AN ASSEMBLY SIMILAR TO WIREMOLD EVOLUTION SERIES AV8. FOR ABOVE FLOOR FITTINGS POWER SHALL BE DUPLEX RECEPTACLE OR OTHER AS NOTED. PROVIDE SEPARATION BARRIER BETWEEN POWER AND TEL/DATA COMPARTMENTS. PROVIDE JUNCTION BOX ON UNDERSIDE OF FLOOR. PACK FITTING TO RESTORE FIRE RATING OF FLOOR. FLOOR BOXES FOR FURNITURE SYSTEMS SHALL UTILIZE SEPARATE FIRE RATED POKE-THRU'S FOR POWER AND TEL/DATA. WIREMOLD TYPE RC-9 MAY BE UTILIZED FOR EACH POWER AND TEL/DATA IN-FEED LOCATION WITH 2 INCH CONDUIT CONNECTION FOR EACH IN-FEED CONNECTION.

- D. ERECT WALL AND SWITCH OUTLETS IN ADVANCE OF FURRING AND FIREPROOFING. OUTLET BOXES SHALL BE SET SQUARE AND TRUE WITH BUILDING FINISH. SECURE TO BUILDING STRUCTURE BY ADJUSTABLE STRAF IRON OR GROUT IN WITH MASONRY. VERIFY OUTLET LOCATIONS IN FINISHED SPACES WITH ARCHITECTURAL DRAWINGS OF INTERIOR DETAILS AND FINISHES. PROVIDE BARRIERS BETWEEN SWITCHES CONNECTED TO DIFFERENT PHASES FOR VOLTAGES EXCEEDING 150 VOLTS TO GROUND.
- PANEL, JUNCTION AND PULL BOXES SHALL BE LOCATED CLEAR OF OTHER TRADES. CONCEAL JUNCTION AND PULL BOXES IN FINISHED SPACES. WHERE NECESSARY, REROUTE RACEWAYS OR MAKE OTHER ARRANGEMENTS FOR CONCEALMENT. BOXES SHALL BE ACCESSIBLE PROVIDE ACCESS DOORS AS REQUIRED FOR ACCESSIBILITY. SUPPORT BOXES FROM BUILDING STRUCTURE, INDEPENDENT OF CONDUIT. PROVIDE FLOOR-TO-CEILING CHANNELS FOR MOUNTING ON DRYWALL AND LIGHTWEIGHT CONSTRUCTION. OUTLET BOXES FOR FIXTURES RECESSED IN HUNG CEILINGS SHALL BE ACCESSIBLE THROUGH OPENING CREATED BY REMOVAL OF FIXTURE. SECURE TO BLACK IRON SUPPORT. MOTOR TERMINAL BOXES: COORDINATE WITH MOTOR BRANCH CIRCUIT CONDUIT AND WIRING: ADD BOX VOLUME WHERE REQUIRED.
- FIRE SEALANTS: PROVIDE FOR RACEWAYS AND WIRE PASSING THROUGH FLOOR SLOTS, SLEEVES OR OPENINGS IN FIRE PARTITIONS.
- PERFORM CONTINUITY TESTS OF RESISTANCE OF FEEDER CONDUITS FROM SERVICE TO POINT OF FINAL DISTRIBUTION USING 1 CONDUCTOR RETURN. MAXIMUM RESISTANCE SHALL BE 25 OHMS. ANY FEEDERS FOUND TO EXCEED THIS TOLERANCE SHALL BE REPLACED AT CONTRACTOR'S EXPENSE

13. WIRE AND CABLE:

- A. PROVIDE WIRE AND CABLE COMPLETE WITH ACCESSORIES. SIZE REFERENCE SHALL BE AWG AND/OR KCMIL EXCEPT AS NOTED.
- CONDUCTORS SHALL BE COPPER, ASTM STANDARD SOLID (NO. 10 AND SMALLER) OR STRANDED (NO. 8 AND LARGER). GENERAL USE CABLING SHALL BE NO. 12 MINIMUM. AT 120 VOLTS AND OVER 75FT UP TO 100 FT CIRCUIT LENGTH, PROVIDE NO. 10 MINIMUM. AT 277 VOLTS AND OVER 150FT UP TO 250 FT CIRCUIT LENGTH, PROVIDE NO. 10 MINIMUM.
- CONTROL AND ALARM CABLING, EXCEPT AS NOTED, SHALL BE NO. 14 MINIMUM. AT 120 VOLTS AND OVER 200 FT CIRCUIT LENGTH, PROVIDE NO. 12 MINIMUM
- OTHER VOLTAGES AND PHASES: ADJUST CABLE SIZING AS REQUIRED TO MAINTAIN CODE MAXIMUM VOLTAGE DROP. INCREASE RACEWAY SIZES FOR LARGER WIRE AS REQUIRED.
- INSULATION SHALL BE RUBBER AND THERMOPLASTIC, 90 DEG C MEETING ASTM AND ICEA STANDARDS. TYPE THHN/THWN SHALL BE UTILIZED FOR FEEDERS AND BRANCH CIRCUITS EXCEPT AS NOTED. SFF-2 SHALL BE USED FOR BRANCH CIRCUITS LOCATED IN WIRING CHANNELS OF CONTINUOUS ROW FLUORESCENT FIXTURES AND IN AMBIENT TEMPERATURES OVER 90 DEG. C. UNDERGROUND SERVICE ENTRANCE CABLING SHALL BE USE. PROVIDE CROSS-LINKED POLYETHYLENE INSULATION (TYPE XHHW) IN EXTERIOR LOCATIONS INCLUDING UNDERGROUND NON-SERVICE CABLES
- METAL-CLAD CABLE (TYPE MC) WITH GROUND WIRES MAY BE UTILIZED WHEN PERMITTED BY BUILDING RULES AND REGULATIONS FOR BRANCH CIRCUITS IN DRY HOLLOW LOCATIONS, HUNG CEILINGS, AND BLOCK WALLS. TYPE MC CABLE MAY NOT BE INSTALLED IN EXPOSED CEILINGS WITHOUT WRITTEN APPROVAL BY ARCHITECT AND ENGINEER. WHEN USED IN LIEU OF WIRING IN CONDUIT, STATE IN PROPOSAL THAT PRICE IS BASED UPON THE USE OF MC CABLE. MC CABLE SHALL INCLUDE COPPER CONDUCTORS AND STEEL OR LIGHTWEIGHT STEEL JACKET. TYPE MC CABLE UTILIZED IN HEALTH CARE FACILITIES AND AREAS AS DEFINED BY THE NATIONAL ELECTRICAL CODE ARTICLE 517 SHALL BE EQUIVALENT TO AFC CABLE SYSTEMS HCF-90 AND UTILIZED FOR NORMAL CIRCUITS ONLY. BX CABLE (TYPE AC) SHALL NOT BE UTILIZED. ALL BRANCH CIRCUIT HOMERUNS AND WIRING WITHIN ELECTRICAL CLOSETS SHALL BE RUN IN CONDUIT
- G. COLOR CODING SHALL BE AS FOLLOWS
- 120/208 VOLT SYSTEM BLACK FOR A PHASE RED FOR B PHASE BLUE FOR C PHASE
- 277/480 VOLT SYSTEM: **BROWN FOR A PHASE** ORANGE FOR B PHASE YELLOW FOR C PHASE
- NEUTRAL WIRE SHALL UTILIZE WHITE OUTER COVERING THROUGHOUT. EQUIPMENT GROUND WIRE SHALL UTILIZE GREEN OUTER COVERING THROUGHOUT.

WHERE COLOR-CODED CABLE IS NOT AVAILABLE, CERTIFY IN WRITING AND REQUEST PERMISSION TO OVERLAP CONDUCTORS WITH 6 IN. OF COLOR TAPING IN ACCESSIBLE LOCATIONS.

- PROVIDE FLAMEPROOF LINEN OR FIBER TAGS IN ACCESSIBLE LOCATIONS FOR FEEDERS INDICATE FEEDER NUMBER SIZE PHASE AND POINTS OF ORIGIN AND TERMINATIONS. FOR CONTROL AND ALARM WIRING, INDICATE TYPE (CONTROL OR ALARM), SIZE OF WIRE, AND POINTS OF ORIGIN AND TERMINATIONS. SIMILAR TO STRANCO PRODUCTS, INC.
- TERMINATIONS. SPLICES AND TAPS UNDER 600 VOLTS: COPPER CONDUCTORS NO. 10 AND SMALLER SHALL UTILIZE COMPRESSION-TYPE OF TWIST-ON SPRING-LOADED CONNECTORS AND CLEAR NYLON-INSULATED COVERING. COPPER CONDUCTORS NO. 8 AND LARGER SHALL UTILIZE MECHANICAL BOLTED PRESSURE OR HYDRAULIC COMPRESSION TYPE JSING MANUFACTURER'S RECOMMENDED TOOLING. CABLE LUGS AND CONNECTORS SHALL UTILIZE COMPRESSION TYPE OF SAME METAL AS CONDUCTOR. PROVIDE TO MATCH CABLE. WITH MARKING INDICATING SIZE AND TYPE. COPPER LUG CONNECTIONS TO BUS BARS: USE ANTI-SEIZE COMPOUND.
- NOT MORE THAN 3 LIGHTING OR CONVENIENCE OUTLET CIRCUITS SHALL BE INSTALLED IN ONE CONDUIT UNLESS OTHERWISE INDICATED. IF MORE THAN THREE CIRCUITS. DERATE WIRE CURRENT CARRYING CAPACITY AND MAINTAIN CODE REQUIREMENTS FOR CONDUIT FILL. NEUTRAL CONDUCTOR SHALL BE COUNTED AS A CURRENT CARRYING CONDUCTOR. SUBMIT TO ENGINEER FOR REVIEW PRIOR TO INSTALLATION. PULL NO THERMOPLASTIC WIRES AT TEMPERATURES LOWER THAN 32 DEG F. PROVIDE SEPARATE RACEWAYS FOR CONDUCTORS OF NORMAL AND EMERGENCY SYSTEMS, 120/208 AND 277/480 VOLT SYSTEMS. THERMOPLASTIC WIRES SHALL NOT BE INSTALLED IN COMPUTER AREA RAISED FLOORS.
- K. LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL CONNECTIONS.
- PERFORM CONTINUITY AND INSULATION TESTS. MEGGER TEST 100 PERCENT OF FEEDERS, 10 PERCENT OF BRANCH CIRCUITS AND MOTOR BRANCH CIRCUITS OVER 25 HP. PERFORM TESTS PRIOR TO CONNECTING EQUIPMENT AND IN PRESENCE OF AUTHORIZED REPRESENTATIVES. SUBMI WRITTEN REPORT OF RESULTS. CORRECT OR REPLACE CABLE TESTING BELOW MANUFACTURER'S STANDARDS.
- 14. GROUNDING
- A. A SEPARATE EQUIPMENT GROUNDING CONDUCTOR COMMONLY DESCRIBED AS A 'GREEN WIRE' SHALL BE PROVIDED FOR ALL BRANCH CIRCUITS PROTECTED BY OVERCURRENT DEVICES. A 'GREEN WIRE' GROUND SHALL ALSO BE PROVIDED FOR FLEXIBLE CONDUIT AND MOTOR CIRCUITS. METALLIC RACEWAY CONTINUITY SHALL BE MAINTAINED WITH A BARE NO. 6 WIRE. WHERE ISOLATED GROUNDING BRANCH CIRCUITS ARE USED. PROVIDE A SEPARATE AND DISTINCTLY MARKED GREEN GROUND WIRE EACH GROUNDING CONDUCTOR SHALL SERVE A MAXIMUM OF THREE CIRCUITS/POLES.

- B. SERVICE AND EQUIPMENT:
- FOR SEPARATELY DERIVED SERVICES AND ALL SERVICE SWITCHES. GROUND THE NEUTRAL CONDUCTOR THROUGH DISCONNECTING LINK AND GROUND TERMINAL TO WATER SERVICE GROUND CLAMP, BUILDING STEEL AND DRIVEN GROUND RODS.
- 2) GROUND THE CENTER TAP OF Y-CONNECTED TRANSFORMERS THROUGH SECONDARY NEUTRAL AND GROUND BUS TO WATER SERVICE GROUND CLAMP. CONNECTIONS TO BUILDING STEEL WILL BE CONSIDERED ONLY WHERE PERMITTED BY CODE AND BY APPROVAL.
- 3) GROUND CLAMPS SHALL BE BRONZE, SOLDERLESS TYPE WITH BRONZE SCREWS, SUITABLE FOR RECEIVING NOTED CONDUCTORS MOUNT GROUND CLAMP ON WATER SERVICE AT STREET SIDE OF MAIN SERVICE VALVE. PROVIDE JUMPER TO BY-PASS WATER METER.
- C. RUN INSULATED GROUND CONDUCTORS IN RIGID METALLIC CONDUIT WITH CONDUCTOR CONNECTED TO CONDUIT, THROUGH GROUND FITTING AT EACH END.
- D. GROUND NONCURRENT CARRYING METAL PARTS OF DISTRIBUTION PANELS. SWITCHBOARDS, TRANSFORMER ENCLOSURES, RACEWAYS, BUSWAY ENCLOSURES, CONTROLLER ENCLOSURES, MOTOR FRAMES AND OTHER ELECTRICAL EQUIPMENT.
- E. ALL COMPONENTS FOR GROUNDING SYSTEMS SHALL BE UL 467 LISTED.
- F. MISCELLANEOUS

GROUND THE FOLLOWING

- a. TEL/DATA/AUDIO-VISUAL SYSTEMS
- b. FIRE ALARM SYSTEM.
- c. EMERGENCY DISTRIBUTION SYSTEM.
- d. COMPUTER EQUIPMENT/ENCLOSURES
- RAISED FLOORS.
- f. LINE AND LOAD SIDE OF A VFD.
- 15. POWER WIRING
- A. PROVIDE ALL POWER WIRING IN CONDUIT TO ALL MOTORS AND EQUIPMENT FURNISHED UNDER ALL CONTRACTS ON THE PROJECT. INCLUDE EXTENSIONS FROM CONTROLLERS TO MOTORS AND MOTOR CONNECTIONS MOUNT AND WIRE ALL CONTACTORS AND POWER DEVICES FURNISHED UNDER ALL CONTRACTS.
- B. PROVIDE ONE (1) DEDICATED 120V 20A CIRCUIT FOR EACH HVAC CONTROL PANEL. COORDINATE QUANTITY AND LOCATION WITH HVAC/BMS CONTRACTOR
- 16. CONTROL WIRING
- A. PROVIDE ALL CONTROL WIRING IN CONDUIT FOR MOTORS AND EQUIPMENT FURNISHED UNDER ALL CONTRACTS AND AS SPECIFICALLY SHOWN ON THE DRAWINGS AND SPECIFICATIONS. INCLUDE MOUNTING AND WIRING OF ALL CONTROL DEVICES FURNISHED WITH EQUIPMENT.
- 17. WIRING DEVICES:
- A. PROVIDE COMPLETE MATERIAL AND ACCESSORIES AS NOTED BY LEVITON HUBBELL, OR EQUAL. ALL DEVICE TYPES, FINISH AND COLOR ARE SUBJECT TO APPROVAL BY ARCHITECT.
- B. LOCAL WALL SWITCHES SHALL BE SPECIFICATION GRADE, TOGGLE, QUIET TYPE. RATED 20 AMP. 120/277 VOLT. AC. ALL SWITCHES SHALL BE GANGED WITH MULTI DEVICE PLATES. IN AREAS WHERE DIMMERS ARE SPECIFIED WITH WALL SWITCHES; ALL SWITCHES SHALL MATCH DIMMER SERIES AND SHALL BE GANGED TOGETHER. WHERE TABS FROM DIMMERS ARE REMOVED, FOLLOW MANUFACTURERS DE-RATING AND UP-SIZE DIMMER AS APPROPRIATE.

SIMILAR TO:

- 1) IN FINISHED AREAS ARCHITECTURAL TYPE ROCKER SWITCH: LEVITON DECORA PLUS #5621-2 (SINGLE POLE), 5622-2 (DOUBLE POLE), 5623-2 (THREE WAY), 5624-2 (FOUR WAY),
- 2) ALL OTHER AREAS HEAVY-DUTY INDUSTRIAL TYPE TOGGLE SWITCH: LEVITON 1221-2 (SINGLE POLE), 1222-2 (DOUBLE POLE). 1223-2 (3 WAY), 1224-2 (4 WAY).
- 3) LOCKING TYPE: LEVITON 1221-21 (SINGLE POLE), 1222-21 (DOUBLE POLE), 1223-2L (THREE WAY), 1224-2L (FOUR WAY).
- 4) ILLUMINATED SWITCHES FOR FINISHED AREAS: LEVITON DECORA

PLUS #5631-2 (SINGLE POLE, 120V).

- 5) ILLUMINATED SWITCHES FOR UNFINISHED AREAS: TOGGLE TYPE; LEVITON #1221-LH.
- 6) COMBINATION DUPLEX AND USB CHARGER: LEVITON #T5832W
- 7) PILOT LIGHT SWITCHES IN FINISHED AREAS: LEVITON DECORA PLUS #5628-2 (SINGLE POLE).
- 8) PILOT LIGHT SWITCHES IN UNFINISHED AREAS: LEVITON DECORA PLUS # 1221-PLC (SINGLE POLE).
- 9) DIMMER SWITCHES: AS NOTED ON PLANS OR AS SPECIFIED BY ARCHITECT/LIGHTING DESIGNER. DIMMERS MUST BE COMPATIBLE WITH LIGHT FIXTURE. NOTE: FOR ALL INCANDESCENT DIMMED LOADS CONTRACTOR SHALL INCLUDE DEBUZZING COIL SIMILAR TO LUTRON CPW SERIES SIZED TO MATCH LOAD.
- 10) VACANCY/OCCUPANCY SENSORS: WALL STATIONS: HUBBELL LIGHTHAWK2 LHMTD. CEILING SENSORS: HUBBELL OMNI DT 500/1000/2000 AS REQUIRED FOR COVERAGE. PROVIDE UNIVERSAL VOLTAGE POWER PACKS, SINGLE OR DUAL RELAYS AND WALL MOUNTED MANUAL-ON SWITCH(S) AT DOOR(S) AS REQUIRED TO SUIT LAYOUT AND CONTROL. ALL EQUIPMENT AND WIRING SHALL BE SUITABLE AND COMPATIBLE WITH SPECIFIED LIGHTING FIXTURES, SENSOR AND CONTROL INTENT INDICATED ON CONTRACT DRAWINGS.
- C. INSERTION RECEPTACLES SHALL BE COMMERCIAL SPECIFICATION GRADE HEAVY DUTY DUPLEX CONVENIENCE 125 VOLT, 2 POLE, 3 WIRE, 20 AMP WITH U GROUND SLOT GROUNDED, EXCEPT AS NOTED. DEVICE SHALL BE SIMILAR TO HUBBELL #HBL5362 OR EQUAL BY LEVITON. ARROW HART OR PASS & SEYMOUR LEGRAND OR GE. FACE COLOR SHALL BE SELECTED BY OWNER OR ARCHITECT. DEVICES USED ON EMERGENCY BRANCH CIRCUITS SHALL BE RED FACE ONLY. INSERTION RECEPTACLES SHALL MEET LATEST NEMA STANDARDS, PUBLICATION WD-6, FEDERAL SPECIFICATION W-C-596 AND BE UL LISTED TO UL498.
- SIMILAR TO:
- 1) IN FINISHED AREAS ARCHITECTURAL TYPE DECORATOR SERIES FOR ALL TYPES NOTED BELOW. FOR DUPLEX RECEPTACLES COMMERCIAL SPECIFICATION GRADE: LEVITON DECORA PLUS #16351-W (SINGLE POLE), 16352-W (DOUBLE POLE).
- 2) IN AREAS DEFINED BY NEC 406.12: LEVITON, SMOOTH FACE ILLUMINATED DUPLEX RECEPTACLE #M8300-ILW (TAMPER RESISTANT MT830-ILW) OR DECORA PLUS LINE M1636-ILW (TAMPER RESISTANT MT163-ILW)
 - ISOLATED GROUND: LEVITON, SMOOTH FACE ILLUMINATED RECEPTACLE #M8300-IGW (TAMPER RESISTANT MT830-IGW) OR DECORA PLUS MD830-IGW (TAMPER RESISTANT MDT83-IGW).
- OTHER AREAS: EXTRA HEAVY-DUTY HOSPITAL GRADE SMOOTH FACE, LEVITON #M8300-W (TAMPER RESISTANT M8300-SGW) OR

DECORA PLUS #M1636-HGW (TAMPER

- COMBINATION DUPLEX RECEPTACLE AND USB CHARGER: LEVITON T5832 20A, 120V DUPLEX RECEPTACLE WITH DUAL 3.6A, 5.0VDC TYPE A USB CHARGERS
- 4) ALL OTHER AREAS: EXTRA HEAVY DUTY SPECIFICATION GRADE: LEVITON #M5362-W OR DECORA PLUS M1636-W.
- #M1636-IGW.
- 5) SINGLE RECEPTACLES- COMMERCIAL SPECIFICATION GRADE: LEVITON #5361 OR DECORA # 16352.
- 6) SPECIAL USE: NON-INTERCHANGEABLE TYPES AND RATINGS MATCHING EQUIPMENT PLUG.
- 7) CLOCKS: SINGLE RECESSED RECEPTACLE SIMILAR TO LEVITON #5361-CH.
- 8) GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE WITH SELF-PROTECTION AND LED INDICATOR LIGHT. SIMILAR TO HUBBELL #GF5362 OR EQUAL BY LEVITON, ARROW HART OR PASS & SEYMOUR
- a) GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLES IN DAMP LOCATIONS SHALL BE WEATHER RESISTANT b) GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLES IN WET LOCATIONS SHALL BE WEATHER RESISTANT WITH METALLIC WHILE-IN-USE COVER.
- 9) SURGE PROTECTION RECEPTACLES: SHALL BE BACK AND SIDE WIRED WITH A MAXIMUM SINGLE PULSE RATING OF 24KA, L-N. LEVITON #5380 (20 AMP).
- a) ISOLATED GROUND: LEVITON 5380-IG (20 AMP).
- . MOMENTARY CONTACT SWITCHES. FOR REMOTE CONTROL SWITCHES, SIMILAR TO LEVITON #1257.
- PILOT LIGHTS: NEON LAMP, SIMILAR TO HUBBELL NO. T1375, WITH 125-VOLT
- F. DEVICE PLATES: COORDINATE WITH ARCHITECT FOR FINAL TYPE, COLOR. MATERIAL AND FINISH. FOR RECEPTACLES WITH OTHER THAN 120 VOLT, INSCRIBED VOLTAGE AVAILABLE.
- 1) BRUSHED 302 STAINLESS STEEL WITH ENGRAVED CIRCUIT IDENTIFICATION PLATE WHEN USED TOGETHER WITH EMERGENCY BRANCH CIRCUIT DEVICE.
- 2) IF PERMITTED BY ARCHITECT AND BUILDING STANDARD, REINFORCED THERMOPLASTIC BY SAME MANUFACTURER OF DEVICES.
- G. COLORS: AS SPECIFIED AND COORDINATED WITH ARCHITECT.
- H. MOUNTING ORIENTATION OF RECEPTACLES (HORIZONTAL OR VERTICAL): COORDINATE WITH ARCHITECT.

18. LIGHTING FIXTURES:

- A. LIGHTING FIXTURE SCHEDULE SHOWN ON ENGINEERING DRAWINGS IS FOR INFORMATION PURPOSES ONLY. REFERENCE LIGHTING DESIGNER AND ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR COMPREHENSIVE LIGHTING INFORMATION. ENGINEER IS NOT RESPONSIBLE FOR INFORMATION SHOWN AS IT MAY BE GENERAL IN NATURE OR SUPERSEDED ANY REFERENCE MADE HEREIN OF LIGHTING FIXTURE SCHEDULE REFERS TO AND INCLUDES ARCHITECTURAL AND LIGHTING DESIGN DOCUMENTS.
- B. PROVIDE LIGHTING FIXTURES, LEDS/LAMPS AND COMPONENTS AS PER ARCHITECTURAL/LIGHTING DESIGNER LIGHTING FIXTURE SCHEDULE AND SPECIFICATIONS. FIXTURES SHALL BE COMPLETELY FACTORY ASSEMBLED, WIRED AND EQUIPPED WITH ALL NECESSARY LAMPING, SOCKETS, DRIVERS/BALLASTS, SUPPORTING HARDWARE, PLASTER RINGS, BACKBOXES, CONDUIT CONNECTION POINTS, ETC. AS REQUIRED FOR A COMPLETE ASSEMBLY. LISTED CATALOG NUMBERS DO NOT NECESSARILY DENOTE REQUIRED MOUNTING EQUIPMENT OR ACCESSORIES AND SHALL BE INCLUDED AS APPLICABLE TO MEET THE DESIGN INTENT AND PROJECT CONDITIONS RELEVANT TO PROPER INSTALLATION AND OPERATION CONTRACTOR SHALL CAREFULLY COORDINATE WITH LIGHTING VENDOR THE MEANS AND METHODS OF INSTALLATION.
- C. FIXTURES SHALL BE COMPLETE AND CONSTRUCTED TO COMPLY WITH APPLICABLE CODE, REQUIREMENTS OF THE LOCAL AUTHORITIES HAVING JURISDICTION AND BUILDING STANDARDS. FIXTURES SHALL BE UL LISTED AND INDICATION OF SAME INCLUDED ON ALL FIXTURES. LISTINGS BY OTHER NATIONALLY RECOGNIZED TESTING LABORATORIES SUCH AS INTERTEK TESTING SERVICES (ETL) MAY BE CONDITIONALLY ACCEPTED.
- D ALL FIXTURES SHALL BE INDEPENDENTLY MOUNTED FROM BLACK IRON OR BUILDING STRUCTURE AS REQUIRED AND NOT FROM CEILING GRID. ELECTRICAL INSTALLER/CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION OF CEILING CONSTRUCTION TYPES WITH LIGHTING FIXTURES. FIXTURES SHALL BE PROVIDED FOR OPERATION WITH PROPER VOLTAGE CHARACTERISTICS. REFER TO PLANS FOR INFORMATION.
- E. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND QUANTITIES OF LIGHTING FIXTURES.
- F. LED FIXTURES SHALL HAVE REMOVABLE BOARDS & ACCESSIBLE DRIVERS FOR END OF LIFE REPLACEMENT OF SOURCE.
- G. LED DRIVERS SHALL BE 0-10V 1% DIMMING TYPE, UNLESS OTHERWISE INDICATED ON ARCHITECTURAL/LIGHTING DESIGN DOCUMENTS.
- H. LED COLOR TEMPERATURE SHALL BE 3500 KELVIN AND SHALL MATCH ALL OTHER SOURCES, UNLESS OTHERWISE INDICATED IN LIGHTING FIXTURE SCHEDULE
- I. FLUORESCENT LIGHTING FIXTURES SHALL COMPLY WITH IES STANDARDS RP-1 AND RP-24 AND NEMA STANDARD PUBLICATION LE-1, FLUORESCENT INDUSTRIAL FIXTURES SHALL COMPLY WITH RLM STANDARDS INSTITUTE AND SHALL BEAR THE RLM LABEL.
- J. FURNISH ALL FLUORESCENT, INCANDESCENT, HID OR TUNGSTEN HALOGEN LAMPS AS INDICATED ON THE ARCHITECTS AND LIGHTING DESIGNER LIGHTING FIXTURE SCHEDULE AND AS REQUIRED FOR EACH FIXTURE. ALL FLUORESCENT LAMPS SHALL BE T5 OR T8. SPX35 RS (MIN. CRI 80+) UNLESS OTHERWISE NOTED. LAMPS SHALL BE SUPPLIED BY PHILIPS, GENERAL ELECTRIC. OSRAM/SYLVANIA.
- K. ALL LED FIXTURES SHALL HAVE MINIMUM 5 YEAR WARRANTIES ON LED BOARDS AND DRIVERS.
- L. FLUORESCENT BALLASTS SHALL BE NEMA PREMIUM ELECTRONIC TYPE. WHEREVER DIMMERS ARE SHOWN ON PLANS. FIXTURES SHALL BE PROVIDED WITH COMPATIBLE DIMMING BALLAST EQUAL TO LUTRON 'HI-LUME' MATCHING LOCAL OR CENTRAL DIMMING SYSTEM. CONTRACTOR SHALL FURNISH AND INSTALL ALL BALLASTS IF FIXTURE DOES NOT INCLUDE
- M. EMERGENCY DRIVER/BATTERY SHALL BE UL LISTED AND APPROVED FOR USE IN APPLICABLE JURISDICTION. OPERATING LED BOARDS OR (2) FLUORESCENT LAMPS WITH MINIMUM 5 YEAR WARRANTIES. FOR T8 LAMP, BATTERY SHALL BE BODINE OR IOTA WITH HIGHEST LEVEL OF OUTPUT WATTS AVAILABLE TO MATCH FIXTURE SPECIFIED UNLESS OTHERWISE NOTED. CONTRACTOR SHALL PROVIDE COLD TEMP/DAMP LOCATION/SLIM PROFILE EMERGENCY DRIVER/BATTERY AS NECESSARY FOR A COMPLETE FUNCTIONAL SYSTEM AS PER DESIGN INTENT. WHERE EMERGENCY DRIVER/BATTERY IS NOT AVAILABLE OR PRACTICABLE FOR A PARTICULAR FIXTURE TYPE, CONTRACTOR SHALL PROVIDE SUITABLE INVERTER(S). EQUAL TO PHILLIPS BODINE ELI-S SERIES, IN LIEU OF INDIVIDUAL EMERGENCY UNITS. INVERTER(S) SHALL BE CHOSEN TO MINIMUM PHYSICAL SIZE NEEDED FOR EMERGENCY LIGHTING POWER INDICATED. COORDINATE MOUNTING LOCATION(S) WITH ARCHITECT PRIOR TO INSTALLATION. ALL EMERGENCY DRIVERS/BALLASTS SHALL INCLUDE A NON-SWITCHED CIRCUIT IN ADDITION TO THE CONTROLLED CIRCUIT FOR VOLTAGE MONITORING.
- N. ALL LIGHTING LAYOUTS/SPECIFICATIONS MUST COMPLY WITH LATEST

- a) ISOLATED GROUND: LEVITON #M5362-IGW OR DECORA PLUS

- VERSION OF ENERGY CONSERVATION CONSTRUCTION CODE OR ASHRAE 90.1, AS APPLICABLE.
- 19. EMPTY CONDUIT SYSTEMS: A. PROVIDE COMPLETE SYSTEM OF EMPTY CONDUIT, FITTINGS, PULL BOXES, OUTLETS, SLEEVES AND FISH/PULLING WIRES.
- B EQUIPMENT AND INSTALLATION SHALL CONFORM TO REQUIREMENTS OF THE TELECOMMUNICATION SYSTEMS CONTRACT DRAWINGS AND EIA/TIA REQUIREMENTS.
- 1) OUTLETS SHALL BE:
- a) WALL: 4 IN. SQUARE WITH REDUCER RING. COVER PLATE PROVIDED INTEGRAL WITH OUTLET DEVICE. BLANK OFF WHERE NO DEVICE IS INSTALLED.
- b) FLOOR: IN-FLOOR CAST IRON WITH LOW-TENSION FITTING OR AS SPECIFIED FOR POKE THRU FLOOR ASSEMBLIES.
- CONDUIT FROM OUTLETS SHALL BE 1 IN. MINIMUM WHERE SIZE IS NOT SHOWN ON DRAWINGS. FURNISH EMPTY CONDUIT FROM OUTLETS TO NEAREST ACCESSIBLE HUNG CEILING OR AS NOTED. TERMINATE OPEN END WITH INSULATED BUSHING.
- C. PROVIDE FISHWIRES, IN RACEWAYS OVER 10 FT LONG AND AT ALL DROPS TO OUTLETS.
- PROVIDE RISER PULL BOXES AT A MINIMUM OF 50 FEET INTERVALS. FOR 2-INCH CONDUITS AND SMALLER, PROVIDE PULL BOX FOR EVERY 100 FEET FOR STRAIGHT RUNS. PROVIDE PULL BOX FOR EVERY 180 DEGREES OF BENDS. BENDING RADIUS SHALL NOT BE LESS THAN 10 TIMES INTERNAL CONDUIT DIAMETER.
- E. BOND ALL RACEWAYS SYSTEMS TO PROVIDE A COMMON GROUND PATH F. DEVICES, CONNECTORS AND WIRING COMPLETE WILL BE PROVIDED UNDER
- G. FURNITURE SYSTEM CONNECTIONS FOR TEL/DATA SHALL BE A MINIMUM SIZE OF 2" UNLESS OTHERWISE NOTED ON DRAWINGS. FLOOR BOXES FOR TEL/DATA FURNITURE SYSTEM IN-FEEDS SHALL BE SEPARATE FROM POWER IN FEEDS.
- 20. SECURITY SYSTEM

OTHER WORK SCOPES.

- A. FOR EACH SECURITY SYSTEM OUTLET. PROVIDE AN OUTLET BOX AND WITH PLATE WHERE REQUIRED (PLATES TO BE SAME TYPE AS WIRING DEVICES BUT TO MATCH SECURITY SYSTEM EQUIPMENT).
- B. FROM EACH SECURITY SYSTEM OUTLET, PROVIDE 1" EMPTY CONDUIT TERMINATED WITH 90 DEGREE SWEEP TWELVE INCHES ABOVE HUNG CEILING OR AT CLOSETS ACCESSIBLE CEILING WITH APPROVED BUSHING AND WITH DRAG WIRE.
- C. ALL CONDUIT SHALL BE MINIMUM EMT AND INSTALLED CONCEALED IN FINISHED AREAS OR AS NOTED EXCEPT WHERE CONDUIT IS RUN IN SLABS OUTDOORS OR SUBJECT TO PHYSICAL DAMAGE WHERE RIGID GALVANIZED STEEL SHALL BE USED.
- D. ALL SECURITY SYSTEM EQUIPMENT SHALL BE PROVIDED BY OTHERS. SECURITY SYSTEM WIRING (PROVIDED BY OTHERS) SHALL BE PLENUM
- RATED WITH TEFLON TYPE OUTER JACKET IN SUSPENDED CEILING USE FOR AIR HANDLING PURPOSES
- 21. INSTALLATION OF OFFICE FURNITURE SYSTEM
- A. THE CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIAL NECESSARY REGARDING ELECTRICAL POWER AND TEL/DATA AS APPLICABLE FOR COMPLETE FURNITURE SYSTEMS. THIS WORK SHALL INCLUDE, BUT NOT LIMITED TO THE FOLLOWING:
- INSTALL ALL BASE SECTIONS ON TO THE MAIN FURNITURE PANEL WHERE POWER AND COMMUNICATIONS ARE REQUIRED.
- 2) INSTALL ALL POWER AND COMMUNICATIONS "WHIP" CONNECTORS, RECEPTACLES, ETC., WHERE REQUIRED
- WHERE A PRE-WIRED FURNITURE SYSTEM IS NOT SPECIFIED, FURNISH AND INSTALL ALL WIRING WITHIN FURNITURE SYSTEM INCLUSIVE OF WIRING DEVICES, RACEWAYS, JUNCTION BOXES, WIREMOLD, TABLE-TOP BOXES ETC TO PROVIDE CONFIGURATION AS SHOWN.
- 4) FURNISH AND INSTALL BRANCH CIRCUIT WIRING FROM ELECTRICAL PANELS VIA JUNCTION BOXES AT FLOOR, WALL OR CEILING WHERE SHOWN ON DRAWINGS OR AS REQUIRED TO ACCOMMODATE CONDITION
- 5) FURNISH AND INSTALL EMPTY CONDUIT WITH JUNCTION BOXES AND DRAG WIRES FOR TELEPHONE AND DATA CABLES.
- 6) INSTALLATION OF THE TASK LIGHTING SYSTEM, WHEN APPLICABLE.
- 22. INSTALLATION OF PRE-PURCHASED EQUIPMENT
- A. INSTALLER/CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIALS AS REQUIRED TO INSTALL PRE-PURCHASED EQUIPMENT.
- 23. FIRE ALARM SYSTEM
 - REFER TO FIRE ALARM DRAWINGS. SYSTEM WIRING, DEVICES, ETC., SHALL BE IN ACCORDANCE WITH APPLICABLE CODE REQUIREMENTS, BUILDING STANDARDS AND SYSTEM MANUFACTURER. STROBE POWER SUPPLIES SHALL BE FURNISHED AND INSTALLED AS REQUIRED. SYSTEM RE-PROGRAMMING TO ACCOMMODATE DEMOLITION AND NEW DEVICES SHALL BE INCLUDED. ALL LABOR AND MATERIALS FOR SYSTEM PRE-TEST AND TEST WITH BUILDING VENDOR AND FIRE DEPARTMENT SHALL BE INCLUDED.
- 24. ELECTRICAL TESTING (CONTRACTOR TO FOLLOW APPLICABLE NETA STANDARDS).
 - PROVIDE ALL NECESSARY METERS, INSTRUMENTS, TEMPORARY WIRING AND LABOR TO TEST AND ADJUST ALL EQUIPMENT AND WIRING INSTALLED AND/OR CONNECTED UNDER THIS CONTRACT, INCLUDING ELECTRICAL EQUIPMENT FURNISHED BY OTHERS, TO DETERMINE PROPER POLARITY PHASING. FREEDOM FROM GROUND FAULTS AND SHORTS AND PROPER OPERATION OF EQUIPMENT. ALL MEASURING INSTRUMENTS MUST BE PROPERLY CALIBRATED.
 - B. WHENEVER THE AUTHORITIES HAVING JURISDICTION REQUIRE THAT ANY WORK BE TESTED OR APPROVED, CONTRACTOR SHALL PROVIDE PROPER FACILITIES FOR ACCESS FOR INSPECTION.
 - C. CHECK ALL LIGHTING FIXTURES AND RECEPTACLES FOR PROPER OPERATION.
 - D. MOTORS:
 - 1) MAKE THE FOLLOWING TESTS ON THE MOTORS BEFORE STARTING UP:
 - a. CHECK MOTOR NAMEPLATE FOR HORSEPOWER, SPEED AND PHASE AND VOLTAGE.
 - 2) MAKE THE FOLLOWING TESTS ON ALL MOTORS DURING OR IMMEDIATELY AFTER START UP:
 - a. CHECK SHAFT ROTATION: CHECK BEARING TEMPERATURE: CHECK MOTOR FOR SMOOTH OPERATION.
 - b. TAKE A CURRENT READING OF FULL LOAD USING A CLAMP ON AMMETER. IF AMMETER READING IS OVER THE RATED FULL LOAD CURRENT, DETERMINE THE REASON FOR THE DISCREPANCY AND TAKE THE NECESSARY CORRECTIVE ACTION.

- c. FOLLOWING ESTABLISHED PROCEDURES EQUIPMENT SHALL BE ENERGIZED AFTER CERTIFICATIONS BY THE CONTRACTOR THAT THE INSTALLATIONS SATISFACTORY. ALL MOTORS AND EQUIPMENT SHALL BE TESTED FOR PROPER OPERATION.
- d. OVERLOAD ELEMENTS IN MOTOR STARTERS SHALL BE ADJUSTED AND CHECKED FOR SUITABILITY TO THE MOTOR CHARACTERISTICS. CONTRACTOR SHALL REPLACE ANY OVERLOADING ELEMENT THAT IS INADEQUATE. THE CAUSE OF ANY MOTOR OPERATING ABOVE FULL LOAD RATING SHOULD BE INVESTIGATED AND THE CAUSE SHALL BE REMOVED INSTEAD OF INCREASING THE OVERLOAD RELAY TRIP RATING. THESE OPERATIONAL TESTS SHALL DETERMINE THAT THE INSTALLATION IS CORRECT.
- E. AFTER ALL ADJUSTMENTS ARE COMPLETE, TAKE CURRENT READINGS AT FULL LOAD USING A CLAMP ON AMMETER AND SUBMIT TO ENGINEERING FOR REVIEW AND APPROVAL.
- F. CHECK ALL CONDUCTORS FOR PROPER INSULATION RESISTANCE USING A MEGOHMMETER TEST SET IN ACCORDANCE WITH MANUFACTURERS STANDARD INSTRUCTIONS AND THE INTERNATIONAL ELECTRICAL TESTING ASSOCIATION (NETA). TEST INSULATION RESISTANCE OF ALL NEW AND AFFECTED EXISTING FEEDERS PRIOR TO ENERGIZING AND REPLACE ANY CONDUCTORS FOUND TO BE BELOW MANUFACTURERS ACCEPTABLE VALUES.
- G. UPS TESTING:
- CONTRACTOR TO PROVIDE LABOR AND MATERIALS TO PERFORM ON SITE LOAD BANK TESTING OF THE UPS AS PER THE MANUFACTURERS REQUIREMENTS AND RECOMMENDATIONS. IF APPLICABLE, THE LOAD BANK UTILIZED FOR UPS TESTING SHALL BE RIGGED AND PLACED INTO AN AREA WITH APPROPRIATE VENTILATION AS APPROVED BY LANDLORD AND CLIENT BY THIS CONTRACTOR. INCLUDE INSTALLATION OF LOAD BANK WITH ALL REQUIRED TEMPORARY CABLES AND POWER. ALL TESTING SHALL BE DONE ON OFF-HOURS AS APPROVED BY BUILDING MANAGEMENT. BREAKDOWN AND REMOVAL OF THE LOADBANK AND ASSOCAITED WIRING SHALL BE BY THIS CONTRACTOR.
- 25. SURGE PROTECTIVE DEVICE (SPD):
- PROVIDE AND INSTALL AT MAIN SERVICE AND DISTRIBUTION PANELS AS WELL AS ALL OTHER LOCATIONS NOTED ON DRAWINGS. AN EXTERNALLY MOUNTED ANSI/UL 1449 (MOST RECENT EDITION). TYPE 1. 20KA I-NOMINAL SURGE PROTECTIVE DEVICE (SPD). SPD PROTECTION MODES SHALL BE EACH LINE TO NEUTRAL, LINE TO GROUND AND NEUTRAL TO GROUND. THE MINIMUM SINGLE-PULSE SURGE CURRENT RATING PER MODE SHALL NOT BE LESS THAN 200KA PER MODE AND INCLUDE INTEGRATED DIAGNOSTICS WITH RED AND GREEN STATUS LED'S, DIAGNOSTIC TEST SWITCHES, DRY CONTACTS AND AN AUDIBLE ALARM. THE SPD SHALL BE DUTY LIFE CYCLE TESTED TO WITHSTAND A MINIMUM OF 10KA. 20KV IEEE C62.41.2-2002 CATEGORY C-HIGH IMPULSES WITH LESS THAN 5% DEGRADATION OF CLAMPING VOLTAGE. A MINIMUM OF A 20 YEAR WARRANTY SHALL BE INCLUDED ON UNIT AND LIFETIME WARRANTY ON FIELD REPLACEABLE POWER MODULES AND FUSES.
- PROVIDE AND INSTALL AT EACH PANEL AN EXTERNALLY MOUNTED ANSI/UL 1449 (MOST RECENT EDITION). 20 KA I-NOMINAL SURGE PROTECTIVE DEVICE (SPD). SPD PROTECTION MODES SHALL BE EACH LINE TO NEUTRAL, LINE TO GROUND AND NEUTRAL TO GROUND. THE MINIMUM SINGLE-PULSE SURGE CURRENT RATING PER MODE SHALL NOT BE LESS THAN 120KA PER MODE AND INCLUDE INTEGRATED DIAGNOSTIC WITH RED AND GREEN STATUS LED'S, DIAGNOSTIC TEST SWITCHES, DRY CONTACTS AND AN AUDIBLE ALARM. A MINIMUM OF A 20 YEAR WARRANTY SHALL BE INCLUDED ON UNIT AND LIFETIME WARRANTY ON FIELD REPLACEABLE POWER MODULES AND
- C. BASIS OF DESIGN SHALL BE SPD'S AS MANUFACTURED BY CURRENT TECHNOLOGY, LIEBERT OR MCG.
- 26. DIGITAL METER
- A. FOR REVENUE GRADE SUB-METERING PROVIDE SATEC EM720, SIEMENS 9610, SQUARE-D PM5560 OR EATON POWER XPERT 8000 IN ACCORDANCE WITH BUILDING RULES REGULATIONS AND STANDARDS ALL METER MAK AND MODEL INFORMATION SHALL BE COORDINATED AND CONFIRMED BY BUILDING MANAGEMENT OR THE BUILDINGS THIRD PARTY METERING COMPANY
- FOR GENERAL PANEL LOAD MONITORING AND NON-REVENUE GRADE APPLICATIONS PROVIDE SIEMENS 9410, SATECH PM135 OR EATON IO 260
- C. PROVIDE PROPER CT'S (SOLID OR SPLIT CORE) AND RUN WIRING IN CONDUIT TO METER. D. PROVIDE 3 PHASE, 4 WIRE POWER CONNECTION TO METER FOR VOLTAGE
- SENSING INCLUDING LOCAL OVERCURRENT PROTECTION AS REQUIRED. E. ALL METERS SHALL BE MOUNTED IN A NEMA 1 ENCLOSURE UNLESS MOUNTED IN ELECTRICAL EQUIPMENT.
- 27. AUTOMATIC TRANSFER SWITCH (ATS)
 - A. ATS SHALL BE ASCO 7000 SERIES OR APPROVED EQUAL OF RUSS ELECTRIC: OPEN TRANSITION (3-POLE, 4-POLE, VOLTAGE AND AMPERE RATING AS NOTED ON DRAWINGS) MOUNTED IN NEMA 1 ENCLOSURE. TRANSFER SWITCH SHALL INCLUDE SWITCHED NEUTRAL UNLESS OTHERWISE NOTED ON DRAWINGS. INCLUDE ACCESSORIES #18B, 18C, 31Z, 72E, 73, 75L/85L AND WHERE REQUIRED, ACCESSORY #125. PROVIDE GENERATOR START WIRING CONSISTING OF 4#12, 3/4" CONDUIT FROM ATS TO GENERATOR CONTROLLER. GENERATOR START WIRING WHEN UTILIZED FOR EMERGENCY, LIFE SAFETY AND REQUIRED STANDBY LOADS SHALL BE A LISTED 2-HOUR FIRE RATED ELECTRICAL CIRCUIT INTEGRITY SYSTEM (FHIT) OR BE INSTALLED IN 2-HR RATED CONSTRUCTION (ATS START WIRING FOR FIRE ALARM SYSTEMS, FIRE PUMPS AND FIRE SERVICE ACCESS ELEVATORS SHALL BE 2-HOUR RATED). FOR ATS' SERVING ELEVATORS, PROVIDE 4#12, 3/4" CONDUIT FROM ATS TO ELEVATOR CONTROLLER (ONE CONTACT TO CLOSE ON EMERGENCY POWER AND OPEN ON NORMAL POWER, ONE NORMALLY OPEN CONTACT (PRE-TRANSFER) TO CLOSE PRIOR TO TRANSFER TO EMERGENCY POWER OR BACK TO NORMAL POWER. UNLESS OTHERWISE NOTED ALL TRANSFER SWITCHES 800 AMPS AND ABOVE SHALL INCLUDE BYPASS ISOLATION. ALL TRANSFER SWITCHES SHALL BE UL LISTED TO 1008. TRANSFER SWITCH WITHSTAND AIC RATINGS SHALL MATCH UPSTREAM NORMAL AND EMERGENCY DISTRIBUTION EQUIPMENT RATINGS.
- 28. FIRE STOPPING
- A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
- B. PROVIDE ALL REQUIRED FIRE-STOPPING. WORK INCLUDES FIRE STOPPING PENETRATIONS OF FIRE-RESISTANCE RATED FLOORS, WALLS AND PARTITIONS IN NEW CONSTRUCTION, AS WELL AS PRE-EXISTING PENETRATIONS IN RENOVATION AREAS OF EXISTING CONSTRUCTION.
- PRODUCT DATA: SUBMIT MANUFACTURER'S PRODUCT DATA FOR EACH FIRE-STOPPING PRODUCT REQUIRED. INCLUDING INSTRUCTIONS FOR SUBSTRATE PREPARATION AND FIRE-STOPPING INSTALLATION.
- D. FIRE RESISTANT JOINT SEALERS: PROVIDE MANUFACTURER'S STANDARD FIRE-STOPPING SEALANT WITH ACCESSORY MATERIALS, HAVING FIRE RESISTANCE RATINGS INDICATED AS ESTABLISHED BY TESTING IDENTICAL ASSEMBLIES PER ASTM E814 BY UNDERWRITERS LABORATORY, INC. OR OTHER TESTING AND INSPECTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.
- MATERIALS PROVIDE THE FOLLOWING:
- 1) ONE-PART FIRE-STOPPING SEALANT: ONE PART LATEX BASED INTUMESCENT SEALANT FORMULATED FOR USE IN A THROUGH-PENETRATION FIRE-STOP SYSTEM FOR SEALING OPENINGS AROUND CABLES, CONDUIT, PIPES AND SIMILAR PENETRATIONS THROUGH WALLS AND FLOORS. ACCEPTABLE PRODUCTS/MANUFACTURERS INCLUDE THE FOLLOWING
- a) SPECIFIED TECHNOLOGIES INC. SPEC SEAL LC150
- b) HILTI FS-ONE MAX

A. SUBMIT WRITTEN CERTIFICATION THAT ELECTRICAL SYSTEMS ARE

29. DEMONSTRATION OF COMPLETE ELECTRICAL SYSTEMS

COMPLETE AND OPERATIONAL. SUBMIT CERTIFICATION WITH CONTRACTOR'S REQUEST FOR FINAL REVIEW.

1) AT THE TIME OF FINAL REVIEW OF ELECTRICAL WORK, DEMONSTRATE THE OPERATION OF ELECTRICAL SYSTEMS. FURNISH LABOR, APPARATUS AND EQUIPMENT FOR SYSTEMS' DEMONSTRATION. THE VARIOUS TEST SHALL BE WITNESSED AND APPROVED BY THE OWNER AND/OR THE OWNERS REPRESENTATIVE.

B. THE CONTRACTOR SHALL FURNISH ALL TEST EQUIPMENT, MATERIALS, LABOR, AND TEMPORARY POWER HOOK-UPS TO PERFORM START-UP AND ALL TESTS AS REQUIRED. ALL TEST PROCEDURES SHALL CONFORM TO THIS SPECIFICATION AND APPLICABLE STANDARDS INCLUDING BUT NOT LIMITED TO; ANSI, IEEE, NEMA, OSHA AND NETA.

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TESTS AND TEST RECORD. TESTING SHALL BE PERFORMED BY AND UNDER THE IMMEDIATE SUPERVISION OF THE CONTRACTOR. TEST RECORDS SHALL BE KEPT FOR EACH PIECE OF EQUIPMENT. COPIES SHALL BE FURNISHED TO THE ENGINEER FOR REVIEW AND/OR APPROVAL.

A VISUAL INSPECTION OF ALL ELECTRICAL EQUIPMENT. TO CHECK FOR THE FOREIGN MATERIAL, TIGHTNESS OF WIRING AND CONNECTION, PROPER GROUNDING, MATCHING NAMEPLATE CHARTS WITH SPECIFICATION, ETC., SHALL BE MADE PRIOR TO ACTUAL TESTING.

E. A COMPLETE OPERATIONAL TEST SHALL BE MADE ON THE REVISED LIFE SAFETY FIRE ALARM SYSTEM. THE CONTRACTOR SHALL CONSULT WITH THE EQUIPMENT VENDORS AND THEN SUBMIT FOR APPROVAL A STEP-BY-STEP PROCEDURE DESCRIBING THE METHOD OF MAKING THE TESTS, THE EQUIPMENT TO BE UTILIZED AND THE FEATURE TO BE CHECKED BY THE TEST. ALL INTERLOCKS AND PROTECTIVE FEATURES SHALL BE CHECKED

A. IN THE INSTANCE OF COMPLEX OR SPECIALIZED ELECTRICAL SYSTEMS SUCH AS EMERGENCY/STAND-BY POWER SYSTEMS, DIMMING/LIGHTING CONTROL SYSTEMS, FIRE ALARM SYSTEM OR SIMILAR, THE INSTALLATION FINAL CONNECTIONS AND TESTING OF SUCH SYSTEMS SHALL BE MADE UNDER THE DIRECT SUPERVISION OF FACTORY AUTHORIZED FIELD TECHNICIAN/ENGINEER WHO SHALL BE IN THE EMPLOY OF THE RESPECTIVE EQUIPMENT MANUFACTURER

30. SPECIAL TESTING SERVICES

31. DESIGN MODIFICATIONS

32. NEW YORK CITY PROJECTS

ADVISORY BOARD

COORDINATION STUDY.

ANY AND ALL EXPENSES INCURRED BY THESE EQUIPMENT MANUFACTURERS' REPRESENTATIVES RELATED TO THIS PROJECT. SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL INSTALLER/CONTRACTOR.

A. THE DRAWINGS SHOW ELECTRICAL SYSTEMS THAT SUPPLY, CONTROL, AND/OR MONITOR SYSTEMS SPECIFIED ELSEWHERE. THE ELECTRICAL SYSTEM SHOWN HAS BEEN BASED ON SPECIFIC MANUFACTURER'S DATA OR INFORMATION CONVEYED TO THE ELECTRICAL DESIGNER. WHERE ANY AGREEMENT OR CHANGE IS MADE TO SUPPLY EQUIPMENT OF LARGER CAPACITY OR DIFFERENT ELECTRICAL CHARACTERISTICS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE ELECTRICAL DESIGN MODIFICATIONS TO AFFECT SUCH CHANGES WITHIN THE INTENT OF THESE SPECIFICATIONS AND TO INFORM THE ENGINEER. IN WRITING, OF SUCH CHANGE. FOR EXAMPLE. IF HVAC COMPRESSORS AND/OR MOTORS ARE ALLOWED TO BE CHANGED TO 230 VOLTS RATHER THAN THE ORIGINALLY SPECIFIED 208 VOLTS, BOOSTING OR BUCKING TRANSFORMERS SHALL BE SUPPLIED, INSTALLED, AND WIRED TO ACCOMMODATE THE CHANGE AT NO ADDITIONAL COST.

A. ALL WORK SHALL BE GOVERNED BY THE LATEST VERSION OF THE NEW YORK CITY ELECTRICAL CODE. B. ALL ELECTRICAL DEVICES, FIXTURES AND WIRING SHALL MEET THE REQUIREMENTS OF NEW YORK CITY BUILDING CODE, NEW YORK CITY ELECTRICAL CODE AND BE APPROVED FOR USE IN NEW YORK CITY. C. EMT SHALL NOT BE UTILIZED WHERE SUBJECT TO PHYSICAL DAMAGE OR FOR UNDERGROUND, EXTERIOR OR WET/OUTDOOR LOCATIONS. ONLY RIGID GALVANIZED STEEL OR INTERMEDIATE METAL CONDUIT SHALL BE UTILIZED FOR THE AFORMENTIONED LOCATIONS. D. CONTRACTOR IS RESPONSIBLE FOR ALL DRAWINGS. SUBMISSIONS.

APPROVALS AND FEES ASSOCIATED WITH FILING WITH THE NEW YORK CITY E. CONTRACTOR SHALL INCLUDE AS PART OF ITEM D. ABOVE, A SHORT CIRCUIT

ACCEPTABLE SWITCHBOARD MANUFACTURERS FOR NYC PROJECTS WHICH SUPERSEDES THE SWITCHBOARD SECTION LISTED ABOVE UNDER LOW VOLTAGE DISTRIBUTION EQUIPMENT: ALL CITY SWITCHBOARD CO., ATLAS SWITCH CO., INC., ELECTROTECH SERVICE EQUIPMENT CORPORATION, LINCOLN ELECTRIC PRODUCTS CO. INC., OR APPROVED EQUAL G. SPECIAL INSPECTIONS: WHERE REQUIRED, SHALL BE PROVIDED BY THE OWNER WHO SHALL RETAIN AN ACCREDITED SPECIAL INSPECTOR.



DRAWING TITLE **ELECTRICAL** SPECIFICATIONS

DRAWING NO.		
E-701.00		
SEAL & SIGNATURE	ISSUE DATE: SCALE: DWG BY: CHK BY:	9-27-23 NTS DWN CHECK
JOB NUMBER 23025-00		