

ELECTRICAL SPECIFICATIONS:

- A. GENERAL:
  - 1. COMPLY WITH PROVISIONS OF NFPA 70--2002 AND LOCAL CODES. LOCAL CODES AND REGULATIONS SHALL GOVERN IN CASE OF CONFLICT.
  - 2. PROVIDE ACCESS TO EQUIPMENT AND APPARATUS REQUIRING OPERATION, SERVICE OR MAINTENANCE.
  - 3. DO NOT INSTALL PANELBOARDS, POWER PANELS, TRANSFORMERS, OR STARTERS WITHIN 42" HORIZONTALLY, FROM FLOOR TO THE STRUCTURE ABOVE, OF PIPING, DUCTWORK AND MECHANICAL EQUIPMENT.
  - 4. OPENINGS THROUGH FIRE RATED FLOORS AND PARTITIONS SHALL BE SEALED WITH FIRE RATED SEALANT AFTER INSTALLATION OF RACEWAYS IN A MANNER TO MAINTAIN THE FIRE RATING OF THE SEPARATION.
  - 5. THE EXISTING INSTALLATION SHALL REMAIN EXCEPT WHERE OTHERWISE INDICATED OR SPECIFIED.
  - 6. PERFORM ALL WORK NECESSARY TO INTERCONNECT THE NEW WORK WITH THE EXISTING WORK AND TO ADAPT THE EXISTING WORK TO THE CHANGES IN THE BUILDING AND THE SYSTEM.
  - 7. EXISTING LUMINAIRES REMOVED AND NOT REUSED ELSEWHERE SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL BE STORED ON THE PREMISES AS DIRECTED.
  - 8. APPARATUS, WIRING, CONDUIT, AND METAL MOLDINGS RENDERED USELESS DUE TO CHANGES IN THE EXISTING BUILDING SHALL BE REMOVED WHERE EXPOSED TO VIEW AND SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE PREMISES.
  - 9. COORDINATE THE INSTALLATION WITH THE STRUCTURE, ARCHITECTURE, AND WORK OF OTHER TRADES TO ELIMINATE CONFLICTS.
  - 10. SHOULD THE INSTALLATION OF NEW DUCTWORK, PIPING OR OTHER EQUIPMENT CONFLICT WITH EXISTING LUMINAIRES AND/OR ELECTRICAL OUTLETS, SHIFT THE OUTLETS OR MAKE SUCH OTHER CHANGES AS ARE NECESSARY IN THE ELECTRICAL INSTALLATION TO REMEDY THE CONFLICTS, AS APPROVED BY THE ARCHITECT AND AT NO EXTRA COST TO THE OWNER.
  - 11. WHERE EXISTING MECHANICAL EQUIPMENT IS REMOVED, REMOVE ELECTRIC WIRING, CONDUIT, SWITCHES AND STARTERS ASSOCIATED WITH THE EQUIPMENT.
  - 12. WHERE EXISTING MECHANICAL EQUIPMENT IS MODIFIED OR RELOCATED, MODIFY THE ELECTRICAL CONNECTIONS TO THE EQUIPMENT TO ADAPT IT TO ITS NEW FUNCTION OR LOCATION.
  - 13. ELECTRICAL MATERIALS SHALL BE NEW AND LISTED BY THE UNDERWRITERS' LABORATORIES, INC. WHEREVER STANDARDS HAVE BEEN ESTABLISHED AND LABEL SERVICE IS REGULARLY FURNISHED BY THIS AGENCY.
  - 14. SHOP DRAWINGS AND CUTS AND/OR DATA TO BE SUBMITTED SHALL INCLUDE THOSE ON THE FOLLOWING ITEMS OF EQUIPMENT OR MATERIALS:
    - PANELBOARDS.
    - LUMINAIRES.
  - 15. EACH CIRCUIT BREAKER, PANELBOARD, DISCONNECT SWITCH, OR OTHER DEVICE SHALL HAVE AN IDENTIFYING NAMEPLATE AFFIXED. NAMEPLATES SHALL BE LAMINATED PLASTIC, WHITE ENGRAVED LETTERS ON BLACK BACKGROUND FOR NORMAL POWER SUPPLY AND WHITE ENGRAVED LETTERS ON RED BACKGROUND FOR EMERGENCY POWER SUPPLY. LETTERS SHALL BE 0.25" HIGH.
- B. DISCONNECT SWITCHES:
  - 1. FUSIBLE TYPE SHALL BE HEAVY DUTY, HORSEPOWER RATED, OF VOLTAGE RATING EQUAL TO VOLTAGE OF CIRCUIT TO WHICH CONNECTED, AND AMPERE RATING AS INDICATED. NONFUSIBLE TYPE SHALL BE SIMILAR, EXCEPT FOR MOTOR LOADS 2 HP OR SMALLER OR NONMOTOR LOADS CONNECTED TO A 20 AMPERE OR SMALLER CIRCUIT MAY BE MOTOR RATED TOGGLE TYPE SWITCHES OR NONAUTOMATIC CIRCUIT BREAKERS, UL LISTED FOR EACH SPECIFIC TYPE OF LOAD. ENCLOSURES SHALL BE NEMA TYPE 1 INDOORS, AND NEMA TYPE 3R WHERE EXPOSED TO WEATHER.
  - 2. PROVIDE FUSES IN FUSIBLE EQUIPMENT AND DEVICES. PROVIDE TO THE OWNER, AS SPARES, 3 FUSES OF EACH SIZE AND TYPE FUSE USED.
- C. WIRING DEVICES:
  - 1. DEVICES SHALL BE WHITE IN COLOR.
  - 2. SINGLE-POLE WALL SWITCHES SHALL BE 277V, 20 AMPERE, COOPER 2221, HUBBELL HBL 1221, LEVITON 1221, OR P&S PS20AC1.
  - 3. DUPLEX RECEPTACLES SHALL BE 125V, SPECIFICATION GRADE, COLORED WHITE.
    - MANUFACTURER, 15 AMPERE: COOPER 5262, HUBBELL HBL 5262, LEVITON 5262A, OR P&S 5262-A.
    - MANUFACTURER, 20 AMPERE: COOPER 5362, HUBBELL HBL 5362, LEVITON 5362A, OR P&S 5362-A.
  - 4. DEVICES SHALL BE BY THE SAME MANUFACTURER.
  - 5. THE APPROXIMATE LOCATIONS OF DEVICE OUTLETS ARE INDICATED. THE EXACT LOCATIONS SHALL BE DETERMINED AT THE BUILDING. THE ARCHITECT RESERVES THE RIGHT TO CHANGE THE EXACT LOCATION OF ANY SWITCH, GELING OR OTHER OUTLET IN ANY ROOM BEFORE IT IS PERMANENTLY INSTALLED.
  - 6. MOUNTING HEIGHTS OF OUTLETS SHALL BE AS INDICATED MEASURED TO THE CENTERLINE OF THE OUTLET.
  - 7. WHERE OUTLETS AT DIFFERENT LEVELS ARE SHOWN ADJACENT, THEY SHALL BE INSTALLED IN ONE VERTICAL LINE.
  - 8. DUPLEX RECEPTACLES SHALL GENERALLY BE 15 AMPERE RATED. WHERE A 20 AMPERE BRANCH CIRCUIT SERVES A SINGLE DUPLEX RECEPTACLE, THE RECEPTACLE SHALL BE 20 AMPERE RATED. DUPLEX RECEPTACLES IN CORRIDORS AND EQUIPMENT ROOMS SHALL BE 20 AMPERE RATED.
  - 9. RECEPTACLES ON DEDICATED CIRCUITS FOR SPECIFIC ITEMS OF EQUIPMENT SHALL HAVE THE EQUIPMENT NAME ENGRAVED IN 0.125" HIGH LETTERS ON THE DEVICE PLATE.
- D. DEVICE COVERPLATES:
  - 1. COVERPLATES FOR FLUSH WALL OUTLETS (SWITCH, RECEPTACLE, TELEPHONE, ETC.) SHALL BE HIGH IMPACT THERMOPLASTIC THE SAME COLOR AS THE DEVICE IT COVERS AS MANUFACTURED BY COOPER, HUBBELL, LEVITON, OR P&S.
- E. RACEWAYS:
  - 1. WIRES SHALL BE RUN IN RACEWAYS UNLESS OTHERWISE SPECIFIED.
  - 2. RACEWAYS SHALL BE RIGID HOT-DIP GALVANIZED RIGID STEEL CONDUIT FOR EXPOSED WORK AND WHERE REQUIRED BY CODE.
  - 3. CONCEALED RIGID RACEWAYS SHALL BE ELECTRICAL METALLIC TUBING, OF ELECTRO OR HOT-DIP GALVANIZED STEEL.
  - 4. RACEWAYS SHALL BE GALVANIZED FLEXIBLE STEEL CONDUIT FOR CONNECTIONS TO MOTORS (MAXIMUM LENGTH 18") AND CONNECTION TO COMPUTER EQUIPMENT UNDER RAISED FLOOR.
  - 5. FLEXIBLE CONDUIT EXPOSED TO WEATHER OR SPRAY SHALL BE NEOPRENE JACKETED STEEL, AND INSTALLED WITH WATERTIGHT FITTINGS.
  - 6. PROVIDE A COMPLETE RACEWAY SYSTEM WITH PULL LINES IN CONDUIT FOR DATA AND/OR COMMUNICATION OUTLETS.
  - 7. JUNCTION BOXES INSTALLED FOR FUTURE USE SHALL BE PROVIDED WITH BLANK COVERPLATES.
  - 8. CONNECTORS AND COUPLINGS FOR RIGID CONDUIT SHALL BE THREADED GALVANIZED STEEL. INSULATED BUSHINGS SHALL BE INSTALLED ON RIGID CONDUIT CONNECTORS IN CABINETS, OUTLET BOXES AND PULL BOXES.
  - 9. FITTINGS FOR ELECTRICAL METALLIC TUBING SHALL BE STEEL TYPE WITH INSULATED THROAT CONNECTORS AND SHALL BE CODE APPROVED FOR EACH SPECIFIC APPLICATION.
  - 10. CONNECTORS FOR FLEXIBLE STEEL CONDUIT (NONWATERTIGHT) SHALL BE OF THE TWIST-IN, INSERTION TYPE, WITH INSULATED THROAT.
  - 11. CONCEALED RACEWAYS NOT IN SLABS OR WALLS SHALL BE SUPPORTED WITH CLAMPS ON HANGERS AT 8' OR LESS INTERVALS.
  - 12. IN GENERAL, THE CONDUIT INSTALLATION SHALL FOLLOW THE LAYOUT INDICATED. THIS LAYOUT IS, HOWEVER, DIAGRAMMATIC ONLY, AND WHERE CHANGES ARE NECESSARY DUE TO STRUCTURAL CONDITIONS, OTHER APPARATUS, OR OTHER CAUSES, SUCH CHANGES SHALL BE MADE WITHOUT ANY ADDITIONAL COST TO THE OWNER. OFFSETS IN CONDUITS ARE NOT INDICATED AND MUST BE FURNISHED AS REQUIRED.
  - 13. PULL LINES SHALL BE INSTALLED IN EMPTY RACEWAYS. AT EACH END, LEAVE 12" OF SLACK COILED IN BOX OR AT END OF RACEWAYS.

F. WIRING:

- 1. NO WIRE SHALL BE SMALLER THAN #12 AWG UNLESS OTHERWISE INDICATED.
- 2. WIRE AND CABLE SHALL BE ANNEALED SOFT DRAWN COPPER AND HAVE A CONDUCTANCE OF 98%.
- 3. SPLICES, TAPS AND TERMINATIONS:
  - SPLICES AND TAPS IN BRANCH CIRCUIT CONDUCTORS, #12 THROUGH 8 AWG, SHALL BE MADE WITH MECHANICAL PRESSURE CONNECTORS.
  - TERMINATIONS OF STRANDED COPPER CONDUCTORS SHALL BE MADE WITH COPPER COMPRESSION OR INDENTOR TYPE LUGS OR WITH MECHANICAL PRESSURE LUGS.
  - JOINTS SHALL BE COVERED WITH 7 MIL ELECTRICAL TAPE ON BRANCH CIRCUIT WIRING CONNECTIONS, AND 10 MIL ELECTRICAL TAPE ON MECHANICAL AND INDENT CONNECTORS ON LARGER CABLES. PATENTED PLASTIC CONNECTION COVERS MAY BE USED FOR CONNECTORS IF APPROVED BY LOCAL AUTHORITY HAVING JURISDICTION.
- 4. WIRE SHALL BE COLOR-CODED TO INDICATE THE VARIOUS PHASES AND NEUTRAL. WHERE COLOR-CODING IS IMPRACTICAL, 0.75" WIDE TAPE BANDS SHALL BE PROVIDED.
- 5. COLOR-CODING FOR THE VARIOUS SYSTEMS SHALL MATCH EXISTING BUILDING STANDARD.
- 6. INSULATION SHALL BE NEC TYPE THWV/THHN.
- G. METAL-CLAD CABLE:
  - 1. METAL-CLAD CABLE INCLUDING GREEN INSULATED GROUND WIRE MAY BE USED WHERE PERMITTED BY CODE FOR LUMINAIRE AND RECEPTACLE BRANCH CIRCUIT WORK IN STUD PARTITIONS AND IN CEILING CONSTRUCTION.
  - 2. ADAPTORS SHALL BE USED AT CONNECTIONS TO BOXES AND TO OTHER RACEWAYS.
  - 3. WHERE METAL-CLAD CABLE FEEDS OUTLETS LOCATED IN MASONRY WALLS, A PIECE OF CONDUIT SHALL BE INSTALLED FOR THAT PORTION OF THE RUN IN OR ON THE MASONRY. THE METALLIC SHEATH SHALL BE STOPPED FROM THE CABLE AND THE CABLE THREADED INTO THE CONDUIT AND A CABLE TO CONDUIT COUPLING SHALL BE INSTALLED IN ORDER TO BOND THE METALLIC SHEATH TO THE CONDUIT.
  - 4. SUPPORT METAL-CLAD CABLE ABOVE SUSPENDED CEILINGS IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.
- H. EQUIPMENT GROUNDS:
  - 1. EQUIPMENT, ENCLOSURES AND RACEWAYS SHALL BE GROUNDED.
  - 2. A GREEN COLORED OR GREEN IDENTIFIED GROUNDING CONDUCTOR SHALL BE INSTALLED IN RACEWAYS WITH THE PHASE CONDUCTORS.
  - 3. BOND GROUND CONDUCTORS AT ORIGIN OF CIRCUITS, AT INTERMEDIATE PULL BOXES, AND TO PANELBOARDS OR EQUIPMENT AT TERMINATIONS.
- I. PANELBOARDS:
  - 1. BUSWORK SHALL BE COPPER.
  - 2. PROVIDE GROUND BUS BARS IN CABINETS.
  - 3. PROTECTIVE DEVICES IN PANELBOARDS SHALL BE MOLDED CASE THERMAL-MAGNETIC, AUTOMATIC CIRCUIT BREAKERS OF FRAME TYPES, NUMBER POLES, TRIP RATINGS AND QUANTITIES AS INDICATED.
  - 4. MAIN AND BRANCH BREAKERS SHALL BE RATED FOR THE FAULT CURRENT LEVEL INDICATED, MINIMUM 10000 AMPERES RMS SYMMETRICAL FOR 208V OR 120V AC, AND 14000 AMPERES RMS SYMMETRICAL FOR 480V OR 277V AC.
  - 5. SPACES FOR FUTURE BREAKERS SHALL BE EQUIPPED WITH HARDWARE TO ACCEPT BREAKERS, AND SHALL BE BUSSED TO ACCEPT A MINIMUM 60 AMPERE BREAKER WITHOUT REVISIONS, UNLESS OTHERWISE INDICATED.
  - 6. PANELBOARDS SHALL BE GE, ITE, SQUARE D, OR WESTINGHOUSE.
  - 7. UNLESS OTHERWISE INDICATED, INSTALL TOP OF PANELBOARD CABINETS 6'-6" ABOVE THE FINISHED FLOOR.
- J. DRY-TYPE TRANSFORMERS:
  - 1. VENTILATED, 480V, 3-PHASE, DELTA PRIMARY, 208/120V, 3-PHASE, 4-WIRE, WYE-CONECTED SECONDARY UNLESS OTHERWISE INDICATED ON THE DRAWINGS, WITH FULL CAPACITY. STANDARD TAPS IN PRIMARY WINDING.
  - 2. WINDINGS: COPPER.
  - 3. TEMPERATURE RISE: 150° C.
  - 4. INSULATION: 220° C.
  - 5. MANUFACTURER: CUTLER-HAMMER DT-3, GE QL, SIEMENS 3F, SQUARE D CLASS 7400, OR UPTGRAFF.
- K. LUMINAIRES:
  - 1. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF LUMINAIRES.
  - 2. 2' X 4' LUMINAIRES SHALL BE TYPE A UNLESS OTHERWISE INDICATED.
  - 3. IN MECHANICAL/ELECTRICAL/COMMUNICATIONS ROOMS, COORDINATE THE FINAL LOCATIONS OF LUMINAIRES WITH EQUIPMENT.
  - 4. LUMINAIRES UTILIZED DURING CONSTRUCTION SHALL BE RELAMPED PRIOR TO ACCEPTANCE BY THE OWNER.
  - 5. CEILING-MOUNTED LUMINAIRES SHALL BE INDEPENDENTLY SUPPORTED FROM THE STRUCTURE.
  - 6. PROVIDE CERTIFICATION OF LUMINAIRE PLASTIC RATING:
    - L. CABLE TRAY:
      - 1. CABLE TRAY SHALL FORM A WIREWAY SYSTEM AND SHALL BE WIRE BASKET TYPE, NOMINAL 2" DEPTH, STEEL CONSTRUCTION. CABLE TRAYS SHALL INCLUDE SPLICES, END PLATES, DROP-OUTS, EXPANSION CONNECTORS IN STRAIGHT RUNS OF 125' OR LONGER, AND SUPPORT/ACCESSORY ITEMS FOR A COMPLETE INSTALLATION.
      - 2. TRAYS SHALL BE 0.191" MINIMUM WIRE GAUGE CONSTRUCTION. TRAY SHALL BE DESIGNED FOR A UNIFORM DISTRIBUTED CABLE LOAD OF 32 POUNDS PER FOOT WHEN SUPPORTED ON 8' SPANS.
      - 3. MANUFACTURER: B-LINE, CABLOFL, FLEXTRAY, GULF COAST SYSTEMS, OR MONO-SYSTEMS.
    - M. MISCELLANEOUS:
      - 1. MAINTAIN, ON SITE, A COMPREHENSIVE SET OF DRAWINGS WITH AS-BUILT CONDITIONS CLEARLY INDICATED IN RED.
      - 2. VERIFY CODE COMPLIANCE OF EXISTING CONDITIONS. IF ANY OF THE EXISTING ELECTRICAL INSTALLATION TO BE UTILIZED IN TENANT CONSTRUCTION IS FOUND TO BE DEFECTIVE OR IN VIOLATION OF NATIONAL, STATE OR LOCAL CODES, NOTIFY THE ARCHITECT IN WRITING WITHIN 5 WORKING DAYS.
      - 3. VERIFY THE LOAD ON EXISTING CIRCUITS TO BE MODIFIED AND/OR REUSED TO ENSURE THAT THE RATINGS OF THE OVERCURRENT PROTECTION DEVICES ARE NOT EXCEEDED. A TRUE-RMS AMMETER WHICH GIVES WIDE BANDWIDTH READINGS OF CURRENT WITH HARMONICS SHALL BE USED. NOTIFY THE ARCHITECT OF ANY OVERLOAD CONDITIONS IN WRITING WITHIN 5 WORKING DAYS.
      - 4. WORK SHALL BE NEAT IN APPEARANCE, PLUMB, LEVEL AND TRUE. ANY WORK DEEMED UNSATISFACTORY BY THE ARCHITECT SHALL IMMEDIATELY BE REMOVED AND REPLACED.

F. WIRING:

- 1. NO WIRE SHALL BE SMALLER THAN #12 AWG UNLESS OTHERWISE INDICATED.
- 2. WIRE AND CABLE SHALL BE ANNEALED SOFT DRAWN COPPER AND HAVE A CONDUCTANCE OF 98%.
- 3. SPLICES, TAPS AND TERMINATIONS:
  - SPLICES AND TAPS IN BRANCH CIRCUIT CONDUCTORS, #12 THROUGH 8 AWG, SHALL BE MADE WITH MECHANICAL PRESSURE CONNECTORS.
  - TERMINATIONS OF STRANDED COPPER CONDUCTORS SHALL BE MADE WITH COPPER COMPRESSION OR INDENTOR TYPE LUGS OR WITH MECHANICAL PRESSURE LUGS.
  - JOINTS SHALL BE COVERED WITH 7 MIL ELECTRICAL TAPE ON BRANCH CIRCUIT WIRING CONNECTIONS, AND 10 MIL ELECTRICAL TAPE ON MECHANICAL AND INDENT CONNECTORS ON LARGER CABLES. PATENTED PLASTIC CONNECTION COVERS MAY BE USED FOR CONNECTORS IF APPROVED BY LOCAL AUTHORITY HAVING JURISDICTION.
- 4. WIRE SHALL BE COLOR-CODED TO INDICATE THE VARIOUS PHASES AND NEUTRAL. WHERE COLOR-CODING IS IMPRACTICAL, 0.75" WIDE TAPE BANDS SHALL BE PROVIDED.
- 5. COLOR-CODING FOR THE VARIOUS SYSTEMS SHALL MATCH EXISTING BUILDING STANDARD.
- 6. INSULATION SHALL BE NEC TYPE THWV/THHN.
- G. METAL-CLAD CABLE:
  - 1. METAL-CLAD CABLE INCLUDING GREEN INSULATED GROUND WIRE MAY BE USED WHERE PERMITTED BY CODE FOR LUMINAIRE AND RECEPTACLE BRANCH CIRCUIT WORK IN STUD PARTITIONS AND IN CEILING CONSTRUCTION.
  - 2. ADAPTORS SHALL BE USED AT CONNECTIONS TO BOXES AND TO OTHER RACEWAYS.
  - 3. WHERE METAL-CLAD CABLE FEEDS OUTLETS LOCATED IN MASONRY WALLS, A PIECE OF CONDUIT SHALL BE INSTALLED FOR THAT PORTION OF THE RUN IN OR ON THE MASONRY. THE METALLIC SHEATH SHALL BE STOPPED FROM THE CABLE AND THE CABLE THREADED INTO THE CONDUIT AND A CABLE TO CONDUIT COUPLING SHALL BE INSTALLED IN ORDER TO BOND THE METALLIC SHEATH TO THE CONDUIT.
  - 4. SUPPORT METAL-CLAD CABLE ABOVE SUSPENDED CEILINGS IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.
- H. EQUIPMENT GROUNDS:
  - 1. EQUIPMENT, ENCLOSURES AND RACEWAYS SHALL BE GROUNDED.
  - 2. A GREEN COLORED OR GREEN IDENTIFIED GROUNDING CONDUCTOR SHALL BE INSTALLED IN RACEWAYS WITH THE PHASE CONDUCTORS.
  - 3. BOND GROUND CONDUCTORS AT ORIGIN OF CIRCUITS, AT INTERMEDIATE PULL BOXES, AND TO PANELBOARDS OR EQUIPMENT AT TERMINATIONS.
- I. PANELBOARDS:
  - 1. BUSWORK SHALL BE COPPER.
  - 2. PROVIDE GROUND BUS BARS IN CABINETS.
  - 3. PROTECTIVE DEVICES IN PANELBOARDS SHALL BE MOLDED CASE THERMAL-MAGNETIC, AUTOMATIC CIRCUIT BREAKERS OF FRAME TYPES, NUMBER POLES, TRIP RATINGS AND QUANTITIES AS INDICATED.
  - 4. MAIN AND BRANCH BREAKERS SHALL BE RATED FOR THE FAULT CURRENT LEVEL INDICATED, MINIMUM 10000 AMPERES RMS SYMMETRICAL FOR 208V OR 120V AC, AND 14000 AMPERES RMS SYMMETRICAL FOR 480V OR 277V AC.
  - 5. SPACES FOR FUTURE BREAKERS SHALL BE EQUIPPED WITH HARDWARE TO ACCEPT BREAKERS, AND SHALL BE BUSSED TO ACCEPT A MINIMUM 60 AMPERE BREAKER WITHOUT REVISIONS, UNLESS OTHERWISE INDICATED.
  - 6. PANELBOARDS SHALL BE GE, ITE, SQUARE D, OR WESTINGHOUSE.
  - 7. UNLESS OTHERWISE INDICATED, INSTALL TOP OF PANELBOARD CABINETS 6'-6" ABOVE THE FINISHED FLOOR.
- J. DRY-TYPE TRANSFORMERS:
  - 1. VENTILATED, 480V, 3-PHASE, DELTA PRIMARY, 208/120V, 3-PHASE, 4-WIRE, WYE-CONECTED SECONDARY UNLESS OTHERWISE INDICATED ON THE DRAWINGS, WITH FULL CAPACITY. STANDARD TAPS IN PRIMARY WINDING.
  - 2. WINDINGS: COPPER.
  - 3. TEMPERATURE RISE: 150° C.
  - 4. INSULATION: 220° C.
  - 5. MANUFACTURER: CUTLER-HAMMER DT-3, GE QL, SIEMENS 3F, SQUARE D CLASS 7400, OR UPTGRAFF.
- K. LUMINAIRES:
  - 1. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF LUMINAIRES.
  - 2. 2' X 4' LUMINAIRES SHALL BE TYPE A UNLESS OTHERWISE INDICATED.
  - 3. IN MECHANICAL/ELECTRICAL/COMMUNICATIONS ROOMS, COORDINATE THE FINAL LOCATIONS OF LUMINAIRES WITH EQUIPMENT.
  - 4. LUMINAIRES UTILIZED DURING CONSTRUCTION SHALL BE RELAMPED PRIOR TO ACCEPTANCE BY THE OWNER.
  - 5. CEILING-MOUNTED LUMINAIRES SHALL BE INDEPENDENTLY SUPPORTED FROM THE STRUCTURE.
  - 6. PROVIDE CERTIFICATION OF LUMINAIRE PLASTIC RATING:
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      - 3. VERIFY THE LOAD ON EXISTING CIRCUITS TO BE MODIFIED AND/OR REUSED TO ENSURE THAT THE RATINGS OF THE OVERCURRENT PROTECTION DEVICES ARE NOT EXCEEDED. A TRUE-RMS AMMETER WHICH GIVES WIDE BANDWIDTH READINGS OF CURRENT WITH HARMONICS SHALL BE USED. NOTIFY THE ARCHITECT OF ANY OVERLOAD CONDITIONS IN WRITING WITHIN 5 WORKING DAYS.
      - 4. WORK SHALL BE NEAT IN APPEARANCE, PLUMB, LEVEL AND TRUE. ANY WORK DEEMED UNSATISFACTORY BY THE ARCHITECT SHALL IMMEDIATELY BE REMOVED AND REPLACED.

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  - 6. PROVIDE CERTIFICATION OF LUMINAIRE PLASTIC RATING:
    - L. CABLE TRAY:
      - 1. CABLE TRAY SHALL FORM A WIREWAY SYSTEM AND SHALL BE WIRE BASKET TYPE, NOMINAL 2" DEPTH, STEEL CONSTRUCTION. CABLE TRAYS SHALL INCLUDE SPLICES, END PLATES, DROP-OUTS, EXPANSION CONNECTORS IN STRAIGHT RUNS OF 125' OR LONGER, AND SUPPORT/ACCESSORY ITEMS FOR A COMPLETE INSTALLATION.
      - 2. TRAYS SHALL BE 0.191" MINIMUM WIRE GAUGE CONSTRUCTION. TRAY SHALL BE DESIGNED FOR A UNIFORM DISTRIBUTED CABLE LOAD OF 32 POUNDS PER FOOT WHEN SUPPORTED ON 8' SPANS.
      - 3. MANUFACTURER: B-LINE, CABLOFL, FLEXTRAY, GULF COAST SYSTEMS, OR MONO-SYSTEMS.
    - M. MISCELLANEOUS:
      - 1. MAINTAIN, ON SITE, A COMPREHENSIVE SET OF DRAWINGS WITH AS-BUILT CONDITIONS CLEARLY INDICATED IN RED.
      - 2. VERIFY CODE COMPLIANCE OF EXISTING CONDITIONS. IF ANY OF THE EXISTING ELECTRICAL INSTALLATION TO BE UTILIZED IN TENANT CONSTRUCTION IS FOUND TO BE DEFECTIVE OR IN VIOLATION OF NATIONAL, STATE OR LOCAL CODES, NOTIFY THE ARCHITECT IN WRITING WITHIN 5 WORKING DAYS.
      - 3. VERIFY THE LOAD ON EXISTING CIRCUITS TO BE MODIFIED AND/OR REUSED TO ENSURE THAT THE RATINGS OF THE OVERCURRENT PROTECTION DEVICES ARE NOT EXCEEDED. A TRUE-RMS AMMETER WHICH GIVES WIDE BANDWIDTH READINGS OF CURRENT WITH HARMONICS SHALL BE USED. NOTIFY THE ARCHITECT OF ANY OVERLOAD CONDITIONS IN WRITING WITHIN 5 WORKING DAYS.
      - 4. WORK SHALL BE NEAT IN APPEARANCE, PLUMB, LEVEL AND TRUE. ANY WORK DEEMED UNSATISFACTORY BY THE ARCHITECT SHALL IMMEDIATELY BE REMOVED AND REPLACED.

F. WIRING:

- 1. NO WIRE SHALL BE SMALLER THAN #12 AWG UNLESS OTHERWISE INDICATED.
- 2. WIRE AND CABLE SHALL BE ANNEALED SOFT DRAWN COPPER AND HAVE A CONDUCTANCE OF 98%.
- 3. SPLICES, TAPS AND TERMINATIONS:
  - SPLICES AND TAPS IN BRANCH CIRCUIT CONDUCTORS, #12 THROUGH 8 AWG, SHALL BE MADE WITH MECHANICAL PRESSURE CONNECTORS.
  - TERMINATIONS OF STRANDED COPPER CONDUCTORS SHALL BE MADE WITH COPPER COMPRESSION OR INDENTOR TYPE LUGS OR WITH MECHANICAL PRESSURE LUGS.
  - JOINTS SHALL BE COVERED WITH 7 MIL ELECTRICAL TAPE ON BRANCH CIRCUIT WIRING CONNECTIONS, AND 10 MIL ELECTRICAL TAPE ON MECHANICAL AND INDENT CONNECTORS ON LARGER CABLES. PATENTED PLASTIC CONNECTION COVERS MAY BE USED FOR CONNECTORS IF APPROVED BY LOCAL AUTHORITY HAVING JURISDICTION.
- 4. WIRE SHALL BE COLOR-CODED TO INDICATE THE VARIOUS PHASES AND NEUTRAL. WHERE COLOR-CODING IS IMPRACTICAL, 0.75" WIDE TAPE BANDS SHALL BE PROVIDED.
- 5. COLOR-CODING FOR THE VARIOUS SYSTEMS SHALL MATCH EXISTING BUILDING STANDARD.
- 6. INSULATION SHALL BE NEC TYPE THWV/THHN.
- G. METAL-CLAD CABLE:
  - 1. METAL-CLAD CABLE INCLUDING GREEN INSULATED GROUND WIRE MAY BE USED WHERE PERMITTED BY CODE FOR LUMINAIRE AND RECEPTACLE BRANCH CIRCUIT WORK IN STUD PARTITIONS AND IN CEILING CONSTRUCTION.
  - 2. ADAPTORS SHALL BE USED AT CONNECTIONS TO BOXES AND TO OTHER RACEWAYS.
  - 3. WHERE METAL-CLAD CABLE FEEDS OUTLETS LOCATED IN MASONRY WALLS, A PIECE OF CONDUIT SHALL BE INSTALLED FOR THAT PORTION OF THE RUN IN OR ON THE MASONRY. THE METALLIC SHEATH SHALL BE STOPPED FROM THE CABLE AND THE CABLE THREADED INTO THE CONDUIT AND A CABLE TO CONDUIT COUPLING SHALL BE INSTALLED IN ORDER TO BOND THE METALLIC SHEATH TO THE CONDUIT.
  - 4. SUPPORT METAL-CLAD CABLE ABOVE SUSPENDED CEILINGS IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.
- H. EQUIPMENT GROUNDS:
  - 1. EQUIPMENT, ENCLOSURES AND RACEWAYS SHALL BE GROUNDED.
  - 2. A GREEN COLORED OR GREEN IDENTIFIED GROUNDING CONDUCTOR SHALL BE INSTALLED IN RACEWAYS WITH THE PHASE CONDUCTORS.
  - 3. BOND GROUND CONDUCTORS AT ORIGIN OF CIRCUITS, AT INTERMEDIATE PULL BOXES, AND TO PANELBOARDS OR EQUIPMENT AT TERMINATIONS.
- I. PANELBOARDS:
  - 1. BUSWORK SHALL BE COPPER.
  - 2. PROVIDE GROUND BUS BARS IN CABINETS.
  - 3. PROTECTIVE DEVICES IN PANELBOARDS SHALL BE MOLDED CASE THERMAL-MAGNETIC, AUTOMATIC CIRCUIT BREAKERS OF FRAME TYPES, NUMBER POLES, TRIP RATINGS AND QUANTITIES AS INDICATED.
  - 4. MAIN AND BRANCH BREAKERS SHALL BE RATED FOR THE FAULT CURRENT LEVEL INDICATED, MINIMUM 10000 AMPERES RMS SYMMETRICAL FOR 208V OR 120V AC, AND 14000 AMPERES RMS SYMMETRICAL FOR 480V OR 277V AC.
  - 5. SPACES FOR FUTURE BREAKERS SHALL BE EQUIPPED WITH HARDWARE TO ACCEPT BREAKERS, AND SHALL BE BUSSED TO ACCEPT A MINIMUM 60 AMPERE BREAKER WITHOUT REVISIONS, UNLESS OTHERWISE INDICATED.
  - 6. PANELBOARDS SHALL BE GE, ITE, SQUARE D, OR WESTINGHOUSE.
  - 7. UNLESS OTHERWISE INDICATED, INSTALL TOP OF PANELBOARD CABINETS 6'-6" ABOVE THE FINISHED FLOOR.
- J. DRY-TYPE TRANSFORMERS:
  - 1. VENTILATED, 480V, 3-PHASE, DELTA PRIMARY, 208/120V, 3-PHASE, 4-WIRE, WYE-CONECTED SECONDARY UNLESS OTHERWISE INDICATED ON THE DRAWINGS, WITH FULL CAPACITY. STANDARD TAPS IN PRIMARY WINDING.
  - 2. WINDINGS: COPPER.
  - 3. TEMPERATURE RISE: 150° C.
  - 4. INSULATION: 220° C.
  - 5. MANUFACTURER: CUTLER-HAMMER DT-3, GE QL, SIEMENS 3F, SQUARE D CLASS 7400, OR UPTGRAFF.
- K. LUMINAIRES:
  - 1. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF LUMINAIRES.
  - 2. 2' X 4' LUMINAIRES SHALL BE TYPE A UNLESS OTHERWISE INDICATED.
  - 3. IN MECHANICAL/ELECTRICAL/COMMUNICATIONS ROOMS, COORDINATE THE FINAL LOCATIONS OF LUMINAIRES WITH EQUIPMENT.
  - 4. LUMINAIRES UTILIZED DURING CONSTRUCTION SHALL BE RELAMPED PRIOR TO ACCEPTANCE BY THE OWNER.
  - 5. CEILING-MOUNTED LUMINAIRES SHALL BE INDEPENDENTLY SUPPORTED FROM THE STRUCTURE.
  - 6. PROVIDE CERTIFICATION OF LUMINAIRE PLASTIC RATING:
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      - 2. TRAYS SHALL BE 0.191" MINIMUM WIRE GAUGE CONSTRUCTION. TRAY SHALL BE DESIGNED FOR A UNIFORM DISTRIBUTED CABLE LOAD OF 32 POUNDS PER FOOT WHEN SUPPORTED ON 8' SPANS.
      - 3. MANUFACTURER: B-LINE, CABLOFL, FLEXTRAY, GULF COAST SYSTEMS, OR MONO-SYSTEMS.
    - M. MISCELLANEOUS:
      - 1. MAINTAIN, ON SITE, A COMPREHENSIVE SET OF DRAWINGS WITH AS-BUILT CONDITIONS CLEARLY INDICATED IN RED.
      - 2. VERIFY CODE COMPLIANCE OF EXISTING CONDITIONS. IF ANY OF THE EXISTING ELECTRICAL INSTALLATION TO BE UTILIZED IN TENANT CONSTRUCTION IS FOUND TO BE DEFECTIVE OR IN VIOLATION OF NATIONAL, STATE OR LOCAL CODES, NOTIFY THE ARCHITECT IN WRITING WITHIN 5 WORKING DAYS.
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