

ELECTRICAL SPECIFICATIONS

PART I – GENERAL

A. CONDITIONS

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/CC'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 ELECTRIC 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, TAMPERING, 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 DURING THIS PERIOD.
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 SEVEN (7) IDENTICAL BOUND SETS OF SHOP DRAWINGS ON THE FOLLOWING ITEMS:
- 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.
3. SUBMIT ITEMS AT ONE TIME IN A NEAT AND ORDERLY MANNER WITHIN 15 DAYS OF AWARD OF CONTRACT. PARTIAL SUBMITTALS WILL NOT BE ACCEPTABLE.

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 GROUNDED CONDUCTORS OF THE WIRING SYSTEM SHALL BE GROUNDED.
2. GROUNDING 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 INACCESSIBLE 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.
2. ALUMINUM CONDUCTORS MAY BE UTILIZED FOR SERVICE ENTRANCE AND PANEL FEEDERS. CONDUCTORS SHALL BE ALUMINUM ALLOW AA-8000 SERIES.
3. 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 120V-WHITE, AND LIVE WIRES 208Y/120V AND 120/240 SHALL BE BLACK (PHASE A), RED (PHASE B), AND BLUE (PHASE C). CIRCUIT SHALL BE LABELED IN EACH J-BOX.
4. ALL CONDUCTORS SHALL BE RATED 600 VOLT.
5. SPLICES IN EXTERIOR PULL BOXES AND MANHOLES SHALL BE WEATHERPROOF USING "SCOTCHCAST" SPLICE KIT OR APPROVED EQUAL. SEAL ENDS OF CONDUITS AND DUCTS WITH "DUCTSEAL" OR APPROVED EQUAL.
6. PROVIDE SOLID CONDUCTOR FOR 12 AWG AND SMALLER.
7. ALL WIRING WITHIN RESIDENTIAL UNITS ONLY MAY BE TYPE NM CABLE.
8. 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.
9. MC CABLE WITH COPPER CONDUCTORS AND GROUND WIRE MAY BE USED WHERE PERMITTED.

E. CONDUIT

1. ALL WIRING SHALL BE INSTALLED IN LISTED METALLIC CONDUIT EXCEPT AS PERMITTED IN OTHER SECTIONS. RGS 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 GRC. ALL CONNECTIONS SHALL HAVE BUSHINGS OR INSULATED THROAT 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 TAPED 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, INSTALLED IN RESIDENTIAL UNITS, SHALL BE PROVIDED WITH A CODE SIZED, PLASTIC OUTLET BOX. JUNCTION AND PULL BOXES SHALL BE CODE SIZED, PLASTIC OR METAL OUTLET BOX. ALL OTHER OUTLET BOXES SHALL BE STEEL.
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

1. WALL SWITCHES SHALL BE SPECIFICATION GRADE AC SILENT TYPE SWITCHES, 20A 120/277 VOLT.
2. RECEPTACLES SHALL BE SPECIFICATION GRADE, DUPLEX TYPE, NEMA5-20R, 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. PANEL BOARDS

1. CIRCUIT BREAKER TYPE AS INDICATED ON DRAWINGS. UNLESS INDICATED OTHERWISE, ALL PANELS SHALL HAVE PANEL HAVE PANEL BOARD TYPE CONSTRUCTION WITH BOLT-ON CIRCUIT BREAKERS FOR 3Ø PANELS.
2. MANUFACTURERS SHALL BE GENERAL ELECTRIC, SQUARE D, SEIMENS, 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 SOLDERLESS TYPE. HANDLE TIES TO FORM MULTI-POLE BREAKERS NOT ACCEPTABLE.

I. LIGHTING FIXTURES

1. PROVIDE ALL LIGHTING FIXTURES, WIRED AND CONNECTED. THE DRAWINGS INDICATE THE FIXTURES FOR EACH LOCATION. PROVIDE LAMPS FOR ALL FIXTURES. THE LAMPS SHALL BE BY THE SAME MANUFACTURER. VERIFY CEILING CONSTRUCTION BEFORE ORDERING RECESSED UNITS. PROVIDE PLASTER FRAMES AND HANGERS AS REQUIRED. CEILING CONSTRUCTION, ARCHITECTURAL ACCESSORIES, VOLTAGE, AND BALLASTS TO MEET THE EXISTING CEILING CONDITION.

J. 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.

K. TELEPHONE AND CABLE TELEVISION SYSTEMS

1. TELEPHONE WALL OUTLETS SHALL CONSIST OF STANDARD 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 STANDARD BOXES MOUNTED 18" ABOVE THE FLOOR UNLESS OTHERWISE INDICATED. PROVIDE A TERMINAL MOUNTING BOARD FOR THE INCOMING SERVICE CABLE.

L. 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.

M. REMODELING WORK

1. THIS PROJECT INVOLVES CONSTRUCTION INSIDE AN EXISTING STRUCTURE. CONTRACTORS, BY SUBMITTING A BID ARE DEEMED TO BE COMPLETELY FAMILIAR WITH THE EXISTING CONDITIONS OF THE BUILDING AS IT INFLUENCES THE WORK DESCRIBED. NO CLAIMS FOR EXTRA COMPENSATION WILL BE CONSIDERED FOR EXISTING CONDITIONS VISIBLE OR REASONABLY INFERRABLE FROM A CAREFUL EXAMINATION OF THE EXISTING BUILDING CONDITIONS.
2. CONTRACTOR SHALL INSPECT THE EXISTING FIELD CONDITIONS AT THE SITE AND THE CONTRACT DOCUMENTS PRIOR TO THE START OF ANY WORK TO DETERMINE WHAT EFFECT THE EXISTING CONDITIONS WILL HAVE ON THE WORK POTENTIAL. CONTRACTOR SHALL REPORT DISCREPANCIES TO THE ARCHITECT AND INCLUDE IN THE BID ALL COSTS REQUIRED TO MAKE THE WORK MEET EXISTING CONDITIONS.
3. DEMOLITION: DISCONNECT, DEMOLISH, AND REMOVE ABANDONED MATERIALS AND EQUIPMENT INDICATED TO BE REMOVED AND NOT INDICATED TO BE SALVAGED OR REMAIN.
4. DISPOSAL AND CLEANUP: REMOVE FROM THE SITE AND LEGALLY DISPOSE OF DEMOLISHED MATERIALS AND EQUIPMENT NOT INDICATED TO BE SALVAGED.
5. PROTECT MATERIALS INDICATED TO REMAIN.

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

LIGHTING CONTROLS

- S SINGLE POLE SWITCH @ +48" UNLESS NOTED
- Sabc 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.
- SLvd 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

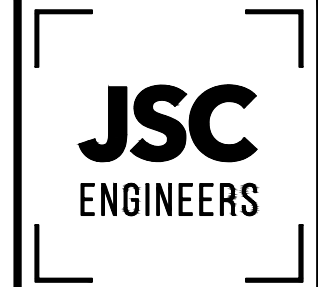
- SPECIAL HEAVY DUTY RECEPTACLE – SIZE AS NOTED. @ +18" UNLESS NOTED
- 1/2 SWITCHED RECEPTACLE @ +18" UNLESS NOTED
- FIRE RATED POKE THRU WITH TYPE INDICATED
- FLUSH FLOOR BOX WITH TYPE INDICATED
- SINGLE RECEPTACLE @ +18" UNLESS NOTED
- DUPLEX RECEPTACLE @ +18" UNLESS NOTED
- DOUBLE DUPLEX RECEPTACLE @ +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 "I"

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
- 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
- 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



MO COA NO. 2012008786 / KS COA NO. E-2818
1925 CENTRAL STREET, SUITE 201
KANSAS CITY, MO 64108
phone: (816) 272-5289
email: jsc@jscengineers.com



04-07-2023

AAC - ADVANCED AESTHETIC CENTER

6 SW 2ND ST.
LEE'S SUMMIT, MO, 64063

PROJECT

ORIGINAL:	04-07-23
REVISIONS:	DATE / DESCRIPTION
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ISSUED:

PERMIT

SHEET TITLE:

ELECTRICAL
SPECIFICATIONS
AND SYMBOLS

JOB NO.: 23-071

SHEET:

E1

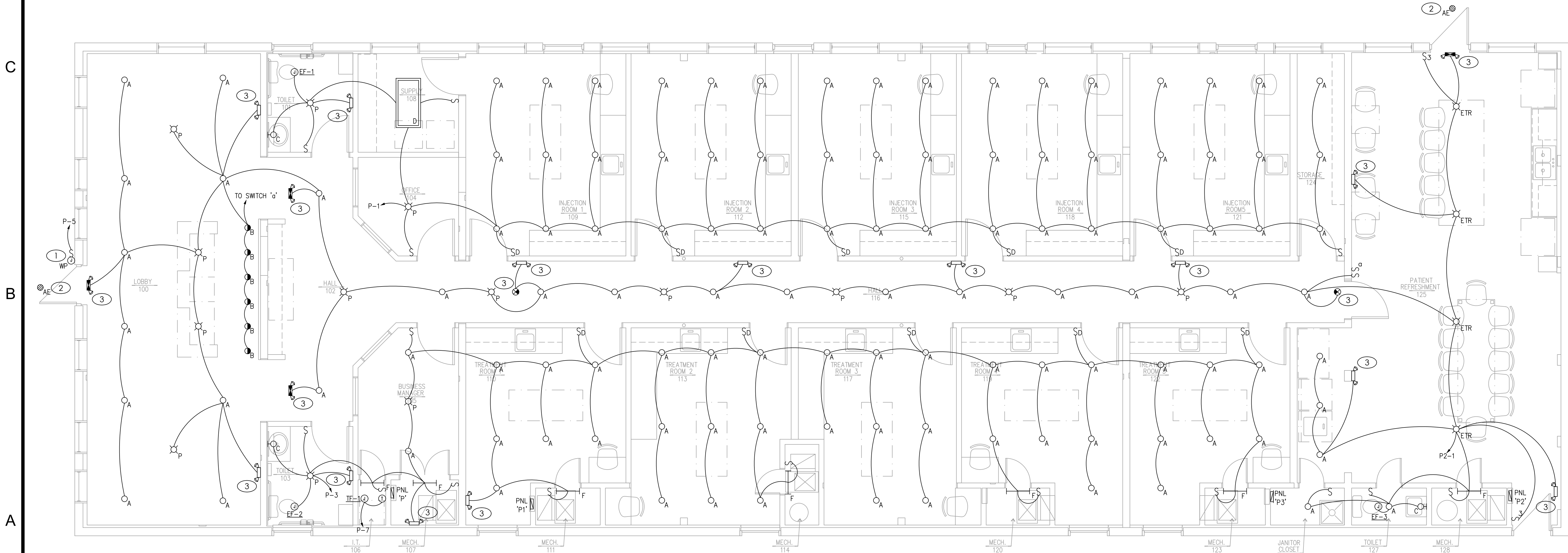
E

D

C

B

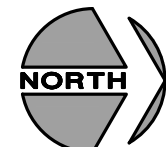
A



ELECTRICAL LIGHTING PLAN

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

1



VOLTAGE DROP CRITERIA

PROVIDE WIRING PER THE TABLE BELOW, UNLESS NOTED OTHERWISE. (NOTE: DISTANCE IS ORTHOGONAL DISTANCE TO CENTER OF LOAD).

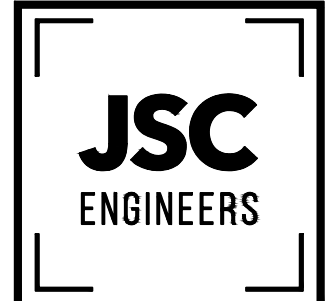
120 VOLT - 20 AMP CIRCUITS
0-100 FEET: #12
101-150 FEET: #10
151-200 FEET: #8
201-300 FEET: #6
301-450 FEET: #4
451-750 FEET: #2

KEYED PLAN NOTES

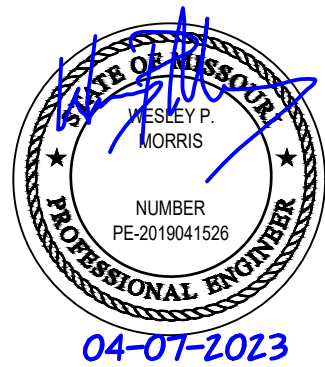
1. JUNCTION BOX WITH DISCONNECTING MEANS PER NEC FOR CONNECTION TO BUILDING MOUNTED SIGNAGE. VERIFY EXACT LOCATION AND CONNECT TO SIGN PER MANUFACTURER'S INSTRUCTIONS. ROUTE CIRCUIT THRU TIMECLOCK. SEE DETAIL 3 SHEET E4.
2. REPLACE EXISTING RECESSED LIGHT WITH NEW FIXTURE AND CONNECT TO EXISTING CIRCUIT SERVING EXTERIOR LIGHTING.
3. CONNECT EXIT/EMERGENCY LIGHT VIA UNSWITCHED HOT CONDUCTOR.

GENERAL NOTES

- A. DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED. REFER TO ARCHITECTURAL PLANS OR FIELD MEASUREMENTS FOR DIMENSIONS.
- B. ALL WORK SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NFPA 70) AND ALL LOCAL BUILDING CODES AND AMENDMENTS.
- C. ALL ROOF AND WALL PENETRATIONS SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR. PROVIDE ALL REQUIRED SLEEVES, FLASHINGS, CURBS, REINFORCED ANGLES, SUPPORTING FRAMES, ETC. UNLESS THEY ARE SPECIFICALLY CALLED OUT TO BE FURNISHED BY OTHERS.
- D. 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.
- E. THIS CONTRACTOR SHALL PERFORM ALL WORK INDICATED AND/OR AS REQUIRED FOR THE PROPER INSTALLATION AND OPERATION OF THE ELECTRICAL SYSTEMS.
- F. PROVIDE CONSTANT UNSWITCHED HOT LEG TO ALL LIGHTS WITH EMERGENCY BATTERY PACKS AND ALL OUTDOOR SCONCES.
- G. THE ELECTRICAL SYSTEM DESIGN IS BASED IN PART ON THE SPECIFIED HVAC EQUIPMENT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE EXACT LOCATIONS AND ELECTRICAL REQUIREMENTS OF ALL HVAC EQUIPMENT BEING FURNISHED. ANY CHANGES TO THE ELECTRICAL SYSTEM DUE TO HVAC EQUIPMENT SUBSTITUTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
- H. ALL WIRING SHALL BE IN APPROVED RACEWAY.
- I. WIRE SIZE SHALL BE MINIMUM #12 AWG, THWN 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 100 FEET. REFER TO VOLTAGE DROP CHART.
- J. MAXIMUM NUMBER OF UNGROUNDED WIRES IN ANY CONDUIT SHALL BE THREE. ADDITIONAL WIRES ARE ACCEPTABLE IF WIRE SIZE IS INCREASED TO ALLOW FOR DERATING PER CODE. PROVIDE ADDITIONAL WIRES FOR SWITCHING AS REQUIRED.
- K. FIRE ALARM, AUDIO/VIDEO AND SURVEILLANCE SYSTEMS BY OTHERS.
- L. ALL CIRCUIT NUMBERS SHOWN NEXT TO DEVICES ARE ASSOCIATED WITH THE HOMERUN SHOWN AT A NEARBY DEVICE AND SHALL TERMINATE AT THE DESIGNATED PANELBOARD CIRCUIT BREAKER.
- M. EC TO PROVIDE AND INSTALL RECEPTACLES, CAPS, AND CORDS AS REQUIRED. CAPS AND CORDS ARE TO BE INSTALLED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.



MO COA NO. 2012008786 / KS COA NO. E-2818
1925 CENTRAL STREET, SUITE 201
KANSAS CITY, MO 64108
phone: (816) 272-5289
email: jsmothers@jseengineers.com



PROJECT
AAC - ADVANCED AESTHETIC CENTER
6 SW 2ND ST.
LEE'S SUMMIT, MO, 64063

ORIGINAL:	04.07.23
REVISIONS:	DATE / DESCRIPTION
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SHEET TITLE:

ELECTRICAL
LIGHTING PLAN

JOB NO.: 23-071

SHEET:

E2

VOLTAGE DROP CRITERIA

PROVIDE WIRING PER THE TABLE BELOW, UNLESS NOTED OTHERWISE. (NOTE: DISTANCE IS ORTHOGONAL DISTANCE TO CENTER OF LOAD).

120 VOLT - 20 AMP CIRCUITS
0-100 FEET: #12
101-150 FEET: #10
151-200 FEET: #8
201-300 FEET: #6
301-450 FEET: #4
451-750 FEET: #2

KEYED PLAN NOTES

1. VERIFY EXACT LOCATION OF FLOOR BOX WITH OWNER PRIOR TO ROUGH-IN. ROUTE (1) 1" C FOR POWER UNDERFLOOR TO WALL RECEPTACLE AS INDICATED.
2. VERIFY LOCATION OF 2'x4'x3/4" FIRE RETARDANT PLYWOOD TELEPHONE BACKBOARD. TERMINATE AS DIRECTED BY TELEPHONE AND INTERNET SERVICE PROVIDER. VERIFY ROUTING AND DISTANCE.
3. SPLIT-WIRED DUPLEX RECEPTACLE MOUNTED UNDER SINK IN CASEWORK FOR POWER TO GARBAGE DISPOSAL AND DISHWASHER. TOP OUTLET SWITCHED FOR DISPOSAL. BOTTOM OUTLET UNSWITCHED FOR DISHWASHER. DEVICE TO BE GFCI PROTECTED BY GFCI BREAKER IN PANEL.
4. PROVIDE JUNCTION BOX FOR PROCEDURE LIGHT MOUNTED IN CEILING. CONNECT PER MANUFACTURER'S SPECIFICATIONS. VERIFY EXACT LOCATION PRIOR TO ROUGH-IN.
5. EXISTING CONDENSING UNIT ON ROOF TO BE CONNECTED TO NEW PANEL AS INDICATED ON PLANS.
6. EXISTING FURNACE TO BE CONNECTED TO NEW PANEL AS INDICATED ON PLANS.
7. EXISTING WATER HEATER TO BE CONNECTED TO NEW PANEL AS INDICATED ON PLANS.
8. EXISTING PANEL TO REMAIN BUT NOT BE USED.
9. MICROWAVE MOUNTED IN UPPER CASE WORK. VERIFY EXACT LOCATION PRIOR TO ROUGH-IN.
10. VERIFY ALL ELECTRICAL REQUIREMENTS AND LOCATION FOR LASER MACHINE PRIOR TO ROUGH-IN. PROVIDE ALL ELECTRICAL COMPONENTS REQUIRED AND CONNECT COMPLETE.
11. FLUSH FLOOR BOX WITH COVER AND MINIMUM (2) DUPLEX RECEPTACLES AND (2) DATA OUTLETS. HUBBELL SYSTEMONE OR PRE-BID APPROVED EQUAL. ROUTE (1) 1" C FOR POWER AND (1) 1" C FOR DATA UNDERFLOOR TO NEAREST WALL AND STUB UP TO ABOVE ACCESSIBLE CEILING FOR HOMERUN TO PANELBOARD/PATCH PANEL.

GENERAL NOTES

- A. DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED. REFER TO ARCHITECTURAL PLANS OR FIELD MEASUREMENTS FOR DIMENSIONS.
- B. ALL WORK SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NFPA 70) AND ALL LOCAL BUILDING CODES AND AMENDMENTS.
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- E. THIS CONTRACTOR SHALL PERFORM ALL WORK INDICATED AND/OR AS REQUIRED FOR THE PROPER INSTALLATION AND OPERATION OF THE ELECTRICAL SYSTEMS.
- F. PROVIDE CONSTANT UNSWITCHED HOT LEG TO ALL LIGHTS WITH EMERGENCY BATTERY PACKS AND ALL OUTDOOR SCONCES.
- G. THE ELECTRICAL SYSTEM DESIGN IS BASED IN PART ON THE SPECIFIED HVAC EQUIPMENT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE EXACT LOCATIONS AND ELECTRICAL REQUIREMENTS OF ALL HVAC EQUIPMENT BEING FURNISHED. ANY CHANGES TO THE ELECTRICAL SYSTEM DUE TO HVAC EQUIPMENT SUBSTITUTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
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- J. MAXIMUM NUMBER OF UNGROUNDED WIRES IN ANY CONDUIT SHALL BE THREE. ADDITIONAL WIRES ARE ACCEPTABLE IF WIRE SIZE IS INCREASED TO ALLOW FOR DERATING PER CODE. PROVIDE ADDITIONAL WIRES FOR SWITCHING AS REQUIRED.
- K. FIRE ALARM, AUDIO/VIDEO AND SURVEILLANCE SYSTEMS BY OTHERS.
- L. ALL CIRCUIT NUMBERS SHOWN NEXT TO DEVICES ARE ASSOCIATED WITH THE HOMERUN SHOWN AT A NEARBY DEVICE AND SHALL TERMINATE AT THE DESIGNATED PANELBOARD CIRCUIT BREAKER.
- M. EC TO PROVIDE AND INSTALL RECEPTACLES, CAPS, AND CORDS AS REQUIRED. CAPS AND CORDS ARE TO BE INSTALLED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

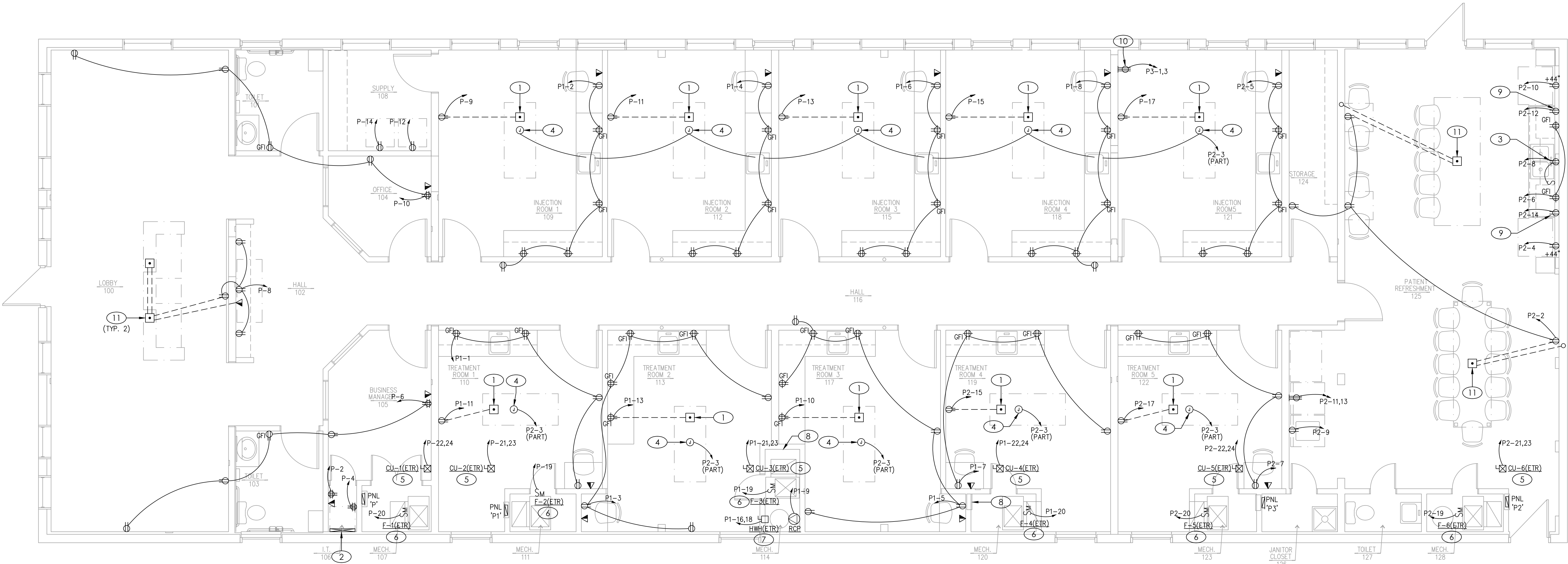
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D

C

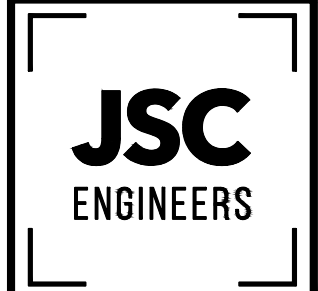
B

A



ELECTRICAL POWER PLAN

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



MO COA NO. 2012006786 / KS COA NO. E-2818
1925 CENTRAL STREET, SUITE 201
KANSAS CITY, MO 64108
phone: (816) 272-5289
email: jsmothers@jscengineers.com



AAC - ADVANCED AESTHETIC CENTER
6 SW 2ND ST.
LEE'S SUMMIT, MO, 64063

PROJECT	ORIGINAL: 04.07.23
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SHEET TITLE:
ELECTRICAL POWER PLAN

JOB NO.: 23-071
SHEET: E3

E

D

C

B

A

ELECTRICAL LIGHTING SCHEDULE (OR EQUAL. VERIFY ALL SELECTIONS AND FINISHES WITH OWNER AND ARCHITECT PRIOR TO ORDERING).							
FIXTURE TYPE	MANUFACTURER		VOLT AMPS	MOUNTING	LAMP TYPE	REMARKS	VOLT
	NAME	CATALOG NUMBER					
A	LITHONIA	LDN6-40/20-LO6-AR-LSS-120-EZ1	22.5	RECESSED	INCLUDED 4000K LED	6" RECESSED CAN LED DOWNLIGHT, 2000 LUMEN	120
AE	LITHONIA	LDN6-40/20-LO6-AR-LSS-120-EZ1-EL	22.5	RECESSED	INCLUDED 4000K LED	6" RECESSED CAN LED DOWNLIGHT, 2000 LUMEN, WITH 10W EMERGENCY BATTERY PACK	120
B	LITHONIA	LDN6-40/20-LW6-AR-LSS-120-EZ1	22.5	RECESSED	INCLUDED 4000K LED	6" RECESSED WALL WASH LED DOWNLIGHT, 2000 LUMEN	120
C	OWNER PROVIDED	WALL SCONCE	20	WALL SURFACE	INCLUDED 4000K LED	OWNER PROVIDED LED WALL SCONCE. CONTRACTOR INSTALLED, \$150 ALLOWANCE PER FIXTURE	120
D	LITHONIA	EPANL-2X4-3000LM-80CRI-40K-MIN10-ZT-MVOLT	29	GRID	INCLUDED 4000K LED	2' X 4' GRID LAY-IN DIMMABLE LED FLAT PANEL, 3000 LUMEN	MVOLT
F	LITHONIA	CLX-L24-2500LM-SEF-RDL-MVOLT-GZ10-40K-80CRI	18.4	WALL	INCLUDED 4000K LED	2' LED STRIP FIXTURE, 2500 LUMEN. WALL MOUNT ABOVE DOOR. VERIFY EXACT LOCATION WITH ARCHITECT.	MVOLT
P	OWNER PROVIDED	PENDANT	30	PENDANT	INCLUDED 4000K LED	OWNER PROVIDED LED PENDANT. CONTRACTOR INSTALLED, \$300 ALLOWANCE PER FIXTURE	120
ETR	EXISTING TO REMAIN						
	LITHONIA	EU2L-M12	3	SURFACE	INCLUDED LED	EMERGENCY EGRESS LIGHT WITH TWIN ADJUSTABLE HEADS AND BATTERY BACK-UP	MVOLT
	LITHONIA	ECBR-LED-M6	1	SURFACE	INCLUDED LED	EMERGENCY EXIT SIGN WITH RED LETTERS AND BATTERY BACK-UP	MVOLT

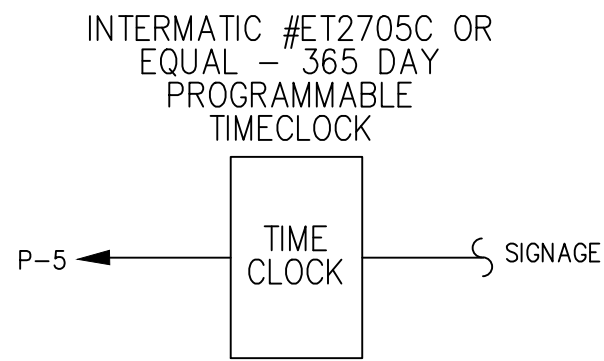
LIGHTING FIXTURE SCHEDULE

SCALE : NO SCALE

2

KEYED SLD NOTES

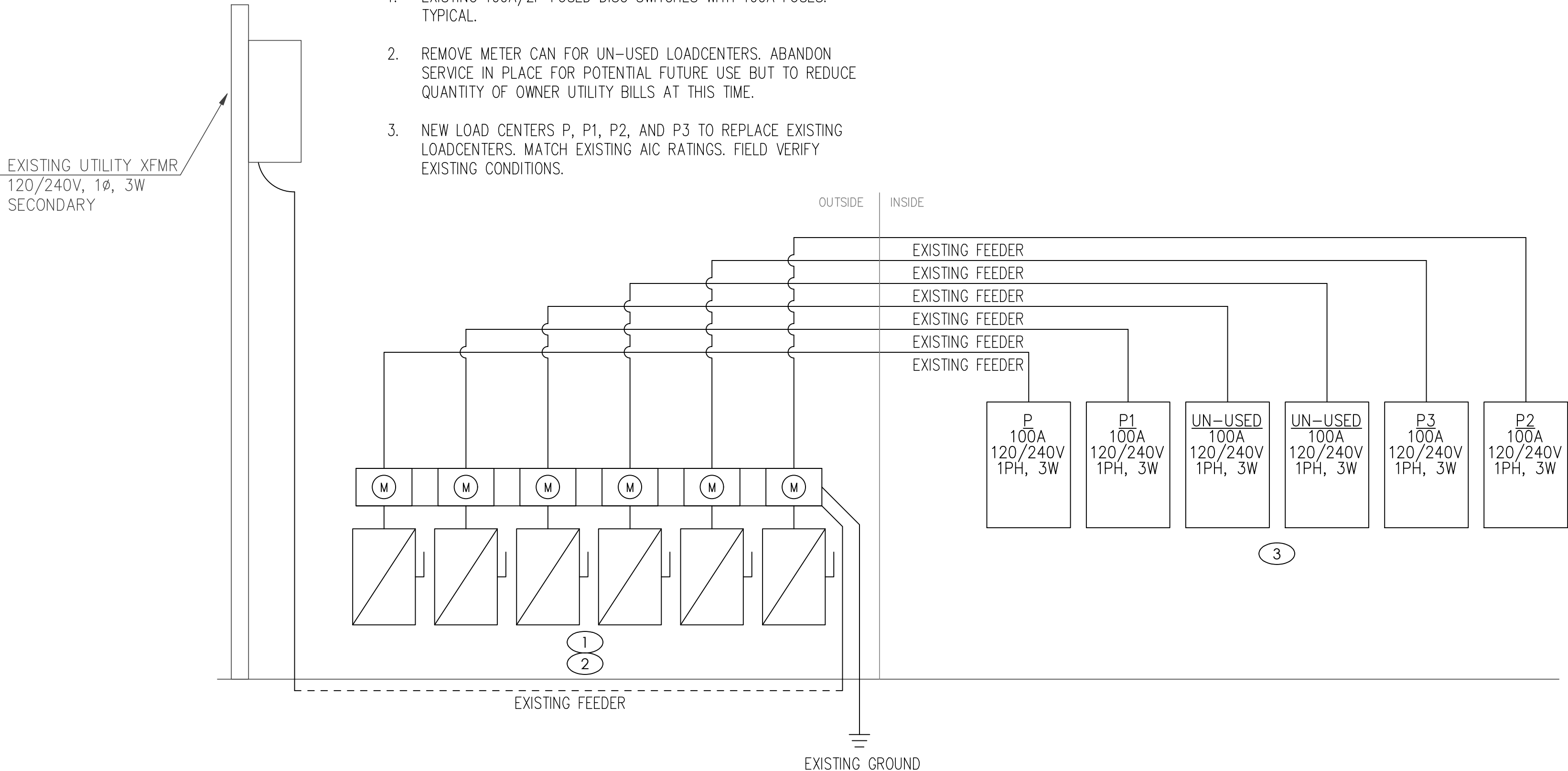
- EXISTING 100A/2P FUSED DISC SWITCHES WITH 100A FUSES. TYPICAL.
- REMOVE METER CAN FOR UN-USED LOADCENTERS. ABANDON SERVICE IN PLACE FOR POTENTIAL FUTURE USE BUT TO REDUCE QUANTITY OF OWNER UTILITY BILLS AT THIS TIME.
- NEW LOAD CENTERS P, P1, P2, AND P3 TO REPLACE EXISTING LOADCENTERS. MATCH EXISTING AIC RATINGS. FIELD VERIFY EXISTING CONDITIONS.



SIGNAGE CONTROL DIAGRAM

SCALE : NO SCALE

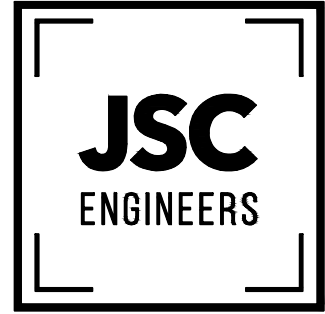
3



ELECTRICAL SINGLE LINE DIAGRAM

SCALE : NO SCALE

1



MO COA NO. 2012008786 / KS COA NO. E-2818
1925 CENTRAL STREET, SUITE 201
KANSAS CITY, MO 64108
phone: (816) 272-5289
email: jcmothers@jseengineers.com



AAC - ADVANCED AESTHETIC CENTER
6 SW 2ND ST.
LEE'S SUMMIT, MO, 64063

PROJECT: AAC - ADVANCED AESTHETIC CENTER	
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SHEET TITLE:
ELECTRICAL
SCHEDULES
AND DIAGRAMS

JOB NO.: 23-071
SHEET: E4

7

6

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1

E

D

C

B

A

PANELBOARD: P2 (NEW)														FED FROM: EXISTING METER / DISCONNECT										LINE-SIDE LUGS: MECHANICAL									
BUS AMPS: 125A														AIC RATING: 10000 FULLY RATED										EQUIPMENT GROUND BUS									
MAIN SIZE/TYPE: MLO														SERVES: REFRESH / TREATMENT																			
VOLTS/PHASE: 120/240V, 1PH, 3W														MOUNTING: RECESSED																			
LOCATION: PATIENT REFRESH 125																																	
SECTION: 1																																	
CKT NO.	DESCRIPTION	VOLTAMPS/PHASE		WIRE	BKR	P	P	BKR	WIRE	VOLTAMPS/PHASE		DESCRIPTION	CKT NO.																				
		A	B							A	B																						
1	LTG - PATIENT / HALL	1,702		12	20	1	1	20	12	1,080		RCPT - PATIENT REFRESH	2																				
3	LTG - PROCEDURE		1,000	12	20	1	1	20	12		1,000	RCPT - FRIDGE (GFI)	4																				
5	RCPT - INJECTION ROOM 5	1,080		12	20	1	1	20	12	360		RCPT - REFRESH COUNTER	6																				
7	RCPT - TREATMENT ROOM 5		1,080	12	20	1	1	20	12		500	RCPT - REFRESH DISPOSAL/DISH (GFI)	8																				
9	RCPT - WASHER (GFI)	800		12	20	1	1	20	12	1,000		RCPT - FRIDGE (GFI)	10																				
11	RCPT - DRYER		2,496	10	30	2	1	20	12		1,000	RCPT - REFRESH MICROWAVE (GFI)	12																				
13		2,496						1	20	12	1,000	RCPT - REFRESH MICROWAVE (GFI)	14																				
15	PWR - TREATMENT ROOM 4 CHAIR		360	12	20	1	1	20				SPARE	16																				
17	PWR - TREATMENT ROOM 5 CHAIR	360		12	20	1	1	20				SPARE	18																				
19	PWR - F-6		1,200	12	15	1	1	15	12		1,200	PWR - F-5	20																				
21	PWR - CU-6	1,236		12	15	2	2	15	12	1,236		PWR - CU-5	22																				
23			1,236								1,236		24																				
SUBTOTAL		7,674	7,372									4,676	4,936	SUBTOTAL																			
TOTAL PHASE A - VA		12,350	LOAD	CONN VA		DF	LOAD		CONN VA		DF																						
AMPS 103			COOLING	4,944		1.00	REFRIG				1.00																						
TOTAL PHASE B - VA		12,308	HEATING	2,400		0	SIGN/DISP				1.25																						
AMPS 103			LIGHTING	2,702		1.25	KITCHEN				1.00																						
TOTAL PNLBD - VA		24,658	RECEPTACLES	13,892		1.0/5	EXISTING				1.00																						
AMPS 103			MOTORS	1.00			LRG MOTOR				1.25	TOTAL DEMAND																					
			SUPP HEAT	1.00			SHOW/WNDW				1.25	20,988 VA																					
			MISC EQUIP	720		1.00	LTG TRACK				1.00	87 A																					
PANELBOARD NOTES																																	
CIRCUITS IN <i>ITALICS</i> = EXISTING LABELED LOAD TO REMAIN																																	
GFI = GROUND-FAULT CIRCUIT INTERRUPTER BREAKER																																	

PANELBOARD: P1 (NEW)														FED FROM: EXISTING METER / DISCONNECT										LINE-SIDE LUGS: MECHANICAL									
BUS AMPS: 125A														AIC RATING: 10000 FULLY RATED										EQUIPMENT GROUND BUS									
MAIN SIZE/TYPE: MLO														SERVES: TREATMENT ROOMS																			
VOLTS/PHASE: 120/240V, 1PH, 3W														MOUNTING: RECESSED																			
SECTION: 1														LOCATION: TREATMENT ROOM 1																			
CKT NO.	DESCRIPTION	VOLTAMPS/PHASE		WIRE NO.	BKR AMP	P	P	BKR AMP	WIRE NO.	VOLTAMPS/PHASE		DESCRIPTION	CKT NO.																				
		A	B							A	B																						
1	RCPT - TREATMENT ROOM 1	1,080		12	20	1	1	20	12	1,260		RCPT - INJECTION ROOM 1	2																				
3	RCPT - TREATMENT ROOM 2		1,080	12	20	1	1	20	12		1,080	RCPT - INJECTION ROOM 2	4																				
5	RCPT - TREATMENT ROOM 3	1,260		12	20	1	1	20	12	1,080		RCPT - INJECTION ROOM 3	6																				
7	RCPT - TREATMENT ROOM 4		1,080	12	20	1	1	20	12		1,260	RCPT - INJECTION ROOM 4	8																				
9	PWR - RECIRC PUMP	180		12	20	1	1	20	12	360		PWR - TREATMENT ROOM 3 CHAIR	10																				
11	PWR - TREATMENT ROOM 1 CHAIR		360	12	20	1	1	20				SPARE	12																				
13	PWR - TREATMENT ROOM 2 CHAIR	360		12	20	1	1	20				SPARE	14																				
15	SPARE						2	30	10		2,250	PWR - WATER HEATER	16																				
17	SPARE									2,250			18																				
19	PWR - F-3		1,200	12	15	1	1	15	12		1,200	PWR - F-4	20																				
21	PWR - CU-3		1,236	12	15	2	2	15	12	2,400		PWR - CU-4	22																				
23			1,236							2,400			24																				
SUBTOTAL		4,116	4,956							7,350	8,190	SUBTOTAL																					
TOTAL PHASE A - VA		11,466	LOAD	CONN VA		DF	LOAD		CONN VA		DF																						
AMPS 96			COOLING	7,272		1.00	REFRIG				1.00																						
TOTAL PHASE B - VA		13,146	HEATING	2,400		0	SIGN/DISP				1.25																						
AMPS 110			LIGHTING	1,125		1.25	KITCHEN				1.00																						
TOTAL PNLBD - VA		24,612	RECEPTACLES	9,180		1.0/5	EXISTING				1.00																						
AMPS 103			MOTORS	180		1.00	LRG MOTOR				1.25	TOTAL DEMAND																					
			SUPP HEAT	4,500		1.00	SHOW/WNDW				1.25	22,212 VA																					
			MISC EQUIP	1,080		1.00	LTG TRACK				1.00	93 A																					
PANELBOARD NOTES																																	
CIRCUITS IN <i>ITALICS</i> = EXISTING LABELED LOAD TO REMAIN																																	

PANELBOARD: P3 (NEW)														FED FROM: EXISTING METER / DISCONNECT														LINE-SIDE LUGS: MECHANICAL													
BUS AMPS: 125A														AIC RATING: 10000 FULLY RATED														EQUIPMENT GROUND BUS													
MAIN SIZE/TYPE: MLO														SERVES: EQUIPMENT																											
VOLTS/PHASE: 120/240V, 1PH, 3W														MOUNTING: SURFACE																											
SECTION: 1														LOCATION: JAN CLST 126																											
CKT NO	DESCRIPTION	VOLTAMPS/PHASE		WIRE NO	BKR AMP	P	P	BKR AMP	WIRE NO	VOLTAMPS/PHASE		DESCRIPTION	CKT NO																												
		A	B							A	B																														
1	PWR - LASER MACHINE	2,880		10	30	2	1	20				SPARE	2																												
3			2,880					1	20			SPARE	4																												
5	SPARE				20	1	1	20				SPARE	6																												
7	SPARE				20	1	1	20				SPARE	8																												
9	SPARE				20	1	1	20				SPARE	10																												
11	SPARE				20	1	1	20				SPARE	12																												
13	SPARE				20	1	1	20				SPARE	14																												
15	SPARE				20	1	1	20				SPARE	16																												
17	SPARE				20	1	1	20				SPARE	18																												
19	SPARE				20	1	1	20				SPARE	20																												
21	SPARE				20	1	1	20				SPARE	22																												
23	SPARE				20	1	1	20				SPARE	24																												
SUBTOTAL		2,880	2,880									SUBTOTAL		24																											
TOTAL PHASE A - VA		2,880	LOAD	CONN VA		DF	LOAD		CONN VA		DF																														
AMPS 24			COOLING	1.00			REFRIG		1.00																																
TOTAL PHASE B - VA		2,880	HEATING	0			SIGN/DISP		1.25																																
AMPS 24			LIGHTING	1.25			KITCHEN		1.00																																
TOTAL PNLBD - VA		5,760	RECEPTACLES	1.0/5			EXISTING		1.00																																
AMPS 24			MOTORS	1.00			LRG MOTOR		1.25			TOTAL DEMAND																													
			SUPP HEAT	1.00			SHOW/WNDW		1.25			5,760 VA																													
			MISC EQUIP	5,760		1.00	LTG TRACK		1.00			24 A																													
PANELBOARD NOTES																																									

PANELBOARD: P (NEW)														FED FROM: EXISTING METER / DISCONNECT				LINE-SIDE LUGS: MECHANICAL EQUIPMENT GROUND BUS									
BUS AMPS: 125A MAIN SIZE/TYPE: MLO VOLTS/PHASE: 120/240V, 1PH, 3W SECTION: 1														AIC RATING: 10000 FULLY RATED SERVES: SOUTH & WEST BLDG MOUNTING: SURFACE LOCATION: MECH RM 107													
CKT NO	DESCRIPTION	VOLTAMPS/PHASE		WIRE NO.	AMP	P	P	BKR AMP	WIRE NO.	VOLTAMPS/PHASE		DESCRIPTION	CKT NO														
		A	B							A	B																
1	LTG - INJECTION / OFFICE		1,292	12	20	1	1	20	12	360		RCPT - IT	2														
3	LTG - TREATMENT / OFFICE		1,162	12	20	1	1	20	12		360	RCPT - PHONEBOARD	4														
5	LTG - SIGNAGE	1,200		12	20	1	1	20	12	1,080		RCPT - MANAGER / SEATING	6														
7	PWR - TF-1		100	12	20	1	1	20	12		1,080	RCPT - LOBBY	8														
9	PWR - INJECTION RM 1 CHAIR	360		12	20	1	1	20	12	1,080		RCPT - OFFICE / LOBBY	10														
11	PWR - INJECTION RM 2 CHAIR		360	12	20	1	1	20	12		1,000	RCPT - FREEZER	12														
13	PWR - INJECTION RM 3 CHAIR	360		12	20	1	1	20	12	1,000		RCPT - FRIDGE	14														
15	PWR - INJECTION RM 4 CHAIR		360	12	20	1	1	20				SPARE	16														
17	PWR - INJECTION RM 5 CHAIR	360		12	20	1	1	20				SPARE	18														
19	PWR - F-2		1,200	12	15	1	1	15	12		1,200	PWR - F-1	20														
21	PWR - CU-2		1,740	10	25	2	2	30	10	2,040		PWR - CU-1	22														
23			1,740								2,040		24														
SUBTOTAL		5,312		4,922						5,560	5,680	SUBTOTAL															
TOTAL PHASE A - VA		10,872		CONN VA		DF		LOAD			CONN VA	DF															
AMPS 91				7,560		1.00		REFRIG			1.00																
TOTAL PHASE B - VA		10,602		2,400		0		SIGN/DISP		1,200	1.25																
AMPS 88				2,454		1.25		KITCHEN			1.00																
TOTAL PNLBD - VA		21,474		5,960		10/5		EXISTING			1.00																
AMPS 89				100		1.00		LRG MOTOR			1.25	TOTAL DEMAND															
				SUPP HEAT		1.00		SHOW/WDNW			1.25	19,988 VA															
				MISC EQUIP		1.00		LTG TRACK			1.00	83 A															
PANELBOARD NOTES																											
CIRCUITS IN /ITALICS = EXISTING LABELED LOAD TO REMAIN																											
SIGN/DISPLAY - SIGNAGE & DISPLAY CASE																											