

ELECTRICAL SPECIFICATIONS

I. SCOPE
These electrical specifications are intended for construction and bid pricing. Provide all material, labor, transportation, tools, supervision, etc., necessary to have a complete and operational system as shown on these drawings and described by these specifications. All items not specifically mentioned herein which are necessary to make a complete working installation, shall be provided by the electrical contractor. Any such item excluded shall be provided and installed at the electrical contractor's expense. Drawings and this specification are complimentary to one another and things indicated in one is also implied in the other.

II. CODES AND FEES
All work shall be done in accordance with the requirements of OSHA, NFPA, ANSI, NESC, UL, IEEE, and the National Electrical Code (NEC), as well as all local and state codes and regulations. The electrical contractor shall obtain and pay for all permits, fees and inspections required by the building and safety codes, governing ordinances, and the rules and regulations of any legal body having jurisdiction.

III. WORKMANSHIP
All work shall be neatly, orderly and securely installed with conduits, panelboards, boxes, switches, etc., perpendicular and/or parallel with the principal structural members.

IV. SHOP DRAWINGS
Five sets of shop drawings shall be submitted by the electrical contractor for boxes, raceways, conductors, wiring devices, fuses, disconnect switches, grounding components, panelboards, light fixtures, motor starters, motor controllers, and all miscellaneous system components for any miscellaneous systems as indicated on the drawings.

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IX. FIELD COORDINATION
A. The electrical contractor shall be responsible for field coordination with all other disciplines. If equipment revisions are made and the electrical provisions do not adequately address the revised equipment requirements, the electrical contractor shall notify the engineer of the discrepancy prior to proceeding with installation of any materials. Failure to make this contact shall result in all expenses for removal of incorrect materials to be borne by the electrical contractor.
B. The drawings are diagrammatic and attempt to depict approximate locations. Exact location of all structural members, architectural materials, VAC equipment, etc. shall be field coordinated by the electrical contractor. Scaling from the drawings is prohibited for actual installation. Any required dimensions shall be obtained from the architect via a written request.

X. ELECTRICAL PRODUCT SPECIFICATIONS
A. BOXES AND ENCLOSURES
1. All boxes, enclosures, cabinets for devices and outlets, and junction boxes, cabinets, and hinged cover enclosures shall be provided as required for a complete and code compliant installation.
2. All boxes, enclosures, etc. shall be suitable for the environment in which they are specified. All boxes in interior, dry applications shall be NEMA 1 type. All boxes installed outdoors, in wet areas, and in equipment rooms shall be NEMA 3R.

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4. Common neutrals may be pulled in conduits where opposite phase conductors are run. All conduits shall have a ground wire pulled.
5. All feeder and branch circuit conductors No. 6 AWG and larger shall be phase identified in each accessible enclosure by one inch wide plastic tape attached to conductors in a readily visible location. Tape colors shall match color code requirements specified herein.
6. Splices in conductors shall be made only within junction boxes, wiring troughs and other enclosures as permitted by the National Electrical Code. Do not splice conductors in panelboards, safety switches, or motor control enclosures. Splices in conductors No. 10 AWG or smaller shall be made with insulated spring connectors. Splices in conductors No. 8 AWG and larger shall be made with split bolt connectors taped with No. 89 plastic electrical tape unless splices are specifically indicated to be made with crimping sleeve or lug applied to conductors with hydraulically operated crimping tool.

D. WIRING DEVICES
1. Switches shall be 20 amp 120 volt specification grade with Ivory handles and Ivory nylon cover plates unless otherwise noted.
2. Duplex outlets shall be 15 amps 125 volt A.C. 3-wire specification grade straight blade with Ivory face and Ivory nylon cover plates unless otherwise noted.
3. 6FIC type duplex outlets shall be 20 amp, 125 volt A.C. 3-wire specification grade straight blade with Ivory face and Ivory nylon cover plate, unless otherwise noted.
4. Device manufacturers shall be Hubbell, Bryant, F&S, or ArrowHart.

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G. DISCONNECT SWITCHES
1. Non-fused disconnect switches shall be provided for all motors located out of sight of motor controller and where indicated on the drawings. When exposed to weather provide NEMA 3R, otherwise provide NEMA 1 enclosure.
2. Fusible Disconnect switches shall have fuse size over frame size as noted on the drawings.
3. Acceptable manufacturers are: Square D, Siemens, Cutler-Hammer/Mestinghouse, and General Electric.
H. GROUNDING
1. The building electrical grounding system shall be provided with the new electrical service. It shall consist of a grounding triad (three 10' x 3/4" Copper ground rods in a triangular configuration), with all building steel and water piping bonded to it per the NEC. All raceway and boxes shall be grounded via a dedicated ground wire routed in each feeder and branch wiring conduit.

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J. LIGHT FIXTURES
1. Light fixture shall be provided as shown on the fixture schedule. Alternate fixtures from other manufacturers shall be considered if submitted at the time of bid via manufacturer cut sheets. Proof of equality is the responsibility of the electrical contractor and the engineer can approve or reject the alternate fixtures at his discretion.
2. Ballasts provided with fixtures shall be ETL-CBM approved, high power factor, with UL label and type (electronic or magnetic) as specified on drawings.
3. Lamps shall be provided for all fixtures in accordance with fixture schedule.
4. Poles, mounting brackets, and accessories shall be provided as specified on drawings. Any accessory not specifically specified, but required to complete the installation shall be furnished and installed with the fixture.

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V. UL APPROVAL
All electrical items covered by this specification shall be UL labeled and listed for their specific use. All items installed by the electrical contractor under these specifications shall be UL listed. Items not UL listed shall be removed and replaced at the electrical contractor's expense.

VI. TESTING
A. Upon completion of the work, tests shall be made of the lighting and power systems in the drawings, to assure operation is in compliance with these specifications and the drawings. Tests shall be conducted to the satisfaction of the architect and owner.

VII. ELECTRICAL SERVICE
Electrical Service shall originate as shown on the drawings. New service entrance disconnect and new panels shall be provided and installed as indicated on these drawings. Breaker sizes are indicated on panelboard schedules and shall be of voltage rating, AIC rating, and ampere pole and trip rating as noted on the panelboard schedules.

VIII. GUARANTEE
Work shall be guaranteed for a one (1) year period beginning after owner acceptance and occupancy of the facility.

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B. RACEWAYS
1. Raceway in all finished and/or concealed areas where installed above ground level shall be EMT.
2. Flexible metal conduit shall be used for connection to recessed light fixtures, and other equipment subject to vibration.
3. Liquid tight flexible metal conduit shall be used in wet areas for connection to motors, exterior equipment and exterior lights.
4. Underground conduits shall be schedule 40 PVC with rigid steel elbows and rigid steel stub ups.

C. CONDUCTORS
1. All conductors shall be copper and shall have 600 volt type THHN/THWN insulation unless noted otherwise. Conductors installed underground or in exterior areas shall be THWN only.
2. All branch circuits shall be minimum of #12 AWG stranded copper except for branch circuit wiring to light fixtures, which may be #12 AWG solid copper.
3. Conductors shall be color coded as follows:

| Volts | Phase A | Phase B | Phase C | Neut. |
|---------|---------|---------|---------|-------|
| 208/120 | black | red | blue | white |
| 240/120 | black | red | | white |

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E. FUSES
1. Fuses shall be type RK1, current limiting dual element time delay fuses for all applications except motors. For motors, use RK5 fuses.
2. Light fixtures shall be protected by integral GLR type fast blow fuses.
3. Acceptable manufacturers are Busman, Sould-Shawmut, and Littlefuse.

F. SUPPORTING DEVICES AND IDENTIFICATION
1. All raceways, boxes, and other electrical equipment shall be supported in compliance with the NEC.
2. All electrical boxes shall be labeled as to the content of the box (ie fire alarm, security, etc.). All receptacles and power J-boxes shall be labeled on the face of the device or box as to what panel and circuit serves the device or box.

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I. PANELBOARD
1. Shall have plug-in type circuit breakers. Panels and breakers shall have 10000 AIC rating at 208/120 volts and 14000 AIC rating at 480/277 volts unless noted otherwise on drawings. All multiple breakers shall be common trip only. Phase, neutral, and ground busses shall be copper. Refer to drawings for further or more stringent requirements.
2. Approved manufacturers are: Square D, Cutler-Hammer/Mestinghouse, General Electric and Siemens.
3. Typewritten directories shall be provided by the electrical contractor for all PANELBOARD. These shall be revised with as-built information prior to project completion. Spares and spaces shall be noted as such on final typed panel directory.

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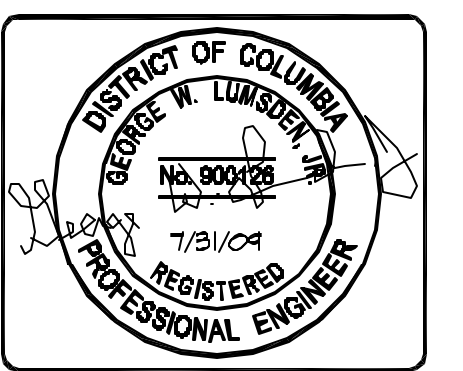
K. FIRE ALARM SYSTEM AND COMPONENTS
1. Device's shall be as manufactured by Simplex, Honeywell, Edwards, or approved equal. All new horns or horn strobe units added shall meet present guidelines for decibel output and candela output. All units in all areas shall meet or exceed all local codes as well as the Americans with Disabilities Act (ADA). Locate devices and components as indicated on drawings. Coordinate with local official prior to end of project and add devices at his request if needed.
2. The electrical contractor shall perform power requirement calculations and battery drain calculations for the load on the fire alarm system and size the battery system to meet NFPA-72 for stand-by battery requirements and alarm mode battery requirements.
3. The electrical contractor shall coordinate with owner and provide a reporting process as per the owners direction. The system shall include as a minimum, the control panel, the annunciate panel and an automaker with a four (4) telephone memory that is owner programmable.

END OF SPECIFICATIONS
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rick/jack/design
25 HEMLOCK RIDGE ROAD
LEICESTER, NORTH CAROLINA 28748
PH: 828-683-7348 FAX: 828-683-9902
email: rick@rickjackdesign.com

REVISIONS
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new facility for:
Washington
seventh day
baptist church
CRITTENDEN @ 16TH, WASHINGTON, D.C.

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|------------------------|----------------|
| project no. 2K70609 | |
| dwn by: TC | chk by: GWL |
| date: JULY 31, 2009 | |
| scale: AS SHOWN | |
| sheet no: E2 | |