

ELECTRICAL SPECIFICATIONS

GENERAL REQUIREMENTS:

- 1. INSTALLATION STANDARDS AND PRACTICES
A. COORDINATE AND COMPLY WITH SPECIFICATIONS AND REQUIREMENTS IN ARCHITECTURAL PLANS, MECHANICAL PLANS AND IN CONTRACT FOR CONSTRUCTION.
B. FURNISH ALL LABOR, EQUIPMENT, SUPPLIES AND MATERIALS AND PERFORM ALL OPERATIONS INCLUDING EXCAVATIONS AND BACK FILLING, CUTTING, CHANNELING AND CHASING NECESSARY FOR THE INSTALLATION OF COMPLETE SYSTEMS.
C. PERFORM ALL WORK IN ACCORDANCE WITH THE RULES AND REGULATIONS OF ALL APPLICABLE, MUNICIPAL, STATE, AND OTHER LOCAL CODES, AND THE VERSION OF THE NATIONAL ELECTRICAL CODE ADOPTED BY THE JURISDICTION.
D. ALL WORK SHALL BE PERFORMED IN A WORKMANLIKE MANNER, IN CONFORMANCE WITH MANUFACTURERS INSTALLATION INSTRUCTIONS AND INDUSTRY PRACTICES.
E. SECURE ALL NECESSARY PERMITS, LICENSES AND INSPECTIONS AND PAY ALL FEES AND CHARGES.
F. COORDINATE AND SCHEDULE SHUTDOWNS OF ELECTRIC SERVICE, FEEDERS AND CIRCUITS AROUND THE NEEDS OF THE OWNER OF THE FACILITY.
G. PROVIDE TEMPORARY POWER AS REQUIRED FOR CONSTRUCTION.
H. THE GENERAL ARRANGEMENT OF CONDUIT, WIRING AND EQUIPMENT SHALL BE AS SHOWN ON THE CONTRACT DRAWINGS, WITHOUT SUBSTANTIAL ALTERATION. THE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND DUE TO THE SMALL SCALE OF THE DRAWINGS, ALL OFFSETS, FITTINGS AND ACCESSORIES ARE NOT INDICATED. ENGINEER AND OWNER RESERVE THE RIGHT TO MAKE REASONABLE CHANGES IN LOCATION OF DEVICES, EQUIPMENT, AND ROUTING OF CONDUIT UP TO THE TIME OF RIGGING AT NO ADDITIONAL COST.
I. THE CONTRACTOR SHALL VISIT THE SITE AND OBSERVE EXISTING CONDITIONS INCLUDING STRUCTURAL, FINISH AND OTHER CIRCUMSTANCES THAT AFFECT THE COMPLETION OF THE WORK. ACCOMMODATE WORK ACCORDINGLY AT NO ADDITIONAL COST TO THE OWNER.
J. REFER TO MECHANICAL PLANS FOR EXACT LOCATIONS OF MECHANICAL EQUIPMENT AND CONTROL WIRING REQUIREMENTS. IN GENERAL, CONTROL AND INTERLOCK WIRING FOR HVAC SYSTEMS IS UNDER DIVISION 15. CONTRACTOR SHALL CAREFULLY REVIEW THE CONTRACT DOCUMENTS AND COORDINATE EXCLUSIONS WITH OTHER TRADES.
K. REMOVE ALL LIGHTING FIXTURES, RECEPTACLES, ETC., IN THE EXISTING SPACE THAT INTERFERE WITH THE NEW CONSTRUCTION AND AS SHOWN ON THE DRAWINGS. REMOVE ALL CONDUCTORS BACK TO THE CLOSEST ACCESSIBLE JUNCTION POINT. MAINTAIN CONTINUITY OF CIRCUITRY TO ANY DEVICES WHICH ARE TO REMAIN AS PART OF A NON-AFFECTED WARD OR PARTITION. CONTRACTOR SHALL CONFIRM WITH OWNER WHETHER OR NOT REMOVED LIGHTS ARE TO BE TURNED OVER TO OWNER STOCK.
L. INDIVIDUAL HOME RUNS ARE SHOWN FOR CLARITY ONLY. E.C. CAN COMBINE THEM TOGETHER PER N.E.C. MULTIWIRE CIRCUITS WITH COMMON NEUTRALS SHALL HAVE BREAKER HANDLE TIES.
M. THE CONTRACTOR SHALL STUDY THE ARCHITECTURAL AND ELECTRICAL DRAWINGS AND COORDINATE EXACT LOCATIONS OF THE VARIOUS ELECTRICAL DEVICES WITH DOOR SWINGS, GLASS PARTITIONS, ETC.
N. MANUFACTURERS AND MODEL NUMBERS INDICATED ON THE CONTRACT DRAWINGS SHALL BE FOR REFERENCE ONLY. VERIFY ALL MANUFACTURERS, DISCONNECT SWITCHES, WIRING DEVICES, WIRE AND CABLE RATING, FA EQUIPMENT AND ALL OTHER EQUIPMENT AND MATERIALS SPECIFIED. PREPARE AND SUBMIT SHOP DRAWINGS AND/OR DIAGRAMS FROM ALL SPECIALLY FABRICATED ITEMS, MODIFICATIONS TO STANDARD ITEMS AND SYSTEMS WHERE DETAILED DESIGN IS NOT SHOWN ON THE CONTRACT DRAWINGS OR WHERE THE PROPOSED INSTALLATION DIFFERS FROM THAT SHOWN ON THE CONTRACT DRAWINGS. SHOP DRAWINGS SHALL INCLUDE PLANS, ELEVATIONS, SECTIONS, MOUNTING DETAILS OF COMPONENT PARTS, POINT TO POINT INTERCONNECTIONS DIAGRAMS, SINGLE LINE DIAGRAMS AND OTHER DRAWINGS NEEDED TO FULLY DESCRIBE THE FUNCTION, FABRICATION AND CONNECTION OF THE SYSTEM.
O. ANY EXISTING FEEDERS THAT ARE REUSED OR MODIFIED AS A RESULT OF THE CONTRACT DRAWINGS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO BIDDING. WAIVER OF RESPONSIBILITY OR REQUESTS FOR ADDITIONAL PAYMENT BASED ON LACK OF KNOWLEDGE OF CONDITIONS AT THE SITE WILL NOT BE ACCEPTED.

- 2. SUBMITTALS:
A. THE CONTRACTOR SHALL PREPARE AND SUBMIT CATALOG CUTS, SPECIFICATION SHEETS, DESCRIPTIVE DATA, ETC., FOR PANELBOARDS, DISCONNECT SWITCHES, WIRING DEVICES, WIRE AND CABLE RATING, FA EQUIPMENT AND ALL OTHER EQUIPMENT AND MATERIALS SPECIFIED. PREPARE AND SUBMIT SHOP DRAWINGS AND/OR DIAGRAMS FROM ALL SPECIALLY FABRICATED ITEMS, MODIFICATIONS TO STANDARD ITEMS AND SYSTEMS WHERE DETAILED DESIGN IS NOT SHOWN ON THE CONTRACT DRAWINGS OR WHERE THE PROPOSED INSTALLATION DIFFERS FROM THAT SHOWN ON THE CONTRACT DRAWINGS. SHOP DRAWINGS SHALL INCLUDE PLANS, ELEVATIONS, SECTIONS, MOUNTING DETAILS OF COMPONENT PARTS, POINT TO POINT INTERCONNECTIONS DIAGRAMS, SINGLE LINE DIAGRAMS AND OTHER DRAWINGS NEEDED TO FULLY DESCRIBE THE FUNCTION, FABRICATION AND CONNECTION OF THE SYSTEM.

- 3. CUTTING AND PATCHING: ALL CUTTING AND PATCHING NECESSARY FOR THE INSTALLATION OF THE ELECTRICAL WORK SHALL BE DONE BY THE ELECTRICAL CONTRACTOR. ANY DAMAGE DONE TO THE WORK ALREADY IN PLACE BY REASON OF THIS WORK SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE. PATCHING SHALL BE UNIFORM IN APPEARANCE AND SHALL MATCH WITH THE SURROUNDING SURFACE.

- 4. IDENTIFICATION: PERMANENTLY IDENTIFY ALL MOTOR STARTERS, DISCONNECT SWITCHES, CONTROLS, PANELBOARDS, TERMINAL BOARDS, TRANSFORMERS AND OTHER EQUIPMENT IN ACCORDANCE WITH THE PROJECT NOMENCLATURE. IDENTIFICATION PLATES SHALL BE LAMINATED PLASTIC, BLACK WITH WHITE ENGRAVED LETTERS. UNLESS OTHERWISE INDICATED, USE 1/2" HIGH LETTERING. LETTERING FOR CONTROL CENTERS, CONTROL PANELS, METERING AND INSTRUMENT PANELS SHALL BE 3/8" HIGH. ATTACH IDENTIFICATION PLATES WITH CORROSION RESISTANT PHILLIPS HEAD STEEL SCREWS OR ADHESIVE APPROVED FOR THE PURPOSE.

- 5. HAZARDOUS MATERIALS: ENGINEER HAS NOT INVESTIGATED OR MADE ANY CONSIDERATION FOR THE POSSIBLE PRESENCE OF HAZARDOUS MATERIALS. IN THE EVENT THAT CONTRACTOR DISCOVERS POTENTIAL OR PRESUMED HAZARDOUS MATERIALS, THE OWNER SHALL BE IMMEDIATELY NOTIFIED AND SUCH MATERIALS SHALL NOT BE DISTURBED PENDING DIRECTION FROM OWNER.

- 6. RECORD DRAWINGS: UPON COMPLETION OF THE ELECTRICAL INSTALLATION, THE CONTRACTOR SHALL DELIVER TO THE OWNER ONE (1) SET OF PRINTS OF THE ELECTRICAL CONTRACT DRAWINGS WHICH SHALL BE LEGIBLY MARKED IN ERASABLE RED PENCIL TO SHOW ALL CHANGES AND DEPARTURES OF THE INSTALLATION AS COMPARED WITH THE ORIGINAL DESIGN. THEY SHALL BE SUITABLE FOR USE IN PREPARATION OF RECORD DRAWINGS.

- 7. TESTS: FURNISH ALL LABOR, MATERIALS, INSTRUMENTS, FUEL AND POWER REQUIRED TO PERFORM ALL NECESSARY TESTS. PERFORM TESTS ACCORDING TO NEMA STANDARDS. ALL DEFECTIVE MATERIALS AND/OR WORKMANSHIP DISCOVERED AS A RESULT OF TESTS SHALL BE REPLACED AT NO EXPENSE TO THE OWNER AND THE TEST SHALL BE REPEATED. A THOROUGH TEST SHALL BE MADE TO DEMONSTRATE THAT THE SYSTEM IS FREE FROM GROUND FAULTS, SHORT CIRCUITS, AND OPEN CIRCUITS, THAT THE RESISTANCE TO GROUND OF ALL NON-GROUNDED CIRCUITS, BEFORE AND AFTER CONNECTION OF EQUIPMENT MEETS THE REQUIREMENTS OF THE NEC.

- 8. GUARANTEE: THE MATERIAL AND WORKMANSHIP OF ALL PARTS OF THE ELECTRICAL INSTALLATION SPECIFIED HEREIN SHALL BE GUARANTEED UNCONDITIONALLY FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE AGAINST MECHANICAL AND ELECTRICAL DEFECTS ARISING FROM FAULTY MATERIALS OR WORKMANSHIP. EITHER REPLACEMENT OR REPAIRS SHALL BE MADE PROMPTLY ON ANY DEFECTIVE MATERIALS OR WORKMANSHIP WITHOUT CHARGE DURING THAT PERIOD.

ELECTRICAL MATERIALS AND METHODS:

- 1. MATERIALS - GENERAL:
A. ALL MATERIALS SHALL BE NEW AND SUITABLE FOR THE CONDITIONS AND DUTIES IMPOSED ON THEM AFTER INSTALLATION. ALL SUCH MATERIAL SHALL BE AS FOUND IN THE APPROVED LIST OF THE NATIONAL BOARD OF FIRE UNDERWRITERS. ALL EQUIPMENT AND SYSTEMS SHALL BE UL APPROVED.
B. WHERE MATERIAL OR EQUIPMENT IS IDENTIFIED BY PROPRIETARY NAME, MODEL NUMBER AND/OR MANUFACTURER, FURNISH THE ITEM OR EQUAL THEREOF, SUBJECT TO ACCEPTANCE BY THE ENGINEER. SUBSTITUTED ITEMS SHALL BE EQUAL OR BETTER IN QUALITY AND PERFORMANCE AND BE SUITABLE FOR THE AVAILABLE SPACE, REQUIRED ARRANGEMENT AND APPLICATION. SUBMIT ANY AND ALL DATA NECESSARY TO DETERMINE THE SUITABILITY OF SUBSTITUTED ITEMS.

- 2. CONDUITS AND FITTINGS:
A. GENERAL:
a. ALL WIRING IN METAL RACEWAY, PROVIDE CABLES AND PROVIDE EMPTY CONDUIT FOR SPACE INCLUDING BUS FOR FUTURE INSTALLATION OF CIRCUIT BREAKERS.
b. MINIMUM CONDUIT SIZE SHALL BE 3/4" AND 1" FOR UNDERGROUND CONDUITS.
c. IN FINISHED AREAS, INSTALL ALL RACEWAYS CONCEALED UNLESS OTHERWISE INDICATED. IF MC CABLE IS BUILDING BARRIER, USE THREADED FITTINGS W/GBL, LOCKWASIS & INSULATED BRANCH CIRCUITS (LESS THAN 60 A).
d. BRANCH CIRCUITS SHALL BE RUN IN CONDUIT IN ALL AREAS WHERE THEY CANNOT BE CONCEALED. THESE SHALL INCLUDE, BUT NOT BE LIMITED TO, OPEN CEILING, UNFINISHED WALLS, MECHANICAL EQUIPMENT SPACES, ETC. EXPOSED CONDUIT SHALL BE RUN PLUMB, AND PARALLEL OR PERPENDICULAR TO THE WALLS IN A NEAT AND ORDERLY MANNER USING EVENLY SPACED HANGERS.
e. FOR HAZARDOUS LOCATIONS, PENETRATION OF EXTERIOR WALLS AND OTHER PARTITIONS WITH HIGH TEMPERATURE/HUMIDITY DIFFERENTIALS SUCH AS THOSE FOR COLD STORAGE, PROVIDE COMPOUND FILLED SEALING FITTINGS.
f. ALL CONDUITS WITH A NOMINAL DIAMETER OF 2 INCHES OR LARGER SHALL BE RIGID METAL CONDUIT.

- B. MATERIALS:
a. PROVIDE HOT-DIP GALVANIZED, RIGID STEEL CONDUIT FOR WORK EXPOSED TO WEATHER AND FOR EMBEDDED WORK IN CONCRETE OR MASONRY AND IN OR BELOW THE CONCRETE SLAB ON GRADE (AS THE VAPOR BARRIER, USE THREADED FITTINGS W/GBL, LOCKWASIS & INSULATED BUSHINGS).
b. PROVIDE LIQUIDTIGHT FLEXIBLE CONDUIT (SEALTIGHT) FOR CONNECTION TO EXTERIOR & KITCHEN EQUIPMENT.
c. PROVIDE GALVANIZED EMT WITH COMPRESSION FITTINGS UNLESS OTHERWISE NOTED.

- C. SUPPORTS:
a. ALL SUPPORT PARTS AND HARDWARE SHALL BE GALVANIZED.
b. SUPPORT ALL RACEWAYS SO THAT STRAIN IS NOT TRANSMITTED TO OUTLET BOXES AND PULL BOXES, ETC. SUPPORTS SHALL BE SUFFICIENTLY RIGID TO PREVENT DISTORTION OF CONDUITS DURING WIRE PULLING.
c. SUPPORT SINGLE RUNS OF SUSPENDED FEEDER CONDUIT WITH "KINDORF" D-148 OR C-150 ADJUSTABLE HANGERS USING 3/8" RODS FOR CONDUITS UP TO 2" AND 1/2" RODS FOR CONDUITS LARGER THAN 2".
d. SUPPORT GROUPS OF SUSPENDED CONDUITS RUN IN PARALLEL ON TRAPEZE HANGERS CONSTRUCTED OF "KINDORF" OR "SQUARE" TYPE. SUPPORTS SHALL BE PROVIDED WITH 1/2" HANGER RODS. NO THE WIRES OR BUILDING WIRE SHALL BE USED FOR STRAPPING CONDUITS.
e. SUPPORT SPACING RUNS OF CONDUIT USING ONE HOLD PIPE STRAP OR TWO HOLD PIPE STRAPS. STRAP SPACING MAXIMUM 6 FT. ON CENTERS.
f. FASTEN PIPE STRAPS AND HANGERS TO CONCRETE USING INSERTS OR EXPANSION BOLTS AND TO HOLLOW MASONRY USING TOGGLE BOLTS. WOODEN PULPS AND SHEELS SHALL NOT BE PERMITTED. ALL SUPPORTS IN BAR, IOSTIS CONSTRUCTION SHALL BE ATTACHED TO THE TOP CHORD OF THE JOISTS USING SUITABLE CLAMPS APPROVED FOR THE PURPOSE.
g. SUPPORT CONDUITS FROM JOISTS AND BEAMS USING CLAMPS AND/OR CADDY CLIPS APPROVED FOR THE PURPOSE.

- 3. BOXES:
A. OUTLET BOXES FOR CONCEALED WORK SHALL BE ZINC-COATED SHEET STEEL, NOT LESS THAN 4" OBTAGEL OR SQUARE AND SUITABLE FOR THE SIZE AND TYPE OF DEVICE. BOXES FOR OUTDOOR WORK SHALL BE NEMA 3R CAST ALUMINUM BOXES WITH GASKETED JOINTS, THREADED HUBS FOR CONDUIT ENTRY AND CORROSION RESISTANT FINISH.
B. OUTLET BOXES IN EXPOSED MASONRY WALLS SHALL BE PROVIDED WITH DEEP SQUARE-CUT DEVICE COVERS. THEY SHALL BE SET SO THAT THE BRICK OR BLOCK CAN BE CUT AND FITTED CLOSELY TO THE COVER OPENING AND SO THAT THE STANDARD WALL PLATE WILL COVER THE JOINT BETWEEN THE BRICK OR BLOCK AND THE BOX.
C. ALL BOXES USED FOR SUPPORTING FIXTURES SHALL BE FURNISHED WITH MALLEABLE IRON FIXTURE STUDS OF "NO BOLT" TYPE SECURED BY LOCKWUT. PROVIDE SUPPORT FOR BOXES INDEPENDENT OF SUSPENDED CEMENTS.
D. JUNCTION AND PULL BOXES SHALL BE FURNISHED AND INSTALLED AS SHOWN OR WHERE REQUIRED TO FACILITATE PULLING OF WIRES AND CABLES. SUCH BOXES SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS. ALL BOXES FOR CONCEALED WORK SHALL BE CONSTRUCTED OF 12 GAUGE GALVANIZED SHEET STEEL, UNLESS OTHERWISE NOTED AND SHALL BE PROVIDED WITH MOUNTING BRACKETS AND FLAT SCREW COVERS. BOXES FOR EXTERIOR WORK SHALL BE CAST ALUMINUM OR GALVANIZED CAST IRON WITH THREADED HUBS AND GASKETED COVERS.

- 4. WIRE AND CABLE (600 VOLT):
A. BUILDING WIRE, UNLESS OTHERWISE INDICATED, SHALL BE 600 VOLT, TYPE THHN AND THWN INSULATION FOR INTERIOR USE AND TYPE USE, CROSS-LINKED POLYETHYLENE INSULATION FOR UNDERGROUND OUTSIDE BUILDING INSTALLATION. CONDUCTORS SHALL BE SIZED AND RUN AS INDICATED. CONDUCTORS SHALL BE SOFT DRAWN COPPER OF NOT LESS THAN 88% CONDUCTIVITY.
B. NO WIRE SMALLER THAN NUMBER TWELVE (12) AWG SHALL BE USED UNLESS OTHERWISE INDICATED. THE WIRE SIZE INDICATED IN THE HOMERUN SHALL BE USED THROUGHOUT THE CIRCUIT. CONDUCTORS SHALL BE CONTINUOUS FROM OUTLET TO OUTLET AND FROM TERMINAL BOARD TO POINT OF FINAL CONNECTION, AND NO SPLICE SHALL BE MADE EXCEPT WITHIN OUTLET OR JUNCTION BOXES. ALL WIRES NUMBER EIGHT (8) AWG AND LARGER SHALL BE STRANDED AND SPLICES SHALL BE OF THE TYPE INDENTED INTO CONDUCTOR.
C. A COLOR CODING SYSTEM SHALL BE USED FOR THROUGHOUT THE BUILDING'S NETWORK OF FEEDERS AND CIRCUITS. SELECTION SHALL BE BASED ON APPLICABLE WORK COVERED BY THIS CONTRACT.
D. ALL CONTROL WIRING SHALL BE COLOR CODED WITH WIRES OF COLORS DIFFERENT FROM THOSE TO DESIGNATE PHASE WIRES.

- 5. WIRING DEVICES:
A. ALL DEVICES SHALL BE OF THE SAME MANUFACTURER. DEVICES SHALL BE GENERAL ELECTRIC, HUBBELL, ARROW HART, LEVITON OR APPROVED EQUAL.
B. WALL SWITCHES: TOGGLE SWITCHES SHALL BE OF THE SILENT MECHANICAL TYPE RATED 20 AMPERE, RATED FOR SUPPLIED VOLTAGE. MOUNT SWITCHES 48" TO CENTER OF OUTLET BOX ABOVE FLOOR.
C. RECEPTACLES: RECEPTACLES FOR WALL OUTLETS SHALL BE NEMA 5-20R, 125 VOLTS, DUPLEX, THREE-WIRE WITH THIRD POLE GROUNDING. VERIFY EXISTING OUTLET LOCATIONS PRIOR TO ROUGH-IN OF NEW. MOUNT RECEPTACLES 18" ABOVE FINISHED FLOOR (UNLESS OTHERWISE NOTED).
D. GROUND, PHASE AND NEUTRAL CONDUCTORS SHALL BE PIGTAILED IN OUTLET BOXES OR MULTI-OUTLET ASSEMBLY FOR RECEPTACLES SO THAT GROUND AND ELECTRICAL SERVICE WILL NOT BE DISTURBED TO OTHER RECEPTACLES ON THE SAME MULTI-WIRE CIRCUIT IF RECEPTACLE IS REMOVED.
E. IDENTIFICATION PLATES: A DEVICE PLATE SHALL BE PROVIDED FOR EACH OUTLET REQUIRING ONE. ALL PLATES SHALL BE APPROVED BY THE ARCHITECT.
F. GFCI RECEPTACLES: GFCI RECEPTACLES SHALL BE STRAIGHT-BLADE, NON-FEED THRU, DUPLEX TYPE RECEPTACLE WITH INTEGRAL GROUND FAULT PROTECTION AND RATED FOR 20A, 120V.
G. USB RECEPTACLES: USB RECEPTACLES SHALL BE STRAIGHT-BLADE, NON-FEED THRU, DUPLEX TYPE RECEPTACLE WITH (2) INTEGRAL USB PORTS AND RATED FOR 20A, 120V.
H. REFER TO ARCHITECTURAL DRAWINGS FOR COLOR OF WIRING DEVICES AND DEVICE PLATE UNLESS OTHERWISE NOTED.
I. EXISTING WIRING DEVICES AND WALL PLATES SHALL BE REPLACED AS REQUIRED TO MATCH NEW.
J. MOTOR RATED SWITCH/MOTOR RATED SWITCH SHALL BE FOR SINGLE PHASE MOTORS RATED 1 HP AND LESS. SWITCH SHALL HAVE A QUICK-MAKE/QUICK-BREAK SWITCHING MECHANISM. ENCLOSURE SHALL BE A GENERAL PURPOSE NEMA 1 ENCLOSURE, UNLESS OTHERWISE INDICATED. MANUAL MOTOR STARTER SHALL BE MANUFACTURED BY CUTLER HAMMER, GENERAL ELECTRIC, SIEMENS OR SQUARE D.
K. RECEPTACLES THAT ARE AUTOMATICALLY CONTROLLED TO REMOVE POWER FOR ENERGY MANAGEMENT OR BUILDING AUTOMATION MUST BE PERMANENTLY MARKED WITH THE WORD "CONTROLLED" AND HAVE A VISIBLE POWER SYMBOL ON THE RECEPTACLE.

- 6. GROUNDING:
A. PROVIDE EQUIPMENT GROUNDING CONDUCTORS WHERE INDICATED IN ALL RACEWAYS AND CABLES SIZED IN ACCORDANCE WITH THE N.E.C.
B. PROVIDE GROUNDING ELECTRODE CONDUCTOR CONNECTED TO THE BUILDING GROUNDING SYSTEM FOR TRANSFORMER SECONDARY.

SERVICE AND DISTRIBUTION:

- 1. PANELBOARDS:
A. PROVIDE DISTRIBUTION AND BRANCH CIRCUIT PANELBOARDS WITH FEATURES AND RATINGS AS INDICATED ON THE DRAWINGS. THESE SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING: VOLTAGE, BUS RATING, FULLY-RATED SYMMETRICAL AMPERES INTERRUPTING CAPACITY (AIC), PHASE, NUMBER OF WIRES, NUMBER OF POLES, MAIN CIRCUIT BREAKER OR MAIN LUGS ONLY.
B. PANELBOARDS SHALL COMPLY WITH NEMA PB1 AND UL 67. PANELBOARDS SHALL HAVE FULLY RATED COPPER MAIN BUS BAR, FIFTY PERCENT COPPER GROUND BUS BAR AND A FULL RATED INSULATED NEUTRAL BUS BAR, WHERE INDICATED. PANELBOARDS SHALL HAVE COPPER LUGS. CIRCUIT BREAKERS SHALL BE BOLT-ON FOR BOTH 480V AND 208V PANELBOARDS. CIRCUIT BREAKERS SHALL BE OF THE THERMAL MAGNETIC TYPE WITH ACCESSORIES (SHUNT TRIP, GROUND FAULT PROTECTION, ETC.) AS INDICATED ON THE PANELBOARD SCHEDULE. IN INSTANCES WHERE "SPACE" IS INDICATED ON THE SCHEDULE, PROVIDE FULLY EQUIPPED SPACE INCLUDING BUS FOR FUTURE INSTALLATION OF CIRCUIT BREAKERS.
C. PROVIDE A TYPED CIRCUIT DIRECTORY MOUNTED INSIDE FRONT DOOR OF PANEL ENCLOSURE.
D. PANELBOARD SHALL BE PERMANENTLY MARKED TO INDICATE WHERE THE POWER ORIGINATES. THIS LABEL SHALL BE PERMANENTLY AFFIXED, OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED AND NOT HAND WRITTEN.
E. PANELBOARDS SHALL BE MANUFACTURED BY CUTLER HAMMER, GENERAL ELECTRIC, SQUARE D OR SIEMENS.
F. THE CONTRACTOR SHALL BALANCE THE LOADS ON ALL PANELBOARDS AS CLOSELY AS POSSIBLE AND TO THE SATISFACTION OF THE ENGINEER.
G. THE CIRCUIT NUMBERS USED ON THE DRAWINGS ARE FOR IDENTIFICATION ONLY AND THE CIRCUIT NUMBER IN THE PANEL NEED NOT NECESSARILY CORRESPOND. EACH CIRCUIT IN THE PANELS, HOWEVER, SHALL BE ACCURATELY INDEXED AS SPECIFIED HEREIN. CIRCUITS SHALL BE ARRANGED IN PANELS SO THAT ALL LIGHTING CIRCUITS ARE TOGETHER, ALL MOTOR CIRCUITS ARE TOGETHER, ETC.

- 2. SAFETY SWITCHES:
A. SAFETY SWITCHES SHALL BE PROVIDED WITH RATINGS AND ACCESSORIES AS INDICATED ON THE CONTRACT DOCUMENTS. THESE INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING: AMPERE RATING, VOLTAGE RATING, NO. OF POLES, FUSIBLE OR NON-FUSIBLE. SAFETY SWITCHES SHALL BE MANUALLY OPERATED AND HAVE A QUICK-MAKE, QUICK-BREAK SWITCHING MECHANISM. SAFETY SWITCHES SHALL HAVE MECHANICAL LUGS SUITABLE FOR COPPER CONDUCTORS AND SHALL COMPLY WITH UL 98 AND NEMA ICS-1.
B. FUSED SWITCHES RATED FOR 30A TO 600A SHALL BE EQUIPPED WITH CLASS R FUSE CLIPS AND SHALL HAVE A FUSE REJECTION CAPABILITY. FUSED SWITCHES RATED FOR 600A TO 1200A SHALL BE EQUIPPED WITH CLASS I FUSE CLIPS. SWITCHES SHALL HAVE UL LISTED SHORT CIRCUIT CURRENT RATING OF 200,000 RMS SYMMETRICAL AMPS.
C. ENCLOSURE SHALL BE NEMA 1 FOR INDOOR INSTALLATIONS AND NEMA 3R FOR EXTERIOR INSTALLATIONS. ENCLOSURE SHALL HAVE ON/OFF MARKINGS AND SHALL HAVE A BLACK OR RED OPERATING HANDLE. HANDLE SHALL BE CAPABLE OF BEING PAD-LOCKABLE IN THE "OFF" POSITION. ENCLOSURE DOOR SHALL HAVE DEFATTEABLE INTERLOCKS TO PREVENT OPENING OF THE SWITCH COVER WHEN THE SWITCH IS "ON" AND TO PREVENT TURNING THE SWITCH "ON" WHEN THE COVER IS OPEN.
D. SAFETY SWITCHES SHALL BE MANUFACTURED BY CUTLER HAMMER, GENERAL ELECTRIC, SIEMENS OR SQUARE D.
E. PROVIDE SAFETY SWITCH WITH PROVISIONS SUCH THAT THE SWITCH SHALL BE LOCKABLE IN THE "ON" POSITION.

- 3. DRY TYPE TRANSFORMERS:
A. DRY TYPE TRANSFORMERS SHALL BE PROVIDED WITH KVA RATINGS, PRIMARY VOLTAGE AND SECONDARY VOLTAGE AS INDICATED ON THE DRAWINGS. DRY TYPE TRANSFORMERS SHALL COMPLY WITH UL ST 20 AND UL 1561.
B. TRANSFORMER ENCLOSURES SHALL BE RATED FOR INDOOR USE AND OF THE VENTILATED TYPE. TRANSFORMERS SHALL HAVE AN INSULATION CLASS OF 220 DEGREES CELSIUS CLASS WITH 150 DEGREE CELSIUS TEMPERATURE RISE.
C. PROVIDE SIX FULL CAPACITY 2.5 PERCENT TAPS, TWO ABOVE AND FOUR BELOW NOMINAL VOLTAGE.
D. TRANSFORMERS SHALL BE MANUFACTURED BY CUTLER HAMMER, GENERAL ELECTRIC, SIEMENS OR SQUARE D.

- 4. FUSES:
A. FUSES RATED FOR 600 AMPERES AND LESS FOR FEEDER, BRANCH AND MOTOR CIRCUITS SHALL BE DUAL ELEMENT UL CLASS RK-5 CURRENT-LIMITING TIME DELAY TYPE. FUSES SHALL HAVE A TIME DELAY OF 1/2 SECONDS MINIMUM AT 500 PERCENT OF AMPERE RATING OF FUSE. FUSE SHALL HAVE INTERRUPTING RATING OF 200,000 RMS SYMMETRICAL AMPS. FUSES SHALL BE DUAL ELEMENT CONSTRUCTION INCORPORATING A THERMAL OVERLOAD ELEMENT USING 250 DEGREES FAHRENHEIT MELTING POINT ALLOY FOR THERMAL PROTECTION AND A SEPARATE SHORT CIRCUIT ELEMENT.
B. FUSES RATED FOR 801 AMPERES AND GREATER FOR FEEDER CIRCUITS AND SERVICE ENTRANCE EQUIPMENT SHALL BE DUAL ELEMENT UL CLASS I CURRENT-LIMITING TIME DELAY TYPE. FUSES SHALL HAVE A TIME DELAY OF FOUR SECONDS MINIMUM AT 500 PERCENT OF AMPERE RATING OF FUSE. FUSE SHALL HAVE INTERRUPTING RATING OF 200,000 RMS SYMMETRICAL AMPERES. FUSES SHALL BE DUAL-ELEMENT CONSTRUCTION INCORPORATING A THERMAL OVERLOAD ELEMENT USING 250 DEGREES FAHRENHEIT MELTING POINT ALLOY FOR THERMAL PROTECTION AND A SEPARATE SHORT CIRCUIT ELEMENT.
C. FUSES SHALL BE MANUFACTURED BY BUSSMAN, FERRAZ SHAWMUT OR APPROVED EQUAL.

- 5. ENCLOSED CIRCUIT BREAKER:
A. ENCLOSED CIRCUIT BREAKERS SHALL COMPLY WITH NEMA AB 1 1993 AND UL 489. CIRCUIT BREAKERS SHALL BE MOLDED CASE CIRCUIT BREAKERS WITH INVERSE TIME AND INSTANTANEOUS TRIPPING CHARACTERISTICS. CIRCUIT BREAKER SHALL BE OPERATED BY A TOGGLE-TYPE HANDLE WHICH SHALL PROVIDE QUICK-MAKE, QUICK-BREAK CONTACT ACTION. THE CIRCUIT BREAKER SHALL HAVE COMMON TRIPPING OF ALL POLES.
B. CIRCUIT BREAKER SHALL BE PROVIDED WITH A PUSH-TO-TRIP BUTTON ON THE FACE OF THE CIRCUIT BREAKER TO MECHANICALLY OPERATE THE CIRCUIT BREAKER TRIPPING MECHANISM FOR MAINTENANCE. CIRCUIT BREAKERS SHALL HAVE A MINIMUM SYMMETRICAL INTERRUPTING CAPACITY AS INDICATED ON THE DRAWINGS.
C. ENCLOSED CIRCUIT BREAKERS SHALL BE PROVIDED WITH A SURFACE MOUNTED NEMA 1 GENERAL PURPOSE ENCLOSURE INTENDED FOR INDOOR USE, UNLESS OTHERWISE NOTED. ENCLOSURE SHALL COMPLY WITH UL 50 AND NEMA 250. ENCLOSURE SHALL HAVE PROVISIONS FOR PADLOCKING THE CIRCUIT BREAKER IN THE "OFF" POSITION. ENCLOSURE SHALL HAVE A GRAY SAKED ENAMEL PAINT FINISH.
D. ENCLOSED CIRCUIT BREAKER SHALL BE MANUFACTURED BY CUTLER HAMMER, GENERAL ELECTRIC, SIEMENS OR SQUARE D.

- 6. POWER POLE:
A. THE SYSTEM SHALL CONSIST OF MODULAR VERTICAL CHANNELS WITH SEPARATE CHASES FOR LINE VOLTAGE AND LOW VOLTAGE WIRING. THE SYSTEM SHALL CONSIST OF A PRE-PUNCHED SUPPORT, ALUMINUM END COVERS AND A METALLIC CENTER PANEL. THE MULTI-OUTLET ASSEMBLY SHALL COMPLY WITH NEC 380 AND SHALL BE UL LISTED.
B. THE SYSTEM SHALL BE AVAILABLE WITH AN EXTENSION KIT THAT ALLOWS FOR VARYING CEILING HEIGHTS. THE FRAME SUPPORTS SHALL BE AVAILABLE WITH FACTORY PRE-PUNCHED HOLES FOR COMMUNICATION OUTLETS AND TRADE KNOCKOUTS FOR ELECTRICAL TERMINATIONS. A PLATE WITH OPENINGS AND KNOCKOUTS SHALL BE PROVIDED TO FEED MODULAR SYSTEMS FURNITURE.
C. THE POWER POLE SHALL BE MECHANICALLY AND ELECTRICALLY CONTINUOUS AND SHALL BE BONDIED IN ACCORDANCE WITH THE NEC. THE SYSTEM SHALL BE SECURELY SUPPORTED AT THE CEILING AND THE FLOOR IN ACCORDANCE WITH MANUFACTURERS INSTALLATION REQUIREMENTS. POWER POLE SHALL BE MANUFACTURED BY WIREMOLD OR APPROVED EQUAL.

LIGHTING:

- 1. FURNISH AND INSTALL A COMPLETE LIGHTING FIXTURE FOR EACH LIGHTING FIXTURE SYMBOL SHOWN ON THE DRAWINGS.
2. ALL FIXTURES SHALL BE IN ACCORDANCE WITH ALL LOCAL, MUNICIPAL AND STATE REQUIREMENTS GOVERNING SAME AND SHALL BE UL APPROVED.
3. SUPPORTS FOR ALL FIXTURES SEPARATELY FROM THE SUSPENDED CEILING SYSTEM. PROVIDE A MINIMUM OF TWO (2) GALVANIZED STEEL #12 GAUGE HANGER WIRES (ALTERNATE CORNERS) ON ALL RECESSED FIXTURES.
4. FIXTURES IN AREAS WHO CEILING SHALL BE RIGIDLY SUPPORTED USING THREADED ROD, U-CHANNELS OR SIMILAR MATERIALS.
5. ALL EXIT AND EMERGENCY LIGHTING CIRCUITS SHALL BE POWERED FROM INTEGRAL BATTERIES. MOUNT EXIT SIGNS 96" ABOVE FINISHED FLOOR, AND ONE GENERAL LIGHTING CIRCUIT SERVING THE OCCUPANCY SENSOR SHALL BE RIGIDLY SUPPORTED USING THREADED ROD, U-CHANNELS OR SIMILAR MATERIALS.
6. MEANS OF EGRESS SHALL BE ILLUMINATED SO FAILURE OF A SINGLE ELEMENT OR BULB DOES NOT LEAVE AN AREA IN TOTAL DARKNESS.
7. ALL FLUORESCENT LIGHTING FIXTURES AND FIXTURES SERVED FROM MULTI-WIRE BRANCH CIRCUITS SHALL COMPLY WITH DISCONNECTING MEANS REQUIREMENTS SET FORTH IN NEC 410-120(G).
8. WALL MOUNTED OCCUPANCY SENSOR SHALL BE PASSIVE INFRARED AND SHALL HAVE 180 DEGREE COVERAGE FOR A MINIMUM OF 900 SQUARE FEET. OCCUPANCY SENSOR SHALL HAVE AN ADJUSTABLE TIME DELAY FROM 30 SECONDS TO 30 MINUTES AND SHALL FIT IN A STANDARD OUTLET BOX. SENSOR SHALL BE MANUFACTURED BY WATTSSTOPPER, SENSOR SWITCH, OR APPROVED EQUAL.
9. CEILING MOUNTED OCCUPANCY SENSORS:
A. OPEN OFFICELARGE AREA APPLICATION: LOW VOLTAGE PASSIVE INFRARED OCCUPANCY SENSOR RATED FOR OPEN OFFICE OR LARGE AREA APPLICATIONS. SENSOR SHALL BE IMMUNE TO RFI AND EMI, SHALL HAVE AN EXTENDED RANGE FRESNEL LENS WITH 360 DEGREE COVERAGE FOR A MINIMUM OF 1000 SQUARE FEET OF OCCUPANCY DETECTION.
B. TOILET ROOM LOW VOLTAGE OR LINE VOLTAGE ULTRASONIC OR DUAL TECHNOLOGY OCCUPANCY SENSOR RATED FOR TOILET ROOM APPLICATIONS. SENSOR SHALL BE IMMUNE TO RFI AND EMI, SHALL HAVE 360 DEGREE COVERAGE FOR A MINIMUM OF 500 SQUARE FEET. SENSOR SHALL HAVE ADJUSTABLE TIME DELAY AND SENSITIVITY AND SHALL HAVE AN LED INDICATOR OF OCCUPANCY DETECTION.
C. CONFERENCE/CLASSROOM AREAS: LOW VOLTAGE DUAL TECHNOLOGY SENSOR RATED FOR USE IN CLASSROOM AND CONFERENCE ROOM APPLICATIONS. SENSOR SHALL HAVE COVERAGE FOR WALKING MOTION UP TO 2000 SQUARE FEET AND COVERAGE FOR TYPICAL DESKTOP ACTIVITY UP TO 1000 SQUARE FEET. SENSOR SHALL BE IMMUNE TO RFI AND EMI. SENSOR SHALL HAVE AN ADJUSTABLE TIME DELAY AND SENSITIVITY AND SHALL HAVE AN LED INDICATOR OF OCCUPANCY DETECTION. SENSOR SHALL BE WATTSSTOPPER MODEL DT-200 SERIES OR APPROVED EQUAL. OCCUPANCY SENSOR SHALL OPERATE WITH A COMPATIBLE POWER PACK.
D. H-BAY/WAREHOUSE AREAS: LINE VOLTAGE, PASSIVE-INFRARED OCCUPANCY SENSOR WITH 360-DEGREE COVERAGE FOR USE IN H-BAY WAREHOUSE APPLICATION. OCCUPANCY SENSOR SHALL OPERATE AT 120V OR 277V AND SHALL MOUNT ON LIGHTING FIXTURE, JUNCTION BOX OR OTHER ENCLOSURE. AFTER A USER SPECIFIED LENGTH OF TIME WHEN NO OCCUPANCY IS DETECTED, LIGHTING SHALL AUTOMATICALLY SWITCH OFF. SENSOR SHALL BE WATTSSTOPPER SERIES HB OR APPROVED EQUAL. OCCUPANCY SENSORS SHALL BE MANUFACTURED BY WATT STOPPER, SENSOR SWITCH OR APPROVED EQUAL.
E. OCCUPANCY SENSORS SHALL BE MANUFACTURED BY WATT STOPPER, LEVITON OR APPROVED EQUAL.

COMMUNICATION, DATA AND CONTROL SYSTEMS:

- 1. PLENUM CABLE WHEN CONTROL AND SIGNAL WIRING IS INSTALLED W/0 METAL RACEWAY IN PLENUMS IT SHALL COMPLY WITH 300.22, 2014 NEC.
2. TELEPHONE/DATA SYSTEM:
A. PROVIDE A WALL RING AND PULL STRING FOR EACH TELEPHONE OR DATA OUTLET WITH A 18" NYLON PULL WIRE TO THE NEAREST ACCESSIBLE CEILING.
B. MOUNT TELEPHONE/DATA OUTLETS 18" ABOVE FINISHED FLOOR (UNLESS OTHERWISE NOTED).
3. FIRE ALARM SYSTEM:
A. THE ELECTRICAL DRAWINGS SHOW DIAGRAMMATIC LOCATIONS OF FIRE ALARM SYSTEM DEVICES ONLY. ADDITIONAL DEVICES NOT SHOWN ON THE DRAWING MAY BE REQUIRED. THE FIRE ALARM CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN OF A FULL SYSTEM AND SHALL PROVIDE ALL DEVICES AND COMPONENTS AS REQUIRED FOR A COMPLETE WORKING SYSTEM THAT MEETS THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION. ARJUMS DRAWINGS SHALL NOT BE ALTERED BY THE CONTRACTOR FOR THE PURPOSE OF OBTAINING FIRE ALARM SYSTEM PERMITS. THE GENERAL CONTRACTOR AND THEIR FIRE ALARM CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE FIRE ALARM PERMIT INCLUDING PREPARATION OF ALL REQUIRED STAMPED AND UN-STAMPED DOCUMENTATION AND DRAWINGS BY THE AUTHORITY HAVING JURISDICTION. REFER TO EXISTING FIRE ALARM SYSTEM DOCUMENTATION AND, IF APPLICABLE, SEPARATE FIRE ALARM SYSTEM SPECIFICATIONS FOR MODIFICATIONS TO THE EXISTING BUILDING FIRE ALARM SYSTEM.
B. ALL FIRE ALARM DEVICES, EQUIPMENT, AND INSTALLATION METHODS SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE, ARTICLE 760; NFPA 72, NATIONAL FIRE ALARM CODE; NFPA 101, LIFE SAFETY CODE; AMERICANS WITH DISABILITIES ACT; APPLICABLE BUILDING CODES; WITH LOCAL AND MUNICIPAL CODES AND WITH THE AUTHORITY HAVING JURISDICTION. THE FIRE ALARM SYSTEM AND ASSOCIATED COMPONENTS SHALL BE UL LISTED AND LABELED.
C. ALL NEW AND RELOCATED FIRE ALARM DEVICES SHALL BE CONNECTED TO THE EXISTING FIRE ALARM SIGNALING AND NOTIFICATION CIRCUITS IN THE RENOVATED AREA. ALL NEW FIRE ALARM DEVICES SHALL BE FULLY COMPATIBLE WITH THE EXISTING SYSTEM.
D. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING EXPANDED PANELS AS REQUIRED AND FOR PROGRAMMING OF THE EXISTING SYSTEM. IT SHALL BE THE RESPONSIBILITY OF THE OWNER AND/OR CONTRACTOR TO DETERMINE IF THE EXISTING FIRE ALARM SYSTEM IS CAPABLE OF HANDLING ADDITIONAL DEVICES AND ZONES.
E. FIRE ALARM SYSTEM DEVICES SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDED PROCEDURES. VISUAL NOTIFICATION DEVICES SHALL BE MOUNTED SUCH THAT THE ENTIRE LENS IS NOT LESS THAN 80" ABOVE FINISHED FLOOR OR 6" BELOW CEILING, WHICHEVER IS LOWER. AUDIBLE NOTIFICATION DEVICES SHALL BE MOUNTED SUCH THAT THE TOP OF THE DEVICE IS NOT LESS THAN 90" ABOVE FINISHED FLOOR AND BELOW THE FINISHED CEILING AT A HEIGHT NOT LESS THAN 8'.
F. FIRE ALARM SYSTEM WIRING SHALL BE FIRE RATED MC CABLE.

ELECTRICAL NOTES:

- 1. REFER TO ARCHITECTURAL AND MECHANICAL DRAWINGS FOR RELATED INFORMATION.
2. REFER TO MECHANICAL PLANS FOR EXACT LOCATIONS OF HVAC EQUIPMENT AND CONTROL WIRING REQUIREMENTS.
3. THE CONTRACTOR SHALL COORDINATE CONNECTIONS AT HVAC AND OTHER EQUIPMENT SPECIFIED UNDER DIVISION 15 WITH THE MECHANICAL CONTRACTOR PRIOR TO INSTALLATION.
4. COORDINATION SHALL INCLUDE THE CONTRACTORS DETERMINATION OF THE FOLLOWING INFORMATION: METHOD OR TYPE OF TERMINATION FOR EACH CIRCUIT; THE VOLTAGE, AMPACITY AND NUMBER OF WIRES REQUIRED FOR EACH CIRCUIT; DISCONNECT SWITCH AND/OR MOTOR STARTER REQUIRED AT EACH TERMINATION POINT.
5. THE CONTRACTOR SHALL FULLY COORDINATE CONNECTIONS AT EQUIPMENT PROVIDED BY OTHERS AND SHALL VERIFY ALL ELECTRICAL REQUIREMENTS PRIOR TO INSTALLATION.
6. CONTRACTOR SHALL VERIFY ALL RATINGS, SIZES, FINISHES, ETC. OF ALL EQUIPMENT AND SHALL VERIFY ANY DISCREPANCIES IDENTIFIED IN DRAWINGS WITH ENGINEER PRIOR TO ORDERING AND INSTALLATION.
7. PLENUM WIRING SHALL COMPLY WITH NEC 300.22.
8. ELECTRICAL INSTALLATIONS SHALL BE PERFORMED IN ACCORDANCE WITH NFPA 70, THE NATIONAL ELECTRICAL CODE, AND EXECUTIVE REGULATION 21-94, AND ALL LOCAL CODES AND AUTHORITIES HAVING JURISDICTION. ALL ELECTRICAL EQUIPMENT SHALL BE CLEARLY LABELED, MARKED OR STAMPED WITH THE SYMBOL OF AN ELECTRICAL TESTING LABORATORY APPROVED BY THE LOCAL FIRE MARSHAL (REF MC-FSC).
9. SERVICE DISCONNECTS RATED OVER 1000 AMPS SHALL COMPLY WITH NEC 230.35.
10. CIRCUIT BREAKERS WHERE THE HIGHEST CONTINUOUS CURRENT TRIP SETTING IS RATED OR CAN BE ADJUSTED TO 1200 AMPS OR HIGHER SHALL COMPLY WITH NEC 240.87.
11. VERIFY ALL OUTLET LOCATIONS ON JOB PRIOR TO ROUGH-IN.
12. COORDINATE ALL OUTLET BOX LOCATIONS WITH MASONRY TO MINIMIZE CUTTING AND PATCHING OF BOTH BRICK AND BLOCK.
13. INDIVIDUAL HOME RUNS ARE SHOWN FOR CLARITY ONLY. ELECTRICAL CONTRACTOR MAY COMBINE THEM TOGETHER PER THE NEC. ALL BRANCH CIRCUITS SHALL BE #12 AWG THHN OR THWN COPPER CONDUCTORS UNLESS OTHERWISE NOTED AT THE HOME RUN OR INDICATED IN A SCHEDULE. MINIMUM CONDUIT SIZE SHALL BE 3/4".
14. CONTRACTOR SHALL PROVIDE FIELD APPLIED HAZARD MARKINGS PER NEC 110.21(B).
15. EMERGENCY LIGHTING FIXTURES AND EXIT SIGNS SHALL BE FED FROM THE SAME LIGHTING BRANCH CIRCUITS AS THAT SERVING THE NORMAL LIGHTING IN THE AREA AND CONNECTED AHEAD OF ANY LOCAL SWITCHES. EXTEND AN UNSWITCHED BRANCH CIRCUIT TO EMERGENCY LIGHTING FIXTURES, EXIT SIGNS, AND NIGHT LIGHTING FIXTURES.

SYMBOLS LIST

Table with 2 columns: Symbol and Description. Includes symbols for lighting fixtures, switches, receptacles, and communication outlets.

ABBREVIATIONS LIST

Table with 2 columns: Abbreviation and Full Name. Lists abbreviations for electrical components like AMP, AC, AFC, AHU, etc.

DRAWING INDEX

Table with 2 columns: Drawing Number and Description. Lists drawing numbers E1 through E4 and their corresponding descriptions.

Stamp area containing the signature of Gregory Baldwin, date 10:14:35 -05'00', and professional engineer seals for the State of Maryland.

Vertical strip on the right edge containing project information: PROJECT NUMBER, PROJECT MANAGER, ARCHITECT/MEP ENGINEER, and drawing details like DWG NO., DATE, and REVISIONS.

RECEIVED stamp from the Department of Inspections, Licenses and Permits, Howard County, dated APR 09 2021.