ELECTRICAL SPECIFICATIONS

GENERAL CONDITIONS

A. PROTECTION: CONTRACTOR SHALL PROTECT THE BUILDING AND ITS CONTENTS FROM DAMAGE BY HIS WORK AND SHALL MAKE GOOD ALL DAMAGE THUS CAUSED.

B. CLEAN UP: DURING THE COURSE OF THE WORK AND AT THE END OF THE JOB, THE BUILDING AND PREMISES SHALL BE LEFT IN CLEAN CONDITION.

C. INSURANCE: EVIDENCE OF THE FOLLOWING INSURANCE SHALL BE SUBMITTED TO THE OWNER BY THIS CONTRACTOR.

(1) WORKMEN'S COMPENSATION
(2) PUBLIC LIABILITY
(3) PROPERTY DAMAGE

THE AMOUNT OF EACH INSURANCE COVERAGE SHALL BE TO THE SATISFACTION OF THE OWNER.

SCOPE OF WORK

THE INTENT OF THESE SPECIFICATIONS IS THAT THE JOB INCLUDES EVERYTHING FOR THE ENTIRE AND PROPER COMPLETION OF THE BUILDING ELECTRICAL SYSTEMS, WITH ALL EQUIPMENT CONNECTED UP AND READY FOR USE, AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST ISSUE OF THE NATIONAL ELECTRICAL CODE, AND SHALL MEET THE APPROVAL OF AUTHORITIES HAVING JURISDICTION. ANY MISC. WORK OR MATERIAL NOT SPECIFICALLY CALLED FOR ON THE DRAWINGS OR SPECIFICATIONS, BUT OBVIOUSLY WITHIN THEIR INTENT, SHALL BE INCLUDED AS PART OF THE JOB.

CLEANING AND REMOVAL OF RUBBISH

KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF BUILDING BEING RENOVATED FREE FROM MATERIALS AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. DEBRIS SHALL BE NEATLY STACKED AS DIRECTED. CONTRACTOR SHALL REMOVE ALL RUBBISH RESULTING FROM HIS WORK.

TEMPORARY LIGHT AND POWER

THIS CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN AND REMOVE AFTER CONSTRUCTION IS COMPLETED, A COMPLETE AND ADEQUATE SYSTEM OF TEMPORARY LIGHT AND POWER WHICH SHALL MEET THE REQUIREMENTS OF OSHA AND THE NATIONAL ELECTRICAL CODE, AND BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE SAFETY STANDARDS AND PREVAILING GOVERNMENTAL REGULATIONS. THIS CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, LICENSES, INSPECTIONS, ETC.

UNIFORMITY OF MANUFACTURE

ALL PANELBOARDS, DISCONNECT SWITCHES, ETC. FURNISHED FOR THIS INSTALLATION SHALL BE THE PRODUCTS OF A SINGLE MANUFACTURER, WHICH SHALL BE "SQUARE D" OR EQUIVALENT PRODUCTS AS MADE BY "GENERAL ELECTRIC", "WESTINGHOUSE", OR "ITE".

SWITCHES AND FUSES

FURNISH AND INSTALL ALL DISCONNECT SWITCHES AS REQUIRED BY CODE AND/OR AS SHOWN ON PLANS. DISCONNECTS SHALL BE "SQUARE D", TYPE HU OR HF, OR EQUIVALENT PRODUCT BY "GENERAL ELECTRIC", "WESTINGHOUSE" OR "ITE". ENCLOSURE SHALL BE NEMA 1 GENERAL PURPOSE TYPE. WHERE INSTALLED OUTDOORS, EXPOSED TO WATER, SPRAY OR OTHER MOISTURE, IN WHICH CASE ENCLOSURE SHALL BE NEMA 3R RAINTIGHT. WHERE USED IN AIR CONDITIONING PLENUMS, USE DUST-TIGHT.

UNLESS OTHERWISE NOTED, ALL FUSES SHALL BE AS MANUFACTURED BY "BUSSMAN". FUSES SHALL BE "BUSSMAN" FUSETRON, UL CLASS K5.

CIRCUIT BREAKERS

MOLDED CASE: SINGLE, TWO OR THREE POLE. AS SHOWN ON THE PLANS; THERMAL-MAGNETIC TYPE; QUICK-MAKE AND QUICK-BREAK WITH TRIP FREE HANDLE. CIRCUIT BREAKERS SHALL BE AS MANUFACTURED BY "SQUARE D", "GENERAL ELECTRIC", "WESTINGHOUSE", "ITE" OR APPROVED EQUAL FOR EXISTING PANELBOARDS.

MOTORS

MOTORS WILL BE FURNISHED AND INSTALLED UNDER OTHER SPECIFICATION SECTIONS, BY WIRED TO BY THIS CONTRACTOR. THIS CONTRACTOR WILL BE RESPONSIBLE FOR VERIFYING THE LOCATION AND CHARACTERISTICS OF EACH MOTOR, AND MAKING PROPER PROVISIONS FOR SAME. NO EXTRAS WILL BE ALLOWED DUE TO FAILURE OF CONTRACTOR TO COMPLY WITH THIS PROVISION.

MOTOR STARTERS AND CONTROLLERS

UNLESS OTHERWISE NOTED, MOTOR STARTERS SHALL BE FUNISHED UNDER OTHER SPECIFICATION SECTIONS. THIS CONTRACTOR SHALL INSTALL ALL MOTOR STARTERS, CONTROLLERS AND ALL ACCESSORIES OR PARTS THAT MAY BE REQUIRED FOR INTERLOCKING OR AS SPECIFIED HEREIN. THIS CONTRACTOR SHALL FURNISHED AND INSTALL ALL RELAYS (IN APPROVED NEMA ENCLOSURES) REQUIRED FOR INTERLOCKING DAMPERS, MOTORIZED DOORS, FIRE ALARM SYSTEMS AND OTHER AUTOMATIC TEMPERATURE CONTROL REQUIREMENTS.

WIRING AND WIRING METHODS, BELOW 600 VOLTS

A. GENERAL

ALL WIRE FOR POWER AND LIGHT SHALL BE AS SHOWN ON THE DRAWINGS AND SHALL NOT BE SMALLER THAN NO. 12 AWG. EACH RACEWAY SHALL BE SIZED ACCORDING TO THE NUMBER AND SIZE OF CONDUCTORS IN IT. ALL RACEWAYS SHALL BE RIGIDLY FASTENED TO OUTLET BOXES AND PANELBOARDS AND ADEQUATELY SUPPORTED THROUGHOUT EACH RUN. FURNISH AND INSTALL ALL REQUIRED PULL BOXES OR JUNCTION BOXES.

B. RACEWAYS

(1) MINIMUM SIZE SHALL BE 1/2".

(2) RIGID STEEL CONDUIT: CONDUITS FOR GENERAL USE SHALL BE RIGID STEEL CONDUIT, HOT DIP GALVANIZED OR STANDARDIZED.

(3) FLEXIBLE STEEL CONDUIT: WITH OR WITHOUT OUTER LIQUID TIGHT JACKET, FOR FINAL CONNECTION TO LIGHTING FIXTURES, MOTOR TERMINAL BOX, AND EQUIPMENT.

(4) ELECTRIC METALLIC TUBING (EMT): THREADLESS THIN WALL CONDUIT, WITH COMPRESSION FITTINGS. MAY BE USED UP TO 3" IN EXPOSED DRY LOCATIONS, HUNG CEILING, HOLLOW WALLS, AND IN FURRED SPACES. FOR LARGER SIZES, USE RIGID STEEL CONDUIT.

(5) UNDERGROUND CONDUITS: ALL CONDUITS EMBEDDED IN CONCRETE OR UNDERGROUND SHALL BE RIGID GALVANIZED STEEL CONDUIT. ENTIRE INSTALLATION SHALL BE COMPLETELY WATERTIGHT.

C. PULL AND JUNCTION BOXES

PULL AND JUNCTION BOXES SIZED PER N.E.C. SHALL BE PROVIDED IN WIRING SYSTEMS WHERE INDICATED OR AS REQUIRED TO FACILITATE THE PROPER INSTALLATION OF WIRES AND CABLES. STANDARD TYPE CODE GAGE BOXES WITH SCREWED TYPE COVERS SHALL BE EMPLOYED.

D. SUPPORTS

THE ELECTRICAL CONTRACTOR SHALL ENGAGE THE SERVICES OF A MANUFACTURER OF VIBRATION ISOLATION AND SEISMIC DEVICES. SAID MANUFACTURER SHALL BE RESPONSIBLE FOR MEETING THE REQUIREMENTS OF BOCA, SECTION 1113.0 AND SMACNA GUIDELINES FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEMS. THE MANUFACTURER SHALL PROVIDE INSTALLATION INSTRUCTION, DRAWINGS AND FIELD SUPERVISION TO ASSURE PROPER INSTALLATION AND PERFORMANCE.

SUPPORTS, BRACES AND HANGERS PROVIDED WITH SEISMIC RESTRAINTS SHALL BE PROVIDED BY THIS CONTRACTOR FOR PROPER INSTALLATION OF DISCONNECT SWITCHES, CONDUITS, PULL BOXES, PANELBOARDS, CONTROL EQUIPMENT, ETC.

E. SLEEVES

THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL SLEEVES (MINIMUM NO. 18 GAUGE STEEL) IN FLOORS, BEAMS, ETC. NEEDED FOR INSTALLING HIS WORK AND FOR INSTALLING TELEPHONE CABLES, ETC., UNLESS OTHERWISE SPECIFIED HEREINAFTER.

F. OUTLETS

THIS CONTRACTOR SHALL PROVIDE AN OUTLET BOX FOR EVERY OUTLET, SWITCH RECEPTACLE, ETC., CALLED FOR IN THE DRAWINGS. EACH BOX SHALL BE ADEQUATELY FASTENED IN PLACE AND PROVIDED WITH PROPER BUSHINGS AND LOCKNUTS.

G. WIRE AND CABLE

WIRES AND CABLES SHALL HAVE THERMOPLASTIC INSULATION, TYPE THW OR THHN, RATED 600 VOLTS CONFORMING TO THE LATEST REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE. CONDUCTORS SHALL BE COPPER, WIRES UP TO AND INCLUDING NO. 10 AWG SHALL BE SOLID AND LARGER THAN NO. 10 AWG SHALL BE STRANDED. FOR 120V BRANCH CIRCUIT HOMERUNS: GENERAL NO. 12, OVER 100 FEET, NO. 10; OVER 200 FEET, NO. 8.

H. WIRING METHODS FOR NORMAL AND EMERGENCY CIRCUITS SHALL COMPLY WITH THE FOLLOWING:

ALL EXPOSED WIRING SHALL BE IN NON-FLEXIBLE METAL RACEWAY.

NORMAL CIRCUITS: HOSPITAL TYPE "HCF-90" ARMORED CLAD CABLE (WITH INTEGRAL GREEN GROUND) WILL BE USED IN HUNG CEILING SPACES AND IN HOLLOW WALL PARTITIONS.

EMERGENCY CIRCUITS: ALL WIRING, SHALL BE IN NON-FLEXIBLE METAL RACEWAY (EMT, IMC OR RSC) OR SHALL BE WIRED WITH TYPE "MI" CABLE. OTHER EXCEPTIONS FOR EMERGENCY WIRING AS DESCRIBED IN NATIONAL ELECTRICAL CODE SHALL BE PERMITTED WHERE THEY APPLY.

I. SPLICES

SPLICES OF WIRE AND CABLES SHALL BE ELIMINATED WHEREVER POSSIBLE AND WHERE NECESSARY ARE TO BE MADE ONLY IN READILY ACCESSIBLE PULL OR JUNCTION BOXES, OUTLETS, SWITCH AND RECEPTACLE BOXES. ALL SPLICES SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AND WITH ACCEPTED PRACTICE AND GOOD WORKMANSHIP.

J. GROUNDING

A COMPLETE GROUNDING SYSTEM BONDED TO BUILDING STEEL AND WATER SERVICE SHALL BE PROVIDED FOR THE EFFECTIVE GROUND OF ALL ELECTRICAL EQUIPMENT, CONDUIT SYSTEMS, CABINETS OF PANELS, ETC. AS REQUIRED BY CODES. GROUNDING WIRES OR CABLES SHALL NOT BE SMALLER THAN CALLED FOR IN THE CODES AND SHALL BE PROPERLY PROTECTED AGAINST MECHANICAL INJURY. CONDUIT SYSTEMS SHALL BE GROUNDED USING GROUNDING BUSHING AND INTERCONNECTED WITH COPPER CABLE ON GROUNDING RIBBONS. EACH RECEPTACLE SHALL BE GROUNDED BY AN INSULATED GROUNDING CONDUCTOR RUN IN THE SAME RACEWAY WITH THE BRANCH CIRCUIT WIRING AND THEN CONNECTED TO THE RECEPTACLE GROUNDING TERMINAL.

WIRING SYSTEMS

PROVIDE WIRING FROM AND TO POWER AND LIGHTING PANELS, EQUIPMENT CABINETS, LIGHTS, SWITCHES, RECEPTACLES, JUNCTION AND SPLICE BOXES, MOTOR, CONTROLLERS, ACTUATING DEVICES AND ALL OTHER CURRENT CONSUMING EQUIPMENT, APPLIANCES AND CONTROL DEVICES REQUIRED, AS INSTALLED UNDER THIS AND OTHER SPECIFICATION SECTIONS.

WIRING DEVICES AND PLATES

FURNISH, INSTALL AND WIRE THE DEVICES SPECIFIED BELOW FOR ALL OUTLETS. USE ONLY THE FOLLOWING:

1. INSERTION RECEPTACLES: 2-POLE, 3 WIRE, 20A, 125 VOLT, STRAIGHT BLADE, HEAVY DUTY GROUNDING "HOSPITAL GRADE" RECEPTACLES. NUMBER CORRESPOND TO "HUBBELL: MANUFACTURER.

   A. SIMPLEX — — — — NO. 8310 (NORMAL), 8310-R (EMERG)
   B. DUPLEX – — — — – NO. 8300 (NORMAL), 8300-R (EMERG)
   C. GFI TYPE — — — — NO. GF8300 (NORMAL), GF8300-R (EMERG)

2. SPECIAL OUTLETS: AS INDICATED ON THE DRAWINGS OR AS REQUIRED TO MATCH EACH OWNER-FURNISHED EQUIPMENT AND ALL EQUIPMENT SUPPLIED BY OTHER TRADES

3. LOCAL WALL SWITCHES: FLUSH, QUIET TYPE, TOGGLE, AC ONLY, HEAVY DUTY TYPE, NUMBERS CORRESPOND TO "HUBBELL" MANUFACTURE.

   A. SINGLE POLE — — — — — — — NO. 1221, 20A, 120/277V
   B. THREE-WAY — — — — — — — NO. 1223, 20A, 120/277V

4. DEVICES PLATES: ALL PLATES SHALL BE SATIN FINISH 0.040" THICK STAINLESS STEEL AS MANUFACTURED BY "HUBBELL".

5. ALL EMERGENCY RECEPTACLE FACEPLATES SHALL BE FACTORY ENGRAVED AS DESCRIBED BELOW.

   TOP PORTION OF PLATE: PANEL DESIGNATION WHERE THE CIRCUIT ORIGNATED. EXAMPLE: "PNL. EM-3".

   LOWER PORTION OF PLATE: CIRCUIT DESIGNATION. EXAMPLE "CKT.-11".

   HEIGHT OF NUMBER/LETTER SHALL BE 1/8" MINIMUM. SUBMIT SAMPLES.

LIGHTING FIXTURES

A. GENERAL

FURNISH LIGHTING UNITS, LIGHTING EQUIPMENT COMPONENTS AND LAMPS FOR ALL LIGHTING OUTLETS, UNLESS OTHERWISE SPECIFICALLY STATED.

B. TYPE OF UNITS

FIXTURE TYPES TO BE AS INDICATED BY LETTERS AND SCHEDULE ON DRAWINGS.

C. MOUNTING

INSTALL ROWS OF FIXTURES ACCURATELY AND IN STRAIGHT LINES.

LIGHTING FIXTURE CATALOG NUMBERS ARE TO DESIGNATE FIXTURE TYPE ONLY, AND DO NOT NECESSARILY DENOTE MOUNTING ACCESSORIES FOR THE TYPE OF CEILINGS IN WHICH THE FIXTURE WILL BE INSTALLED. REFER TO THE LATEST ARCHITECTURAL CEILING SCHEDULE OR WRITTEN SPECIFICATIONS. FURNISH FIXTURES AND ACCESSORIES TO SUIT.

THIS CONTRACTOR SHALL PROVIDE ANY SUPPLEMENTAL STEEL SUPPORTS AT OVERHEAD STRUCTURE AS REQUIRED, IN ORDER TO INSTALL FIXTURES IN THE LOCATIONS SHOWN. WHERE CEILING GRID IS INSUFFICIENT TO SUPPORT LIGHTING FIXTURES, CONTRACTOR SHALL PROVIDE INDIVIDUAL FIXTURE SUPPORT USING APPROVED METHODS OR AS REQUIRED BY THE CATALOG MANUFACTURER. WHERE CEILING STRUCTURE IS NOT DESIGNED WITH SEISMIC RESTRAINT SYSTEM, PROVIDE APPROVED INDIVIDUAL SUPPORT FOR EACH FIXTURE.

PROVIDE CODE REQUIRED LIGHTING FIXTURE HOLD-DOWN CLIPS FOR ALL LAY-IN FIXTURES.

D. THERMAL PROTECTION

ALL INCANDESCENT LIGHTING FIXTURES SHALL BE UL LISTED AND SHALL BEAR LABELS INDICATING SUITABILITY OF FIXTURES FOR THE TYPES OF CEILING WHERE THEY ARE INSTALLED FURNISH FIXTURES WITH INTEGRAL THERMAL PROTECTION.

FIXTURE WIRE TO BE 300 VOLTS, 150 C, TYPE AF.

FLUORESCENT BALLASTS TO BE ELECTRONIC TYPE, HIGH POWER FACTOR, RAPID OR INSTANT START, CBM AND ETL APPROVED, EXCEPT WHERE OTHERWISE NOTED. "UNIVERSAL" OR EQUAL BY "ADVANCE"

E. SHOP DRAWINGS

SUBMIT SHOP DRAWINGS FOR EACH TYPE OF LIGHT FIXTURE SPECIFIED, INDICATING ALL REQUIRED DATA AND INDICATING MOUNTING DETAILS OR DEVIATIONS FROM SPECIFICATIONS.

REMOVAL AND/OR RELOCATION EXISTING EQUIPMENT

(1) THIS CONTRACTOR SHALL DE-ENERGIZE ELECTRICAL CIRCUITS IN THE AREAS OF THE EXISTING BUILDING AFFECTED BY THE NEW WORK, BY DISCONNECTING THEM FROM THE PANELS TO WHICH THEY ARE CONNECTED.

(2) WHERE EXISTING ELECTRICAL MATERIAL MUST BE REMOVED, ALL SUCH REMOVALS, AND THE SUBSEQUENT REINSTALLATION THEREOF, IF NECESSARY, SHALL BE PERFORMED BY THE ELECTRICAL, REGARDLESS OF WHETHER SUCH REMOVALS ARE REQUIRED FOR WORK PERFORMED UNDER THIS SECTION OR OTHER SECTIONS. AT THE COMPLETION OF THE JOB, ALL EXISTING AND NEW OUTLETS, LIGHTING FIXTURES, ETC. ARE TO BE LEFT READY FOR USEFUL OPERATION, AND ANY DISCONTINUITY OF ELECTRICAL WIRING WHICH MAY PREVENT SUCH OPERATION SHALL BE REPAIRED BY THE ELECTRICAL CONTRACTOR, WHO SHALL INSTALL NEW WIRING TO THOSE OUTLETS, LIGHTING FIXTURES, ETC., IN QUESTION, USING WIRING METHODS AS HEREIN DESCRIBED FOR NEW WORK, AND REGARDLESS OF WHETHER SUCH DISCONTINUITY WAS CAUSED BY THE ELECTRICAL CONTRACTOR, OR BY OTHER TRADE CONTRACTORS.

(3) CARE SHALL BE EXERCISED TO RETAIN THE INTERGRITY OF THOSE PORTIONS OF THE CIRCUITS IN THE AREAS WHICH ARE TO REMAIN ACTIVE.

(4) THE DE-ACTIVATION OF PORTIONS OF CIRCUITS, COMPLETE CIRCUITS AND ALL DEMOLITION WORK SHALL BE DONE IN SUCH A MANNER THAT THE BUILDING ELECTRICAL SYSTEM IS ALWAYS IN COMPLIANCE WITH THE LATEST EDITION OF THE ELECTRICAL CODE.

(5) ALL PHASES OF DEMOLITION WORK SHALL COORDINATED WITH THE OWNER.

FACTORY PROVIDED SEISMIC RESTRAINTS

ALL EQUIPMENT MANUFACTURERS ARE CAUTIONED TO PROVIDE INTERNAL FACTORY RESTRAINTS WHERE NECESSARY TO COMPLY WITH THE SEISMIC REQUIREMENTS OF THE UNIFORM CONSTRUCTION CODE.

ALL TRANSFORMERS 15 KVA AND UP, AND ELECTRICAL PANELBOARDS SHALL BE MANUFACTURED WITH INTERNAL RESTRAINTS TO WITHSTAND SEISMIC ZONE 2 REQUIREMENTS, AND SHALL BE SO CERTIFIED IN WRITING BY THE MANUFACTURER.

WORK IN OTHER SPECIFICATION SECTIONS

REFER TO SPECIFICATIONS COVERING FIRE PROTECTION WORK, PLUMBING WORK AND HVAC WORK FOR POSSIBLE ADDITIONAL WORK TO BE PERFORMED UNDER THE ELECTRICAL CONTRACT. ELECTRICAL CONTRACTOR SHALL BEAR ALL EXPENSES INCURRED AS A RESULT OF HIS NOT FAMILIARIZING HIMSELF WITH SUCH ADDITIONAL WORK.

WORK NOT INCLUDED

FURNISHING OF ALL MOTORS AND CONTROLLERS FOR HEATING, VENTILATING AIR CONDITIONING OR PLUMBING WORK, EXCEPT WHERE OTHERWISE NOTED.

ALL FINISHED PAINTING OF EXPOSED CONDUIT, APPARATUS, ETC., WILL BE DONE UNDER ANOTHER DIVISION OF WORK.

LABELING

AFFIX PERMANENT ENGRAVED LAMACOID (3/8" HIGH WHITE LETTERS ON BLACK BACKGROUND) IDENTIFYING LABELS TO EACH PANEL, DISC. SWITCH, MOTOR STARTER, ETC. BEARING IDENTIFYING SYMBOLS CORRESPONDING EITHER TO THOSE USED ON THE DRAWINGS, RISER DIAGRAM, OR TO THE EQUIPMENT BEING SERVED, WHICHEVER IS MORE APPROPRIATE. ALL SPLICE AND JUNCTION BOX COVERS SHALL BE MARKED WITH PERMANENT BLACK INK MARKERS INDICATING THE BRANCH CIRCUIT NUMBERS AND PANEL DESIGNATION OF THE CONTAINED CONDUCTORS. FOR FEEDERS, TAG EACH SET OF CONDUCTORS, INDICATING TYPE, SIZE, LOAD AND PANEL SOURCE.

TESTS AND INSPECTIONS

UPON COMPLETION OF HIS WORK, THE CONTRACTOR SHALL PERFORM TESTS, INSPECTIONS AND ADJUSTMENTS, OF ALL EQUIPMENT, MATERIAL, AND WIRING IN THIS CONTRACT, AS DIRECTED BY AND IN THE PRESENCE OF THE ARCHITECT OR HIS REPRESENTATIVE, TO DETERMINE WHETHER ALL PROVISIONS OF THE CONTRACT DRAWINGS AND SPECIFICATIONS HAVE BEEN FULFILLED. WIRING SHALL BE TESTED FOR PROPER CONNECTION, SHORT CIRCUITS AND GROUND USING SUITABLE TESTING INSTRUMENTS. ALL EQUIPMENT SHALL BE TESTED FOR PROPER PERFORMANCE. DIRECTION OF ROTATION OF ALL THREE PHASE MOTORS SHALL BE TESTED. ALL TESTS SHALL BE COORDINATED WITH OWNER FOR MINIMUM INTERRUPTION.

PROJECT CLOSE-OUT

PERFORM ALL REQUIREMENTS FOR PROJECT CLOSE-OUT AS SPECIFIED OR REQUIRED AND AS DESCRIBED BELOW.

CLOSE-OUT DOCUMENTS TO BE SUBMITTED BY THIS CONTRACTOR:

(1) AS-BUILT DRAWINGS IN AUTOCAD

(2) CERTIFICATE OF APPROVAL

(3) BOUND MAINTENANCE AND OPERATING MANUALS SHALL COVER:

- LIGHTING FIXTURES
- SWITCHES
- RECEPTACLES
- DISCONNECTS
- OTHER ELECTRICAL DEVICES / EQUIPMENT

GENERAL NOTES

1. THE ELECTRICAL INSTALLATION HEREIN SHALL BE DONE IN ACCORDANCE WITH THE LATEST PROVISIONS OF THE NATIONAL ELECTRICAL CODE AND SHALL COMPLY WITH THE RULES AND REGULATIONS OF ALL LOCAL AND GOVERNMENTAL ENFORCING AUTHORITIES.
2. REFER TO SPECIFICATIONS COVERING FIRE PROTECTION, PLUMBING AND H.V.A.C. WORK FOR POSSIBLE ADDITIONAL WORK TO BE PERFORMED UNDER THE ELECTRICAL CONTRACT.
3. THE ELECTRICAL CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL OTHER TRADES FOR EXACT LOCATION OF ALL MOTOR AND CONTROL DEVICES. LOCATIONS AS SHOWN ON PLANS ARE APPROXIMATE. ALL FINAL CONNECTIONS TO MOTOR TERMINALS SHALL BE DONE WITH A MINIMUM 18" OF LIQUIDTIGHT FLEXIBLE CONDUIT USING APPROPRIATE FITTINGS. PROVIDE EXTERIOR GROUND WIRE WRAPPED AROUND FLEXIBLE CONDUIT WHERE REQUIRED BY CODE, USE APPROPRIATE FITTINGS.
4. ALL AREAS ABOVE AND BELOW PANELBOARDS AND SWITCHBOARDS SHALL BE FREE FROM WORK OF OTHER TRADES.
5. ALL WORKING CLEARANCES FOR PANELBOARDS AND SWITCHBOARDS SHALL COMPLY WITH NATIONAL ELECTRICAL CODE: ARTICLE 110 AND ASSOCIATED TABLES.
6. THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL STRUCTURAL STEEL SUPPORTS FOR ALL ELECTRICAL EQUIPMENT AND DEVICES SUCH AS PANELBOARDS, MAGNETIC STARTERS, DISCONNECT SWITCHES, ETC.
7. ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL LABOR AND MATERIAL REQUIRED TO PRODUCE, COMPLETE WORKING SYSTEMS. HE SHALL FURNISH AND INSTALL COMPLETE WIRING FOR LIGHTING, POWER, MECHANICAL AND PLUMBING EQUIPMENT.
8. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD MEASUREMENTS AND VERIFICATION OF FIELD CONDITIONS PRIOR TO INSTALLATION OF WORK. ANY CHANGE IN WORK NECESSITATED BY FAILURE OF THE ELECT. CONTRACTOR TO COMPLY WITH THIS PROVISION SHALL BE UNDERTAKEN BY THE ELECTRICAL CONTRACTOR AT HIS OWN EXPENSE.
9. THIS CONTRACTOR SHALL DO ALL NECESSARY CUTTING AND PATCHING FOR WORK UNDER THIS CONTRACT. HE SHALL FURNISH AND INSTALL ALL NECESSARY SUPPORTS AND BRACKETS REQUIRED FOR ALL EQUIPMENT UNDER THIS CONTRACT.
10. ARCHITECT SHALL VERIFY MOUNTING HEIGHT OF DEVICES NOT INDICATED ON THE ELECTRICAL PLANS. ALL RECEPTACLES LOCATED AT COUNTERS SHALL BE MOUNTED 6" ABOVE COUNTER OR MOUNTED IN COUNTER BACKSPLASH, UNLESS OTHERWISE NOTED.
11. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT RATING AND PRONG CONFIGURATION OF ALL SPECIAL PURPOSE RECEPTACLES WITH AUTHORIZED BUILDING PERSONNEL AND EQUIPMENT BEING USED.
12. ALL OUTDOOR RECEPTACLES SHALL BE GROUND FAULT TYPE INSTALLED IN A "RAINTITE WHILE IN USE" ENCLOSURE (CLEAR), "TAYMAC" OR EQUAL.
13. DISCONNECT SWITCHES SHALL BE PROVIDED WHERE REQUIRED BY CODE, WHETHER SHOWN ON THE PLANS OR NOT. USE HEAVY DUTY TYPE.
14. CIRCUIT NUMBERS IF SHOWN ON PLANS ARE FOR CLARIFICATION ONLY THIS CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTLY PHASING THE CIRCUITS IN THE PANELBOARD. THE CONTRACTOR SHALL BALANCE THE PANELBOARD(S) LOAD UNDER NORMAL OPERATING CONDITIONS.
15. TELEPHONE BACKBOARD SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
16. WHERE SWITCHES (Sab, Sa,Sb, ETC.) ARE SHOWN ON THE PLANS, PROVIDE MULTI-GANG BACK BOX AND WITH ONE COMMON FACEPLATE.
17. THE ELECTRICAL CONTRACTOR SHALL DE-ENERGIZE ELECTRICAL CIRCUITS IN AREA(S) BEING RENOVATED, BY DISCONNECTING THEM FROM THE PANEL(S) TO WHICH THEY ARE CONNECTED. WHERE EXISTING ELECTRICAL MATERIAL MUST BE REMOVED OR RELOCATED, ALL SUCH REMOVALS, AND THE SUBSEQUENT REINSTALLATION THEREOF, IF NEEDED, SHALL BE PERFORMED BY THIS CONTRACTOR, REGARDLESS OF WHETHER SUCH REMOVALS ARE REQUIRED FOR WORK PERFORMED UNDER THE GENERAL, MECHANICAL OR ELECTRICAL CONTRACT. AT THE COMPLETION OF THE JOB, ALL EXISTING AND NEW RECEPTACLES, LIGHTING FIXTURES, ETC., ARE TO BE LEFT READY FOR USEFUL OPERATION AND ANY DISCONTINUITY OF ELECTRICAL WIRING WHICH MAY PREVENT SUCH OPERATION SHALL BE REPAIRED BY THIS CONTRACTOR, WHO SHALL INSTALL NEW WIRING TO THOSE LIGHTING FIXTURES, RECEPTACLES, ETC., IN QUESTION, USING WIRING METHODS AS DESCRIBED IN SPECIFICATIONS.
18. IN ADDITION TO WIRING SHOWN ON PLANS, THIS CONTRACTOR SHALL PROVIDE CODE SIZE GREEN GROUNDING CONDUCTORS FOR EACH RECEPT. CIRCUIT AND FIXED EQUIPMENT IN NEW AND ALTERED PATIENT CARE AREAS IN ACCORDANCE WITH NEC 517-13. ALL PANELS, EXISTING AND NEW SERVING THE AFORMENTIONED RECEPTACLES AND FIXED EQUIPMENT SHALL BE PROVIDED WITH GROUND TERMINALS.
19. IN ADDITION TO WIRING SHOWN ON PLANS, THIS CONTRACTOR SHALL PROVIDE CODE SIZE GREEN GROUNDING CONDUCTORS FOR EACH RECEPT. CIRCUIT IN NEW AND ALTERED AREAS. ALL PANELS, EXISTING AND NEW, SERVING THE AFORMENTIONED RECEPTACLES SHALL BE PROVIDED WITH GROUND TERMINALS.
20. IN AREAS BEING RENOVATED, WHERE EXISTING LIGHTING FIXTURES ARE BEING RELOCATED OR ARE TO REMAIN, THESE LIGHTING FIXTURES SHALL BE CLEANED AND RELAMPED AS REQUIRED BY THIS CONTRACTOR. ALSO IN AREAS WHERE CEILINGS ARE BEING REMOVED AND REINSTALLED TO FACILITATE MECHANICAL WORK.
21. WHEN SWITCHES (Sab, Sa,Sb, ETC.) ARE SHOWN ON THE PLANS, FOR NORMAL AND/OR EMERGENCY CIRCUIT, PROVIDE MULTI-GANG BACK BOX AND FACEPLATE. NOTE: DO NOT COMBINE NORMAL AND EMERGENCY CIRCUIT SWITCHES IN ONE COMMON BOX, PROVIDE INTEGRAL BARRIER IN BACK BOX TO SEPARATE CIRCUITS.
22. WHERE BOTH NORMAL AND EMERGENCY PANELBOARDS ARE SERVING ELECTRICAL EQUIPMENT AND DEVICES IN ONE COMMON ROOM, GROUNDING TERMINALS OF BOTH PANELBOARDS SHALL BE BONDED TOGETHER.
23. WIRING METHODS FOR NORMAL AND EMERGENCY CIRCUITS SHALL COMPLY WITH THE FOLLOWING:

    ALL EXPOSED WIRING SHALL BE IN NON-FLEXIBLE METAL RACEWAY.

    NORMAL CIRCUITS: HOSPITAL TYPE "HCF-90" ARMORED CLAD CABLE (WITH INTEGRAL GREEN GROUND) WILL BE USED IN HUNG CEILING SPACES AND IN HOLLOW WALL PARTITIONS.

    EMERGENCY CIRCUITS: ALL WIRING, SHALL BE IN NON-FLEXIBLE METAL RACEWAY (EMT, IMC OR RSC) OR SHALL BE WIRED WITH TYPE "MI" CABLE. OTHER EXCEPTIONS FOR EMERGENCY WIRING AS DESCRIBED IN NATIONAL ELECTRICAL CODE SHALL BE PERMITTED WHERE THEY APPLY.
24. ALL EMERGENCY RECEPTACLE FACEPLATES SHALL BE FACTORY ENGRAVED, IDENTIFYING PANEL AND CIRCUIT NUMBER SUPPLYING EACH RECEPTACLE. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
25. FURNISH AND INSTALL A DUCT SMOKE DETECTOR WITH REMOTE INDICATOR IN ALL RETURN AND EXHAUST AIR DUCTS THAT PENETRATE SMOKE BARRIER WALLS.
26. ALL DEVICES LABELED (EX) ARE EXISTING TO REMAIN.
27. ALL DEVICES LABELED (ER) ARE EXISTING WHICH SHALL BE DISCONNECTED, REMOVED AND RELOCATED BY THIS CONTRACTOR TO NEW CEILING OR WALL AS INDICATED ON PLANS.
28. ELECTRICAL ITEMS AND MATERIALS WHICH ARE BEING REMOVED AND ARE NOT TO BE REINSTALLED SHALL BECOME THE PROPERTY OF THE ELECT. CONTRACTOR, EXCEPT FOR THOSE ITEMS OR MATERIALS THE OWNER AT HIS OPTION, WISHES TO RETAIN. ITEMS AND MATERIALS THAT THE OWNER WISHES TO RETAIN SHALL BE REMOVED AND STORED ON THE SITE BY THE ELECTRICAL CONTRACTOR, WHERE DIRECTED BY THE OWNER. ITEMS AND MATERIALS WHICH BECOME THE PROPERTY OF THE ELECT. CONTRACTOR, SHALL BE COMPLETELY REMOVED BY HIM FROM THE SITE.
29. WHERE NEW ELECTRICAL DEVICES ARE TO BE INSTALLED IN EXISTING WALLS, SNAKE OR CHANNEL CONDUIT(S) IN EXISTING WALL AS REQUIRED. ALL NEW DEVICES IN EXISTING WALLS SHALL BE FLUSH MOUNTED. (UNLESS OTHERWISE NOTED)

SYMBOL LIST (ALL MAY NOT APPLY)

- J — JUNCTION BOX WITH COVER, CODE GAGE AND SIZE AS REQUIRED. WHEN SHOWN FOR EQUIPMENT ON PLANS, THIS CONTRACTOR SHALL DO ALL REQUIRED WIRING FOR THAT EQUIPMENT AS PER MANUFACTURERS RECOMMENDATIONS.
- M — JUNCTION BOX FOR PHYSIO MONITOR, FURNISH AND INSTALL 3/4" EMPTY CONDUIT STUBBED ABOVE ACCESSIBLE HUNG CEILING SPACE. PROVIDE PHYSIO MONITORING SYSTEM FACEPLATE AS REQUIRED.
- PP — PUSH PLATE FOR AUTOMATIC DOOR. DO ALL REQUIRED WIRING.
- HOMERUN INDICATES TO WHICH PANEL IT IS CONNECTED. ARROWS AND TICKS INDICATE NUMBER OF CIRCUITS AND WIRES.
- WIRE IN CONDUIT CONCEALED IN WALL OR CEILING.
- WIRE IN CONDUIT EXPOSED.
- WIRE IN CONDUIT CONCEALED IN CONCRETE OR UNDERGROUND.
- $ — MOTOR RATED SWITCH WITH THERMAL OVERLOAD & PILOT LIGHT. FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR.
- DISCONNECT SWITCH. SIZE AND TYPE AS INDICATED. FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR (U.O.N.).
- COMBINATION MAGNETIC MOTOR STARTER/DISCONNECT SWITCH. FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR (U.O.N.).
- ELECTRIC MOTOR, NUMBER INDICATES HORSEPOWER.
- DISCONNECT SWITCH LEGEND
  - AMPERE RATING (100) — NO. OF POLES (3P)
  - FUSE SIZE NF=NON-FUSED (NF) — NEMA ENCLOSURE (1)
  - RATED VOLTAGE (600V)
- 277/480V PANELBOARD.
- 120/208V PANELBOARD.
- TRANSFORMER, SIZE AND TYPE AS INDICATED ON PLANS.
- W — VOICE OUTLET, DESK TYPE. PROVIDE 3/4" EMPTY CONDUIT STUBBED ABOVE ACCESSIBLE HUNG CEILING SPACE. VERIFY ACTUAL LOCATION IN FIELD. "W" INDICATES WALL MOUNTED TYPE (5'-0" AFF). IN AREAS WHERE THE CEILINGS ARE USED AS A RETURN AIR PLENUM, PROVIDE A COMPLETE CONDUIT SYSTEM OR AN APPROVED CABLE FOR USE IN PLENUM CEILINGS.
- DATA OUTLET. PROVIDE 3/4" EMPTY CONDUIT STUBBED ABOVE ACCESSIBLE CEILING SPACE. PROVIDE FACEPLATE AS REQUIRED.
- COMBINATION VOICE AND DATA OUTLET. PROVIDE 3/4" EMPTY CONDUIT STUBBED ABOVE ACCESSIBLE HUNG CEILING SPACE. PROVIDE FACEPLATE AS REQUIRED.
- S — SMOKE DETECTOR (PHOTOELECTRIC TYPE)
- H — HEAT DETECTOR.
- F — FIRE ALARM MANUAL PULL STATION.
- COMBINATION FIRE ALARM HORN AND STROBE LIGHT.
- FIRE ALARM STROBE LIGHT.
- FS — SPRINKLER FLOW SWITCH
- TS — SPRINKLER TAMPER SWITCH
- EMERGENCY CALL BUTTON WITH PULL CORD.
- CB — EMERGENCY CALL BUTTON (CODE BLUE). CONNECT TO EXISTING NURSE CALL SYSTEM
- SA — EMERGENCY CALL BUTTON (STAFF ASSIST). CONNECT TO EXISTING NURSE CALL SYSTEM
- S — NURSE CALL STAFF STATION. 1 REF#3,4
- D — NURSE CALL DUTY STATION.
- NURSE CALL EMERGENCY DOME LIGHT.
- NURSE CALL EMERGENCY DOME LIGHT (MULTI-LIGHT)
- NCM — NURSE CALL MASTER STATION.
- NURSE CALL EQUIPMENT PANEL.

SYMBOL LIST (ALL MAY NOT APPLY)

- LED 2' x 4' LIGHTING FIXTURE.
- LED LIGHTING FIXTURE ON EMERGENCY CIRCUIT. 'NL' INDICATES NIGHTLIGHT FIXTURE.
- LED 2' x 2' LIGHTING FIXTURE.
- FLUORESCENT 4 FT INDUSTRIAL LIGHTING FIXTURE.
- LED DOWN LIGHTING FIXTURE.
- LOW VOLTAGE ACCENT LIGHTING FIXTURE.
- EXIT LIGHT FIXTURE
  - INDICATES WALL MOUNTED, OTHERWISE CEILING MOUNTED.
  - INDICATES DIRECTION OF FACE.
  - INDICATES DIRECTION OF ARROW, IF ANY.
- A — INDICATES LIGHTING FIXTURE TYPE, SEE LIGHTING FIXTURE SCHEDULE.
  SEE LIGHTING CONTROLS SYMBOLIST ON E-0.2 FOR COMPLETE LIGHTING CONTROLS
- Sa — SINGLE POLE SWITCH. SMALL LETTER INDICATES CIRCUIT OR FIXTURE CONTROLLED. MORE THAN ONE LETTER INDICATES NUMBER OF SWITCHES.
- S3 — THREE WAY SWITCH.
- Sp — SINGLE POLE SWITCH WITH PILOT LIGHT.
- Swp — SINGLE POLE SWITCH (WEATHER PROOF).
- Sem — EMERGENCY SHUT-OFF SWITCH.
- DUPLEX RECEPTACLE.
- DUPLEX RECEPTACLE ON EMERGENCY CIRCUIT.
- DOUBLE DUPLEX RECEPTACLE (QUAD).
- DOUBLE DUPLEX RECEPTACLE (QUAD) ON EMERGENCY CIRCUIT.
- DUPLEX RECEPTACLE WITH BUILT-IN GROUND FAULT INTERRUPTER, L.E.D. INDICATOR, TEST AND RESET BUTTON.
- SPECIAL PURPOSE RECEPTACLE, RATING AND PRONG CONFIGURATION AS REQUIRED.
- TV — COMBINATION SIMPLEX RECEPTACLE AND CABLE TV OUTLET. VERIFY EACH LOCATIONS MOUNTING HEIGHT.
- FLUSH POKE-THRU FITTING OR RECEPTACLE. TYPE AS INDICATED ON PLANS.
- DROP CORD WITH NEMA LOCKING TYPE RECEPTACLE, 3 WIRE, GROUNDING TYPE, 20A, WITH #12 CONDUCTORS AND KELLEM GRIPS.

Department of Community Affairs
Construction Project Review
Project No: 5228-22
Partial Electrical Release
Electrical
Vijay Raja
Released: 02/14/23
N.J.S.A. 52:27D-119 ET SEQ., AS AMENDED

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Issuance / Revision

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1	01/25/23	PER DCA COMMENTS

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Posen Project No.:	DCA Number:	
22119	NJPRP-14794	
Submission:	PROGRESS SET NOT FOR CONSTRUCTION	
Drawing:	ELECTRICAL: SPECIFICATIONS & GENERAL NOTES	
Drawn By: DA	Checked By: JA	Date: 8/10/2022
Scale: 1/4" = 1'-0"	Dwg No.Issue No.: E-0.1	Drawing: of