HAVE A CURING COMPOUND COMPLYING WITH ASTM C309 APPLIED TO SURFACE.
- TESTING OF FRESH CONCRETE SHALL BE DONE BY A QUALIFIED TESTING LABORATORY RETAINED BY THE OWNER AND APPROVED BY THE ENGINEER. TESTING SHALL INCLUDE:
 - SLUMP
 - AIR CONTENT
 - CONCRETE TEMPERATURE
 - 28 DAY COMPRESSIVE STRENGTH
 - NOTE ANY WATER OR ADMIXTURES ADDED ON-SITE.

CONCRETE NOTES CONTINUED:

- REFER TO ASTM C172 AND C94. PERFORM ONE SLUMP AND ONE AIR CONTENT TEST FOR EACH DAYS POUR AND ADDITIONAL TESTS WHEN THE CONCRETE CONSISTENCY SEEMS TO HAVE CHANGED IN THE OPINION OF THE INSPECTOR. REFER TO ASTM C143, C173 AND C231. PERFORM TEMP. TESTS HOURLY WHEN THE AMBIENT AIR TEMP. IS BELOW 40°F OR ABOVE 80°F AND ONE TEMP. TEST FOR EACH SET OF COMPRESSIVE-STRENGTH SPECIMENS. REFER TO ASTM C1064. PERFORM ONE COMPRESSIVE-STRENGTH TEST FOR EACH DAYS POUR AND AN ADDITIONAL TEST FOR EACH 50 CUBIC YARD MORE THAN THE FIRST 25 CUBIC YARD. TEST ONE SPECIMEN @ 7 DAYS AND 2 SPECIMENS @ 28 DAYS. REFER TO ASTM C31 AND C39.
- CONTROL JOINTS SHALL BE PLACED AT 12'-0" O.C. EACH WAY MAX. PROVIDE JOINTS IN TIME TO PREVENT SHRINKAGE CRACKING. PROPER JOINTING OF SLAB IS CRITICAL. REFER TO ACI MANUAL OF CONCRETE PRACTICE FOR PROPER JOINTING TECHNIQUES.
- DETAILING, MATERIALS AND INSTALLATION OF CONCRETE REINFORCING STEEL SHALL MEET REQ. AS SET FORTH BY CRSI AND THE AMERICAN CONCRETE INSTITUTE AND THE APPLICABLE BUILDING CODE.
- WHEN PLACING CONCRETE IN HOT WEATHER, REFER TO ACI 305R. WHEN PLACING CONCRETE IN COLD WEATHER, REFER TO ACI 306.1.

**STATE OF MISSOURI
MIKE KEHOE,
GOVERNOR**

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ENGINEER OF RECORD:



MICHAEL D. MITCHELL
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Certificate of Authority 2014035626



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MANAGEMENT,
DESIGN AND CONSTRUCTION**

DEPARTMENT OF CORRECTIONS

**PHASE II
ELECTRICAL REPLACEMENT &
REPLACE GENERATORS &
TRANSFER SWITCHES**

ALGOA CORRECTIONAL CENTER

8501 NO MORE VICTIMS ROAD
JEFFERSON CITY, MO 65101

PROJECT # C2402-01
SITE # 7006
FACILITY # 9327006056

REVISION: _____
DATE: _____
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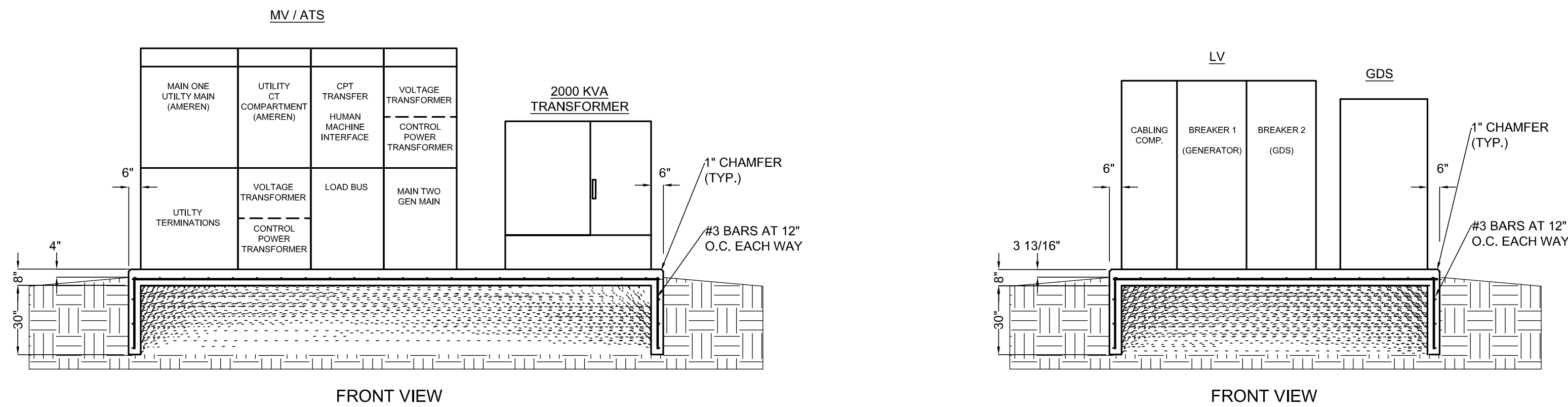
SHEET TITLE:

**DETAILS -
ELECTRICAL**

SHEET NUMBER:

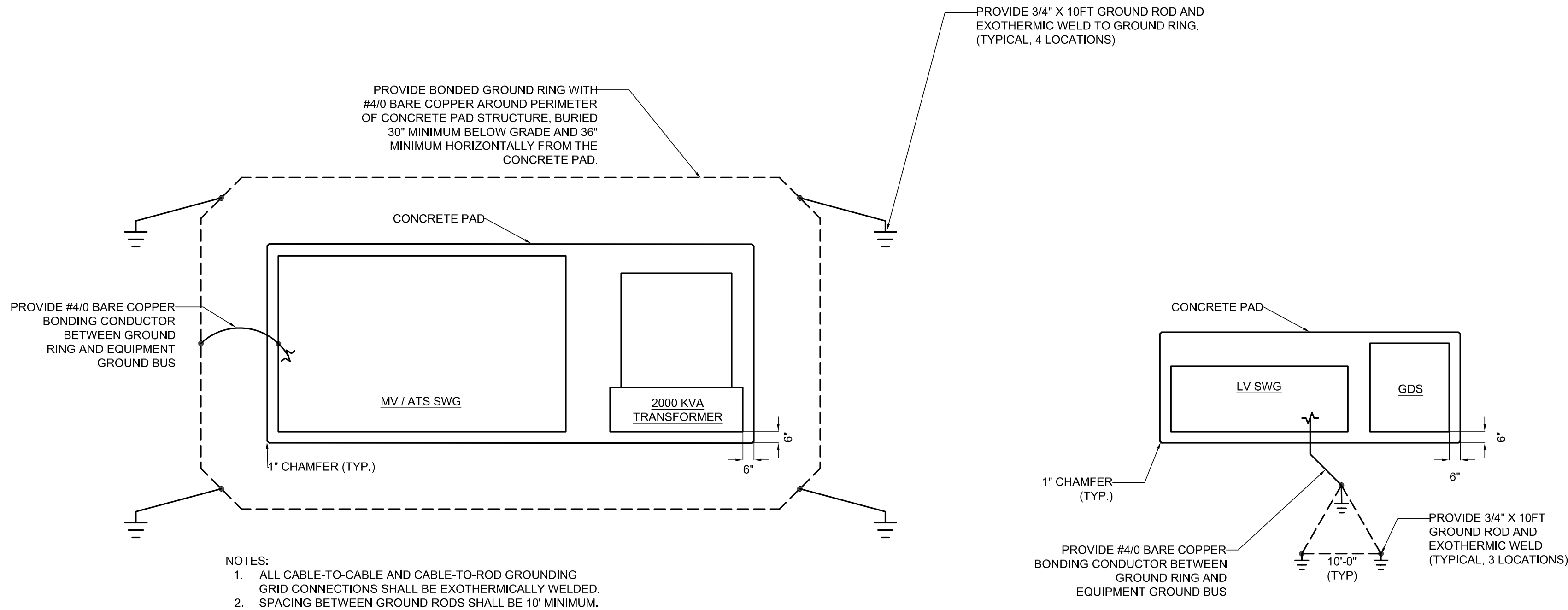
E-500

7 OF 10 SHEETS

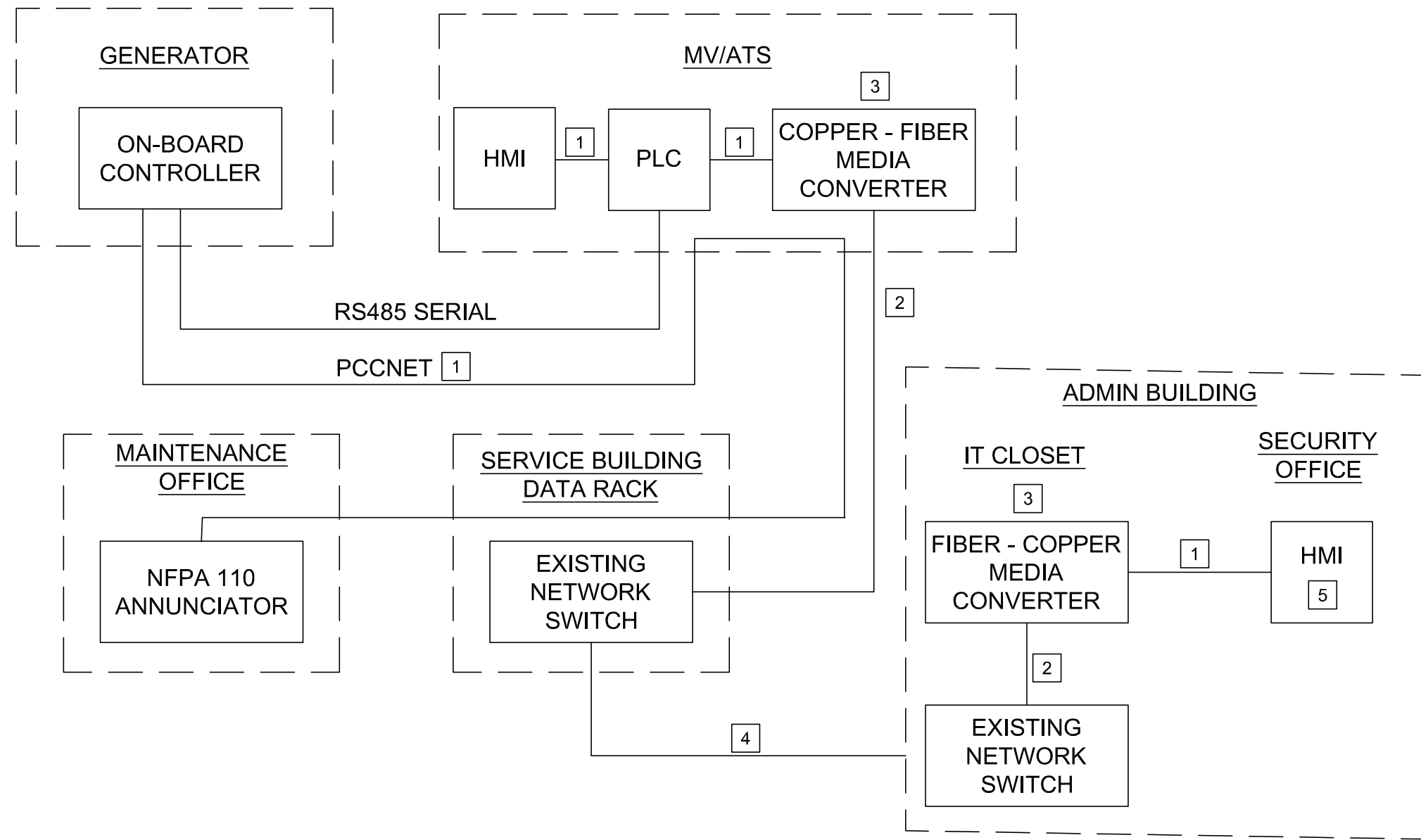


ACTUAL SWITCHGEAR CONFIGURATIONS TO BE CONFIRMED DURING SUBMITTAL PROCESS.

1 SWITCHGEAR ELEVATIONS AND PAD DETAILS
E-501 NO SCALE



2 SWITCHGEAR PLAN AND GROUNDING DETAIL
E-501 NO SCALE



- GENERAL NOTES: (THIS DETAIL ONLY)
1. WIRING DIAGRAM IS DEVELOPED BASED ON EQUIPMENT USED IN BASIS OF DESIGN. CONTRACTORS SHALL CONFIRM CABLING REQUIREMENTS FOR EQUIPMENT SELECTED FOR CONSTRUCTION.
 2. THE PLC IS PROVIDED BY THE SWITCHGEAR MANUFACTURER AND CONTROLS THE GENERATOR AND ATS TRANSFER OPERATIONS.
 3. PCCNET CABLING REQUIREMENTS ARE DETERMINED BY THE CONTRACTOR'S SELECTED GENERATOR MANUFACTURER.
 4. THE HMI AND ANNUNCIATOR SHALL UTILIZE CLOSED NETWORK COMMUNICATIONS.

- KEYED NOTES: (THIS DETAIL ONLY)
- 1 PROVIDE COMMUNICATION CABLING PER MANUFACTURER'S REQUIREMENTS.
 - 2 FIBER OPTIC CABLING TO BE PROVIDED BY CONTRACTOR
 - 3 FIBER CONVERTER SWITCH TO BE PROVIDED BY CONTRACTOR.
 - 4 UTILIZE EXISTING PAIR OF FIBER OPTIC STRANDS BETWEEN THE SERVICE BUILDING DATA RACK AND THE ADMIN BUILDING IT CLOSET.
 - 5 PROVIDE WALL MOUNTED ENCLOSURE WITH LCD DISPLAY FOR HMI. THE HMI AT THIS LOCATION PROVIDES MONITORING ONLY.

3 GENERATOR & ATS COMMUNICATION WIRING DIAGRAM
E-501 NO SCALE

STATE OF MISSOURI
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SITE # 7006
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SHEET TITLE:
DETAILS -
ELECTRICAL

SHEET NUMBER:

E-501

8 OF 10 SHEETS

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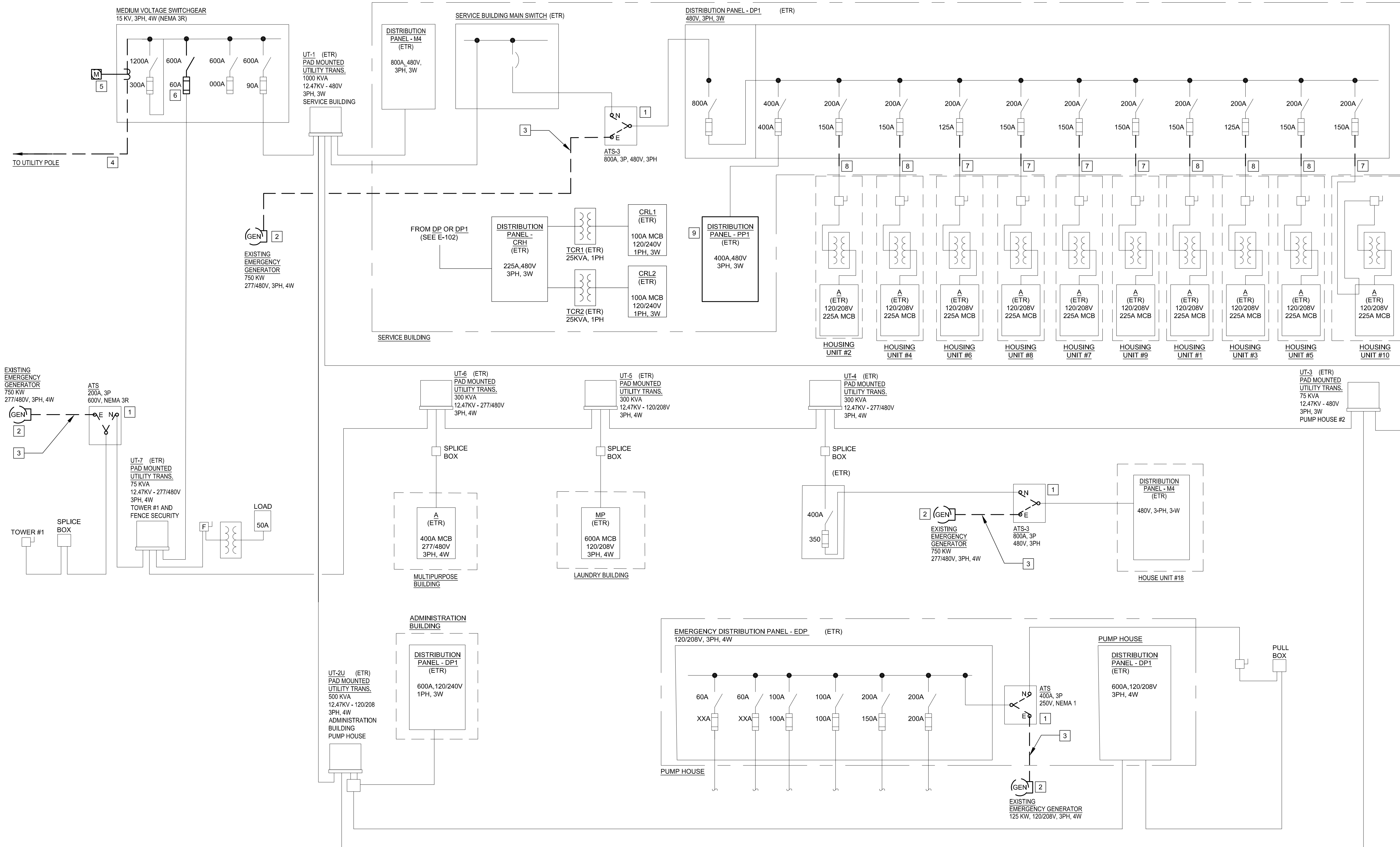
SHEET TITLE:

ONE-LINE DIAGRAM -
ELECTRICAL
DEMOLITION

SHEET NUMBER:

E-600

9 OF 10 SHEETS



1
E-600
ONE-LINE DIAGRAM - ELECTRICAL DEMOLITION
NO SCALE

GENERAL NOTES

- ALL WORK SHALL BE PERFORMED IN STRICT ADHERENCE TO THE PHASING SEQUENCE DESCRIBED ON SHEET G-002.
- INFORMATION SHOWN IN LIGHTER LINEWEIGHT INDICATES EXISTING ELECTRICAL SYSTEMS TO REMAIN.
- INFORMATION SHOWN IN DARKER LINEWEIGHTS INDICATES WORK TO BE COMPLETED IN THIS CONTRACT. DASHED LINES INDICATE DEMOLITION.
- SEE SHEET E-001 FOR ADDITIONAL GENERAL NOTES.
- SEE SHEET E-601 FOR NEW WORK ONE-LINE DIAGRAM.

KEYED NOTES

- EXISTING ATS ENCLOSURE TO REMAIN AND BE REUSED. REMOVE INTERIOR COMPONENTS AND SPLICE NORMAL AND LOAD FEEDERS.
- DEMO EXISTING GENERATOR. CONTRACTOR SHALL SALVAGE AND APPLY SAVINGS TO PROJECT.
- DEMO EXISTING FEEDER FROM GENERATOR TO ATS. UNDERGROUND CONDUITS SHALL BE CUT OFF, SEALED AND ABANDONED.
- DEMO EXISTING MEDIUM VOLTAGE SERVICE ENTRANCE FEEDER FROM AMEREN UTILITY POLE. EXISTING UTILITY POLE TO BE DEMOLISHED BY AMEREN AFTER NEW ELECTRICAL SERVICE IS ENERGIZED AND RECONNECTED TO THE EXISTING MEDIUM VOLTAGE SWITCHGEAR.
- EXISTING CT EQUIPMENT TO BE REMOVED AND RETURNED TO AMEREN.
- EXISTING FUSES TO BE REMOVED AND REPLACED. SEE SHEET E-601 FOR NEW WORK.

KEYED NOTES (CONTINUED)

- UNDER ALTERNATE BID #1, PARTIALLY DEMOLISH FEEDER FROM DISTRIBUTION PANELBOARD DP1 TO TUNNEL. SEE SHEETS E-101 AND E-102 FOR MORE INFORMATION.
- UNDER ALTERNATE BID #2, PARTIALLY DEMOLISH FEEDER FROM DISTRIBUTION PANELBOARD DP1 TO TUNNEL. SEE SHEETS E-101 AND E-102 FOR MORE INFORMATION.
- UNDER BASE BID, EXISTING FEEDER CONNECTIONS TO PANELBOARD ARE TO BE CLEANED AND RETORQUED TO FACTORY SPECS. SEE SHEET E-601 FOR WORK TO BE PROVIDED UNDER ALTERNATE BID #3.

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MIKE KEHOE,
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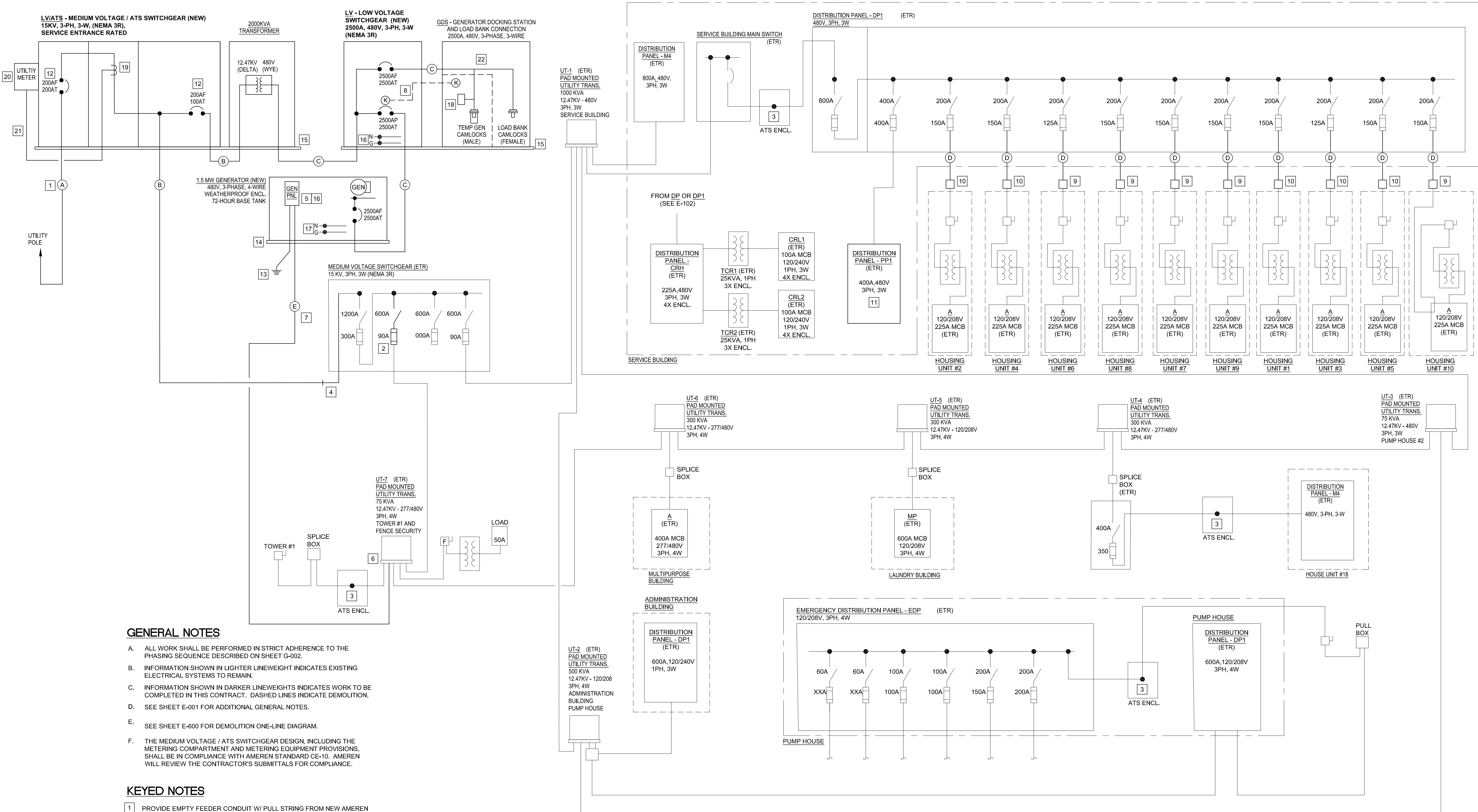
SHEET TITLE:

ONE-LINE
DIAGRAM -
ELECTRICAL NEW

SHEET NUMBER:

E-601

10 OF 10 SHEETS



GENERAL NOTES

- ALL WORK SHALL BE PERFORMED IN STRICT ADHERENCE TO THE PHASING SEQUENCE DESCRIBED ON SHEET G-002.
- INFORMATION SHOWN IN LIGHTER LINEWEIGHT INDICATES EXISTING ELECTRICAL SYSTEMS TO REMAIN.
- INFORMATION SHOWN IN DARKER LINEWEIGHTS INDICATES WORK TO BE COMPLETED IN THIS CONTRACT. DASHED LINES INDICATE DEMOLITION.
- SEE SHEET E-001 FOR ADDITIONAL GENERAL NOTES.
- SEE SHEET E-600 FOR DEMOLITION ONE-LINE DIAGRAM.
- THE MEDIUM VOLTAGE / ATS SWITCHGEAR DESIGN, INCLUDING THE METERING COMPARTMENT AND METERING EQUIPMENT PROVISIONS, SHALL BE IN COMPLIANCE WITH AMEREN STANDARD CE-10. AMEREN WILL REVIEW THE CONTRACTOR'S SUBMITTALS FOR COMPLIANCE.

KEYED NOTES

- PROVIDE EMPTY FEEDER CONDUIT W/ PULL STRING FROM NEW AMEREN UTILITY POLE TO NEW MEDIUM VOLTAGE ATS SWITCHGEAR. MEDIUM VOLTAGE CONDUCTORS AND TERMINATIONS BY AMEREN.
- PROVIDE (3) NEW FUSES IN EXISTING MEDIUM VOLTAGE SWITCH.
- REMOVE INTERIOR COMPONENTS FROM ATS ENCLOSURE. SPLICE NORMAL POWER FEEDER AND LOAD FEEDER TOGETHER WITH UL LISTED INSULATED MECHANICAL SPLICES.
- INTERCEPT AND UTILIZE EXISTING CONDUIT FOR INSTALLATION OF NEW MEDIUM VOLTAGE FEEDER FROM MV/ATS.
- PROVIDE 100A, MCB, 277/480V, 3-PHASE, 4-WIRE PANELBOARD IN GENERATOR ENCLOSURE WITH PREWIRED CIRCUITS FOR COOLANT HEATER, BATTERY CHARGER, AND LIGHTING PACKAGE.
- PROVIDE HAND-DIGGING UNDER EXISTING TRANSFORMER CONCRETE PAD TO INSTALL CONDUIT STUB-OUT FOR NEW FEEDER.
- PROVIDE UNDERGROUND FEEDER FROM EXISTING PADMOUNT TRANSFORMER TO NEW 277/480V PANELBOARD IN GENERATOR ENCLOSURE. SEE SHEET E-101 FOR MORE INFORMATION.
- PROVIDE KIRK KEY INTERLOCK BETWEEN GENERATOR BREAKER AND ACCESS DOOR FOR CONNECTION OF TEMPORARY GENERATOR.
- UNDER ALTERNATE BID #1, PARTIALLY REPLACE FEEDER FROM DISTRIBUTION PANELBOARD DP1 TO TUNNEL. SEE SHEETS E-101 AND E-102 FOR MORE INFORMATION.

KEYED NOTES (CONTINUED)

- UNDER ALTERNATE BID #2, PARTIALLY REPLACE FEEDER FROM DISTRIBUTION PANELBOARD DP1 TO TUNNEL. SEE SHEETS E-101 AND E-102 FOR MORE INFORMATION.
- UNDER ALTERNATE BID #3, EXISTING PANELBOARD SHALL BE REPLACED IN ITS CURRENT LOCATION. SEE SHEET E-102 FOR MORE INFORMATION.
- PROVIDE DRAW-OUT TYPE VACUUM BREAKER.
- PROVIDE 3/4" X 10FT COPPER CLAD GROUND ROD AND #6 BARE WIRE IN 3/4" PVC CONDUIT. CONNECT TO GROUND BAR AT GENERATOR PANEL.
- PROVIDE CONCRETE PAD FOR EQUIPMENT. SEE SHEET E-500 FOR MORE INFORMATION.
- PROVIDE CONCRETE PAD FOR EQUIPMENT. SEE SHEET E-501 FOR MORE INFORMATION.
- NEUTRAL AND GROUND SHALL BE BONDED AT THIS LOCATION.

ONE-LINE DIAGRAM - ELECTRICAL NEW

NO SCALE

KEYED NOTES (CONTINUED)

- NEUTRAL AND GROUND SHALL NOT BE BONDED AT THIS LOCATION.
- PROVIDE FACTORY MOUNTED PHASE ROTATION MONITOR AND STRIP HEATER IN GENERATOR DOCKING STATION. CIRCUIT FOR STRIP HEATER SHALL ORIGINATE FROM GENERATOR AUXILIARY PANEL.
- PRIMARY METERING SHALL BE COLD SEQUENCE METERING. CURRENT TRANSFORMERS AND POTENTIAL TRANSFORMERS TO BE FURNISHED BY AMEREN AND SHIPPED TO SWITCHGEAR MANUFACTURER FOR INSTALLATION AT THE FACTORY. REFERENCE AMEREN STANDARD CE-10 FOR INSTALLATION REQUIREMENTS.
- CONTRACTOR TO INSTALL METER AND METERING WIRE LOOP FURNISHED BY AMEREN. METER SHALL BE INSTALLED ON THE END WALL OF THE MEDIUM VOLTAGE SWITCHGEAR.
- PROVIDE CONDUIT FOR METERING WIRE LOOP PER AMEREN STANDARDS.
- PROVIDE STRIP HEATER AND THERMOSTAT IN GDS. PROVIDE POWER BY EXTENDING CIRCUIT FROM GENERATOR AUXILIARY PANELBOARD.

FEEDER SCHEDULE (X)

PLAN MARK	PHASE WIRE NO.	PHASE WIRE SIZE	NEUTRAL NO.	NEUTRAL SIZE	GROUND NO.	GROUND SIZE	CONDUIT NO.	CONDUIT SIZE	REMARKS
A	-	-	-	-	-	-	1	5"	PROVIDE PULL STRING
B	3	2/0	-	-	1	3	1	4"	15KV, MV-101, 133%, SHLD
C	21	500MCM	-	-	7	350MCM	7	3"	
D	2	2/0	-	-	1	6	1	1-1/2"	
E	3	3	1	3	-	-	1	1-1/4"	