SECTION 26 10 00 - ELECTRICAL SYSTEMS - GENERAL

1.1 ELECTRICAL – GENERAL

A. All electrical work shall be in accordance with the current editions of NEC, UL, NEMA, and all other state, and local codes and ordinances.

B. Electrical Rooms:

1. Shall contain no non-electrical piping.
2. Shall have a minimum clear height of 12’- 0”.
3. Shall have egress and equipment access openings large enough to accommodate equipment service or replacement.

C. All electrical conduits shall be a minimum of 3/4" on new installations. Existing relocation of conduit may be 1/2" if original installation is 1/2".

D. All communication conduits shall be in accordance with Division 27 section for Technology.

E. All security systems conduits shall be a minimum of 1" unless specifically noted otherwise in Security Sections.

F. All devices shall be 20 amps fully rated and shall be specification grade with plastic device cover plates.

G. All exit lights shall be LED diffuse face type. Use battery mounted inside fixture housing only where required.

H. All conduit runs from floor to 8' A.F.F. in garages, warehouses and mechanical rooms shall be rigid galvanized steel. It may be EMT elsewhere. Riser penetrations shall have a 4” high curbing.

I. All branch circuit panels shall be bolt-on circuit breaker type, 10,000 A.I.C. breakers. New panels shall have minimum of 20% spare capacity.

J. All fuses 600 AMP and lower shall be Class RK 1, low peak time delay. 601 AMP and larger shall be Class L low peak.

K. All safety switches shall be heavy duty with provisions for Class RK 1 fuses.

L. For systems 600 volt and lower, all wire shall be stranded copper, 600 volt, 90 degrees C. THHN or THWN insulation. Minimum wire size shall be No.12 AWG.

M. For system above 600 volt, all wire shall be copper, at rated voltage or higher, with ground shield and waterproof insulation.

N. All transfer switches shall be 3 pole for single-phase systems and 4 pole for three phase systems.

O. Provide double duplex (quad) receptacles adjacent to all CWRUnet faceplates in office areas.

P. Designs shall require affixing flash protection warning labels in all electrical panels.

Q. All receptacles on an emergency circuit shall be red in color with red device cover plates.

R. Panel Labeling engraved phenolic plates and shall be as follows:

1. XX-A-BBBC where:

a. XX = either RP for 208/120V; LP for 480/277V; or PP for 480V distribution
b. A = Floor;
c. BBB = Room Number;
d. C = Letter sequence. Hallway panels get nearest room number.

2. Example: The 1st 208/120 Panel located on the 3rd Floor at Room 301 shall be labeled as RP-3-301A.

S. Wiremold shall be #3000 when applicable. Alternates may be considered as required.

T. All grounds shall be separate green ground wire. Conduit shall not be used for ground return.

U. All building emergency generators shall be natural gas where possible.

V. All equipment, where applicable, shall carry Energy Star Rating (transformers, lighting, motors, etc.).

W. For projects that retrofit an existing building, consultants shall specify panel manufacturers prevalent to the Building (if the building presently utilizes Square D panels all new Panels shall be Square D).

X. Provide two level lighting in stairwells. Low level always on and high level activated by a motion detector.

Y. All recessed lighting shall have at least 6 inch clearance for service and maintenance.

Z. All public areas shall use LED lighting where possible.

1.2 ACCEPTABLE EQUIPMENT AND DEVICE MANUFACTURERS

A. Electrical devices:

1. Minimum 20 amps, fully rated.

B. Electronic ballasts:

1. Multi-Volt Capacity.

C. Emergency Lighting Units (battery packs):

1. Only use when project has no emergency generator.
2. Battery Packs shall last not less than 90 minutes when in use.

D. Exit Lights:

1. Shall be LED only.
2. Shall be red background unless match existing, nearby units

E. Panels, Branch Circuits:

1. Square D.
2. General Electric.
3. Cutler/Hammer-Westinghouse.

F. Panels, Distribution:

1. Square D.
2. General Electric.
3. Cutler/Hammer-Westinghouse.

G. Lighting Controls:

1. Douglas Lighting Controls.
2. General Electric Lighting Controls.
3. Watt Stopper.

H. Safety Switches:

1. Square D.
2. General Electric.
3. Cutler/Hammer-Westinghouse.

I. Transfer Switches (All critical service areas shall have bypass capability):

1. Russ Electric.
2. Zenith.
3. Asco.

J. Clock System (Clocks shall be located in all corridors, classrooms, and teaching labs and shall be satellite synchronized):

1. Primex.

1.3 ELECTRICAL SERVICE AND DISTRIBUTION

A. All new switchgear shall utilize Square D Powerlogic Metering and Monitoring Systems, and shall be connected to the existing campus Powerlogic System. All current transformers shall include shorting block installation. New switchgear shall be fitted out completely, blank spaces shall be allowed.

B. All high voltage service through the metering and primary gear shall be subject to utility (The Medical Center Co.) approval in addition to CWRU's approval.

C. The installation shall comply with The Medical Center Co. specifications issued in Division 33.

1.4 LUMINAIRES AND ACCESSORIES

A. All fluorescent lighting fixtures shall contain electronic ballast that deliver 98% or greater power factor and have less than 10% harmonic distortion with sound rating of "A."

B. Incandescent and halogen lamps are not permitted. Use compact fluorescent lamps or LED lamps in all fixtures that would typically use incandescent lamps.

C. Architect and/or Lighting Consultant shall conform to either I.E.S., IEEE or to the CWRU Required Design Lighting Levels listed herein. This pertains to maximum, as well as minimum levels. Lighting calculations shall be submitted to CWRU with 90% Design Development review drawings.

D. Outdoor perimeter and walkway lighting source shall be HPS or LED.

E. All fluorescent lamps shall be SP 35 color specification and shall be T-8. Preferably low mercury lamps. New construction installations may utilize T-5 lamps.

F. Motion sensors and/or Emergency Management System for lighting control shall be used in hallways, offices, classrooms and restrooms. Departments shall approve use of lighting control in classrooms. Provide a minimum of one night-light in each restroom.

END OF SECTION