Section 26 05 01 - Common Requirements For Electrical

A. General
1. Requirements specified in Division 1, instructions to bidders, supplemental general conditions, special conditions, addenda, alternates, contract and proposal, along with Division 26 and all its sections, comprise the contract documents for the electrical contract, along with these specifications as though they were one, and anything implied by the specifications shall be interpreted as also implied by the drawings and vice versa. Provide necessary items for a complete installation of all electrically operated equipment listed in the specifications or shown on the contract drawings.
2. The architectural, structural, mechanical, plumbing and equipment drawings and specifications are incorporated into, and become a part of this division. This contractor shall examine all such drawings and specifications and become thoroughly familiar with the provisions contained therein. The submission of his bid shall indicate such knowledge.
3. Electrical drawings are diagrammatic. They are intended to show the approximate locations of equipment and conduit. Dimensions given on the plans, in figures, shall take precedence over scaled dimensions and shall be verified in the field. The electrical contractor shall layout all equipment rooms to make sure the equipment, as purchased, fits in the room or space shown. Exact location of all equipment shall be verified in the field and routing of conduits shall suit field conditions.
4. Until the time of installation, the architect reserves the right to make minor changes in the location of conduit and equipment without additional cost to the contract.
5. The electrical drawings and specifications are intended to supplement each other. Material and labor necessary to the project shall be furnished and installed even though not specifically mentioned in both. Labor and/or materials neither shown nor specified, but obviously necessary for the completion and proper functioning of the system, shall be furnished and installed by the electrical contractor.
6. Arrange all equipment substantially as shown on the drawings. Make deviations only where necessary to avoid interference. Check all equipment sizes against available space prior to shipment to avoid interference.
7. Examine the work of other trades insofar as their work comes in contact with or is covered by this work in no case attach to, or finish against any defective work or install work in a manner which will prevent proper installation of the work of other trades.
8. Electrical contractor shall verify with other trades all electrical characteristics of equipment requiring electrical connections, contractor shall verify voltage, phase and horsepower and shall notify engineer of any discrepancies prior to start of work. Electrical contractor shall provide disconnecting means and overload protection for all equipment, unless furnished integral with equipment package.
9. It is the intent of these drawings that this be a complete electrical job, any errors or omissions shall be brought to the attention of the engineer prior to bidding the job.

B. Visit to the Site
1. This contractor shall visit the site of the work and familiarize himself with all conditions affecting his work. The submission of his proposal shall indicate such knowledge. No additional payment shall be made on claims that arise from a lack of knowledge of the existing conditions

C. Code and Permits
1. Installation shall be in full accordance with all codes, rules and regulations of municipal, city, county, state and public utilities and all other authorities having jurisdiction over the premises.
2. Comply with any specification requirements that are in excess but not in conflict with code requirements.
3. The contractor shall secure and pay for all permits, plan reviews and certificates of inspection in connection with his work, required by the foregoing authorities. Before final payment of the contract is allowed, all certificates shall be delivered to the architect in duplicate.
4. Electrical material and equipment shall bear the UL label except where UL does not label such types of material and equipment.

D. Shop Drawings Submittals
1. The electrical contractor shall submit five (5) sets of shop drawings, or (1) set of shop drawing electronically within (2) weeks of project awarded, the shop drawings of the following equipment using the indicated numbering system and titles, shall be submitted through the architect to the engineer and then resubmitted for final approval if necessary. Electronic shop drawings will be returned electronically. Shop drawings shall be submitted for the following items:
   - D.a. Wiring devices
   - D.b. Panelboards, transformers and safety switches including fault current study based on equipment being supplied.
   - D.c. Lighting control system, contactors, time switches and photocell
   - D.d. Lighting fixtures
   - D.e. Communications cabling and equipment
   - D.f. Fire/Supervisory alarm system
2. All submitted shop drawings (manufacturers' equipment descriptive sheets or vendors' prepared drawings) shall have the general contractor's or subcontractor's "stamp of approval" indicating that the item submitted is as called for on the plans and specifications, is approved by the general contractor or subcontractor, the date of approval and initialed by the person approving the submittal and the name of the company submitting said equipment for approval.
3. Submit bound brochures complete with a table of contents. Loose or stapled together sheets are not acceptable. Any submittals not in brochure form or not as specified shall be returned at the contractor's expense for resubmittal.
4. All descriptive literature shall be submitted in a three (3) hole brochure with a cover identifying the following:
   - D.a. Name of the job
   - D.b. Location of the job, address, city and state.
   - D.c. Name and address of the company submitting the brochures.
   - D.d. Date of the submittal.
5. Every effort shall be made, in checking the shop drawings, to detect and correct all errors, omissions and inaccuracies. Failure to do this will not relieve the electrical contractor of the responsibility for the proper and complete installation in accordance with the contract documents.

E. As-built Drawings
1. Submit to the architect one set of reproducible (mylars) electrical drawings showing the as-built conditions.

F. Standards and Substitutions
1. Wherever the words "approved by", "approved equal", "as directed" or similar phrases are used in the following specifications, they shall be understood to refer to the owner as the approving agency. The name or make of any equipment or materials named in this specifications (whether or not the words "or approved equal" are used) shall be known as the "standard".
2. These specifications establish quality standard of materials and equipment to be provided. Specific items are identified by manufacture, trade name or catalog designation. Should the contractor propose to furnish materials and equipment other than those specified or approved by addendum, submit a written request for substitutions to the architect at the bid opening. The request shall be an alternate to the original bid; be accompanied with complete descriptive (manufacturer, brand name, catalog number, etc.) and technical data for all items. Failure by this contractor to submit the requisite documentation detailed above shall be understood by the architect and engineer to indicate that substitute equipment will not be presented by the contractor for consideration. Such substitutions will not be considered after the bid opening date and delay of project will not be permitted for further inspection and evaluation after this date.

G. Testing and Placing in Service
1. Any material or equipment failing a test shall be repaired or replace at the contractor's expense.
2. Tests shall include the following:
   - G.a. Measure the load on each phase of the main service and each phase of every feeder under full load conditions.
   - G.b. Measure the no-load and full-load voltages (phase to phase, phase to neutral and phase to ground for each phase of each service, of each separately derived system, and at each panelboard or transformer).
   - G.c. Measure the ground resistance of the main service grounding electrode and the ground resistance of each separately derived system's grounding electrode.
   - G.d. Make insulation resistance tests on all dry type transformers and motors.

H. Interferences
1. Before the installation of any item begins, the electrical contractor shall carefully ascertain that it does not interfere with clearances for the erection of finish beams, columns, pilasters, walls or other structural or architectural members as shown on the architectural drawings. If any work is installed and the architectural design cannot be followed, this contractor shall, at his own expense, make changes in his work as directed by the architect to permit the completion of the architectural work in accordance with drawings and specifications.
2. It shall be the duty of this contractor to report any interferences between his work and that of any of the other contractors as soon as they are discovered. The architect shall determine which equipment will be relocated, regardless of which was installed first. His decision will be final.

I. Quality Assurance
1. All products shall be new and of the type and quality specified. Where materials, equipment, apparatus or other products are specified by manufacturer, brand name, type of catalog number, such designation shall establish the standards of the desired quality and style. It is the intent of these specifications to establish a standard of quality of materials and equipment installed.

J. Special Inspections
1. Special inspection is to be provided in addition to the inspections conducted by the department of building safety and shall not be construed to relieve the owner or his authorized agent from requesting the periodic and called inspections required by the building code. Special inspection shall be paid by the owner.
2. Special inspector shall meet the qualifications as stated in the building code and shall perform the duties and responsibilities as outlined in the building code.

Section 26 05 02 - Basic Electrical Materials and Methods

A. Nameplates
1. General: furnish and mount on each panelboard, switchboard (including branch switches), large junction box, safety switch, starter, remote control, push button station, and all similar controls, a nameplate descriptive of the equipment or equipment controlled
2. Provide black and white nameplates constructed from laminated phenolic with a white center core. Letters shall be engraved in the phenolic to form white letters 3/8" high. Fasten the nameplates with an adhesive type fastener.

B. Mounting Accessories
1. This contractor shall furnish and install all angle iron, channel iron, rods, supports, hangers, concrete or plywood required to install, mount and support any electrical equipment or device called for on the plans. Attachment to the roof deck is not permitted.
2. Supporting material shall be complete with hangers, connectors, bolts, clamps and necessary accessories to make a complete installation. Supporting material shall be galvanized, painted or otherwise suitably finished. Products by Binkley, Steel City, or Raco will be acceptable.
3. All surface-mounted equipment on block walls shall be mounted on 3/4" plywood backboard. All floor-mounted equipment shall be installed on a 4" high concrete housekeeping pad. Pad shall be painted to match floor finish color.

C. Execution
1. The electrical work for construction proposed shall conform to all federal (OSHA), state, all specific safety requirements and the requirements of the current edition of the NEC.
2. Check the HVAC and plumbing specifications for electrical requirements and include the same in the contract cost.
3. Equipment connections, starters, disconnect switches, control transformers and pushbutton stations for the equipment furnished by the owner or under a separate contract shall be installed and connected under this division, as indicated on the contract drawings.
4. All cutting, patching, excavating, backfilling and concrete work related to this contract will be the responsibility of the electrical contractor. This contractor shall assume the responsibility of providing the sleeves, chases and openings necessary for the electrical installation and for their repair in an acceptable manner, as determined by the architect. All holes shall be core-drilled. Provide fire stop in all openings created through fire-rated walls, floors or ceilings. Contractor shall field verify slab on grade floor constriction type prior to cutting. Under no circumstances shall the contractor cut a structural floor slab thicker than four (4") inches without prior written approval from Engineer of Record. Notify Engineer of Record of any slab thickness greater than four (4") inches prior to proceeding with any saw cutting.
5. This contractor shall be responsible for providing all required access panels necessary for his work, coordinate with architect prior to installation.

D. Materials and Workmanship
1. All work shall be installed in a practical and workmanlike manner, by mechanics skilled in the several trades necessary.
2. All materials shall be new and free from defects and shall be the best of their several kinds unless specified or indicated on the drawings to the contrary.
3. During each phase and at the completion of the construction, this contractor shall remove all debris and excess materials caused by his work. He shall leave the area of operation broom clean.
4. All electrical equipment shall bear the underwriters laboratories label or ETL label.
5. This contractor shall guarantee his workmanship and material (lamps excepted) for a period of one year from the date of building opening and leave his work in perfect order at the completion. Should defects develop within the guarantee period, the contractor shall, upon notice of the same, remedy the defects and have all damages to other work or furnishings caused by the repairs corrected at his expense to the condition before such damage.

E. Temporary Service
1. The electrical contractor shall furnish, install and remove as required all temporary power and temporary lighting in all areas and individual rooms when needed by the individual trades in the performance of their work. The electrical work for construction purposes shall conform to all federal (OSHA), state, specific safety requirements, as well as the requirements of the national electric code and national electrical safety code. The electrical contractor shall obtain and pay for all required applications, permits and inspections pertaining to this work. This cost shall be included in the contractor's price.
2. New light fixtures shall not be used for temporary lighting.

Section 26 05 19 - Wiring and Cable

A. Color code conductors (except control and instrumentation conductors) as follows:

	208/120 System	480/277 System
Phase A	Black	Brown
Phase B	Red	Orange
Phase C	Blue	Yellow
Neutral	White	Grey
Ground	Green	Green

1. #12 and #10 conductors shall have continuous insulation color, as listed above.
2. Color code conductors larger than above, which do not have continuous insulation color by application of at least two laps of colored tape on each conductor at all points of access including junction boxes. Color tape shall be the equal of 3M products Scotch #35.
3. Conductors shall be soft annealed copper insulated for 600 volts unless specifically indicated otherwise. Aluminum conductors are not allowed on this project.

B. Insulation type shall be type THWN for wire sizes #8 AWG and larger and THHN or THWN for #10 AWG and smaller. THHN shall not be used in wet or damp locations.

C. Flexible cord shall be heavy duty type so with an equipment ground conductor in addition to the current carrying conductors.

D. Provide #12 conductors, unless otherwise indicated.
1. Control conductors shall be #14 minimum for NEC class I and #16 for NEC class II.

E. Conductors #8 AWG and larger shall be stranded.

F. Conductors #10 AWG shall be solid or stranded. Final connections shall be made with wire type consistent with UL listing and manufacturer specifications of the equipment, fixture and/or device.

G. Conductors #12 AWG and smaller shall be solid.

H. Install wiring in conduit.

I. Connect #10 and smaller wires with constant pressure expandable spring type connectors, "Scotchlok" by 3M or B-Cap by Buchanan.

J. Connect #8 and larger wires with compression connectors or splices as manufactured by Burndy or T&B.

K. Insulate splicing connectors to at least 200% of the wire insulation. Use pre-stretched tubing connector insulators, 3M PST for #2 and larger conductors.

L. Pull conductors using recognized methods and equipment leaving at least 6" wire at all junction boxes for connections.
1. Clean out each conduit system before pulling wire.

M. Form and tie all wiring in panelboards.

N. There shall be no wirenut joints or splices made inside switchboards/panelboards.

O. Branch circuit wire sizes (and conduits) shall be increased from those indicated on the plans to prevent excessive voltage drop. Branch circuits shall be installed with wires of sufficient size so that voltage drop between the panel and the loads does not exceed limit of 3%.

P. Regardless of the temperature rating of the conductor insulation, all conductor ampacity rating for this project shall be determined from the 75°C conductor temperature ratings indicated in the NEC tables. Where equipment or devices are provided with terminals/lugs rated for 60°C, the ampacity rating of the 75°C conductor shall be limited to its associated 60°C rating as indicated in the NEC tables. The electrical contractor shall be responsible to increase the conductors and conduit size as required.

Q. Circuits may be multi-plexed in conduit provided wire is properly derated and conduit sized per code. Under no circumstances shall more than six (6) current carrying conductors be run in a single conduit.

R. Type MC cable may be utilized only if NEC and AHJ approved for the intended use and in the limited applications defined below, Type MC cableshall be formed from continuous length of spirally wound, interlocked zinc coated or galvanized (inside and outside) strip steel.
1. Provide for final connections to luminaires that are installed in accessible ceiling systems (limited to 6' maximum in length and limited to "whips" from building electrical system junction boxes down to luminaires). Do not install type MC cable from fixture to fixture unless a special properly listed and labeled UL approved system is specifically indicated.
2. Provide for new 15 and 20 amp branch circuit drops to receptacles in existing hollow partitions for remodeling work. This applies only under all of the following circumstances and condidtions.

a. Basis of design includes cutting and patching for such applications. Type MC cable may be used only where Owner or Architect specifically directs installer case-by-case not to slot walls (limited to 10' maximum cable length from overhead conduit system junction box to respective wall receptacle).
b. Provide only where concealed (install wiring for exposed applications in raceways).
c. Route cables perpendicular and parallel to the building architectural lines, surfaces, and structural members, keeping offsets to a minimum and following building contours where possible.
d. Maintain a uniform elevation for cable runs wherever possible. Support and anchor cables at maximum 4 foot intervals and within 12" of box or outlet in amanner that prevents sagging. Install cables in a manner that prevents overheating. Fasten cables directly to the structure using factory clamps and clips specifically designed for the respective cable (Caddy or equal).

S. Provide wire and raceway systems as described herein and indicated on drawings. Armored cable (AC), and non-metallic sheated cable (NMC) shall not be permitted, unless noted specifically otherwise and approved prior to bidding.

Section 26 05 26 - Grounding and Bonding

A. Ground all equipment per N.E.C.

B. Ground all dry type transformers as per drawings and NEC #450-10.

C. All conduits shall contain a code-sized ground wire size per N.E.C. in addition to the conductors shown on the plans. Where circuit conductors are increased in size for voltage drop, the ground wire size shall be increased proportionately.

D. Where an isolated, insulated ground is required a separate isolated green ground shall be run from the panel isolated ground bus to the isolated ground connection of the device served. In no case shall the system ground (green wire and associated outlet boxes, conduit and building steel) be allowed to contact the isolate ground (green wire with white stripe).

Section 26 05 33 - Raceways and Boxes

A. Raceways
1. All wire shall be run in accordance with code in corrosion resistant, rigid, threaded, metal conduit or electrical metallic tubing (E.M.T.) unless otherwise specifically stated herein.
   - A.a. Conduit in exterior walls, below floor slab, or underground shall be rigid, threaded, galvanized, heavy wall type.
   - A.b. Carlon PVC type 40 heavy wall conduit with ground wire may be used below floor slab or underground in lieu of rigid, threaded, galvanized conduit. PVC 40 conduit shall not be run in or above floor slab. PVC conduit shall terminate below floor slab with rigid, threaded metal conduit adapter. Conduit above slab shall be metal.
   - A.c. Conduit run exposed to the weather shall be heavy wall, metal threaded type.
2. Conduit size shall be 3/4" minimum.
3. Conduit shall be securely fastened in place.
4. All conduit shall be concealed in walls, floor and ceilings wherever possible. Exposed conduit in finished areas will not be permitted. Exposed conduit will be permitted in the unfinished areas with the specific approval of the architect.
5. Use flexible conduit for the connection to recessed or semi-recessed lighting fixtures (6' length maximum). Use liquid tight metal conduit for all connections to motors and other equipment subject to vibration and in areas subject to moisture.
6. Use watertight joints with buried and concrete encased conduit. All buried conduits outside of buildings shall have a minimum of 24" of cover. Metal conduits buried in earth shall be painted (two coats) with heavy asphaltum point.
7. Support runs of conduit as detailed in the appropriate table of the national electrical code (NEC).
8. Installed exposed runs of conduit and conduit above lay-in ceilings parallel or perpendicular to the walls, structural members of intersections of vertical planes and ceilings. Provide right angle turns using fittings or symmetrical bends. Support conduits within 1" of all changes in direction.
9. If a conduit is suspended, it shall be supported on trapeze hangers which use "all-thread" rods from the structural steel. The use of ceiling support wire or similar material will not be accepted.
10. Install empty conduit for future use as indicated on the drawings. Conduit shall be complete with jetline or pull rope, junction/outlet boxes, tile rings and appropriate cover plates.
11. Provide pitchpockets where conduits penetrate the roof.
12. Thread lubrication/sealant is required on outdoor and underground threaded metal joints.
13. Install fire seal fittings where conduits penetrate concrete floor slabs or masonry walls required to be fire rated.
14. Horizontal portion of conduit exposed on the roof and feeding equipment shall not be more than 5'-0" unless the written approval from architect or engineer is obtained.

B. Pull and Junction Boxes
1. Install pull and junction boxes where shown on the drawings, and where required for changes in direction, at junction points, and to facilitate wire pulling. A conduit shall have no more than 270 degrees in turns. Furnish box sizes in accordance with NEC unless larger boxes are indicated.
2. Provide steel boxes and removable covers of code gauge, hot rolled sheet steel, hot dipped galvanized inside and outside, for above ground work. Furnish weatherproof boxes when installed above ground outside.
3. Provide cast iron boxes, hot dipped galvanized inside and outside where shown on the drawings. Furnish removable covers with gaskets and stainless steel, brass or bronze screws.
4. Provide concrete boxes for underground work unless otherwise indicated on the drawings. Furnish steel frames and covers with the cover attached to the frame with hexagon head, brass or bronze cap screws, 3/8" in diameter. Provide a rubber gasket for sealing between the cover and the frame. Paint the cover with two coats of heavy asphaltum.

C. Outlet Boxes
1. Use sheet steel boxes, zinc coated or cadmium plated, for concealed interior work.
2. Use cast boxes, zinc-cadmium finish malleable iron, for exposed interior work, and for exposed or concealed work in wet, damp or exterior locations. Cast boxes shall be series FD by Crouse Hinds or Appleton.
3. Wall box sizes (minimum) shall be 4" square X 2-1/2" deep where wall construction permits. Where wall construction dictates, the width may be reduced to 2-1/8" or 1-1/2" under special conditions.
4. Fixture outlets in ceilings (minimum) shall be 4" octagonal X 1-1/2" deep (4-11/16" octagonal X 2-1/2" deep where required to accommodate larger conduit or larger number of wires).
5. Gang boxes shall be one piece (minimum), 2-1/8" deep.
6. Provide flush floor box series 880 by Wiremold with duplex receptacle for wood platform at display show windows, box with coverplate flange catalog #880W1-818TCAL, and brushed aluminum coverplate catalog #828R-TCAL with flip lid to protect receptacle when not in use. Both flange and coverplate shall have brushed aluminum finish. UL scrub listed.
7. Flush mount boxes in all finished walls, install the plaster rings in drywalled plastered walls and raised covers as required in walls with other finishes so that the cover plates fit tightly against boxes or rings, 3/16" maximum gaps are allowed for noncombustible walls.
8. Adjust location of outlets in masonry or tile construction to occur in the nearest joint to the height specified. Heights shall meet A.D.A. requirements.
9. Support all boxes to maintain proper alignment and rigidity.
10. Clean boxes of all foreign matter prior to the installation or wiring of devices.
11. Mounting heights on the drawings are to the centerline of the box unless otherwise noted.

Section 26 22 13 - Dry Type Transformers

A. Transformers shall be continuously rated isolating type for 60 hertz service unless otherwise indicated.

B. Insulation systems shall be 220 degrees C (150 degrees rise).

C. Enclosures for transformers shall be metallic, suitable for indoor and outdoor installation as applicable and rodent proof.

D. Manufacturers shall be Square D, Cutler Hammer, Seimens, or G.E., Fractional KVA transformers shall be manufactured by Edwards or the special equipment manufacturer in which the transformers are used.

E. Four approved vibration dampeners per transformer shall be employed as necessary to avoid transmitting any vibration to the building structure. Sizes of the mountings shall be selected on the basis of the weight of the transformer, using:
1. A minimum 1" thick rubber-cork-rubber sandwich type for floor mounting.
2. A spring type for suspension mounting.
3. Two(2) spring type at the top (with two (2) steel brackets) and two (2) rubber-in compression type at the bottom (stand-off) for wall mounting.

F. No conduits shall be attached directly to the transformer. At each attachment, provide a vibration dampening assembly consisting of:
1. AT&B #5721, 2, 3 etc., or equivalent female hub type liquid-tight connector by Steel City, Efcor or approved equal.
2. T&B #5331, 2, 3 etc., or equivalent male hub type liquid-tight connector with an insulated throat by Steel City, Efcor or approved equal.
3. Short length (24" plus or minus) of liquid-tight flexible conduit.
4. A bonding jumper of NEC size outside of the assembly.

G. Floor mounting: all floor mounted transformers shall be installed on a 4" high concrete pad. This contractor shall furnish and install concrete pad.

Section 26 24 16 - Panelboards

A. Panelboards
1. Acceptable manufacturers: Square D, Cutler Hammer, Seimens, G.E.. Panelboards shall be enclosed dead front safety type with features and ratings as scheduled on the drawings.
2. Panels known as "load centers" are unacceptable.
3. Molded case circuit breakers shall be as scheduled on the drawings and specified in this division.
4. All bus bars shall be rectangular, solid copper or aluminum.
5. Space, where shown in panel schedules, designates space for future protective devices and shall include bus and support.
6. Install cabinets so that center of the top breaker does not exceed 6'-6" above the finished floor.
7. Entries on directory cards shall be typed, complete and accurate.
8. All bolted connections shall be torqued in accordance with manufacturer's standards.
9. Electrical contractor shall arrange circuits as near as possible to circuit numbers on the drawings. At completion of job, electrical contractor shall take current reading checks of respective phases. A minimum of circuit connections shall be rearranged to balance as closely as possible, the load in the panel.
10. All breakers shall be bolt-on type, full size. No compact breakers allowed.
11. Provide (3) spare 1" conduits into accessible ceiling space where panels are flush-mounted.

Section 26 27 26 - Wiring Devices

A. Unless noted otherwise, wiring device color shall be ivory. All isolated ground (I.G) type receptacles shall be orange unless otherwise noted.

B. Provide totally enclosed, 20 ampere, 120/277 volt, quiet A/C general use snap switches.

C. Switches shall be specification grade as manufactured by Hubbel, P&S, or Leviton.

D. Provide NEMA configuration 5-20R Duplex 125 volt grounding type receptacles rated for 20 amperes unless otherwise indicated on the drawings.

E. Receptacles shall be specification grade as manufactured by Hubbell, P&S or Leviton.

F. Receptacles requiring amperages, voltages or configurations different from the duplex convenience receptacles above shall be as indicated on the drawings.

G. Provide other receptacles of a quality, material and workmanship equal to that specified for duplex convenience receptacles.

Section 26 28 13 - Fuses

A. The contractor shall furnish a complete set of fuses for all switches, plus fusible equipment furnished by other trades. Unless indicated otherwise on plans, the fuses shall be of the following types:
1. Fuses 601 to 6000 amps shall be UL class. Trade type shall be KRP-C as manufactured by the Bussmann Company.
2. Fuses 1/10 to 600 amps shall be UL class RK1. Trade type shall be low peak LPS-RK (600V) and LPN-RK (250V) as manufactured by the Bussmann Company.
3. All other fuses shall be dual-element current-limiting type with 200,000 amperes symmetrical interrupting capacity.

B. Fuses shall be manufactured by Bussmann, Gould-Shawmutt, or Reliance.

C. Spare fuses amounting to a duplicate set of each size installed shall be turned over to the owner upon completion of the project. Provide and place in a spare fuse cabinet similar to Bussmann # SFC.

D. This contractor shall replace all fuses blown during construction.

Section 26 28 16 - Safety Switches

A. Safety switches shall be the enclosed heavy-duty type (type HD) with quick-make, quick-break mechanism and external pad lockable operating handle.

B. Safety switches shall be rated for 240 or 600 volts as applicable. They shall be horsepower rated when used in motor circuits.

C. Safety switches shall be fusible or non-fusible 2, 3, or 4 pole as indicated on the drawings.

D. Safety switches shall be single throw unless otherwise indicated on the drawings.

E. Enclosures shall be NEMA 1 indoors and NEMA 3R outdoors unless otherwise indicated on the drawings.

F. Manufacturer shall be Square D, Siemens, G.E., or Cutler-Hammer. All safety switches shall be by one manufacturer.

G. Switches on block walls shall be mounted on a 3/4" plywood backboard, where located indoors.

Section 26 51 00 - Lighting Fixtures

A. Linear fluorescent lamps for new light fixtures shall be 3500K color temperature U.O.N.

B. Lighting fixtures and lamps shall be furnished and installed as indicated on the lighting fixture schedule.

C. All fixtures furnished by the electrical contractor shall bear the underwriter's laboratories label and shall be installed according to manufacturer's instructions.

D. Ballasts for linear fluorescent lamps shall be electronic, parallel, instant-start, normal output type, less than 20% THD, CBM and ETL certified, as manufactured by Magnetek, Motorola or Advance.

E. This contractor shall provide and install all necessary support media for all lighting fixtures including structural steel, angle, rods, etc. In general, fluorescent and high intensity discharge fixtures shall be supported in a manner acceptable to the local inspection authorities. All fixtures shall be firmly supported from beams or joists.
1. Provide all necessary backing, blocking and supports for wall mounted fixtures.
2. Fixtures shall not be supported from roof deck.

F. All recessed fixtures shall be equipped with necessary plaster frames and surface trim.

G. Recessed fixtures in fire rated ceiling or supply air plenums shall be approved for the fire rating of the ceiling. Provide air tight gaskets to seal around openings.

H. All light fixtures utilized for egress or emergency purposes shall be connected ahead of any switch/controls.

I. All adjustable fixtures shall be aimed and adjusted during evening hours to the satisfaction of the architect and/or tenant.

J. All surface or recessed ceiling light fixtures installed on grid or tile ceilings shall be installed to agree with module of ceiling either displacing a tile, or on center of tile, or centered on grid lines.

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