ELECTRICAL LEGEND

Symbol	Description
	LIGHT FIXTURE DESIGNATION, FLOODLIGHT, SEE LIGHTING FIXTURE
A	LIGHT FIXTURE DESIGNATION, SEE LIGHTING FIXTURE SCHEDULE
	LIGHTING FIXTURE, SURFACE MOUNTED
	LIGHTING FIXTURE, RECESSED MOUNTED
	LIGHTING FIXTURE, WALL MOUNTED
	1 X 4 FLUORESCENT LIGHT FIXTURE.
$	TOGGLE SWITCH 120/277V. 20 AMP. ,(M.H. = 48" A.F.F.) , 3-WAY
$3	TOGGLE SWITCH 120/277V. 20 AMP. ,(M.H. = 48" A.F.F.) , 4-WAY
$4	TOGGLE SWITCH 120/277V. 20 AMP. ,(M.H. = 48" A.F.F.)
$K	TOGGLE SWITCH 120/277V. 20 AMP. KEYSWITCH ,(M.H. = 48" A.F.F.)
$F	FAN SWITCH 120/277V. 20 AMP, (HORSEPOWER RATED) ,(M.H. = 48" A.F.F.)
$JS	DOOR JAM SWITCH (DOOR ACTIVATED) 120/277V. 20 AMP. ,(M.H. = 48" A.F.F.)
$T	TOGGLE SWITCH 120/277V. 20 AMP. , WITH ,(M.H. = 48" A.F.F.) 10 MIN. TIME DELAY, RELAY BY MECH. CONT. INSTALLED BY E.C.
$L/F	FAN AND LIGHTING SWITCH 120/277V. 20 AMP ,(M.H. = 48" A.F.F.) , 3-WAY
$P	TOGGLE SWITCH 120/277V. 20 AMP. , WITH PILOT LIGHT ,(M.H.=48"A.F.F.)
$EX	TOGGLE SWITCH 120/277V. 20 AMP. EXPLOSION-PROOF
$S	SPEED SWITCH 120/277V. 20 AMP. U.O.N. ,(M.H. = 48" A.F.F.)
$M	SINGLE PHASE MANUAL MOTOR STARTER, (M.H. = 48" A.F.F.)
$D	DIMMER SWITCH 120/277V. 20 AMP., (M.H. = 48" A.F.F.)
	DUPLEX RECEPTACLE, 20 AMP., 125V., (M.H. = 18" A.F.F.)
	DUPLEX RECEPTACLE, 20 AMP., 125V., RECESS FLOOR MOUNTED
	DUPLEX RECEPTACLE, 20 AMP., 125V., CEILING MOUNTING.
	USB OUTLET, (M.H. = 18" A.F.F.)
	DUPLEX RECEPTACLE, 20 AMP., 125V., TOP HALF SWITCHED, M.H. = 18" A.F.F. UNLESS OTHERWISE NOTED
	DUPLEX RECEPTACLE, 20 AMP., 125V., ISOLATED GND. AND SURGE PROTECTED, (M.H. = 18" A.F.F.)
	SINGLE RECEPTACLE, 20 AMP., 125V., COORDINATE M.H. WITH DEDICATED EQUIPMENT
	FOUR-PLEX QUAD RECEPTACLE, 20A., 125V., (M.H. = 18" A.F.F.)
	SPECIAL PURPOSE OUTLET 220V 3/16.15/16. RANGE OUTLET, COORD. W/ EQUIPT.
	DUPLEX RECEPTACLE, 20 AMP., 125V., MOUNT ABOVE COUNTER
	30 AMP., 125V., TWIST LOCK RECEPTACLE FOR FLOOR POLISHING MACHINE
SH CLG.	LOW VOLTAGE MOTORIZED SHADE CONNECTION AND MOTOR
J	JUNCTION BOX, MOUNTING AS SHOWN
	GARAGE DOOR PUSH BUTTON SWITCH
	ELECTRIC MOTOR
	MOTOR STARTER
	COMBINATION MOTOR STARTER, TYPE AS DESIGNATED
	ELECTRICAL PANEL, SEE PANEL SCHEDULE SHEET(S) FOR DETAILS
— — —	EXISTING EQUIPMENT TO REMAIN
———	NEW EQUIPMENT OR WORK OF THIS PROJECT
P	SMOKE ALARM/CO SENSOR COMBINATION 120V WITH BATTERY BACK UP
	CIRCUIT BREAKER, TYPE AND SIZE AS PER DRAWINGS.
KP	LOW VOLTAGE LIGHTING KEYPAD
C	CLOCK
B	BELL
	TELEPHONE PORT FLOOR MOUNTED
	DUAL TELEPHONE OUTLET MOUNTED AT 18" A.F.F. USE CAT-5 W/1" STUB UP 6" ABOVE CEILING.
	DUAL TELEPHONE OUTLET MOUNTED AT 54" A.F.F. USE CAT-5 W/1" STUB UP 6" ABOVE CEILING.
	COMPUTER/DATA/TELEPHONE OUTLET MOUNTED AT 18" A.F.F. USE CAT-5. W/1" STUB UP 6" ABOVE CEILING.
TV	TELEVISION OUTLET (M.H. = 18" A.F.F.)
TX	LIGHTING TRANSFORMER

ABBREVIATIONS

A.C.	ABOVE COUNTER	G.F.I.	GROUND FAULT INTERRUPTER
A.F.	ARC FAULT	G.F.I./WR	GROUND FAULT INTERRUPTER WITH WEATHER RESISTANT WHILE IN USE TYPE COVER
A.F.F.	ABOVE FINISHED FLOOR	L.C.	LOCKABLE COVER
A.S.W.	ABOVE SHOW WINDOW RCPT.	M.H.	MOUNTING HEIGHT
B.F.C.	BELOW FINISHED CEILING	M.E.R.	MAIN ELECTRICAL ROOM
B.F.G.	BELOW FINISHED GRADE	N	NEW DEVICE
C.B.	CIRCUIT BREAKER	N.F.	NON FUSED
CL	CENTER LINE	NL	NIGHT LIGHT
D	DEDICATED FOR COMPUTER, PROVIDE DEDICATED GROUND AND NEUTRAL	T.C.	TERMINAL CABINET
EM	PROVIDE EMERGENCY BATTERY PACK W/FIXTURE, CONNECT AHEAD OF ALL SWITCHES.	T.S.	TIME SWITCH
FLR.	FLOOR	U.O.N.	UNLESS OTHERWISE NOTED
E	EXISTING DEVICE TO REMAIN	WP.	WEATHER PROOF
RL	EXISTING RELOCATED	WR.	WEATHER RESISTANT
		TX	TRANSFORMER.
		M.S.	MOTION SENSOR
		ATS.	AUTOMATIC TRANSFER SWITCH
		CLG.	CEILING
		RM	EXISTING TO BE REMOVED

ALL ELECTRICAL INSTALLATION SHALL COMPLY WITH NEC 110.11, 110.12, 110.28 AND 358.12.5

ELECTRICAL GENERAL NOTES

1. IT SHALL BE UNDERSTOOD THAT ALL WORK PERFORMED SHALL BE BY A LICENSED ELECTRICAL CONTRACTOR IN A FIRST CLASS WORKMANLIKE MANNER. SAID CONTRACTOR SHALL MEET ALL REQUIREMENTS SET FORTH BY ANY LOCAL ORDINANCE AND GOVERNING AUTHORITIES.
2. ENTIRE INSTALLATION SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, LATEST EDITION NEC 2020 AND THE LATEST EDITIONS OF ALL LOCAL CODES, RULES 2023, AND ORDINANCES HAVING JURISDICTION FBC 2023. , 8TH EDITION.
3. IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO PROVIDE ALL LABOR, MATERIALS, AND SUPERVISION NECESSARY TO ACCOMPLISH THE WORK SHOWN AND/OR NOTED ON THE DRAWINGS AND SPECIFICATIONS.
4. ALL REQUIRED INSURANCE SHALL BE PROVIDED FOR PROTECTION AGAINST PUBLIC LIABILITY AND PROPERTY DAMAGE FOR THE DURATION OF THE WORK.
5. ELECTRICAL CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO BID AND VERIFY ALL CONDITIONS, LOCATIONS, DIMENSIONS AND COUNTS AS SHOWN AND/OR NOTED ON THE DRAWINGS. THIS SHALL INCLUDE ANY AND ALL FABRICATIONS REQUIRED PRIOR TO INSTALLATION.
6. IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR FOR THE ADVANCED ORDERING OF LONG LEAD ITEMS SO AS NOT TO INTERFERE WITH THE PRODUCTION OF OTHER TRADES RESULTING IN ANY DOWN OR LAG TIME.
7. CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FREE FROM DEFECTS FOR A PERIOD OF NOT LESS THAN (1) YEAR FROM DATE OF ACCEPTANCE, UNLESS INDICATED OR SPECIFIED OTHERWISE.
8. CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ADDITIONAL CHARGE AND SHALL INCLUDE REPLACEMENT OR REPAIR OF ANY OTHER PHASE OF THE INSTALLATION WHICH MAY HAVE BEEN DAMAGED THEREBY.
9. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR TO ORIGINAL CONDITIONS ANY AND ALL DAMAGES TO BUILDING SURFACES, EQUIPMENT AND FURNISHINGS CAUSED DURING PERFORMANCE OF WORK.
10. ALL ELECTRICAL EQUIPMENT, DEVICES, WIRE, ETC., SHALL BE LISTED FOR THE INTENDED USE, WITH UNDERWRITER'S LABORATORIES, INC. (UL) WHERE STANDARDS HAVE BEEN ESTABLISHED BY UL. AS A MINIMUM, ALL EQUIPMENT SHALL MEET APPLICABLE STANDARDS FOR THE TYPE OF EQUIPMENT AND INTENDED USE OF THE FOLLOWING:
    A. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI).
    B. ILLUMINATING ENGINEERS SOCIETY (IES).
    C. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM).
    D. NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION (NEMA).

    NOTE:
    THESE STANDARDS ARE SUBORDINATE TO CODES AND STANDARDS SET BY UL.
11. IT SHALL NOT BE THE INTENT OF THESE PLANS AND/OR SPECIFICATIONS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. THE CONTRACTOR SHALL BE EXPECTED TO FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM AND PROVIDE ALL REQUIREMENTS NECESSARY FOR EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER.
12. ALL CONDUIT RUNS ARE SHOWN DIAGRAMMATICALLY. EXACT ROUTING SHALL BE DETERMINED IN THE FIELD, UNLESS OTHERWISE NOTED. THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL THE PROPER NUMBER OF CONDUCTORS IN ALL RACEWAYS AS REQUIRED TO ACCOMPLISH THE PROPER FUNCTIONING OF THE DEVICE OR EQUIPMENT AS SHOWN.
13. ELECTRICAL CONTRACTOR SHALL NOT SCALE DRAWINGS. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR EXACT LOCATIONS OF ALL EQUIPMENT UNLESS NOTED OTHERWISE.
14. THE ELECTRICAL CONTRACTOR SHALL KEEP ALL AREAS IN WHICH WORK IS BEING PER- FORMED, FREE FROM DEBRIS AT ALL TIMES AND SAID AREAS SHALL BE LEFT BROOM CLEAN AT THE END OF EACH WORKING DAY.
15. CONTRACTOR SHALL PAY FOR ALL PERMITS, FEES, INSPECTIONS, AND TESTING.
16. ARCHITECTURAL AND/OR ENGINEERING EXPENSES THAT ARE INCURRED DUE TO REVISIONS OR SUBSTITUTIONS REQUESTED BY THE CONTRACTOR SHALL BE PAID FOR BY THAT CONTRACTOR.
17. COORDINATE ALL ELECTRICAL SITE WORK WITH GENERAL CONTRACTOR PRIOR TO INSTALLATION.
18. FOR ELECTRIC POWER SYSTEM.
    A. COORDINATE POWER SERVICE WITH POWER COMPANY.
    B. VERIFY LOCATION OF POWER SERVICE TERMINATION WITH POWER COMPANY PRIOR TO SUBMITTING BID.
19. FOR TELEPHONE SYSTEM:
    A. PROVIDE GROUNDING FOR ALL TELEPHONE OUTLETS AND EQUIPMENT PER REQUIREMENTS OF TELEPHONE COMPANY.
    B. TELEPHONE CONDUITS SHALL NOT BE INSTALLED IN THE SAME TRENCH WITH POWER AND LIGHTING CONDUITS.
    C. MARK TERMINATIONS OF TELEPHONE CONDUIT AS DIRECTED BY TELEPHONE COMPANY.
    D. VERIFY LOCATION OF TELEPHONE SERVICE WITH TELEPHONE COMPANY, PRIOR TO SUBMITTING BID.
    E. USE EXTERIOR GRADE 3/4" PLYWOOD BACKBOARDS FOR MOUNTING TELEPHONE EQUIPMENT AND TERMINAL STRIPS. PAINT BOARD ON ALL SIDES AND EDGES WITH TWO COATS OF FLAT BLACK ASPHALT PAINT.
20. ALL CONDUCTORS SHALL BE IN CONDUITS. ALL CONDUITS SHALL BE GALVANIZED RIGID STEEL (GRS) EXCEPT THAT: (A) PVC CONDUITS MAY BE USED UNDERGROUND PROVIDED ELBOWS AND RISERS ARE GRS, WHERE SUBJECT TO PHYSICAL DAMAGE (B) ELECTRICAL METALLIC TUBING (EMT) MAY BE USED IN OR ON WALLS OR CEILINGS WHERE NOT SUBJECT TO ECHANICAL DAMAGE, DAMP OR CORROSIVE CONDITIONS, (C) LIQUID TIGHT FLEXIBLE CONDUIT WHERE REQUIRED, (D) FLEXIBLE METALLIC CONDUIT (MC CABLE W/GROUNDING CONDUCTOR), WHERE REQUIRED IN DRY LOCATIONS ONLY. ALL CONDUITS IN HAZARDOUS AREAS (PER NEC) SHALL MEET THE REQUIREMENTS OF NEC CHAPTER 5. CONTRACTOR MAY USE ROMEX (R) INDOOR IN DWELLING UNITS WHEN APPROVED BY EOR.
21. FOR UNDERGROUND ELECTRICAL CONDUITS, PROVIDE PULL BOXES, SUCH THAT NO SINGLE CONDUIT RUN HAS BENDS IN EXCESS OF 360. PULL BOXES SHALL BE SUITABLE AND APPROVED FOR THE INTENDED USE. WHERE CONDUITS PASS UNDERNEATH PAVED AREAS THEY SHALL BE RGS. WHERE UNDERGROUND CONDUITS ARE NOT EXPOSED TO MECHANICAL DAMAGE OR ARE NOT UNDER PAVED AREAS, THEY MAY BE SCHEDULE 40 PVC, BUT ALL CONDUIT RISERS SHALL BE RGS. RGS CONDUITS SHALL EXTEND A MINIMUM OF 18" BELOW GRADE.
22. APPLY BITUMASTIC COATING TO ALL METALLIC CONDUITS IN SLABS OR UNDERGROUND.
23. ALL CONDUCTORS SHALL BE COPPER U.O.N., TYPE THHN OR THWN INSULATION, RATED 75°C WET/DRY EXCEPT WHERE OTHERWISE REQUIRED BY U.L. OR CODES UNLESS OTHERWISE NOTED. MINIMUM WIRE SIZE SHALL BE #12 AWG EXCLUDING CONTROL WIRING.
24. WIRE WAYS SHALL BE SIZED AS REQUIRED, PER NEC, UNLESS OTHERWISE NOTED.
25. ALL ELECTRICAL EQUIPMENT SHALL BE RAINTIGHT (NEMA 4X) WHERE EXPOSED TO THE WEATHER. ALL FLEX CONDUITS CONNECTED TO SUCH EQUIPMENT SHALL BE LIQUID-TIGHT.
26. OUTLET BOXES SHALL BE PRESSED STEEL IN DRY LOCATIONS, CAST ALLOY WITH THREADED HUBS IN WET OR DAMP LOCATIONS AND SPECIAL ENCLOSURE FOR OTHER CLASSIFIED AREAS. PROPER PLASTER RINGS SHALL BE USED WITH OUTLET BOXES. PROPER COORDINATION BETWEEN ELECTRICAL SUBCONTRACTOR AND GENERAL CONTRACTOR FOR PLASTER RING INITIATION WILL BE REQUIRED. NO "GOOF" RINGS SHALL BE ALLOWED. ALL OUTLET BOXES SHALL BE SECURELY FASTENED.
27. ALL FACE PLATES SHALL BE WHITE DECORA UNLESS OTHER WISE INDICATED IN THE DRAWING.
28. MOTOR STARTERS SHALL BE MANUAL OR MAGNETIC, AS INDICATED OR REQUIRED, WITH OVERLOAD PROTECTION FOR EACH PHASE. ALL MOTOR SHALL BE EQUIPED WITH DISCONNECT MOTOR STARTER COMBINATION.
29. FURNISH AND INSTALL DISCONNECT SWITCHES AND WIRING FOR AIR CONDITIONING EQUIPMENT PER MANUFACTURER RECOMMENDATIONS. CONTROLS SHALL BE PROVIDED BY DIVISION 15. ELECTRICAL CONTRACTOR SHALL VERIFY CIRCUIT PROTECTIVE DEVICE RATING FOR EQUIPMENT PROVIDED PRIOR TO INSTALLATION.
30. DISCONNECT SWITCHES SHALL BE SIZED PER NEC TO ACCOMMODATE EQUIPMENT SERVED, INCLUDING REQUIRED FUSES, U.O.N. DISCONNECT SWITCHES SHALL BE HORSEPOWER RATED, HEAVY-DUTY TYPE.
31. FUSES SHALL BE CURRENT LIMITING, PER U.L., RATED 600 VOLTS, UNLESS OTHERWISE NOTED.
    A. NONTIME DELAY FUSES IN MAIN SWITCHES AND SWITCHES FEEDING PANELS.
    B. TIME DELAY FUSES FOR MOTOR AND A/C CIRCUITS.
32. CIRCUIT BREAKERS SHALL BE BOLT-ON U.O.I., INVERSE TIME-TYPE (THERMAL-MAGNETIC). TWO AND THREE-POLE CIRCUIT BREAKERS SHALL HAVE COMMON TRIP. ALL PANELBOARDS SHALL HAVE COPPER BUS.
33. UNLESS NOTED AS EXISTING, ALL EQUIPMENT, WIRING, DEVICES, ETC. SHALL BE NEW.
34. WHERE CORE DRILLING OF FLOOR/WALLS IS REQUIRED, CONTRACTOR SHALL SEAL OPENINGS WATERTIGHT AFTER UTILITIES HAVE BEEN INSTALLED. LOCATION OF CORED HOLES SHALL BE COORDINATED WITH LOCATION OF EQUIPMENT IN A MANNER TO BE CLEAN AND FUNCTIONAL. THE CONTRACTOR SHALL INSTALL ONLY ONE CONDUIT PER HOLE AND SEAL THE OPENING AROUND THE CONDUIT AS SPECIFIED.
35. PROVIDE FIRE RETARDANT U.L. APPROVED SEALANT ON ALL PENETRATIONS OF FIRE RATED PARTITIONS, WALLS AND STRUCTURAL SLABS. IT SHALL BE THE RESPON- SIBILITY OF THE ELECTRICAL CONTRACTOR TO VERIFY, PRIOR TO SUBMITTING BID, LOCATIONS OF ALL SUCH FIRE RATED PARTITIONS, WALLS, AND STRUCTURAL SLABS.
36. BALLASTS SHALL HAVE MIN. POWER FACTOR OF 0.90. BALLASTS FOR METAL HALIDE AND HIGH PRESSURE SODIUM FIXTURES SHALL BE CONSTANT WATTAGE TYPE WITH 5% LAMP WATTS FOR 10% NOMINAL LINE VOLTAGE VARIATION.
37. THE EQUIPMENT GROUNDING TERMINAL BARS OF THE NORMAL AND EMERGENCY ELECTRICAL SYSTEM PANELBOARDS SERVING THE SAME BUILDING SHALL BE BONDED TOGETHER WITH AN INSULATED, CONTINUOUS, COPPER CONDUCTOR NOT SMALLER THAN NUMBER 6.
38. PROVIDE LAMPS WITH FIXTURES, SEE LUMINAIRE SCHEDULE FOR LAMP TYPE. CONTRACTOR SHALL VERIFY EACH FIXTURE VOLTAGE PRIOR TO ORDERING.
39. ALL CONNECTIONS TO GROUND RODS & BUILDING STEEL SHALL BE MADE WITH U.L. APPROVED WELDED CONNECTIONS, UNLESS NOTED OTHERWISE. THE CONTRACTOR SHALL FORM A GROUNDING ELECTRODE SYSTEM AS PER NEC 250-50.
40. PROVIDE MOUNTING BACKBOARDS FOR ELECTRICAL AND COMMUNICATION EQUIPMENT. BACKBOARDS SHALL BE OF TYPE "AC" PLYWOOD, PAINTED ON BOTH SIDES AND EDGES WITH TWO COATS OF LIGHT GREY PAINT.
41. PROVIDE A FUSE HOLDER AND FUSE IN THE PRIMARY SIDE OF EACH UNGROUNDED CONDUCTOR FOR EACH BALLAST (BUSSMAN HEB AND FNQ OR EQUAL), AT THE HAND HOLE OF EACH EXTERIOR POLE MOUNTED LIGHTING FIXTURE OR J-BOX FOR WALL OR GROUND MOUNTED EXTERIOR FIXTURES.
42. PROVIDE TEMPORARY ELECTRICAL SERVICE FOR USE BY ALL TRADES DURING CON- STRUCTION AND REMOVE SAME AT COMPLETION OF PROJECT,
43. THE ELECTRICAL CONTRACTOR SHALL FURNISH A COMPLETE SET OF AS-BUILT DRAWINGS, SHOWING ALL CHANGES AND DEVIATIONS TO THE ARCHITECT/ENGINEER PRIOR TO COMPLETION OF THE PROJECT.
44. PREPARE AND AFFIX A TYPEWRITTEN DIRECTORY TO THE INSIDE COVER OF EACH PANELBOARD INDICATING LOADS SERVED BY EACH CIRCUIT AND PANEL FEEDING THE BOARD.
45. PROVIDE U.L. LISTED COMPOUND APPLIED TO BACK OF "BACK TO BACK" BOXES IN RATED WALLS WHERE THE BOXES ARE LESS THAN 24 INCHES APART MEASURED HORIZONTALLY.
46. NOT USED.
47. METER CANS, HUBS, & LUGS FOR SAME ARE TO BE FURNISHED & INSTALLED BY CONTRACTOR. CONTRACTOR TO VERIFY SPECIFIC TYPE OF METER CAN TO BE USED WITH F.P.L. PRIOR TO BID. ALL THREE PHASE METER AND COMMERCIAL USE SHALL HAVE LEVELER BY PASS AS PER FPL REQUIREMENTS
    A. PROVIDE A PERMANENT SIGN ON THE MAIN ELECTRICAL ROOM DOOR TO THE BLDG. STATING THAT THE SERVICE DISCONNECTS ARE LOCATED INSIDE.
    B. SIGNS SHALL BE PLACED AT THE MAIN DISCONNECT EQUIPMENT INDICATING TYPE AND LOCATION OF ON-SITE EMERGENCY POWER SOURCES.
    C. VOLTAGE AND SERVICE NUMBER SHALL BE INDICATED AT EACH DISCONNECT.
48. NOT USED.
49. THE CONTRACTOR SHALL SUBMIT 6 COPIES OF EQUIPMENT SHOP DRAWINGS FOR ELECTRICAL EQUIPMENT TO THE ENGINEER FOR REVIEW, PRIOR TO ORDERING SUCH EQUIPMENT.
50. ELECTRICAL SYSTEM COMPLIANCE WITH FBC ENERGY CONSERVATION CODE
    A. CONTRACTOR SHALL WITHIN 30 DAYS OF SYSTEM ACCEPTANCE PROVIDE RECORD DRAWIGNS TO THE OWNER.
    B. CONTRACTOR SHALL PROVIDE TO THE BUILDING OWNER OPERATION MANUAL AS PART OF THE SYSTEM ACCEPTANCE.
    C. THE MAXIMUM VOLTAGE DROP FOR FEEDER SHALL NOT EXCEED 2%.
    D. THE MAXIMUM VOLTAGE DROP FOR BRANCH CIRCUITS SHALL NOT EXCEED 3%.
    E. CONTRACTOR SHALL PROVIDE A MEANS OF SPACE LIGHTING CONTROL FOR ALL SPACES ENCLOSED BY CEILING HEIGHT PARTITIONS VIA MOTION SENSOR SET TO A MAXIMUM OF 30MIN. OF ALL OCCUPANTS LEAVING THE SPACE.
    F. CONTRACTOR SHALL PROVIDE FOR ALL OTHER SPACES, EACH CONTROL DEVICES SHALL BE ACTIVATED EITHER MANUALLY BY AN OCCUPANT OR AUTOMATICALLY AN OCCUPANT. EACH CONTROL DEVICE SHALL CONTROL A MAXIMUM OF 2500 SF AREA AND BE CAPABLE OF OVERRIDING ANY TIME OF DAY SCHEDULE SHUT OFF CONTROL FOR MORE THAN 4 HOURS.
51. ALL EMPTY CONDUITS SHALL BE PROVIDED WITH PULL STRING MARKED AT BOTH ENDS.
52. CONTRACTOR SHALL PROVIDE NEUTRAL TO ALL EQUIPMENT UON.
53. DOORS AND GATES CONTROL SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR.
54. CONTRACTOR SHALL PROVIDE TAMPER RESISTANT RECEPTACLES IN DWELLING UNITS AS REQUIRED BY NEC 406.12.
55. PROVIDE ARC FAULT PROTECTION TO ALL OUTLET LOCATED AT KITCHENS, FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DENS, BEDROOMS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS, LAUNDRY AREAS AND ALL OTHER SIMILAR ARE PER NEC 210.12.
56. ELECTRICAL CONTRACTOR IS RESPONSIBLE TO VERIFY AVAILABLE FAULT CURRENT WITH UTILITY COMPANY PRIOR TO EQUIPMENT ORDERING.
57. ALL OUTDOOR ILLUMINATION SHALL BE CONTROLLED VIA TIME SWITCH AND PHOTOCELL U.O.N. PROVIDE ASTRONOMICAL TIME SWITCH CAPABLE OF RETAINING PROGRAMMING AND THE TIME SETTING DURING LOSS OF POWER FOR A PERID OF AT LEAST 10 HOURS. AS PER FLORIDA BUILDING CODE EC C405.2.4. EXTERIOR LIGHTING CONTROL.
58. ON DWELLING UNITS WHEN MORE THAN 12 SMOKE ALARMS ARE TO BE CONNECTED TOGETHER. CONTRACTOR SHALL PROVIDE LOW VOLTAGE HOUSEHOLD FIRE ALARM SYSTEM AS PER NFPA72 SECTION 29.8.2.2.
59. ALL EXTERIOR LIGHT FIXTURES EXPOSED TO WEATHER. SHALL BE WEATHER PROOF.

    P FRAME FUSE
    POLE AS NOTED ON PLAN
    AS NOTED ON PLAN
    NF-NO FUSE
    * PROVIDE FUSE AS PER MANUFACTURER SPECIFICATION.
60. CONTRACTOR SHALL PROVIDE J-BOX AHEAD OF EACH FIXTURE TO COMPLY WITH NEC 410.21 UNLESS FIXTURE IS RATED FOR FEED THRU.
61. ALL ELECTRICAL EQUIPMENT TO BE INSTALLED 1FT. ABOVE BASE FLOOD ELEVATION.
62. ALL LIGHTING ON THERMAL ENVELOPE SHALL BE IC RATED AND MEETING ASTM E 283 FOR LEAKAGE LABELED AIR TIGHT AND HOUSING SHALL BE SEALED WITH A GASKET OR CAULK TO CEILING OR WALL.
63. RESIDENTIAL STAIR ILLUMINATION MUST BE MINIMUM 1FC. INTERIOR AND EXTERIOR OF HOUSE. FBC R 303.7 AND FBC R 303.8.
64. PROVIDE ARC FLASH HAZARD SIGNAGE ON ALL ELECTRICAL EQUIPMENT PER NEC 110.16
65. ALL PANEL TO BE FULLY RATED TO MATCH KAIC AS LISTED ON PANELS. SYSTEM NOT DESING AS SERIES RATED PANELS.
66. ELECTRICAL CONTRACTOR IS RESPONSIBLE TO PROVIDE SHOP DRAWING PRIOR TO ORDERING ELECTRICAL GEAR IN ORDER TO VERIFY AVAILABLE FAULT CURRENT.
67. NO LESS THAN 90% OF ALL LIGHTING FIXTURES SHALL HAVE AN EFFICACY OF AT LEAST 45 LUMENS PER WATT (LED) OR NOT LESS THAN 65 LUMENS PER WATT AND SHALL COMPLY WITH FBC 2023 ENERGY CONSERVATION SECTION CHAPTER IV. FBC E R404.1 AND C405.1 2023 FBCEC.
68. ELECTRICAL INSTALLATION MUST COMPLY WITH 250.140 FRAMES OF RANGES AND CLOTHES DRYERS. FRAMES OF ELECTRIC RANGES, WALL-MOUNTED OVENS, COUNTER-MOUNTED COOKING UNITS, CLOTHES DRYERS, AND OUTLET OR JUNCTION BOXES THAT ARE PART OF THE CIRCUIT FOR THESE APPLIANCES SHALL BE CONNECTED TO THE EQUIPMENT GROUNDING CONDUCTOR IN THE MANNER SPECIFIED BY 250.134 OR 250.138.
69. CONTRACTOR SHALL PROVIDE A GROUND CONDUITS (NEUTRAL) AT LIGHTING SWITCHES OUTLETS AS PER NEC 404.2(C).
70. PHOTOVOLTAIC SYSTEMS. INSTALLATION OF AN APPROPRIATE SIZED CONDUIT, A MINIMUM OF ONE-INCH DIAMETER, LEADING FROM AN EXTERIOR SOUTH-FACING, EAST-FACING, OR WEST-FACING ROOF, WHERE A MINIMUM OF FOUR HOURS OF DIRECT SUNLIGHT IS ACHIEVED, TO A STUBBED JUNCTION BOX ADJACENT TO THE ELECTRICAL METER. ALL EXPOSED CONDUIT SHALL BE CAPPED AND PROVIDED WITH ADEQUATE FLASHING. THE CONDUIT SHALL NOT BE LOCATED ON OR IN THE DIRECTION OF A NORTH FACING ROOF. ROOF REINFORCEMENTS SHALL BE ADDRESSED AT THE TIME OF INSTALLATION.

EMERGENCY GENERATOR NOTES

1. SPECIFICATION:
   IT IS THE INTENT OF THIS SPECIFICATION TO SECURE AN EMERGENCY GENERATOR SYSTEM THAT HAS BEEN PROTOTYPE TESTED, FACTORY BUILT, PRODUCTION TESTED, SITE TESTED, OF THE LATEST COMMERCIAL DESIGN, TOGETHER WITH ALL ACCESSORIES NECESSARY FOR A COMPLETE INSTALLATION AS SHOWN ON THE PLANS AND DRAWINGS, AND SPECIFICATIONS HEREIN. THE EQUIPMENT SUPPLIED AND INSTALLED SHALL MEET THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE, ALONG WITH ALL APPLICABLE LOCAL CODES AND REGULA- TIONS. ALL EQUIPMENT SHALL BE NEW, OF CURRENT PRODUCTION OF A NATIONAL FIRM WHICH MANUFACTURES THE GENERATOR AND CONTROLS, TRANSFER SWITCH, AND ASSEMBLES THE STANDBY GENERATOR SETS AS A MATCHED UNIT SO THAT THERE IS ONE-SOURCE RESPONSIBILITY FOR WARRANTY, PARTS, AND SERVICE THROUGH A LOCAL REPRESENTATIVE WITH FACTORY-TRAINED SERVICEMEN.
2. SUBMITTAL
   SUBMITTAL SHALL INCLUDE PROTOTYPE TEST CERTIFICATION AND SPECIFICATION SHEETS SHOWING ALL STANDARD AND OPTIONAL ACCESSORIES TO BE SUPPLIED, SCHEMATIC WIRING DIAGRAMS, DIMENSION DRAWINGS, AND INTERCONNECTION DIAGRAMS IDENTIFYING EACH REQUIERED INTERCONNECTION BETWEEN GENERATOR SET, THE TRANSFER SWITCH, AND THE REMOTE ANNUNCIATOR PANEL.
3. TESTING
   THERE SHALL BE THREE TEST: A DESIGN PROTOTYPE TEST, FINAL PRODUCTION TEST, AND SITE TEST. PROTOTYPE TEST PROGRAMS SHALL INCLUDE THE REQUIEREMENTS OF NFPA 110 AND THE FOLLOWING: MAXIMUM KW; MAXIMUM MOTOR STARTING(KVA) AT 30% INSTANTANEOUS VOLTAGE DIP; ALTERNATOR TEMPERATURE RISE BY EMBEDDED THERMOCOUPLE AND RESISTANCE METHOD PER NEMA MG1-22.40 AND 16.40; GOVERNER SPEED REGULATION UNDER S.S. AND TRANSIENT CONDITIONS; VOLTAGE REGULATION AND GENERATOR TRANSIENT RESPONSE; FUEL CONSUMPTION AT .25, .50, .75, AND FULL LOAD; COMPLETE HARMONIC ANAL- YSIS; SINGLE PHASE SHORT CIRCUIT TEST; ALTERNATOR COOLING AIR FLOW; TORSIONAL ANALYSIS TESTING TO VERIFY THAT THE GENERATOR SET IS FREE OF HARMFUL TORSIONAL STRESSES; ENDURANCE TESTING; COMPLETE FINAL PRODUCTION TEST WITH VARIOUS LOADS AND EXHAUST SYSTEM IN PLACE. TEST SHALL INCLUDE: SINGLE STEP PICKUP; TRANSIENT AND STEADY STATE GOVERNING, SAFETY SHUTDOWN DEVICE TESTING; VOLTAGE REGULATION; RATED POWER; MAXIMUM POWER; SITE TEST: AN INSTALLATION CHECK, START-UP, AND BUILDING LOAD TEST SHALL BE PER- FORMED BY THE MANUFACTURER'S LOCAL REPRESENTATIVE. THE ENGINEER, REGULAR OPERATORS AND THE MAINTENANCE STAFF SHALL BE NOTIFIED OF THE TIME AND DATE OF THE SITE TEST. THE TEST SHALL INCLUDE: FUEL, LUBRICATING OIL, AND ANTIFREEZE SHALL BE CHECKED FOR CONFORMITY TO THE MANUFACTURER'S RECOMMENDATIONS, UNDER THE ENVIROMENTAL CONDITIONS PRESENT AND EXPECTED. ACCESSORIES CHECK SHALL IN- CLUDE, BUT NOT BE LIMITED TO, BLOCK HEATERS, BATTERY CHARGER, GENERATOR STRIP HEATERS, REMOTE ANNUNCIATOR; UNDER START-UP MODE: CHECK FOR EXHAUST LEAKS, PATH OF EXHAUST PASSES AWAY FROM THE BUILDING, COOLING AIR FLOW, MOVEMENT DURING STARTING AND STOPPING, VIBRATION DURING RUNNING, NORMAL AND EMERGENCY LINE-TO- LINE VOLTAGE, AND PHASE ROTATION. AUTOMATIC START-UP TEST BY MEANS OF SIMULATED POWER OUTAGE TO TEST REMOTE-AUTOMATIC STARTING, TRANSFER OF THE LOAD, AND AUTO- MATIC SHUTDOWN. PRIOR TO THIS TEST, ALL TRANSFER SWITCH TIMERS SHALL BE SET FOR PROPER SYSTEM COORDINATION. ENGINE COOLANT TEMPERATURE, OIL PRESSURE, AND BATTERY CHARGE LIVEL ALONG WITH GENERATOR VOLTAGE, AMPERES, AND FREQUENCY SHALL BE MONITORED THROUGHOUT THE TEST. TN EXTERNAL LOAD BANK SHALL BE CON- NECTED TO THE SYSTEM IF SUFFICIENT BUILDING LOAD IS UNAVAILABLE TO LOAD THE GENE- RATOR TO THE NAMEPLATE KW RATING.
4. WARRANTY AND MAINTENANCE
   THE EMERGENCY GENERATOR SYSTEM SHALL BE WARRANTED BY THE MANUFACTURER FOR ONE YEAR OR 2,000 HOURS, WHICHEVER COMES FIRST, FROM THE DATE OF FINAL ACCEP- TANCE. OPTIONAL TWO YEAR AND FIVE YEAR WARRANTIES SHALL BE AVAILABLE UPON RE- QUEST. THE SERVICE CONTRACT SHALLINCLUDE THE FURNISHING OF FACTORY TRAINED PERSONNEL AND MAINTAIN A 24-HOUR PARTS AND SERVICE CAPABILITY AND SHOW AT TIME OF SUBMITTAL THAT THEY ARE REGULARLY ENGAGED IN A MAINTENANCE CONTRACT PROGRAM TO SEMI-ANNUALLY INSPECT AND TEST RUN THE ENGINE TO PERFORM MANUFAC- TURERS RECOMMENDED PREVENTIVE MAINTENANCE SERVICE ON THE EQUIPMENT FURNISHED. THIS SERVICE CONTRACT SHALL INCLUDE OPERATION OF THE EQUIPMENT UNDER SIMULATED POWER FAILURE CONDITIONS, ADJUSTMENT OF GENERATOR AND TRANSFER SWITCH CONTROLS AS REQUIRED AND CERTIFICATION IN THE OWNER'S MAINTENANCE LOG OF REPAIRS MADE AND PROPER FUNCTIONING OF ALL ENGINE AND AUXILIARY SYSTEMS. THIS SERVICE CON- TRACT SHALL BE PROVIDED AT NO ADDITIONAL CHARGE FOR A PERIOD OF TWO YEARS FROM THE DATE OF FINAL ACCEPTANCE. AT THE OWNER'S OPTION, THE SERVICE CONTRACT SHALL BE RENEWABLE ON A YEAR-TO-YEAR BASIS THEREAFTER WITH COSTS BEING PAID BY THE OWNER.
5. ACCEPTABLE MANUFACTURERS SHALL BE LIMITED TO THE FOLLOWING:
   KOHLER, KATOLIGHT, GENERAC OR ONAN.

FOR THIS PROJECT THE EMERGENCY GENERATOR SHALL BE A 60KW LP GAS GENERATOR AS SHOWN ON CUT SHEET, 60KW KOHLER 60RCLB 120/240V 1ø 3W STANDBY, ALTERNATOR WITH AUTOMATIC TRANSFER SWITCH. KOHLER MODEL#KEP, 600A 120/240V 1ø, NEMA3R. PROVIDE LP GAS CONNECTION PIPE SIZED AS PER MANUFACTURE REQUIREMENTS.

ACCESSORIES: RESIDENTIAL GRADE SILENCER EXHAUST CAP, BATTERY, BATTERY RACK AND CABLES, FULL WEATHERPROOF ENCLOSURE, EQUALIZE/FLOAT TYPE CHARGER, HEAVY DUTY AIR CLEANER, OIL DRAIN KIT, AIR CLEANER RESTRICTION INDICATOR, SPRING ISOLATORS, 1% VOLTAGE REGULATION, DECISION MONITOR, OVER- VOLTAGE PROTECTION, PRE-HIGH ENGINE TEMPERATURE SENDER AND LAMP, PRE-OIL PRESSURE SENDER AND LAMP, AND LOW WATER LEVEL SENDER AND LAMP. THE COMPLETE INSTALLATION SHALL COMPLY WTIH NFPA 37. CONTRACTOR TO INSTALL EXHAUST PIPE FOR A COMPLETE INSTALLATION. INSULATE ALL EXHAUST PIPPING AND MUFFLER WITH 2" OF CALCIUM SILICATE.

KOHLER. **Model: 60RCLB**

Multi-Fuel LPG/Natural Gas

ISO 9001 KOHLER NATIONALLY REGISTERED

The Kohler® Advantage

- **High Quality Power**
  Kohler generators provide advanced voltage and frequency regulation along with ultra-low levels of harmonic distortion for excellent generator power quality to protect your valuable electronics.
- **Fast Response**
  Kohler's Fast-Response® X excitation system delivers excellent voltage response and short-circuit capability using a rare-earth permanent magnet (PM)-excited alternator.
- **Quiet Operation**
  Kohler home generators provide quiet, neighborhood-friendly performance.
- **Premium 5-year/2000 hr Limited Warranty Included**
  Kohler is known for extraordinary reliability and performance. Kohler's premium limited warranty covers parts, labor, and travel for the full warranty period.
- **Aluminum Enclosure**
  Attractive aluminum enclosure allows installation as close as 18 inches from your home or small business. Optional 291 kph (181 mph) wind-load-rated enclosure door kit is available for field installation.

Standard Features

- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The generator set accepts rated load in one step.
- A premium 5-year/2000-hour limited warranty covers all systems and components.
- Quick-ship (QS) models with selected features are available. See your Kohler dealer for details.
- GFCI service outlet installed on the junction box.
- RDC2 Controller
  - One digital controller manages both the generator set and transfer switch functions (with optional Model RXT ATS).
  - Designed for today's most sophisticated electronics.
  - Electronic speed control responds quickly to changing demand.
  - Digital voltage regulation protects your valuable electronics from harmonic distortion and unstable power quality.
  - OnCue® Plus Generator Management System for remote monitoring is included with the generator.
- Engine Features
  - Powerful and reliable Kohler 6.2L liquid-cooled engine
  - Electronic engine management system.
  - Simple field conversion between natural gas and LP vapor fuels while maintaining emission certification. (Optional dual fuel automatic changeover kit is available.)
- Innovative Cooling System
  - Electronically controlled fan speeds minimize generator set sound signature.
- Approved for stationary standby applications in locations served by a reliable utility source.
- Certifications
  - The 60 Hz generator set engine is certified by the Environmental Protection Agency (EPA) to conform to the New Source Performance Standard (NSPS) for stationary spark-ignited emissions.
  - cUL/UL listing, CSA certification standard are available.
  - Accepted by the Massachusetts Board of Registration of Plumbers and Gas Fitters.
  - Meets NFPA 37 requirements for 18 in. offset for installation.

Generator Set Ratings

				Standby Ratings Natural Gas		Standby Ratings LPG		Line Circuit Breaker	
Alternator	Voltage	Ph	Hz	kW/kVA	Amps	kW/kVA	Amps	Amps	Poles
4P10X	120/240*	1	60	58/58	242	60/60	250	—	—
	120/208	3	60	60/75	209	60/75	209	225	3
	127/220*	3	60	60/75	197	60/75	197	—	—
	120/240	3	60	60/75	181	60/75	181	200	3
	277/480	3	60	60/75	91	60/75	91	100	3
4Q10X	120/240	1	60	58/58	242	60/60	250	250	2

* Voltage configuration not available from the factory. Field-adjustable by an authorized service technician.
† 50 Hz options are available. Contact your Customer Service representative.

RATINGS: All three-phase units are rated at 0.8 power factor. All single-phase units are rated at 1.0 power factor. *Standby Ratings:* Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Ratings are in accordance with ISO-8528-1 and ISO-3046-1. Obtain technical information bulletin TIB-101 for ratings guidelines, complete ratings definitions, and site condition derates. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever. Availability is subject to change without notice. Contact your local Kohler generator dealer for availability.
G4-307 (60RCLB) 2/23b

KOHLER. **Model: KEP**

Automatic Transfer Switches Service Entrance Rated

Controller

- Decision-Maker® MPAC 1500

Ratings

Power Switching Device	Current	Voltage, Frequency
Molded case (MCCB)	200	208-240 VAC 60 Hz
	100-1200	208-480 VAC 60 Hz
Insulated Case (ICCB)	800-4000	208-480 VAC, 60 Hz

Transfer Switch Standard Features

Enclosed Contact Power Switching Units

- Service entrance automatic transfer switches incorporate an isolating mechanism and overcurrent protection on the utility supply, eliminating the need to have a separate, upstream utility source circuit breaker/disconnect switch.
- UL 1008 listed, file #58962
- IBC seismic certification available
- Fully enclosed silver alloy contacts provide high withstand rating.
- 3-cycle short circuit current withstand-tested in accordance with UL 1008
- Completely separate utility and generator set power switching units provide redundancy (no common parts) and are easy to service.
- Utility disconnect power switching units have overcurrent protection; generator disconnect is available with or without overcurrent protection:
  - Molded case circuit breakers (MCCB) include thermal-magnetic or electronic trip overcurrent protection (80% rated).
  - Molded case switches (MCSW) do not include overcurrent protection (100% rated) (available on generator disconnect only).
  - Insulated case circuit breakers (ICCB) include electronic trip overcurrent protection (100% rated).
  - Insulated case switches (ICSW) do not include overcurrent protection (100% rated) (available on generator disconnect only).
- Inherent stored-energy design prevents damage if manually switched while in service.
- Heavy duty brushless gear motor and operating mechanism provide mechanical interlocking and extreme long life with minimal maintenance.
- Safe manual operation permits easy operation even under adverse conditions.
- All mechanical and control devices are visible and readily accessible.
- Padlockable service disconnect control switch
- Status indicators
- Two-position control circuit isolation switch disconnects utility power to the transfer switch controller.
- Load shed (Forced transfer from Emergency to OFF). (Customer-supplied signal [contact closure] is required for the forced transfer to OFF function.)
- NEMA 1, 3R, 4X and 12 enclosures are available.

Service Disconnect Switch

- Service disconnect to OFF position
- Two-position switch with padlockable cover disconnects the normal and emergency sources.
- Controller display shows Service Disconnected and the NOT IN AUTO LED flashes.
- Lamp illuminates to indicate that the switch is in the DISCONNECT position.

This item has been digitally signed and sealed by Amarilis Rodriguez, PE, on ________. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

JOB# 24-0407

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Amarilis Rodriguez, P.E.
License Number 60236
Signature
Date

Date: 2024.06.18 12:19:43 -04'00'

ELECTRICAL NOTES & DETAILS

SCALE: NTS

NOTES

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Coral Gables, Florida 33146
Tel (305) 740-0120
Email locus@locusarchitecture.net
License AR 13937

CONSULTANT(S)

NO.	REVISION/SUBMISSION	DATE
	OWNER REVIEW	03-11-24
	PERMIT SUBMITTAL	06-07-24

PROJECT

New 2-Story Residence:
6100 W Suburban Dr. Pinecrest, Fl 33156

DRAWING

Electrical Notes & Details

SEAL

Nelson de Leon
AR 13937

SCALE: As Shown
DRAWN
REVIEWED
PROJ. NO.: 351

SHEET NO.

E-04.2