PART 1 - GENERAL

1.1 RELATED SECTIONS:

Refer to Section 260553 for electrical identification.

Refer to Section 15300 for requirements regarding fire protection systems.

1.2 SCOPE OF SECTION:

This section contains the requirements for equipment and installation relating to the service entry, distribution, and control of electric power 600 volts and below. Included, but not limited to, service entrance equipment, switchboards, panelboards, disconnect switches, bus ducts, transformers, and motor control centers. The Designer is required to utilize the latest revision of Electrical Guidelines and Policies, as published by the North Carolina Department of Administration, State Construction Office. Exceptions, additions and modifications of the above referenced document are as noted within this section.

1.3 MAIN DISTRIBUTION PANELS (MDP):

A. Service Entrance Panels (or MDP’s) shall be equipped with a Main Breaker. Acceptable manufacturers: General Electric, Square D, Westinghouse/Cutler Hammer, Siemens.

B. Service entry conductors shall enter MDP from bottom, typically. Distribution feeders to building distribution panels or branch circuits shall be fed overhead, typically concealed above lay-in tile ceiling.

C. All service entrance equipment shall have a minimum of 36” clearance between the serviceable sides and other equipment, walls, doors, etc.

D. MDP’s are to kept clean of construction debris at all times and are to be vacuumed out and wiped down clean at the end of the project prior to turning over to Owner.

E. MDP’s 1000 amps and greater shall be provided with digital power meters furnished by same manufacturer as MDP.

1.4 DISTRIBUTION PANELBOARDS:

A. All distribution panelboards shall have a main circuit breaker, unless otherwise instructed by Project Manager.

B. All distribution panelboards shall be flush mounted in finished spaces and surface mounted in equipment rooms. No concentric knockout in panelboard is allowed.
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C. Standard branch circuit panelboard tubs and fronts shall be sized to have (a minimum) 225 amp bussing capacity to accommodate 42 poles (maximum). Voltage shall be 480/277 or 208/120 volt, 3 phase. The minimum number of poles in panel shall be 30. The minimum spare circuit capacity shall be equal to 33 percent of the number of circuits in use.

D. All panelboard circuits shall be identified in proper sequence, i.e., a 42 pole, 3 phase panelboard, with 14 separate 3 phase circuit breakers feeding 14 pieces of equipment, actually still has 42 circuits, not 14. For example, the third breaker down on the left hand side of panelboard XYZ is indicated on the drawings as circuit XYZ-13,15,17 and not XYZ-3, as sometimes done.

E. A neutral bar and ground bar assembly shall be provided and shall be mounted at opposite ends of cabinet from the mains. The assembly shall have the adequate number of terminals, of sufficient size and type of anti-turn solderless lugs.

F. As much as possible, branch circuit wiring within panelboard cabinet shall be neatly laced and grouped, with grounds going to ground bus together, neutrals going to neutral bus together, etc.

G. Main or sub-feed breakers shall be provided where indicated. Shunt trip breakers where specified, shall have 120 volt coils.

H. Circuit breakers shall be thermal magnetic, bolted type and where more than one pole is used, they shall employ a common trip. Plug-in breakers are not allowed.

I. Breakers in panelboards used for switching of circuits shall be rated for switching duty.

J. Type and size of panel shall be shown on the drawings.

K. GFCI breaker - UL Class A (5 milliamperes sensitivity). Where required or indicated on plans, ground fault circuit protection shall be an integral part of the branch circuit breaker which also provides overload and short circuit protection. Circuits protected by GFCI breakers shall be labeled at each device. Space required in panelboard shall be same as standard single pole circuit breaker.

L. Ratings of breakers for lighting and general purpose receptacles shall be 20 ampere. Other sizes as required for loads.

M. Panel shall not have sub-feeder unless special permission of Project Manager is received. Use sub feed lugs with full size tap to panel mains.
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N. Mount top of wall mounted cabinets where highest circuit breaker is 6'-6" above floor. Coordinate location of recessed panels to be accessible and to avoid interference with other equipment and trades.

O. The position of breakers in each panel shall be arranged in the field for sequence phasing by this Contractor to best suit wiring condition and balancing of phases. Panel directory shall be type written using final building room numbers, not architectural drawing room numbers.

P. When multiple levels of GFCI protection are installed, they shall be coordinated for proper operation. Downstream circuit breaker shall clear before upstream circuit breaker.

1.5 GROUND FAULT INTERRUPTER BREAKERS:

Ground fault interrupter breakers shall be coordinated to assure that the smallest number of circuits will be disconnected during a fault.

1.6 FIRE PUMP SERVICES:

A. Normal electrical power shall feed directly from building service transformer to fire pump controller.

B. Emergency electrical power shall feed from separate breaker on emergency generator to fire pump controller.

C. During renovation or due to location, intermediate disconnecting means may be required by code between transformer or emergency generator and fire pump controller.

END OF SECTION