

ELECTRICAL SPECIFICATIONS

PART I – GENERAL

A. GENERAL

1. FURNISH AND INSTALL A COMPLETELY WIRED AND OPERATIONAL ELECTRICAL SYSTEM AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN, INCLUDING BUT NOT LIMITED TO, THESE MAJOR ITEMS:  
A. LIGHTING FIXTURES AS INDICATED AND SPECIFIED ON THE PLANS.  
B. ELECTRICAL PANELS, SERVICE, CONDUIT, WIRING, ETC., FOR ALL OUTLETS AND EQUIPMENT.  
C. TELEPHONE, TELEVISION, AND FIRE ALARM, OUTLETS AND CONDUIT AS INDICATED.
2. OBTAIN AND REVIEW ALL OTHER DRAWINGS INCLUDING REFLECTED CEILING PLAN, INTERIOR AND EXTERIOR ELEVATIONS, FURNITURE PLANS AND ALL MILL WORK DRAWINGS. COORDINATE INSTALLATION OF ALL ELECTRICAL DEVICES AND EQUIPMENT PRIOR TO ROUGH-IN.
3. OBTAIN SUBMITTAL AND SHOP DRAWINGS FROM OTHER TRADES AND EQUIPMENT TO COORDINATE INSTALLATION ACCORDINGLY.
4. INSTALLATION SHALL COMPLY WITH ALL CURRENT APPLICABLE CODES AND GOVERNING AGENCIES HAVING JURISDICTION.
5. FIRE ALARM SYSTEM, IF REQUIRED PER IBC, SHALL BE DESIGN-BUILD BY OWNER'S/GC'S FIRE ALARM CONTRACTOR. DESIGN SHALL BE IN ACCORDANCE WITH NFPA 72. FIRE ALARM CONTRACTOR SHALL SUBMIT STAMPED DRAWINGS TO AHJ FOR REVIEW AND APPROVAL. FIRE ALARM CONTRACTOR IS RESPONSIBLE FOR TESTING AND VERIFYING THAT THE AUDIBILITY OF THE FIRE ALARM SYSTEM MEETS A MINIMUM OF 15 DBA ABOVE AMBIENT NOISE LEVELS. ADD HORNS WHERE REQUIRED TO MAINTAIN MINIMUM LEVELS.
6. PROVIDE FIRE STOP ON ALL PIPING THAT PENETRATES RATED WALLS. METHOD OF FIRE STOP SHALL MEET WALL RATING. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION OF FIRE RATED WALLS. THIS CONTRACTOR SHALL PROVIDE FIRE RATED ENCLOSURES AROUND ALL ROUGH-IN BOXES, PANELS, ETC. THAT ARE LOCATED IN FIRE RATED WALLS AND SHALL FIRE CAULK ALL OPENINGS IN RATED ASSEMBLIES.

B. RELATED WORK BY OTHERS

1. THE ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUIT, TRENCH, AND BACKFILL FOR ELECTRICAL SERVICE ENTRANCE FROM THE MAIN SERVICE TO UTILITY POINT OF ELECTRICAL SERVICE. ELECTRICAL CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE ELECTRICAL SERVICE ENTRANCE WITH SERVING UTILITY COMPANY.
2. THE ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUIT, TRENCH, AND BACKFILL FOR PRIMARY PHONE AND CATV SERVICE FROM THE TELEPHONE TERMINAL BOARD OR CABINET TO THE PHONE COMPANY AND CATV COMPANY POINT OF SERVICE. COORDINATE WITH LOCAL UTILITY COMPANIES.

C. CODES, REGULATIONS, AND STANDARDS

1. THE INSTALLATION SHALL COMPLY WITH APPLICABLE LOCAL AND STATE CODES AND ORDINANCES, WITH THE REGULATIONS OF THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE AND WITH THE REQUIREMENTS OF THE POWER, TELEPHONE, AND CATV COMPANIES FURNISHING SERVICES TO THIS INSTALLATION.
2. THE LATEST EDITIONS OF THE FOLLOWING INDUSTRY STANDARDS, SPECIFICATIONS, AND CODES ARE MINIMUM REQUIREMENTS:  
A. THE NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION STANDARDS.  
B. THE NATIONAL ELECTRICAL CODE, INCLUDING LOCAL AMENDMENTS.  
C. UNDERWRITER LABORATORIES INCORPORATED STANDARDS.  
D. AMERICAN NATIONAL STANDARDS INSTITUTE.  
E. INTERNATIONAL BUILDING CODE.

D. INSPECTION OF SITE

1. PRIOR TO SUBMITTING A BID FOR ELECTRICAL WORK, THE CONTRACTOR SHALL VISIT THE SITE OF THE PROPOSED CONSTRUCTION AND SHALL THOROUGHLY ACQUAINT HIMSELF WITH EXISTING UTILITIES AND WORKING CONDITIONS TO BE ENCOUNTERED, ETC. ALLOWANCE WILL NOT BE MADE FOR NONCOMPLIANCE WITH THIS CONDITION AFTER BIDDING.
2. ELECTRICAL INSTALLATION SHALL MEET THE EXISTING CONDITIONS.

E. STORAGE AND HANDLING OF MATERIAL

1. DELIVER MATERIALS AND EQUIPMENT TO THE PROJECT IN THE MANUFACTURER'S ORIGINAL, UNOPENED, LABELED CONTAINERS. PROTECT AGAINST MOISTURE, TARNISH, OR DAMAGE FROM IMPROPER HANDLING OR STORAGE. CONTRACTOR SHALL PROTECT AND BE RESPONSIBLE FOR ANY DAMAGE TO WORK OR MATERIALS UNTIL FINAL ACCEPTANCE BY THE OWNER, AND SHALL MAKE GOOD WITHOUT COST TO THE OWNER, ANY DAMAGE OR LOSS THAT MAY OCCUR OR BE INCURRED DURING THE PROJECT.
2. ARRANGE FOR TIMELY DELIVERY OF MATERIALS AND EQUIPMENT TO THE JOB SITE IN ORDER TO MINIMIZE THE LENGTH OF TIME BETWEEN DELIVERY AND INSTALLATION.
3. COVER AND PROTECT ANY MATERIAL WHICH MAY BE AFFECTED BY THE WEATHER WHILE IN TRANSIT OR STORED AT THE PROJECT SITE. ANY MATERIAL FOUND DEFECTIVE OR NOT INSTALLED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS MAY BE REJECTED BY THE ENGINEER.

F. CLEANUP

1. KEEP THE PREMISES FREE FROM ACCUMULATION OF WASTE MATERIALS, OR RUBBISH CAUSED BY EMPLOYEES OR WORK UNDER THIS DIVISION OF THE SPECIFICATIONS. AT THE COMPLETION OF THE WORK REMOVE ALL SURPLUS MATERIALS, TOOLS, ETC., AND LEAVE THE PREMISES BROOM-CLEAN.

G. EXCAVATION, CUTTING, AND FITTING

1. PERFORM ALL EXCAVATION AND BACK FILLING REQUIRED FOR WORK PERFORMED UNDER THIS DIVISION OF THE SPECIFICATIONS. USE EXCAVATED MATERIALS FOR BACKFILL UNLESS OFF SITE MATERIALS ARE DEEMED NECESSARY.
2. PERFORM THE EXCAVATION, CUTTING, FITTING, REPAIRING, AND FINISHING OF THE WORK NECESSARY FOR THE INSTALLATION OF THE EQUIPMENT OF THIS SECTION. HOWEVER, NO CUTTING OF THE WORK OF OTHER TRADES OR OF ANY STRUCTURAL MEMBERS SHALL BE DONE WITHOUT THE CONSENT OF THE ARCHITECT.

H. DRAWINGS

1. THE DRAWINGS INDICATE THE GENERAL ARRANGEMENT AND LOCATIONS OF THE ELECTRICAL WORK. DATA PRESENTED ON THESE DRAWINGS ARE AS ACCURATE AS PLANNING CAN DETERMINE, BUT FIELD VERIFICATION OF ALL DIMENSIONS, LOCATIONS, LEVELS, ETC., TO SUIT FIELD CONDITIONS IS REQUIRED. REVIEW ALL ARCHITECTURAL, STRUCTURAL, AND MECHANICAL DRAWINGS AND ADJUST ALL WORK TO MEET THE REQUIREMENTS OF CONDITIONS SHOWN. THE ARCHITECTURAL DRAWINGS SHALL TAKE PRECEDENCE OVER ALL OTHER DRAWINGS. DISCREPANCIES BETWEEN DIFFERENT PLANS, OR BETWEEN DRAWINGS AND SPECIFICATIONS, OR REGULATIONS AND CODES GOVERNING THE INSTALLATION SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IN WRITING BEFORE THE DATE OF BID OPENING. IF DISCREPANCIES ARE NOT REPORTED, THE CONTRACTOR SHALL BID THE GREATER QUANTITY OR BETTER QUALITY, AND APPROPRIATE ADJUSTMENTS WILL BE MADE AFTER CONTRACT AWARD. CONTRACTOR SHALL BE RESPONSIBLE TO FIELD MEASURE AND CONFIRM MOUNTING HEIGHTS AND LOCATION OF ELECTRICAL EQUIPMENT WITH RESPECT TO COUNTERS, RADIATION, ETC. DO NOT SCALE DISTANCES OFF THE ELECTRICAL DRAWINGS. USE ACTUAL BUILDING DIMENSIONS.

I. COOPERATION WITH OTHER CONTRACTORS

1. COOPERATE WITH THE OTHER TRADES SO THAT THE INSTALLATION OF THE ELECTRICAL OUTLETS AND EQUIPMENT WILL BE PROPERLY COORDINATED. CONDUIT, LIGHTING FIXTURES, AND OTHER EQUIPMENT LOCATIONS SHALL BE VERIFIED WITH OTHER TRADES TO AVOID CONFLICT WITH THE PIPING, DUCTWORK, STEEL, BEAMS, OR OTHER OBSTRUCTIONS.
2. CAREFULLY VERIFY THE LOCATIONS OF THE OUTLET BOXES AND DETERMINE THAT THEY HAVE NOT BEEN DISTURBED DURING THE INSTALLATION OF MATERIALS OF OTHER TRADES.
3. COORDINATE THE LOCATION OF THE TRENCHES AND CONDUITS FOR ELECTRICAL AND TELEPHONE UTILITY SERVICES WITH THE GENERAL CONTRACTOR.
4. COORDINATE HVAC AND PLUMBING EQUIPMENT CONNECTION REQUIREMENTS WITH HVAC AND PLUMBING CONTRACTORS.

J. RECORD DRAWINGS

1. THE ELECTRICAL CONTRACTOR SHALL MAINTAIN A SET OF DRAWINGS AT THE JOB SITE FOR THE EXCLUSIVE PURPOSE OF MAINTAINING A RECORD OF ALL WORK INSTALLED AND TO SHOW ANY DEVIATIONS FROM THE WORK INDICATED ON THE DRAWINGS.
2. AT THE COMPLETION OF THE PROJECT, ONE SET OF REPRODUCIBLE DRAWINGS, SHOWING ALL RECORD CONDITIONS, SHALL BE DELIVERED TO THE OWNER FOR ACCEPTANCE PRIOR TO FINAL PAYMENT.

PART II – PRODUCTS AND EXECUTION

A. MATERIALS

1. ALL MATERIALS SHALL BE NEW AND OF QUALITY AS SPECIFIED ON THE PLANS OR SPECIFICATIONS AND MUST CARRY THE UNDERWRITER'S LABORATORIES APPROVAL COVERING THE PURPOSE FOR WHICH THEY ARE USED, IN ADDITION TO MEETING ALL REQUIREMENTS OF THE CURRENT APPLICABLE CODES AND REGULATIONS.

B. SHOP DRAWINGS AND APPROVALS

1. THE ITEMS SPECIFIED HEREIN AND ON DRAWINGS ARE USED AS A STANDARD OF QUALITY. ANY MATERIALS OF EQUAL QUALITY AND AESTHETIC VALUE WILL BE GIVEN CONSIDERATION AS A SUBSTITUTE FOR THE MATERIALS SPECIFIED. NO APPROVAL WILL BE GIVEN TO A SPECIFIC CATALOG NUMBER, MODEL, OR TYPE OF EQUIPMENT, PRIOR TO BIDDING. AFTER BIDDING, THE DECISION OF THE ARCHITECT AND/OR ENGINEER DETERMINING EQUAL MATERIALS WILL BE FINAL.
2. THE CONTRACTOR SHALL SUBMIT (3) IDENTICAL BOND SETS OF SHOP DRAWINGS ON THE FOLLOWING ITEMS TO THE G.C.:  
A. LIGHTING FIXTURE CUTS AND PERFORMANCE DATA.  
B. OUTLINE DRAWINGS AND DATA SHEETS OF EACH PANELBOARD, LOAD CENTERS, AND DISTRIBUTION PANELS.  
C. OUTLINE DRAWINGS OF ALL SWITCH GEAR COMPONENTS.  
D. WIRING DEVICES AND COVERPLATES.  
E. ALL CIRCUIT BREAKERS INSTALLED IN PANELBOARDS, LOAD CENTERS, AND DISTRIBUTION PANELS.

C. SYSTEM GROUNDING

1. GROUNDING SHALL COMPLY WITH REQUIREMENTS OF ARTICLE 250. ALL EXPOSED NONCURRENT CARRYING METALLIC PARTS OF ELECTRICAL EQUIPMENT, METALLIC RACEWAY SYSTEMS, METALLIC CABLE ARMOR, GROUNDING CONDUCTOR OF NONMETALLIC SHEATHED CABLES, GROUNDING CONDUCTOR IN NONMETALLIC RACEWAYS, AND GROUNDING CONDUCTORS OF THE WIRING SYSTEM SHALL BE GROUNDED.
2. GROUNDED CONDUCTOR (NEUTRAL) OF THE WIRING SYSTEM SHALL BE CONNECTED TO THE SYSTEM GROUNDING CONDUCTOR AT A SINGLE PLACE IN EACH SYSTEM BY REMOVABLE BONDING JUMPERS, SIZED ACCORDING TO THE APPLICABLE PROVISIONS OF THE NATIONAL ELECTRICAL CODE. THE GROUNDED CONDUCTOR (NEUTRAL) TO THE GROUNDING CONDUCTOR CONNECTION SHALL BE LOCATED IN THE ENCLOSURE FOR THE SYSTEM'S OVERCURRENT PROTECTION OR WHERE OTHERWISE INDICATED ON THE PLANS OR SPECIFICATIONS.
3. A GROUND BUS SEPARATE FROM THE NEUTRAL BUS SHALL BE PROVIDED IN ALL DISTRIBUTION PANELS AND PANELBOARDS. PROPER TORQUE ON GROUND BUS SHALL BE VERIFIED, PER MANUFACTURER'S RECOMMENDATIONS, PRIOR TO ENERGIZING EQUIPMENT.
4. GROUND BUSES AND NEUTRAL BUSES IN ALL DISTRIBUTION PANELS, LOAD CENTERS, PANELBOARDS, AND THOSE PROVIDED IN ANY EQUIPMENT SHALL BE ISOLATED EXCEPT WHERE REQUIRED TO BE CONNECTED AS SPECIFIED ABOVE FOR THE SERVICE ENTRANCE.
5. WHEN INDICATED ON THE DRAWINGS, EQUIPMENT GROUNDING CONDUCTORS SHALL BE EXTENDED FROM THE GROUND BUS IN THE DISTRIBUTION EQUIPMENT TO THE RECEPTACLE, FIXTURE OR DEVICE LUGS WHERE THEY ARE PROVIDED. WHERE LUGS ARE NOT PROVIDED, EQUIPMENT GROUNDING CONDUCTORS SHALL BE CONNECTED TO EQUIPMENT ENCLOSURES. THE CONNECTIONS SHALL BE ARRANGED SUCH THAT REMOVAL OF THE RECEPTACLE, EQUIPMENT GROUND CONDUCTORS, OR GROUND JUMPERS FROM GROUND BUSING SHALL NOT AFFECT THE GROUND SYSTEM.
6. RACEWAYS MAY NOT BE USED AS A GROUNDING CONDUCTOR FOR POWER AND LIGHTING CIRCUITS. ALL CONDUIT SHALL HAVE SEPARATE CODE SIZED GREEN GROUND WIRE INSTALLED IN THE CONDUIT TO INSURE A CONTINUOUS GROUNDING PATH.
7. IN ACCESSIBLE LOCATIONS, MAKE CONNECTIONS BY EXOTHERMIC WELD PROCESS.
8. IN ACCESSIBLE LOCATIONS, CONNECTIONS SHALL BE MADE WITH BOLTED THROUGH, APPROVED SOLDERLESS BRONZE GROUNDING DEVICES.

D. WIRE

1. CONDUCTOR SIZES SHOWN ON THE DRAWINGS ARE BASED ON COPPER WIRE. UNLESS OTHERWISE SPECIFIED, ALL WIRE SHALL BE TYPE XHHW OR SE FOR FEEDERS OR BRANCH CIRCUITS LARGER THAN 4 AWG, TYPE THHN/THWN INSULATION FOR FEEDERS AND BRANCH CIRCUITS 4 AWG AND SMALLER. ALL BRANCH CIRCUIT WIRING SHALL BE COPPER.
- 1.A. ALUMINUM CONDUITS MAY BE UTILIZED FOR SERVICE ENTRANCE AND PANEL FEEDERS. CONDUCTORS SHALL BE ALUMINUM ALLOY AA-8000 SERIES.
2. THE WIRES SHALL BE MARKED WITH COLOR TO SIMPLIFY CIRCUIT IDENTIFICATION. UNLESS OTHERWISE REQUIRED BY LOCAL ORDINANCES GROUND WIRES SHALL BE GREEN, NEUTRAL WIRES SHALL BE 20W-WHITE (277V-GRY) LIVE WIRES 480V/277V SHALL BE BROWN (PHASE A), ORANGE (PHASE B), AND YELLOW (PHASE C), AND LIVE WIRES 208Y/120V AND 120/240V SHALL BE BLACK (PHASE A), RED (PHASE B), AND BLUE (PHASE C). WHERE BOTH 208Y/120V AND 120/240V EXIST IN THE SAME BUILDING, THE CONDUCTORS OF EACH CONFIGURATION SHALL BE SEPARATELY IDENTIFIED (NOT THE SAME COLORS).
- 2.A. "HIGH-LEG" PHASE OF DELTA SYSTEM SHALL ALWAYS BE MARKED RED. CIRCUIT SHALL BE LABELED IN EACH J-BOX.
3. ALL CONDUCTORS SHALL BE RATED 600 VOLT.
4. SPLICES IN EXTERIOR PULL BOXES AND MANHOLES SHALL BE WEATHERPROOF USING "SCOTCHCAST" SPLICE KIT OR APPROVED EQUAL. SEAL ENDS OF CONDUITS AND DUCTS WITH "DUCTISEAL" OR APPROVED EQUAL.
5. PROVIDE SOLID CONDUCTOR FOR 10 AWG AND SMALLER.
6. NO WIRE SHALL BE INSTALLED IN THE CONDUIT SYSTEM UNTIL THE CONDUIT SYSTEM IS COMPLETE. USE MINERALAC NO. 100 OR EQUIVALENT AS A LUBRICANT TO FACILITATE THE INSTALLATION OF THE CONDUCTORS IN THE CONDUIT SYSTEM.
7. MC CABLE WITH COPPER CONDUCTORS AND GROUND WIRE MAY BE USED WHERE PERMITTED.

E. CONDUIT

1. WIRING SHALL BE INSTALLED IN LISTED METALLIC CONDUIT EXCEPT AS PERMITTED IN OTHER SECTIONS. IRGS, WITH A 20 MIL PVC COATING WILL BE USED WHEN IN CONTACT WITH EARTH. IMC MAY BE USED IN INDOOR LOCATIONS NOT IN CONTACT WITH THE EARTH. EMT MAY BE USED IN INDOOR LOCATIONS NOT IN CONTACT WITH EARTH, NOT IN CONCRETE SLABS OR WALLS AND NOT SUBJECT TO DAMAGE. PVC MAY BE USED IN OR BELOW CONCRETE AND DIRECT BURIED IN EARTH. FLEXIBLE STEEL CONDUIT SHALL BE USED FOR INDOOR FINAL CONNECTIONS TO EQUIPMENT IN LENGTHS NOT TO EXCEED 72". LIQUID-TIGHT FLEXIBLE STEEL CONDUIT SHALL BE FOR OUTDOOR FINAL CONNECTIONS TO EQUIPMENT NOT TO EXCEED 48".
2. WHERE CONDUIT ENTERS OUTLET BOXES, FIXTURES OR CABINETS, FIRMLY FASTEN WITH STEEL SET SCREW, COMPRESSION CONNECTORS, OR DOUBLE LOCKNUTS FOR GRG. ALL CONNECTIONS SHALL HAVE BUSHINGS OR INSULATED THROUGH CONNECTORS. FIRMLY FASTEN CONDUIT TO THE BUILDING CONSTRUCTION. RUN EXPOSED CONDUIT PARALLEL TO THE BUILDING LINES, SUPPORTED BY APPROPRIATE HANGERS (UNISTRUT, T & B OR APPLETON, OR EQUAL).
3. COVER METALLIC CONDUIT IN CONTACT WITH EARTH WITH POLYETHYLENE TAPE SPIRAL WRAPPED, 1/2 LAPPED TO PROVIDE 20 MIL THICKNESS. TAPE SHALL BE SCOTCH NO. 50 TAPE. CONDUIT AND DUCTS NOT UNDER BUILDINGS AND FEEDER DUCTS SHALL BE INSTALLED PER N.E.C. 300-5. MAKE JOINTS WITH COMPOUND TO BE WATERTIGHT.
4. SCHEDULE 40 PVC CONDUIT SHALL BE PERMITTED UNDERGROUND WITH PROPER FITTINGS. ALL UL APPROVED AND CEMENTED JOINTS. PENETRATIONS THROUGH FLOOR SLABS AND BENDS GREATER THAN 22" SHALL BE WRAPPED RIGID GALVANIZED STEEL ELBOWS.
5. FITTINGS AND CONDUIT BODIES SHALL BE STEEL. DIECAST FITTINGS ARE NOT ACCEPTABLE.
6. CONDUIT SIZES SHALL BE AS REQUIRED BY CODE AND AS INDICATED OR SPECIFIED.
7. ALL EMPTY CONDUIT SYSTEMS SHALL HAVE A 200 LB. TEST NYLON PULL STRING TO FACILITATE INSTALLATION OF FUTURE WIRE.
8. WIRING, CONDUITS, AND OUTLETS SHALL BE CONCEALED WITH THE BUILDING STRUCTURE, EXCEPT THAT CERTAIN MOTOR AND LIGHTING FEEDER CONDUITS MAY BE RUN EXPOSED IN CERTAIN AREAS AS INDICATED ON THE DRAWINGS.
9. CONDUIT PENETRATION THROUGH ROOF SHALL HAVE ROOF FLASHING WITH CAULK TYPE COUNTER FLASHING SLEEVE. INSTALLATION SHALL BE WATERTIGHT.
10. CONDUITS SHALL BE ROUTED PARALLEL AND PERPENDICULAR TO THE STRUCTURE.

F. OUTLET, PULL, AND JUNCTION BOXES

1. EACH SWITCH, LIGHT, RECEPTACLE OR OTHER OUTLET, SHALL BE PROVIDED WITH A CODE SIZED, STEEL OUTLET BOX. JUNCTION AND PULL BOXES SHALL BE METAL AND CODE SIZED.
2. BOXES INSTALLED IN POURED CEMENT FLOORS SHALL BE FLUSH TYPE CAST IRON OR STEEL WITH WATERTIGHT GASKETED COVERS. WHERE BOXES ARE INSTALLED IN FLOORS WITH TILE OR CARPET FLOOR COVERING, COVERS SHALL BE OF THE RECESSED TYPE TO ACCOMMODATE THE FLOOR COVERING. BOXES INSTALLED FOR THE ALARM, COMPUTER, AND SECURITY SYSTEM SHALL BE PROVIDED WITH APPROPRIATE COVER PLATES.
3. BOXES FOR TELEPHONE, COMPUTER, T.V., FIRE ALARM, SECURITY, AND SIMILAR SYSTEMS SHALL BE MINIMUM 2-1/8" DEEP.

G. WIRING DEVICES (COMMERCIAL)

1. WALL SWITCHES SHALL BE SPECIFICATION GRADE AO SILENT TYPE SWITCHES, 20A 120/277 VOLT.
2. RECEPTACLES SHALL BE SPECIFICATION GRADE, DUPLEX TYPE, NEMAS-20R, 20 AMPERE, 120VOLT GROUNDED TYPE. SPECIAL APPLICATION RECEPTACLES SHALL BE INDICATED ON PLANS. MOUNT WITH THE GROUND DOWN.
3. DEVICE PLATES SHALL BE EQUAL TO SIERRA SMOOTH-LINE PLASTIC WALL PLATES. COLOR SHALL BE WHITE, UNLESS OTHERWISE NOTED.
4. RECEPTACLES IN OUTDOOR AND WET LOCATIONS SHALL BE INSTALLED WITH A HINGED OUTLET COVER/ENCLOSURE CLEARLY MARKED AND U.L. LISTED SUITABLE FOR WET LOCATIONS WHILE IN USE, EQUAL TO TAYMAC SPECIFICATION GRADE.

H. SERVICE ENTRANCE SECTION

1. THE SERVICE ENTRANCE EQUIPMENT SHALL BE AS INDICATED ON THE DRAWINGS. EQUIPMENT SHALL CARRY THE U.L. LABEL AND SHALL CONFORM TO THE POWER COMPANY REGULATIONS.
2. SERVICE ENTRANCE EQUIPMENT SHALL BE PROVIDED WITH A FULLY RATED COPPER OR ALUMINUM BUS. HORIZONTALLY TAPERED BUSSING SHALL NOT BE ALLOWED.
1. DISTRIBUTION PANELS  
A. DISTRIBUTION PANELS SHALL BE PROVIDED WITH FULLY RATED COPPER OR ALUMINUM BUS. HORIZONTAL TAPERED BUSSING SHALL NOT BE ALLOWED.
2. ACCEPTABLE MANUFACTURERS – CUTLER HAMMER, SIEMENS, SQUARE D OR GENERAL ELECTRIC.
3. FACTORY ASSEMBLED DEAD FRONT, METAL ENCLOSED, AND SELF-SUPPORTING SWITCH BOARD ASSEMBLY CONFORMING TO NEMA PB 2 AND UL 891, AND COMPLETE FROM INCOMING LINE TERMINALS TO LOAD SIDE TERMINATIONS.
4. LINE AND LOAD TERMINATIONS ACCESSIBLE FROM FRONT ONLY OF THE SWITCH BOARD. SUITABLE FOR CONDUCTOR MATERIALS AND NUMBER OF CONDUCTORS USED.
5. BUS CONNECTIONS: BOLTED ACCESSIBLE FROM FRONT FOR MAINTENANCE. PROVIDE BELLEVILLE WASHERS FOR PROPERLY TORQUE ALL CONNECTIONS.
6. PROVIDE FULLY-RATED NEUTRAL BUS AND FULLY RATED GROUND BUS MATCHING MATERIAL USED FOR MAIN BUS.
7. FUTURE PROVISIONS: FULLY EQUIP SPACES FOR FUTURE DEVICES WITH BUSSING AND BUS CONNECTIONS SUITABLY INSULATED AND BRACED FOR SHORT CIRCUIT CURRENTS. CONTINUOUS CURRENT RATING AS INDICATED ON DRAWINGS.
8. ALL CIRCUIT BREAKERS SHALL BE BOLT-ON TYPE.

I. PANEL BOARDS

1. CIRCUIT BREAKER TYPE AS INDICATED ON DRAWINGS, UNLESS INDICATED OTHERWISE, ALL PANELS SHALL HAVE PANEL BOARD TYPE CONSTRUCTION WITH BOLT-ON CIRCUIT BREAKERS FOR 36 PANELS.
2. MANUFACTURERS SHALL BE GENERAL ELECTRIC, SQUARE D, SIEMENS, CUTLER-HAMMER WITH VOLTAGE, SIZES, AND RATINGS AS INDICATED ON DRAWINGS.
3. THE CIRCUIT BREAKERS SHALL BE OPERABLE IN ANY POSITION AND BE REMOVABLE FROM THE FRONT OF THE PANEL BOARD WITHOUT DISTURBING THE ADJACENT UNITS. BRANCH BREAKERS SHALL BE OF SUCH DESIGN THAT COMBINATION OF SINGLE-POLE, DOUBLE-POLE, AND THREE-POLE BREAKERS CAN BE ASSEMBLED ON THE SAME PANEL. EACH BRANCH CIRCUIT SHALL BE CLEARLY NUMBERED. BRANCH AND MAIN TERMINALS SHALL BE OF THE SOLDERLESS TYPE. HANDLE TIES TO FORM MULTI-POLE BREAKERS NOT ACCEPTABLE.

K. LOAD CENTER

1. CIRCUIT BREAKER TYPE AS INDICATED ON DRAWINGS. MANUFACTURERS SHALL BE GENERAL ELECTRIC, SQUARE D, SIEMENS, CUTLER-HAMMER/EATON WITH VOLTAGE, SIZES, AND RATINGS AS INDICATED ON DRAWINGS.
2. THE CIRCUIT BREAKERS SHALL BE OPERABLE IN ANY POSITION AND BE REMOVABLE FROM THE FRONT OF THE PANEL BOARD WITHOUT DISTURBING THE ADJACENT UNITS. BRANCH BREAKERS SHALL BE OF SUCH DESIGN THAT COMBINATION OF SINGLE-POLE AND DOUBLE-POLE BREAKERS CAN BE ASSEMBLED ON THE SAME PANEL. EACH BRANCH CIRCUIT SHALL BE CLEARLY NUMBERED. BRANCH AND MAIN TERMINALS SHALL BE OF THE SOLDERLESS TYPE. HANDLE TIES TO FORM MULTI-POLE BREAKERS NOT ACCEPTABLE.
3. WIRE TERMINATION FOR PANEL BOARDS AND CIRCUIT BREAKERS SHALL BE LISTED AS SUITABLE FOR 75 DEGREES C.
4. PROVIDE A TYPEWRITTEN CIRCUIT INDEX BEHIND CLEAR PLASTIC COVER ON INSIDE OF DOOR. INFORMATION SHALL INCLUDE ROOM AND TYPE LOAD SERVICE. ALL CIRCUIT BREAKERS SHALL BE IDENTIFIED, INCLUDING SPARES. INDEX CARD FRAME SHALL BE METAL, SECURED TO DOOR.
5. PANEL BOARDS/LOAD CENTERS TO BE PROVIDED WITH COPPER BUSSING ONLY.

L. LIGHTING FIXTURES

1. PROVIDE ALL LIGHTING FIXTURES, WIRED AND CONNECTED. THE DRAWINGS INDICATE THE FIXTURES FOR EACH LOCATION. PROVIDE LAMPS FOR ALL FIXTURES. THE LAMP SHALL BE BY THE SAME MANUFACTURER. EREPLY CEILING CONSTRUCTION BEFORE ORDERING RECESSED UNITS. PROVIDE PLASTER FRAMES AND HANGERS AS REQUIRED. CEILING CONSTRUCTION, ARCHITECTURAL ACCESSORIES, VOLTAGE, AND DRIVERS TO MEET THE EXISTING CEILING CONDITION.
2. ALL FIXTURES SHALL BE FED FROM JUNCTION BOXES WITH LIGHT FIXTURE WHIPS (<6"). DAISY-CHAINING OF FIXTURES IS NOT ALLOWED.

M. LIGHTING CONTROL

1. FURNISH AND INSTALL TIME SWITCHES, PHOTOCELLS, CONTRACTORS AND FULL LIGHTING CONTROL SYSTEMS AS REQUIRED FOR LIGHTING CONTROLS INDICATED ON THE DRAWINGS.
2. TIME SWITCHES SHALL BE EQUAL TO PARAGON, GENERAL ELECTRIC, TORK, OR INTERMATIC AND SHALL HAVE SIZE AND NUMBER OF POLES AS REQUIRED.
3. PHOTOCELLS SHALL BE EQUAL TO TORK OR INTERMATIC WITH VOLTAGE AS INDICATED.

N. TELEPHONE AND CABLE TELEVISION SYSTEMS

1. TELEPHONE WALL OUTLETS SHALL CONSIST OF NO LESS THAN 2-1/8" DEEP BOXES MOUNTED 18" ABOVE THE FLOOR UNLESS OTHERWISE INDICATED. PROVIDE A TERMINAL MOUNTING BOARD FOR THE INCOMING SERVICE CABLE.
2. CABLE TELEVISION OUTLETS SHALL CONSIST OF NO LESS THAN 2-1/8" DEEP BOXES MOUNTED 18" ABOVE THE FLOOR UNLESS OTHERWISE INDICATED. PROVIDE A TERMINAL MOUNTING BOARD FOR THE INCOMING SERVICE CABLE.

O. GUARANTEE

1. GUARANTEE ALL MATERIAL FURNISHED AND ALL WORKMANSHIP PERFORMED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF WORK. ANY DEFECTS DEVELOPING WITHIN THIS PERIOD, TRACEABLE TO MATERIAL FURNISHED AS A PART OF THIS SECTION OR WORKMANSHIP PERFORMED HEREUNDER, SHALL BE MADE GOOD AT NO EXPENSE TO THE OWNER.

P. FIRE SEALING NOTES

1. COORDINATE CONSTRUCTION OF OPENINGS AND PENETRATING ITEMS TO ENSURE THAT THROUGH-PENETRATION FIRESTOP SYSTEMS ARE INSTALLED ACCORDING TO SPECIFIED AND APPLICABLE UL REQUIREMENTS.
2. COORDINATE SIZING OF SLEEVES, OPENINGS, CORE-DRILLED HOLES, OR CUT OPENINGS TO ACCOMMODATE THROUGH-PENETRATION FIRESTOP SYSTEMS.
3. DO NOT COVER UP THROUGH-PENETRATION FIRESTOP SYSTEM INSTALLATIONS UNTIL EXAMINED BY INSPECTOR, IF REQUIRED BY AUTHORITIES HAVING JURISDICTION.
4. COMPATIBILITY: PROVIDE THROUGH-PENETRATION FIRESTOP SYSTEMS THAT ARE COMPATIBLE WITH ONE ANOTHER, WITH THE SUBSTRATES FORMING OPENINGS; AND WITH THE ITEMS, IF ANY, PENETRATING THROUGH-PENETRATION FIRESTOP SYSTEMS, UNDER CONDITIONS OF SERVICE AND APPLICATION, AS DEMONSTRATED BY THROUGH-PENETRATION FIRESTOP SYSTEM MANUFACTURER BASED ON TESTING AND FIELD EXPERIENCE.
5. PROVIDE COMPONENTS FOR EACH THROUGH-PENETRATION FIRESTOP SYSTEM THAT ARE NEEDED TO INSTALL FILL MATERIALS. USE ONLY COMPONENTS SPECIFIED BY THROUGH-PENETRATION FIRESTOP SYSTEM MANUFACTURER AND APPROVED BY QUALIFIED TESTING AND INSPECTING AGENCY FOR FIRESTOP SYSTEMS INDICATED.
6. PROVIDE SLEEVES THROUGH ALL FIRE-RATED WALLS AND FILL VOIDS SURROUNDING SLEEVES AND INTERIOR TO SLEEVES AROUND PIPING WITH FIRE STOP PUTTY WITH U.L. LISTED 3 HOUR RATING INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS.
7. FIRE SEAL ALL PIPING, CONDUIT, CABLE, ETC. PENETRATIONS ROUTED THROUGH FIRE RATED WALLS.
8. PROVIDE FIRE RATED ENCLOSURES OR WRAPS ON LIGHT FIXTURES AND OTHER ITEMS PENETRATING FIRE RATED CEILINGS, FLOOR/CEILING/ CEILING/ROOF ASSEMBLIES TO MAINTAIN UL LISTING FOR CONSTRUCTION.

SYMBOLS LEGEND

NOTE: THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS, ETC., ARE NECESSARILY USED ON THE DRAWINGS.

LIGHTING FIXTURES – SYMBOL/LETTER INDICATES LIGHT FIXTURE AS INDICATED ON FIXTURE SCHEDULE

LED FIXTURE (SEE LIGHTING FIXTURE SCHEDULE)

FIXTURE WITH EMERGENCY BATTERY DRIVER UNIT  
TRACK LIGHT  
DOWNLIGHT FIXTURE WITH EMERGENCY BATTERY DRIVER UNIT  
WALL MOUNTED FIXTURE WITH EMERGENCY BATTERY DRIVER UNIT  
PENDANT MOUNTED FIXTURE WITH EMERGENCY BATTERY DRIVER UNIT  
DOWNLIGHT FIXTURE  
WALL MOUNTED FIXTURE  
PENDANT MOUNTED FIXTURE  
WALL WASHER  
SINGLE FACE EXIT SIGN – UNIVERSAL MOUNTED  
SINGLE FACE EXIT SIGN W/ DIRECTIONAL ARROWS – UNIVERSAL MTD  
DOUBLE FACE EXIT SIGN W/ DIRECTIONAL ARROWS – UNIVERSAL MTD  
DUAL HEADED EMERGENCY UNIT  
COMBO DUAL HEADED EMERGENCY AND EXIT SIGN UNIT  
POLE MOUNTED SITE LIGHT

LIGHTING CONTROLS

S SINGLE POLE SWITCH @ +48" UNLESS NOTED  
Sobc SWITCH BANK @ +48" UNLESS NOTED, LOWER CASE LETTER INDICATES FIXTURE CONTROLLED.  
S3 3-WAY SWITCH @ +48" UNLESS NOTED  
S4 4-WAY SWITCH @ +48" UNLESS NOTED  
SD DIMMER SWITCH – SIZE AS REQUIRED @ +48" UNLESS NOTED  
SM MANUAL MOTOR STARTER  
SOS WALL SWITCH WITH OCCUPANCY SENSOR. DIGITAL LOW VOLTAGE WALL SWITCH. SWITCH @ +48" UNLESS NOTED.  
SLV TWO BUTTON DIGITAL LOW VOLTAGE WALL SWITCH. PROVIDES ON/OFF/0-10V DIMMING. SWITCH @ +48" UNLESS NOTED. PROVIDE EXTRA CONTROL CABLES NEEDED TO FIXTURE CONTROLLED.  
☉ LIGHTING CONTROLS CEILING MOUNT OCCUPANCY SENSOR  
☉ LIGHTING CONTROLS POWER PACK  
☉ PHOTOCELL  
☉ TIMECLOCK

POWER DISTRIBUTION

SWITCHBOARD, MOTOR CONTROL CENTER OR DISTRIBUTION BOARD  
277/480V, 3 PHASE, 4 WIRE PANELBOARD, UNO  
120/208V, 3 PHASE, 4 WIRE PANELBOARD, UNO  
120/240V, 1 PHASE, 3 WIRE PANELBOARD, UNO  
TRANSFORMER

POWER DEVICES

SPECIAL HEAVY DUTY RECEPTACLE @ +18" UNLESS NOTED – SIZE AS NOTED  
1/2 SWITCHED RECEPTACLE @ +18" UNLESS NOTED  
FIRE RATED POKE THRU WITH TYPE INDICATED  
FLUSH FLOOR BOX WITH TYPE INDICATED  
SINGLE RECEPTACLE @ +18" UNLESS NOTED  
DUPLEX RECEPTACLE @ +18" UNLESS NOTED  
DOUBLE DUPLEX RECEPTACLE @ +18" UNLESS NOTED  
DUPLEX RECEPTACLE INSTALLED ABOVE COUNTERTOP  
GFCI-RATED DUPLEX RECEPTACLE  
ARC FAULT RATED DUPLEX RECEPTACLE  
TAMPER RESISTANT RATED DUPLEX RECEPTACLE  
DUPLEX RECEPTACLE WITH WEATHERPROOF COVERPLATE @ 18" UNLESS NOTED  
JUNCTION BOX  
DISCONNECT SWITCH – SIZE AND TYPE NOTED  
COMBINATION FUSED STARTER DISCONNECT SWITCH FUSE SIZE AS INDICATED, STARTER SIZE "1"

AUXILIARY SYSTEMS

MECHANICAL EQUIP. CONNECTION, SEE SCHED. ON MECH. PLAN  
TELEPHONE OUTLET @ +18" UNLESS NOTED  
DATA OUTLET @ +18" UNLESS NOTED  
COMBINATION TELEPHONE/DATA OUTLET @ +18" UNLESS NOTED  
TELEVISION OUTLET @ +60" UNLESS NOTED  
DOOR CHIME PUSHBUTTON @ +48" UNLESS NOTED  
SMOKE DETECTOR  
HEAT DETECTOR  
DUCT SMOKE DETECTOR  
REMOTE TEST STATION WITH INDICATING LIGHT. MOUNT AT 48" AFF UNO.  
AUXILIARY SYSTEM TERMINAL CABINET

GENERAL

CONDUIT RUN CONCEALED IN WALL OR ABOVE CEILING  
CONDUIT RUN BELOW FLOOR OR GRADE

P1-3,5,7 HOMERUN TO PANELBOARD, INFORMATION AT ARROWS ARE CIRCUIT NUMBERS AND PANELBOARD FOR TERMINATION. REFER TO ASSOCIATED NOTE FOR BRANCH CIRCUIT CONDUCTOR SIZES.

INDICATES 1/2" CONDUIT CONCEALED IN CEILING OR WALL WITH (3) CONDUCTORS: (1) PHASE, (1) NEUTRAL, AND (1) GROUND WIRE. ALL ARE #12 AWG UNLESS NOTED OTHERWISE.

(E) OR ETR: DENOTES EXISTING ITEM/EQUIPMENT TO REMAIN

GENERAL NOTES

1. DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED. REFER TO ARCHITECTURAL PLANS OR FIELD MEASUREMENTS FOR DIMENSIONS.
2. ALL WORK SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NFPA 70) AND ALL LOCAL BUILDING CODES AND AMENDMENTS.
3. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACE AVAILABLE, AND WITHOUT INTERFERENCES.
4. THIS CONTRACTOR SHALL PERFORM ALL WORK INDICATED AND/OR AS REQUIRED FOR THE PROPER INSTALLATION AND OPERATION OF THE ELECTRICAL SYSTEMS.
5. THE ELECTRICAL SYSTEM DESIGN IS BASED IN PART ON THE SPECIFIED HVAC AND PLUMBING EQUIPMENT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE EXACT LOCATION AND ELECTRICAL REQUIREMENTS OF ALL EQUIPMENT BEING FURNISHED. ANY CHANGES TO THE ELECTRICAL SYSTEM DUE TO HVAC EQUIPMENT SUBSTITUTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
6. ALL WIRING SHALL BE IN APPROVED RACEWAY.
7. WIRE SIZE SHALL BE MINIMUM #12 AWG, THHN SOLID COPPER UNLESS OTHERWISE NOTED. PROVIDE GROUND WIRE WHERE REQUIRED BY CODE. INCREASE WIRE SIZE TO COMPENSATE FOR VOLTAGE DROP WHERE TOTAL LENGTH OF ANY BRANCH EXCEEDS 70 FEET.
8. CONNECT ALL EXIT SIGNS AND EMERGENCY LIGHTING UNITS TO THE INDICATED CIRCUIT WITH A SEPARATE AND UN-SWITCHED CONDUCTOR BYPASSING ALL CONTROLS AND CONTACTORS. REFER TO MANUFACTURER'S WRITTEN INSTRUCTIONS FOR PROPER INSTALLATION AND TESTING.
9. ROUTE ALL EXPOSED, RIGID CONDUIT TIGHT TO STRUCTURE, PARALLEL TO BUILDING LINES AND IN UNISTRUT CABLE/PIPE TRAY WHERE POSSIBLE. COORDINATE CONDUIT ROUTING AND INSTALLATION WITH OTHER TRADES PRIOR TO ROUGH-IN. SUPPORT CONDUIT FROM STRUCTURE NOT ROOF DECK. MAINTAIN 2" MIN SPACING FROM BOTTOM OF ROOF DECK TO PREVENT ROOFING SCREWS FROM PENETRATING CONDUITS.
10. ADJUST LIGHT FIXTURES WHERE DUCTWORK RUNS INTERFERE WITH PLACEMENT.
11. COORDINATE WIRE SIZING FOR BRANCH CIRCUITS WITH VOLTAGE DROP CRITERIA CHART.

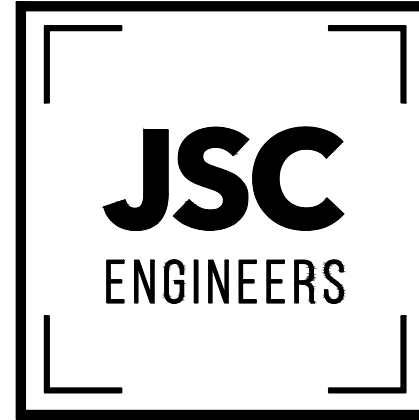


TRADITIONS AT BLACKWELL  
SE SHENANDOAH DRIVE  
LEE'S SUMMIT, MO

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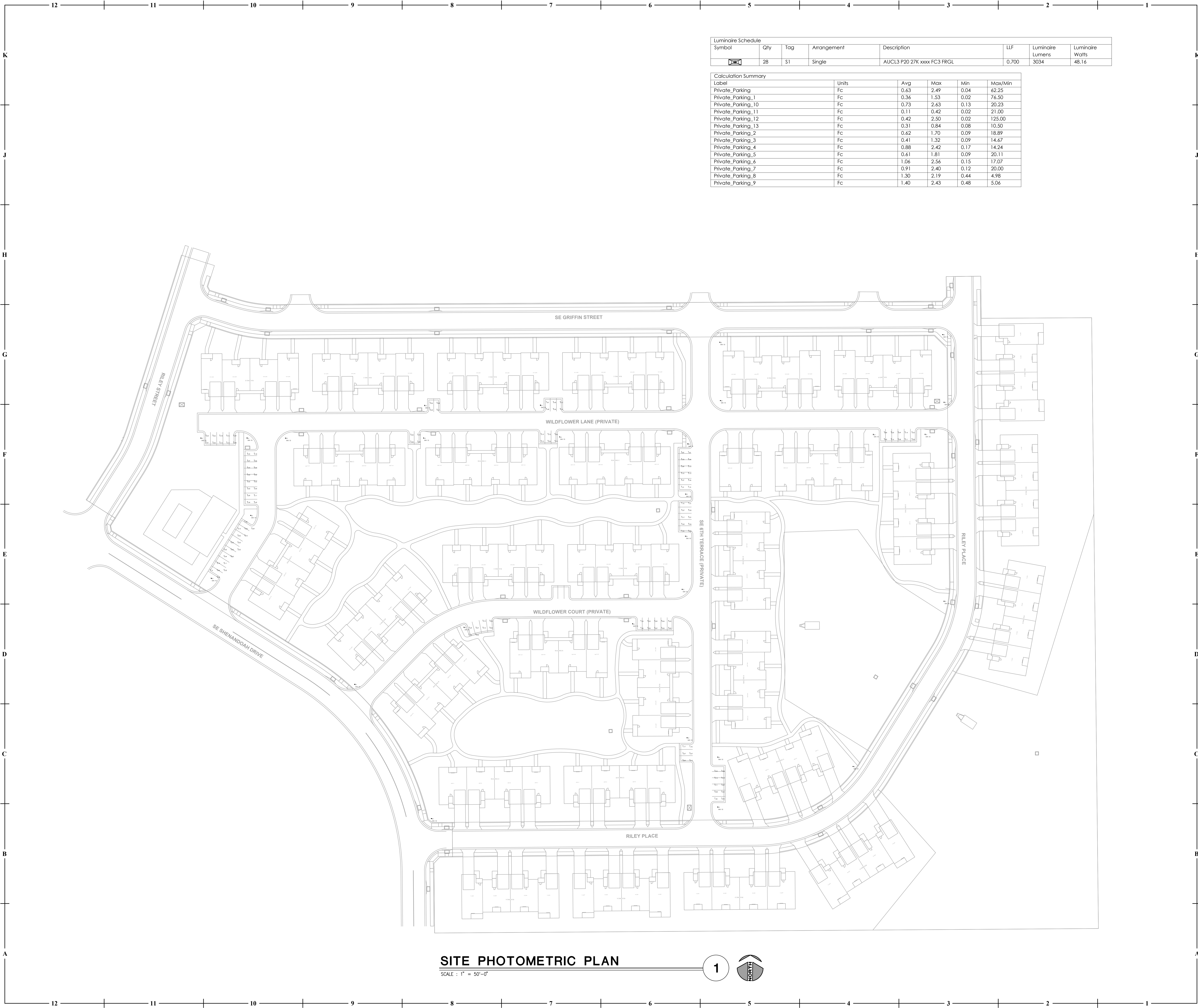
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E001

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JSC PROJECT #: 23-046

ELECTRICAL SPECIFICATIONS & SYMBOLS



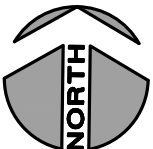
Luminaire Schedule						
Symbol	Qty	Tag	Arrangement	Description	LLF	Luminaire Lumens
	28	S1	Single	AUCL3 P20 27K xxxx FC3 FRGL	0.700	3034
						Luminaire Watts
						48.16

Calculation Summary					
Label	Units	Avg	Max	Min	Max/Min
Private_Parking	Fc	0.63	2.49	0.04	62.25
Private_Parking_1	Fc	0.36	1.53	0.02	76.50
Private_Parking_10	Fc	0.73	2.63	0.13	20.23
Private_Parking_11	Fc	0.11	0.42	0.02	21.00
Private_Parking_12	Fc	0.42	2.50	0.02	125.00
Private_Parking_13	Fc	0.31	0.84	0.08	10.50
Private_Parking_2	Fc	0.62	1.70	0.09	18.89
Private_Parking_3	Fc	0.41	1.32	0.09	14.67
Private_Parking_4	Fc	0.88	2.42	0.17	14.24
Private_Parking_5	Fc	0.61	1.81	0.09	20.11
Private_Parking_6	Fc	1.06	2.56	0.15	17.07
Private_Parking_7	Fc	0.91	2.40	0.12	20.00
Private_Parking_8	Fc	1.30	2.19	0.44	4.98
Private_Parking_9	Fc	1.40	2.43	0.48	5.06

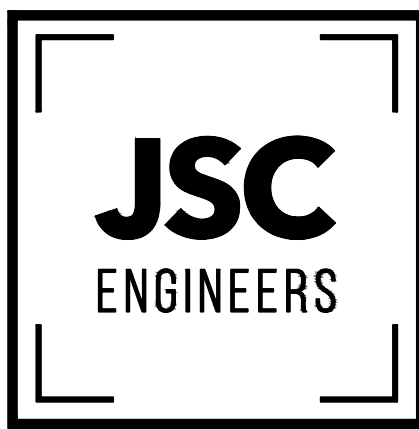
SITE PHOTOMETRIC PLAN

SCALE : 1" = 50'-0"

1



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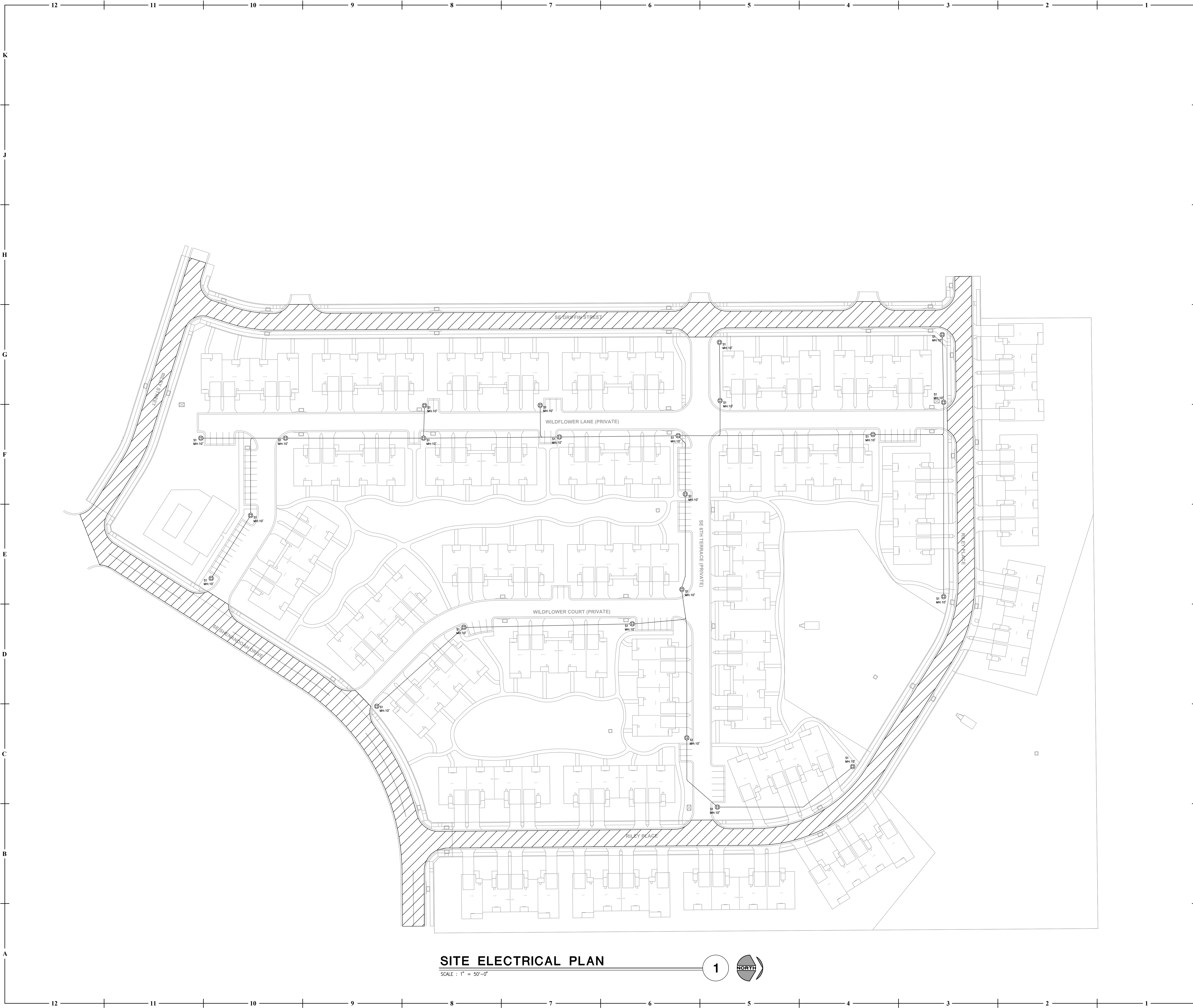
E002

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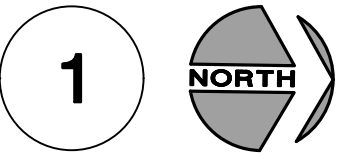
ELECTRICAL SITE  
PHOTOMETRIC

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SE SHENANDOAH DRIVE  
LEE'S SUMMIT, MO

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**SITE ELECTRICAL PLAN**  
SCALE : 1" = 50'-0"



**# KEYED PLAN NOTES**

1. xxx

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**E100**

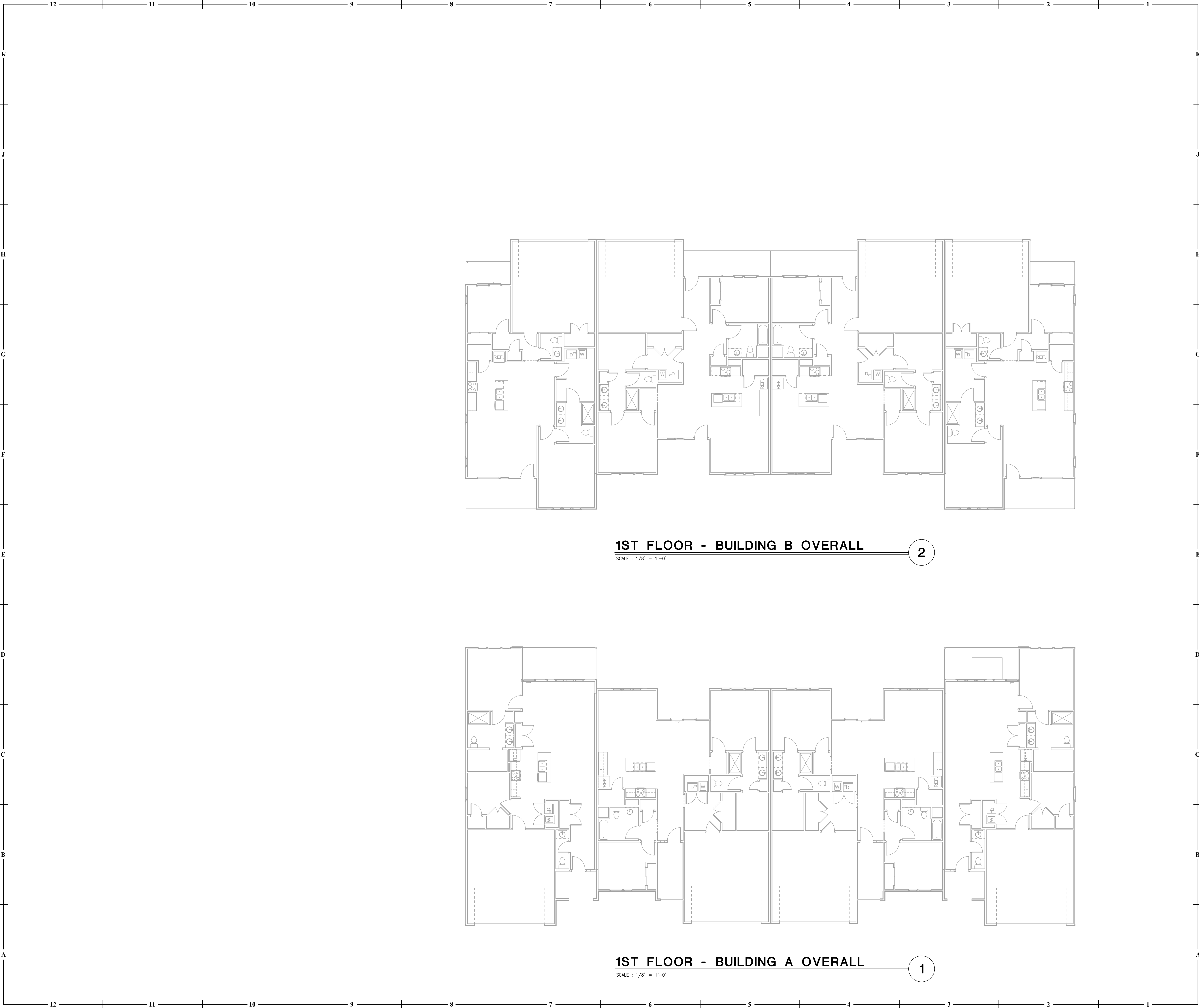
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**ELECTRICAL SITE PLAN**

**TRADITIONS AT BLACKWELL**  
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- # KEYED PLAN NOTES**
- 2-GANG SWITCH: (#1) FOR LIGHTING IN ROOM; (#2) FOR EXHAUST FAN. WIRE SO THAT EXHAUST FAN DERIVES POWER FROM CIRCUIT SERVING LIGHTING FIXTURES IN ROOM.
  - NEW PANELBOARD. REFER TO SINGLE LINE DIAGRAM AND PANELBOARD SCHEDULE ON SHEET E201 FOR MORE INFORMATION.
  - MAKE CONNECTION TO DIVISION 22/23 EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS AND NEC REQUIREMENTS. COORDINATE WORK WITH DIVISION 22/23 CONTRACTOR PRIOR TO CONSTRUCTION.
  - RECEPTACLE AND SWITCH FOR GARBAGE DISPOSAL. CONFIRM EXACT LOCATION WITH ARCHITECT PRIOR TO CONSTRUCTION.
  - CONTINUE CIRCUIT TO LEVEL ABOVE.
  - CONTINUE CIRCUIT TO LEVEL BELOW.
  - PROVIDE AND SECURE STEEL JUNCTION BOX TO STRUCTURE FOR CEILING FAN PER NEC 422.18(A).
  - EXHAUST FAN DERIVES POWER FROM CIRCUIT SERVING LIGHTING FIXTURES IN ROOM.

**TRADITIONS AT BLACKWELL**  
SE SHENANDOAH DRIVE  
LEE'S SUMMIT, MO

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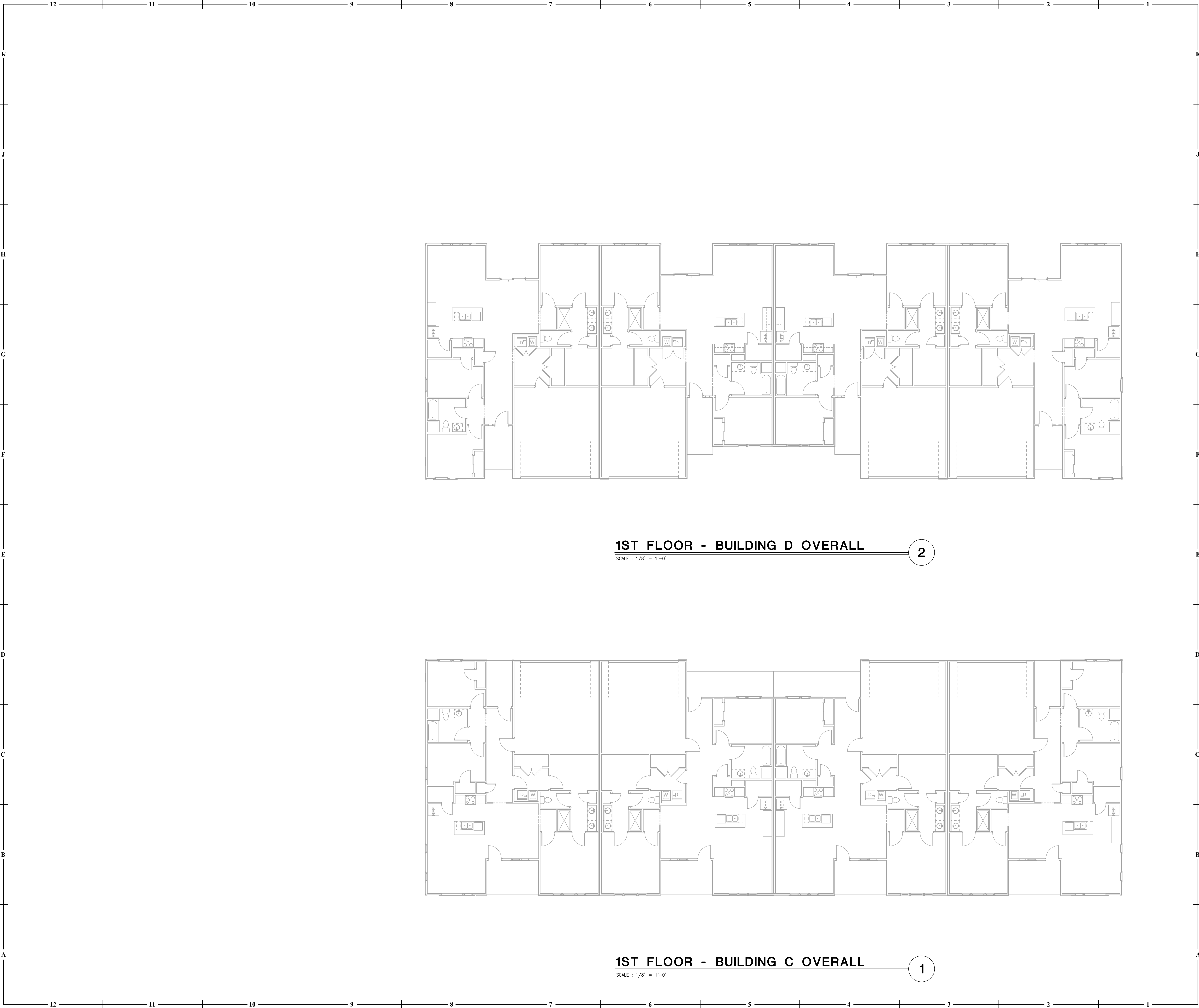
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**E101AB**  
ISSUE DATE: 05.17.23  
JSC PROJECT #: 23-046

**1ST FLOOR OVERALL PLANS  
BUILDINGS A & B**



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- # KEYED PLAN NOTES
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CONSTRUCTION

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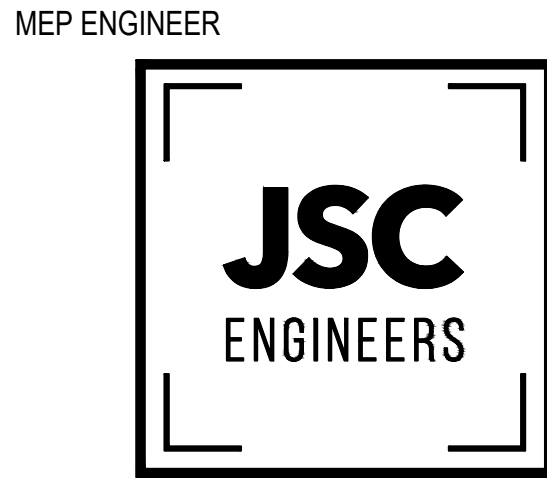
1ST FLOOR OVERALL PLANS  
BUILDINGS C & D



**ELECTRICAL - 2ND FLOOR - BUILDING E** 2  
SCALE : 1/4" = 1'-0"

**ELECTRICAL - 1ST FLOOR - BUILDING E** 1  
SCALE : 1/4" = 1'-0"

# KEYED PLAN NOTES



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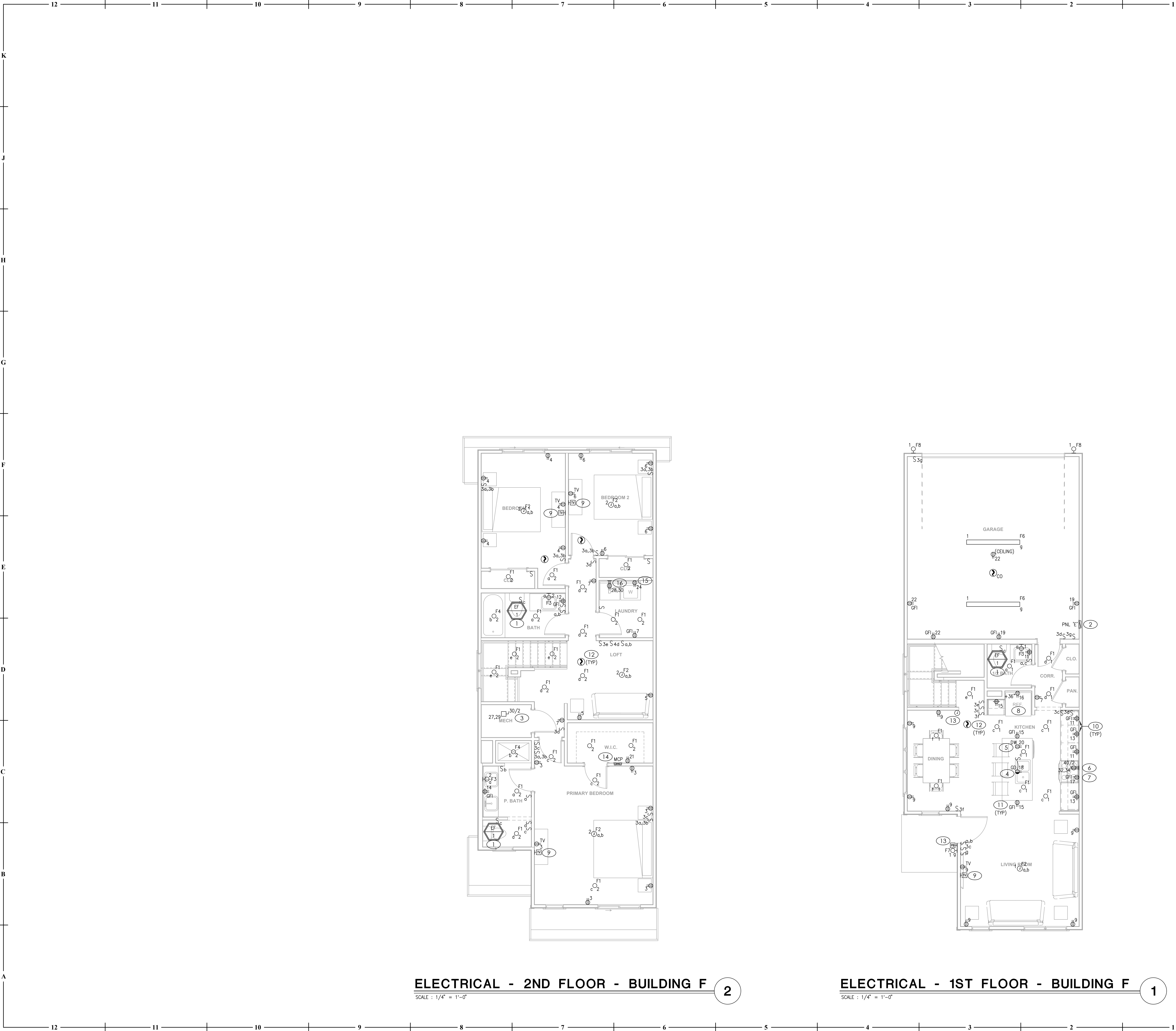
**2ND FLOOR BUILDING E  
LIGHTING AND POWER PLANS**

**TRADITIONS AT BLACKWELL**  
SE SHENANDOAH DRIVE  
LEE'S SUMMIT, MO

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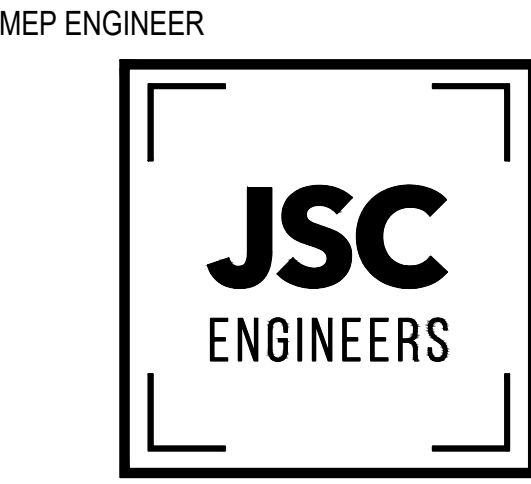


ELECTRICAL - 2ND FLOOR - BUILDING F 2

ELECTRICAL - 1ST FLOOR - BUILDING F 1

KEYED PLAN NOTES

- EXHAUST FAN DERIVES POWER FROM CIRCUIT SERVING LIGHTING FIXTURES IN ROOM.
- NEW PANELBOARD. REFER TO SINGLE LINE DIAGRAM AND PANELBOARD SCHEDULE.
- MAKE CONNECTION TO DIVISION 22/23 EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS AND NEC REQUIREMENTS. COORDINATE WORK WITH DIVISION 22/23 CONTRACTOR PRIOR TO CONSTRUCTION.
- GARBAGE DISPOSAL. 120V, 1/2 HP. CORD & PLUG CONNECTION TO HALF-SWITCHED AFCI/GFCI RECEPTACLE MOUNTED BELOW SINK. PROVIDE 2 #12 CU, 1 #20U EGC AT HANDICAP UNITS. MOUNT SWITCH WITHIN LOWER CABINETS PER ADA GUIDELINES.
- DISHWASHER RECEPTACLE. 120V, 6.2A. PROVIDE 2 #12 CU, 1 #12 CU EGC. CORD AND PLUG CONNECTION TO GFCI RECEPTACLE.
- ELECTRIC COOKTOP, 208V, 1P, 8KW. PROVIDE HARD WIRED CONNECTION TO J-BOX IN CABINET. COORDINATE EXACT LOCATION WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE LOCKABLE CIRCUIT BREAKER IN PANEL AS DISCONNECTING MEANS TO COMPLY WITH NEC 422.31(5). PROVIDE 3 #8 CU, 1 #10 CU EGC. PROVIDE RECEPTACLE TO MATCH PLUG ON UNIT IF UNIT INSTALLED IS CORD AND PLUG CONNECTED.
- COMBINATION MICROWAVE AND EXHAUST HOOD. 120V, 15A MAX. COORDINATE EXACT LOCATION WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE 2 #12 CU, 1 #12 CU EGC. CORD AND PLUG CONNECTION.
- REFRIGERATOR 120V, 12A MAX. PROVIDE 2 #12 CU, 1 #12 CU EGC. CORD AND PLUG CONNECTION.
- TELEVISION. PROVIDE 120V DUPLEX RECEPTACLE, DATA OUTLET AND COAX CABLE (BOTH WIRED BACK TO LOW VOLTAGE STRUCTURED MEDIA ENCLOSURE). MOUNT BETWEEN 18" AND 66" AFF. VERIFY MOUNTING HEIGHT PRIOR TO ROUGH-IN.
- FOR KITCHEN AND BATHROOM RECEPTACLES ABOVE COUNTER, COORDINATE LOCATION AND PLACEMENT PRIOR TO ROUGH-IN. IF FULL BACKSPLASH IS USED MOUNT RECEPTACLES VERTICALLY. IF FULL BACKSPLASH IS NOT USED MOUNT RECEPTACLES HORIZONTALLY ABOVE BACKSPLASH.
- MOUNT ISLAND/PENINSULA RECEPTACLES 12" MAX BELOW TOP OF COUNTER.
- COMBINATION SMOKE DETECTOR AND CARBON MONOXIDE SENSOR. 120V WITH BATTERY BACK-UP. DETECTORS SHALL BE INTERCONNECTED AND INSTALLED IN ACCORDANCE WITH IRC 314 AND 315.M IF 908.7, NFPA 72 & 74 WITH SPECIAL ATTENTION GIVEN TO THE LOCATION OF THE DETECTOR IN THE VICINITY OF RETURN AIR GRILLES. (PROVIDE SMOKE DETECTOR ONLY WHERE ALLOWED BY CODE).
- PROVIDE LOW-VOLTAGE DOOR BELL SYSTEM WITH TRANSFORMER. PROVIDE LOW-VOLTAGE WIRING FROM TRANSFORMER TO PUSHBUTTON AND FROM PUSHBUTTON TO CHIME.
- LOW VOLTAGE STRUCTURED MEDIA ENCLOSURE. COORDINATE REQUIREMENTS. PROVIDE 120V DUPLEX RECEPTACLE. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS. ROUTE 1 2" C TO LOCATION OF INCOMING COMMUNICATION FOR BUILDING.
- CLOTHES WASHER, 120V, 12.0A. PROVIDE 2 #12 CU, 1 #12 CU EGC. CORD AND PLUG CONNECTION. PROVIDE NEMA 5-20R RECEPTACLE.
- ELECTRIC CLOTHES DRYER, 208V, 1 PH, 5000W, 24A. PROVIDE 14-30R RECEPTACLE. PROVIDE 2 #10 C, 1 #10 CU EGC.



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JSC PROJECT #: 23-046

2ND FLOOR BUILDING F  
LIGHTING & POWER PLANS

TRADITIONS AT BLACKWELL  
SE SHENANDOAH DRIVE  
LEE'S SUMMIT, MO

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POWER - UNIT PLAN A

SCALE : 1/4" = 1'-0"

2

LIGHTING - UNIT PLAN A

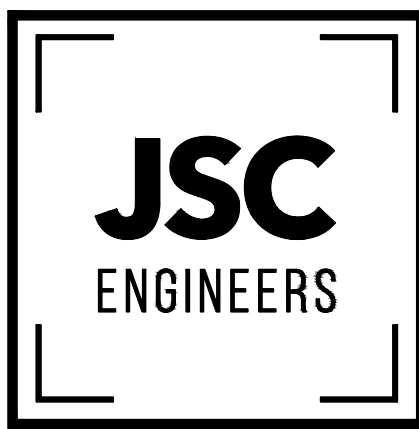
SCALE : 1/4" = 1'-0"

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# KEYED PLAN NOTES

- EXHAUST FAN DERIVES POWER FROM CIRCUIT SERVING LIGHTING FIXTURES IN ROOM.
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E121A

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JSC PROJECT #: 23-046

UNIT PLAN A  
LIGHTING & POWER PLANS

TRADITIONS AT BLACKWELL  
SE SHENANDOAH DRIVE  
LEE'S SUMMIT, MO

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POWER - UNIT PLAN A REVERSED

SCALE : 1/4" = 1'-0"

2

LIGHTING - UNIT PLAN A REVERSED

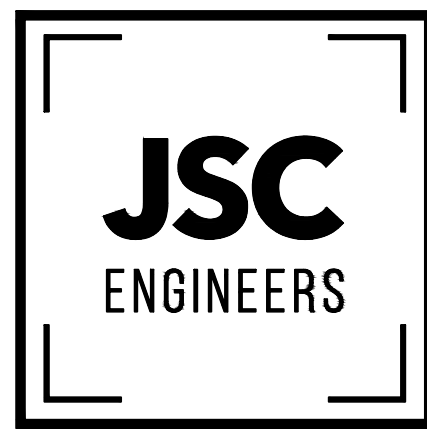
SCALE : 1/4" = 1'-0"

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PROFESSIONAL SEAL

E121AR

ISSUE DATE: 05.17.23  
JSC PROJECT #: 23-046

UNIT PLAN A REVERSED  
LIGHTING & POWER PLANS

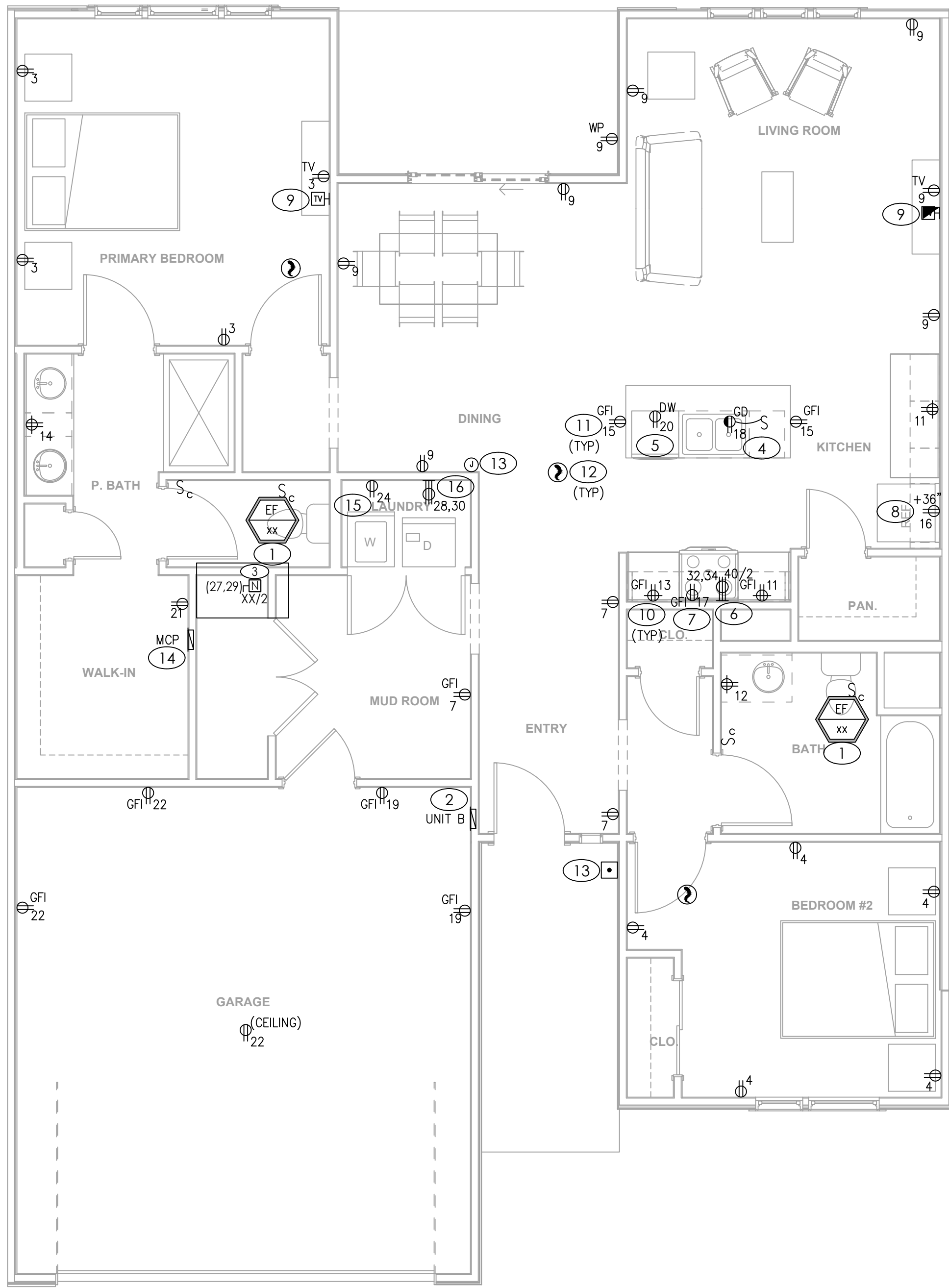
TRADITIONS AT BLACKWELL  
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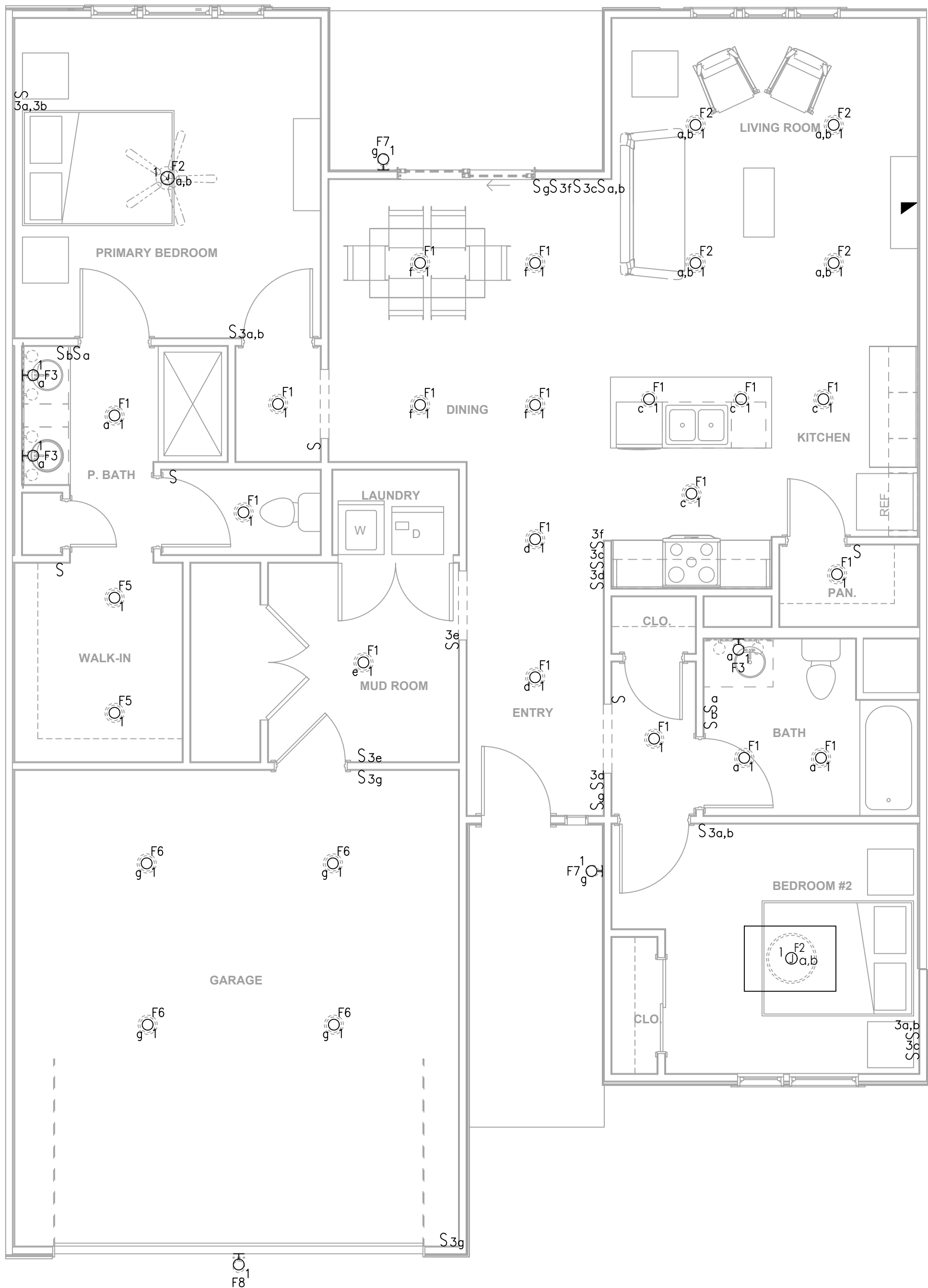
307B SW MARKET ST. Lee's Summit, Missouri 64063 | 816.246.2270  
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POWER - UNIT PLAN B

SCALE : 1/4" = 1'-0"

2



LIGHTING - UNIT PLAN B

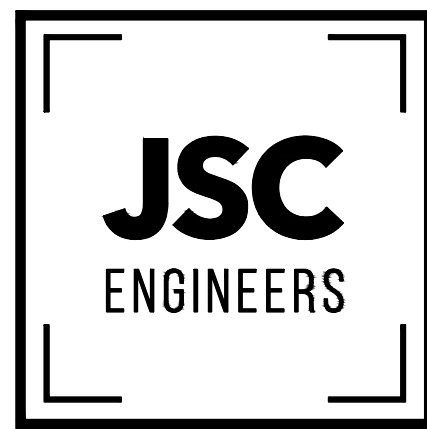
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PROFESSIONAL SEAL

E122B

ISSUE DATE: 05.17.23  
JSC PROJECT #: 23-046

UNIT PLAN B  
LIGHTING & POWER PLANS

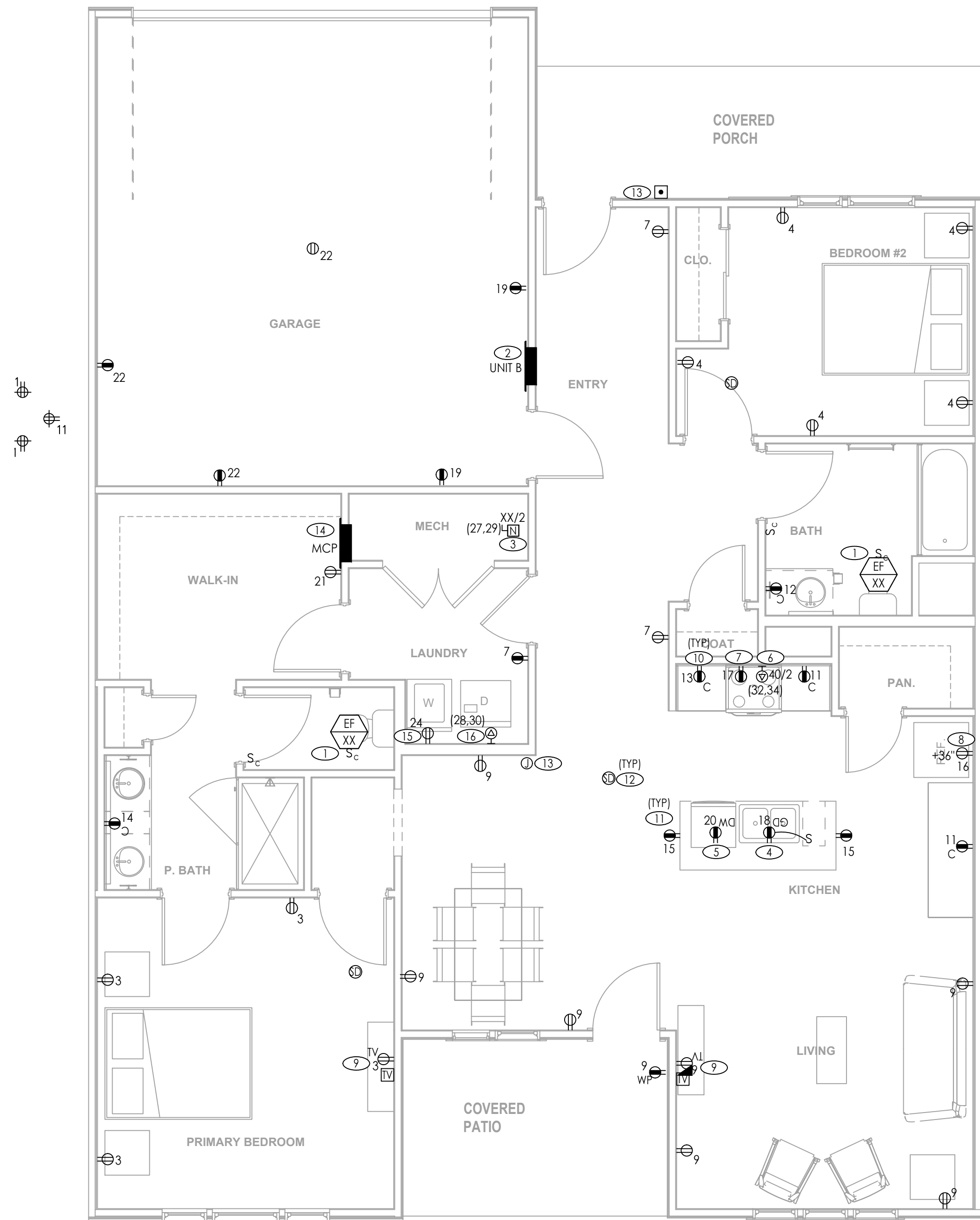
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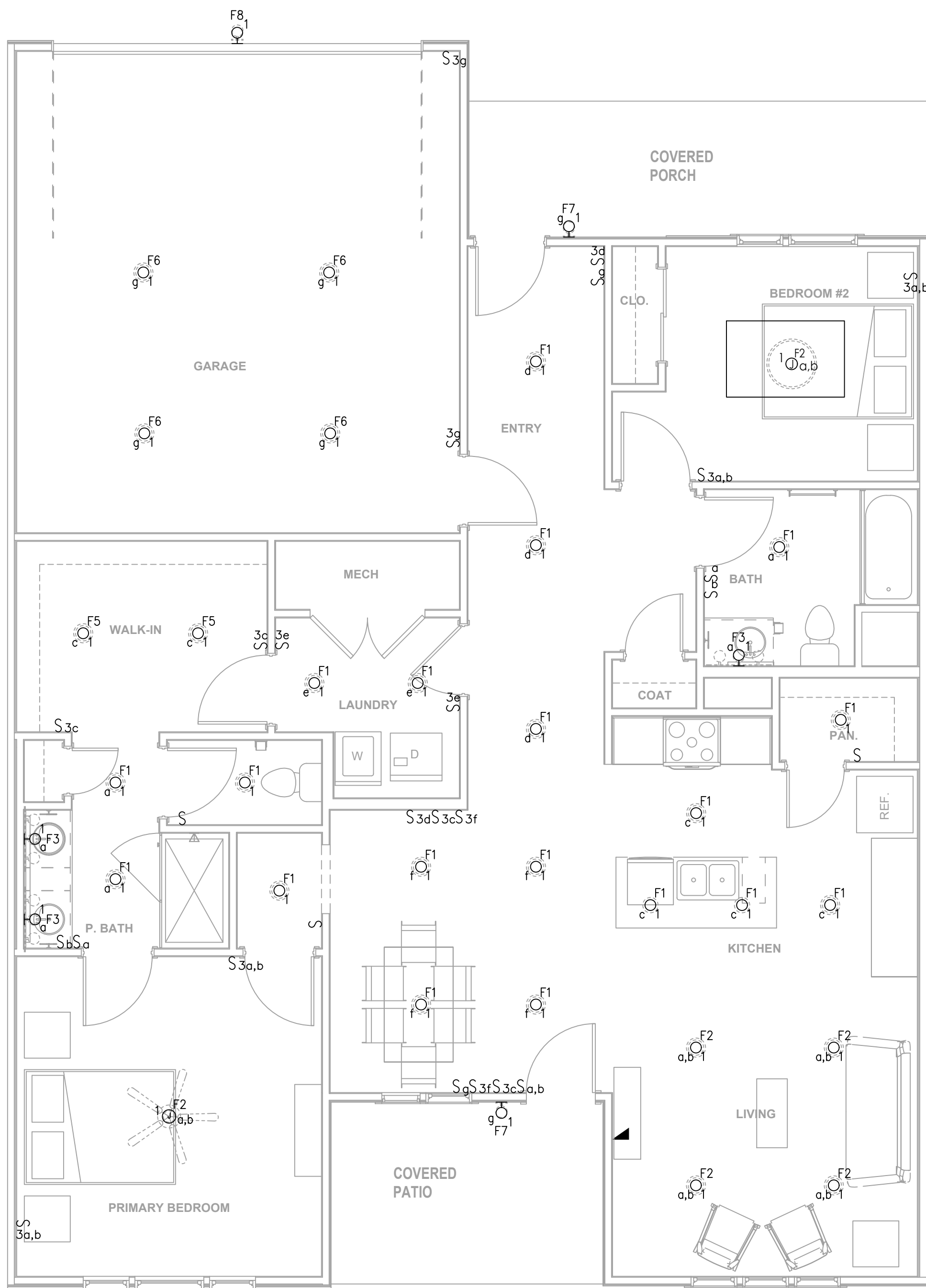




POWER - UNIT PLAN B REVERSED

SCALE : 1/4" = 1'-0"

2



LIGHTING - UNIT PLAN B REVERSED

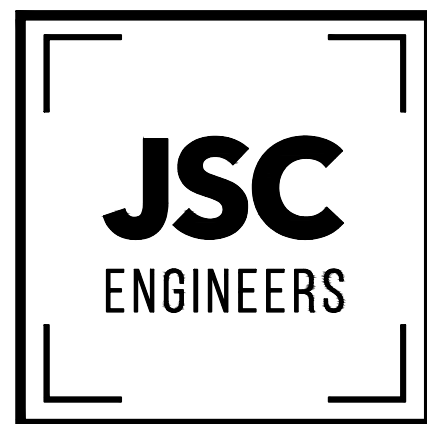
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PROFESSIONAL SEAL

E122BR

ISSUE DATE: 05.17.23  
JSC PROJECT #: 23-046

UNIT PLAN B REVERSED  
LIGHTING & POWER PLANS

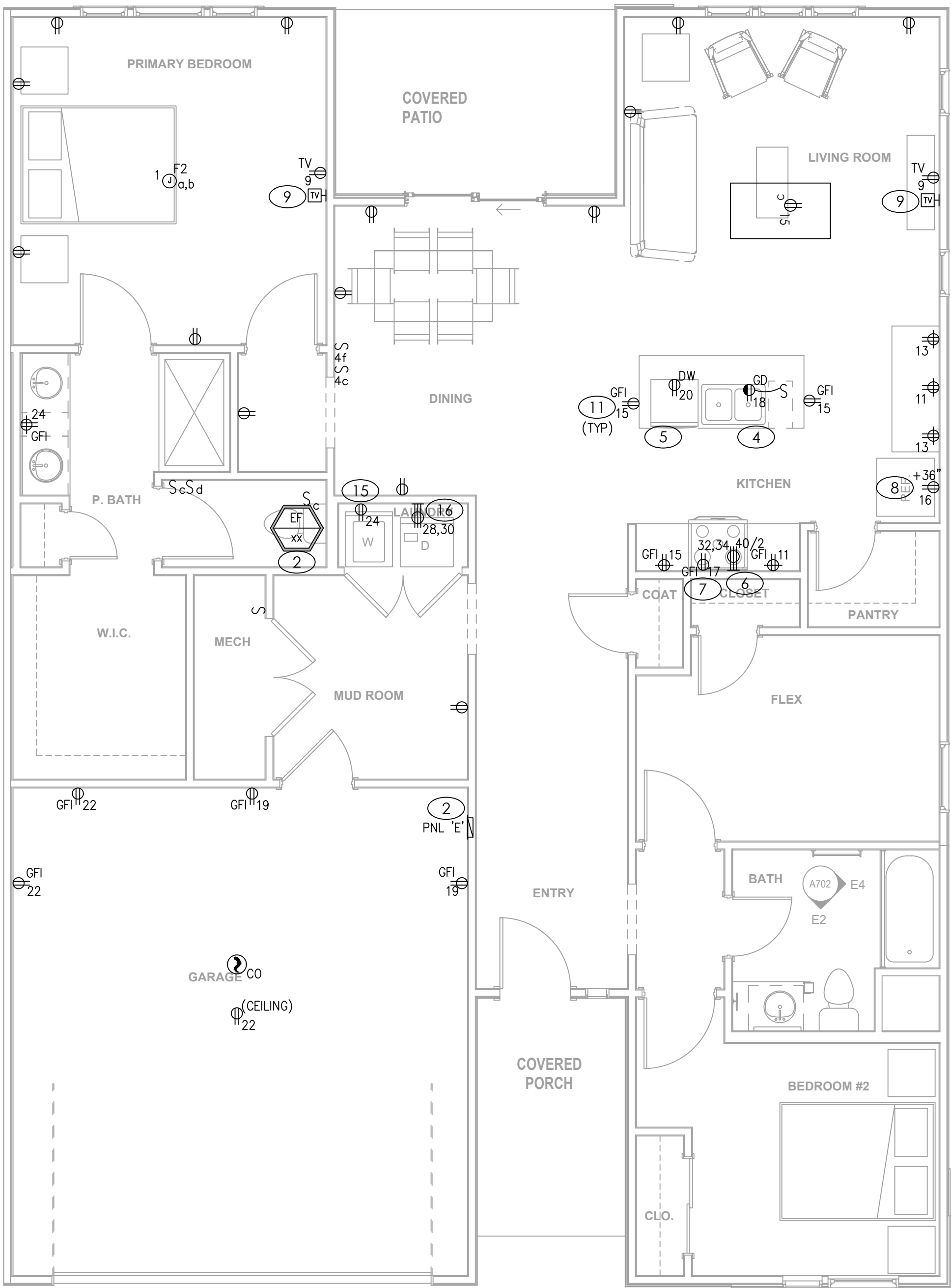
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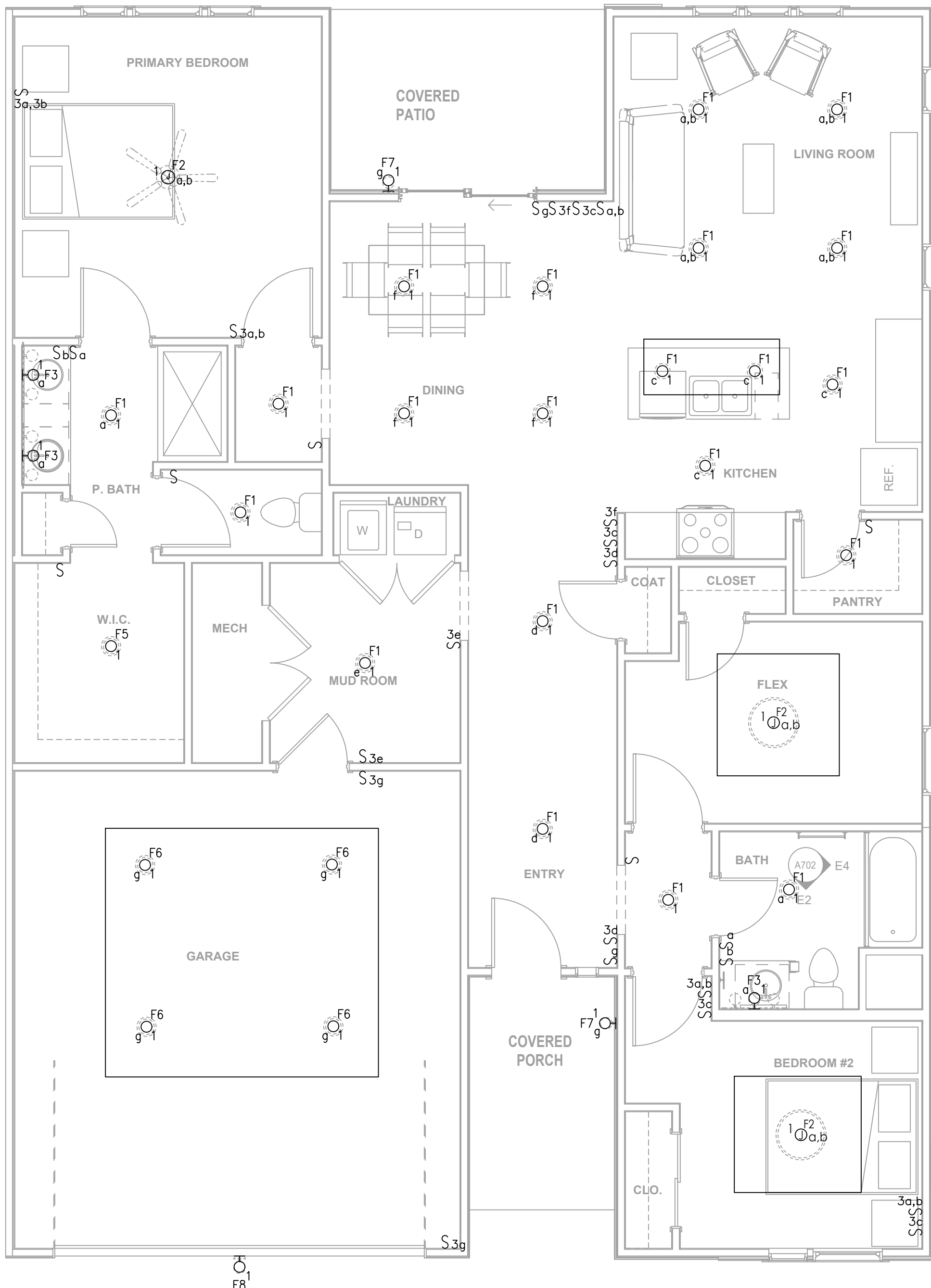
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POWER - UNIT PLAN C

SCALE : 1/4" = 1'-0"

2



LIGHTING - UNIT PLAN C

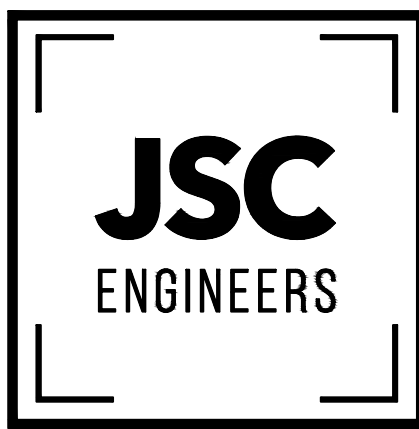
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PROFESSIONAL SEAL

E123C

ISSUE DATE: 05.17.23  
JSC PROJECT #: 23-046

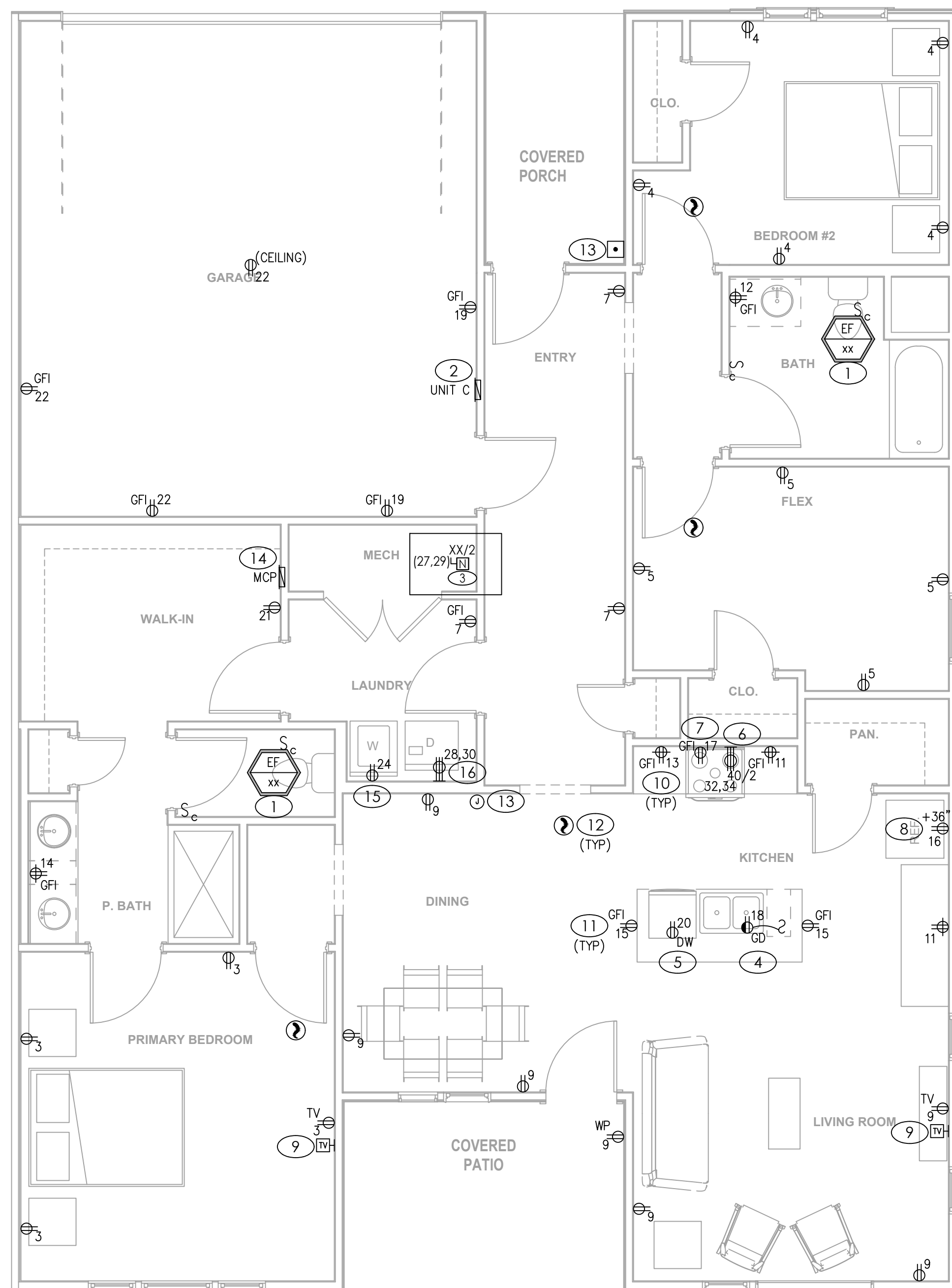
UNIT PLAN C  
LIGHTING & POWER PLANS

TRADITIONS AT BLACKWELL  
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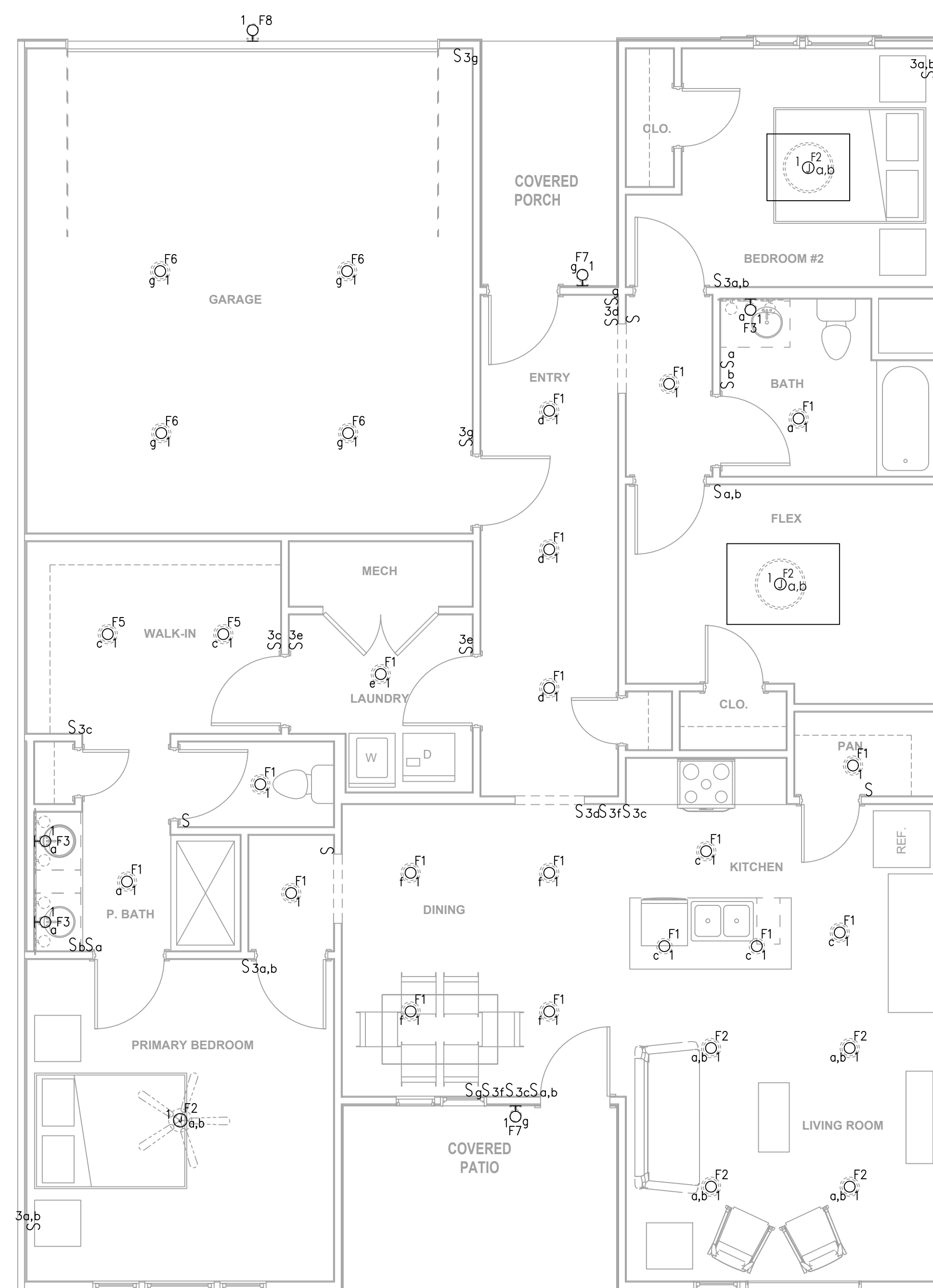




POWER - UNIT PLAN C REVERSED

SCALE : 1/4" = 1'-0"

2



LIGHTING - UNIT PLAN C REVERSED

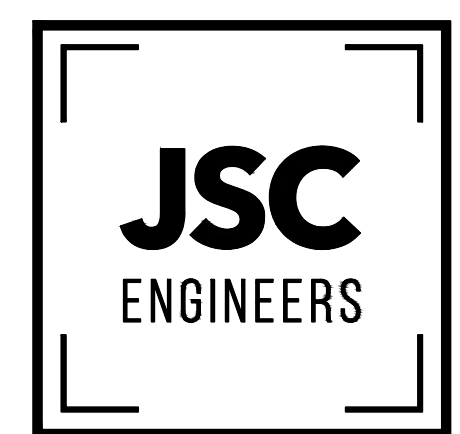
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PROFESSIONAL SEAL

E123CR

SUE DATE: 05.17.23  
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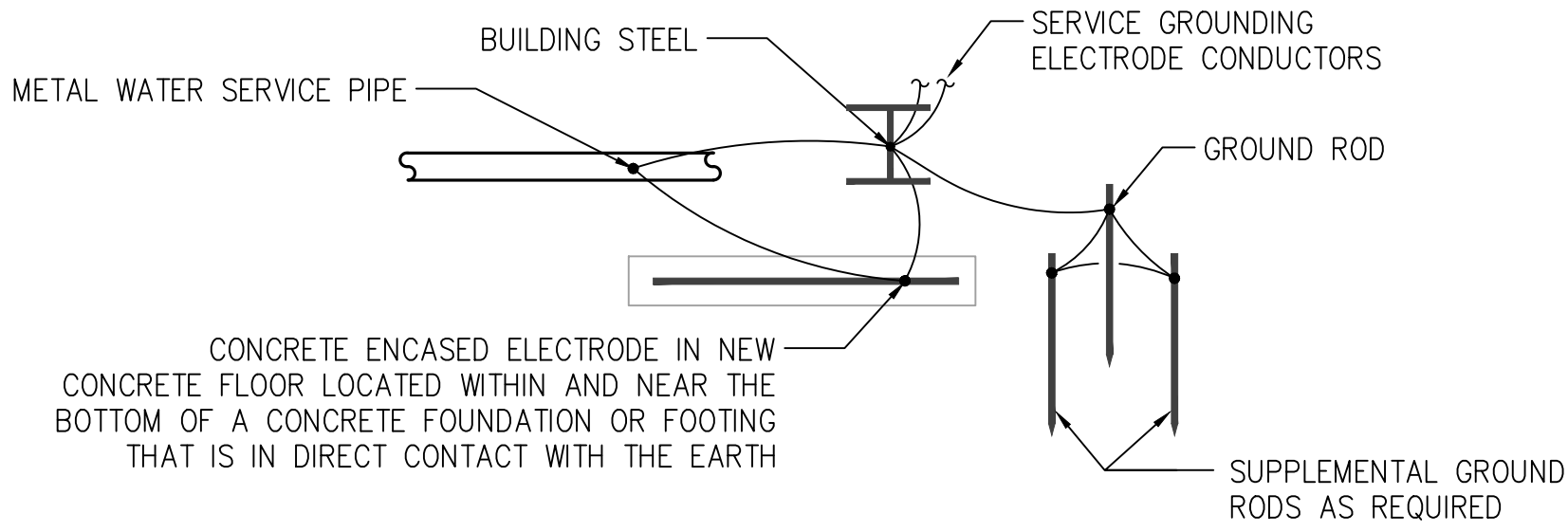
UNIT PLAN C REVERSED  
LIGHTING & POWER PLANS

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LEE'S SUMMIT, MO

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REVISION DATES:



GROUNDING  
ELECTRODE SYSTEM DIAGRAM

SCALE : NO SCALE

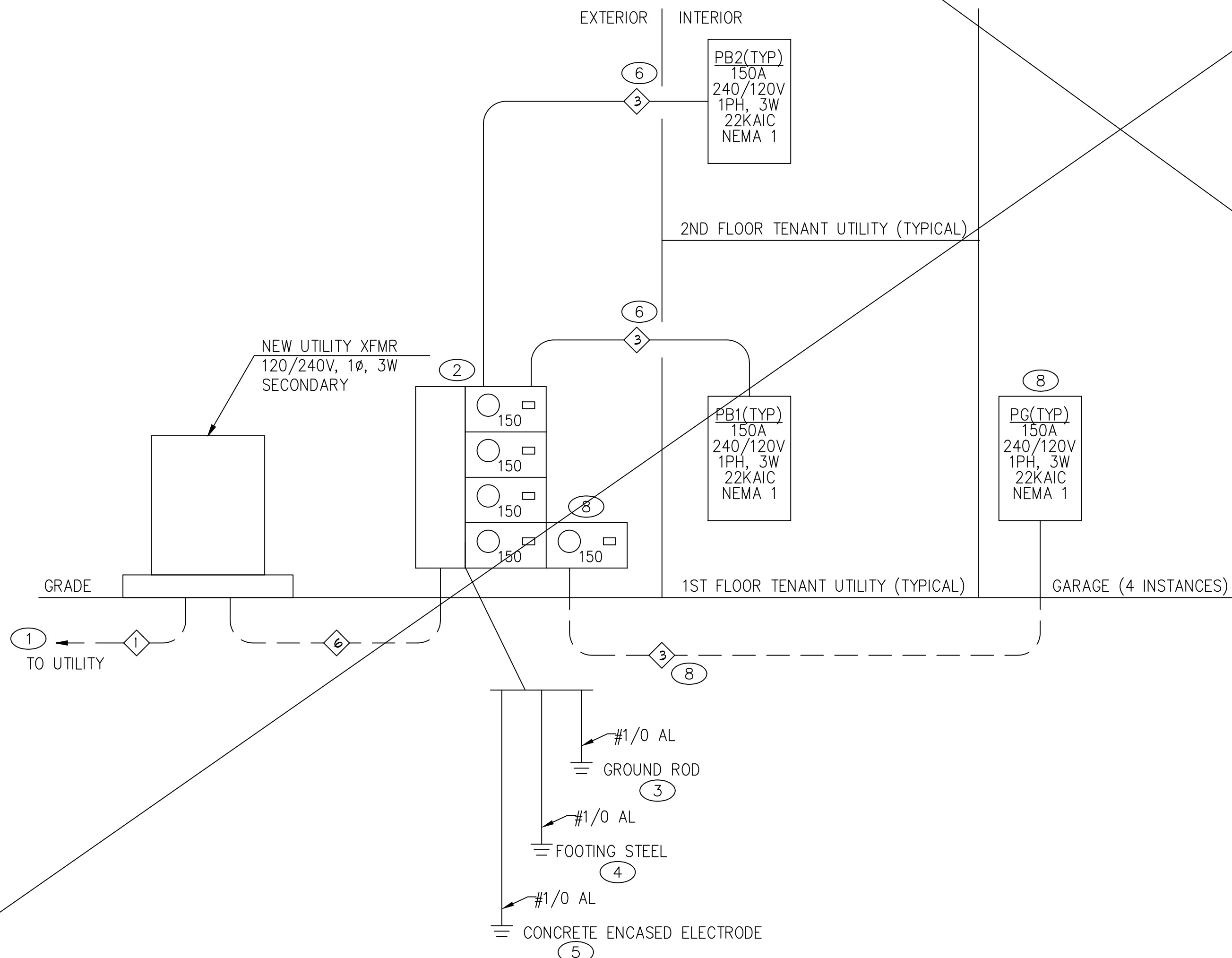
4

ELECTRICAL LIGHTING SCHEDULE (OR EQUAL, VERIFY ALL SELECTIONS AND FINISHES WITH OWNER OR ARCHITECT PRIOR TO ORDERING).							
FIXTURE TYPE	MANUFACTURER		VOLT AMPS	MOUNTING	LAMP TYPE	REMARKS	VOLT
	NAME	CATALOG NUMBER					
A	HALO	SLD612/8030/WH	15	SURFACE	INCLUDED LED	SURFACE MOUNTED LED DOWNLIGHT, 1200 LUMEN, 3000K, WHITE FINISH	120
D	MINIKA	6542-77	20	WALL	INCLUDED LED	DUAL VANITY WALL SCONCE, CHROME FINISH	120
E	TEXAS FLUORESCENT	C-232-8	10	SURFACE	INCLUDED LED	4' STRIP LIGHT, WHITE FINISH	120
F	ROYAL PACIFIC	1057-L	15	SURFACE	INCLUDED LED	52" 5-BLADE FAN, 3 SPEED, REVERSIBLE, WITH GLOBE LIGHT KIT, BRUSHED NICKEL FINISH	120
H	HOME DECORATION	7434P-15	10	PENDANT	INCLUDED LED	COUNTERTOP PENDANT LIGHT, CHROME FINISH	120
S	TERON	GRDW24-CNL-L18-120-12CY-WAL	36	WALL	INCLUDED LED	ENTRY LIGHT, FINISH BY ARCHITECT	120
S1	NUVO	60-531	10	WALL	INCLUDED LED	PATIO LIGHT, BRONZE FINISH	120
	EMERGH-LITE	12MPR12M-2-LG	4	WALL	INCLUDED LED	EMERGENCY LIGHTING UNIT WITH 2 LED LAMPS AND 90 MIN. BATTERY PACK	120
	EMERGH-LITE	W-PR-612M-1-R-2-LA	4	SURFACE	INCLUDED LED	EMERGENCY EXIT EGRESS COMBO LIGHTING UNIT WITH RED FACE EXIT SIGN AND 90 MIN. BATTERY PACK	120
	EMERGH-LITE	EF12-D-LED	3	SURFACE	INCLUDED LED	OUTDOOR EMERGENCY REMOTE EGRESS LIGHTING UNIT	120
	EMERGH-LITE	W-PREM-SNX-R	3	SURFACE	INCLUDED LED	EMERGENCY EGRESS SIGN WITH RED LETTERS AND 90 MINUTE BATTERY PACK	120

FEEDER SCHEDULE (CONDUCTORS TO BE COPPER UNLESS NOTED OTHERWISE)	
FEEDER NUMBER	CONDUIT AND CONDUCTOR SIZES
1	(2) 4" CONDUIT FOR UTILITY USE
2	(2) 3" CONDUIT EACH W/ (3) #500KCMIL AL & (1) #2/0 AL GND
3	(1) 2" CONDUIT W/ (3) #3/0 AL & (1) #4 AL GND
4	(1) 2-1/2" CONDUIT W/ (3) #300KCMIL AL & (1) #2 AL GND
5	(1) 2-1/2" CONDUIT W/ (3) #300KCMIL AL
6	(2) 3" CONDUIT EACH W/ (3) #500KCMIL AL

THE DESIGN PROFESSIONAL HAS PERFORMED ALL THE REQUIRED VOLTAGE DROP CALCULATIONS FOR ALL BRANCH CIRCUITS AND FEEDERS PER THE NATIONAL ELECTRICAL CODE, ARTICLE 210.19(A)(1) FPN NO. 4.

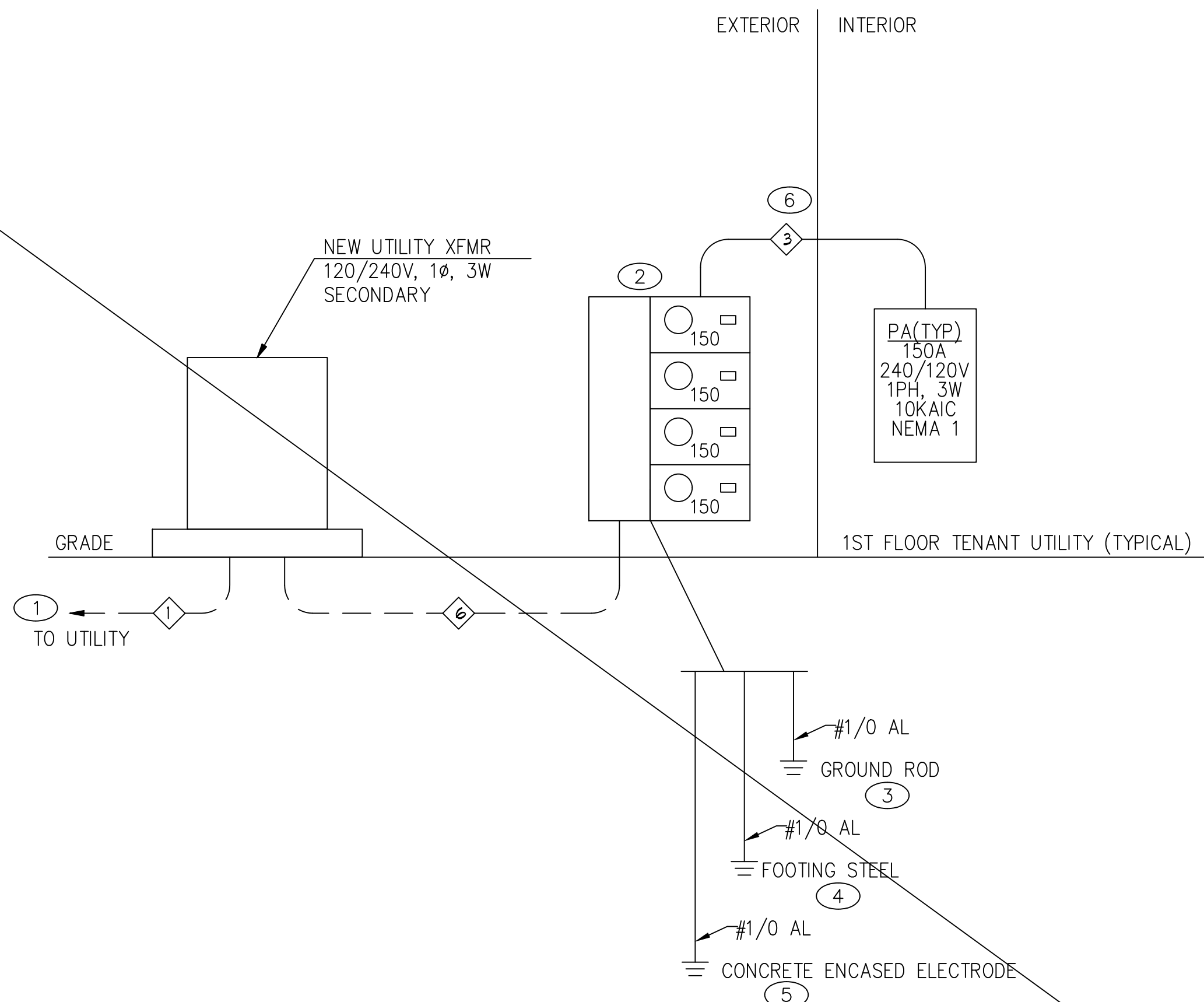
- # KEYED SLD NOTES
1. PROVIDE NEW CONDUIT TO UTILITY SOURCE. VERIFY EXACT LOCATION AND REQUIREMENTS WITH UTILITY PRIOR TO CONSTRUCTION.
  2. NEW 4-GANG, 200A, 120/240V, UTILITY METER STACK. COORDINATE EXACT REQUIREMENTS WITH UTILITY PRIOR TO CONSTRUCTION.
  3. PROVIDE NEW GROUND PER NEC 250.52(A)(5).
  4. BOND PER NEC 250.52(A)(2).
  5. PROVIDE NEW GROUND PER NEC 250.52(A)(3).
  6. COORDINATE EXACT LOCATION OF EXTERIOR PENETRATION INTO THE BUILDING WITH ARCHITECT AND OWNER PRIOR TO CONSTRUCTION.
  7. NEW SINGLE METER, 200A, 120/240V. COORDINATE EXACT REQUIREMENTS WITH UTILITY PRIOR TO CONSTRUCTION.
  8. DERIVE SERVICE FEEDER FOR GARAGE PANEL FROM SERVICE ENTRANCE EQUIPMENT SERVING BUILDING B. 4 INSTANCES IN PROJECT. REFER TO ELECTRICAL SITE PLAN ON SHEET E101 FOR INSTANCES AND LOCATIONS.



SINGLE LINE DIAGRAM - BUILDING B (TYP.)

SCALE : N/A

2



SINGLE LINE DIAGRAM - BUILDING A (TYP.)

SCALE : N/A

1

MEP ENGINEER

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PROFESSIONAL SEAL

**E200**

ISSUE DATE: 05.17.23  
JSC PROJECT #: 23-046

TRADITIONS AT BLACKWELL  
SE SHENANDOAH DRIVE  
LEE'S SUMMIT, MO

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ELECTRICAL SCHEDULES AND  
DIAGRAMS