SWITCHBOARDS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK:

A. Provide service and distribution switchboards as indicated on the Drawings.

B. Refer to other Electrical work sections for fuses, cable/wire, connectors, electrical raceway, and ground fault protection work required in conjunction with switchboard; not work of this section.

1.02 QUALITY ASSURANCE

A. Manufacturer: For each material type required for the work of this section, provide primary materials which are the product of one manufacturer. Provide secondary or accessory materials that are acceptable to the manufacturers of the primary materials.

B. Performance Requirements: Provide switchboards manufactured in accordance with Article 384 of the National Electrical Code and applicable portions of the NEMA PB2, U.L. 891 and NFPA 70, the National Electrical Code.

1.03 DELIVERY, STORAGE AND HANDLING

A. Deliver materials and products in factory labeled packages. Store and handle in strict compliance with manufacturer's instructions and recommendations. Protect from damage from weather, excessive temperatures and construction operations.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

A. Manufacturers: Subject to compliance with requirements, provide products of one of the following (for each type of switchboard):

Siemens
General Electric Company
Square D Company
Cutler-Hammer
A. Switchboard shall be of the modular type construction, constructed in accordance with the latest NEMA PB-2 and U.L. 891 standards, with the required number of vertical sections bolted together to form one metal enclosed rigid switchboard. The sides, top and rear shall be covered with removable screw-on code gauge steel plates. Switchboard shall include all protective devices and equipment as listed on drawings with necessary interconnections, instrumentation and control wiring. All groups of control wires leaving the switchboard shall be provided with terminal blocks with suitable numbering strips. Provide switchboards for 208Y/120-Volt or 480Y/277-Volt service as determined by the use. Wet location panelboards shall be NEMA 3R enclosures. If indicated on plans, switchboard shall be suitable for use as service equipment and be labeled in accordance with U.L. requirements.

B. Bus Requirements: The bus shall be silver-plated copper and of sufficient size to limit the temperature rise to 65°F, based on U.L. tests. The bus shall be braced as indicated and supported to withstand mechanical forces exerted during short circuit conditions when directly connected to a power source having the indicated available short circuit current. Refer to plans for available short circuit current. Provide a full capacity neutral where a neutral is indicated on the drawings. The through bus on the end section shall be extended and pre-drilled to allow the addition of future sections with standard splice plates. Through bus shall be non-tapered. Ground bus and grounding conductor lug shall be furnished. Ground bus shall extend the entire length of the switchboard and shall be firmly secured to each vertical section.

C. Incoming Service:

1. Underground Service: To isolate incoming underground service conductors, an underground cable pull or auxiliary section shall be used. This section shall be of the bussed type and shall be sealable per local utility requirements. Screw-type mechanical lugs to terminate and copper cable shall be furnished as detailed on the plans.

2. Overhead Service: Cable entry: Screw-type mechanical lugs to terminate and copper cable shall be furnished as detailed on the plans. Where necessary provide top cable pull box that shall be sealable per local utility requirements.

3. Service Section: The service section shall be designed for the system parameters indicated, and shall have user metering as indicated, and shall have a main protective device indicated.
D. Distribution Sections:

1. Switchboard Type: Panel-Mounted, Front Accessible
   
a. Individual sections shall be front accessible, not less than 20” deep, and the rear of all sections shall align. Incoming line termination, main device connection and all bolts used to join current-carrying parts shall be installed so as to permit servicing from the front only so that no rear access is required. The branch devices shall be front removable and panel mounted with line and load side connections front accessible.

E. Main Protective Device:

1. Molded case circuit breaker:
   
a. Molded case circuit breaker shall be of the quick-make, quick-break, trip-free, heavy duty type. It shall be a 600-volt breaker with the number of poles, a trip current rating and an interrupting capacity as indicated on plans.

F. Branch Protective Devices: All molded case circuit breakers and fusible switches used as a protective device in a branch circuit will meet the requirements of the appropriate paragraph below.

1. Molded Case Circuit Breakers: Molded case circuit breakers shall be of quick-make, quick-break, trip-free thermal magnetic type, with interrupting capacity, frame, trip and voltage ratings, either 2-pole or 3-pole, as indicated on the plans. All breakers shall be removable from the front of the switchboard without disturbing adjacent units. The switchboard shall have prepared space (provisions) for future units as shown on the plans.

G. Switchboard Accessories:

1. Metering Equipment: Provide a G.E. MULTILIN PQM II-T20CA with multi-net-FE, multi-function, high accuracy digital power metering instrumentation module equipped with an LCD display. The power metering module shall provide simultaneous measurements for current, voltage, and power parameters. Power meter shall be equipped with a communications port for connection to customer's future SCADA network.
2. Ground Fault Protection: Provide as indicated on plans and in Section 26 05 26.

3. Finish: The complete switchboard shall be phosphatized and finished with light gray. ANSI 61 paint.

4. Each switchboard section shall have a nameplate permanently affixed to it, listing the following information: Name of manufacturer, system voltage, ampacity, type, manufacturer's shop order number and date.

5. Each section of switchboard shall bear a U.L. listing mark, where qualified, and a short circuit rating label.

6. Front, side, rear and top of each switchboard section will have a DANGER label in accordance with NEMA Standard PB-2.

PART 3 - EXECUTION

3.01 INSTALLATION OF SWITCHBOARDS:

A. General: Install switchboards where indicated, in accordance with manufacturer's written instructions, applicable requirements of NEC and NECA's "Standard of Installation", and in compliance with recognized industry practices to ensure that products fulfill requirements.

B. Coordinate installation of switchboards with cable and raceway installation work.

C. Anchor enclosures firmly to floors and structural surfaces, ensuring that they are permanently and mechanically secure.

D. Provide electrical connections within enclosures.

E. Fill out switchboard's circuit directory card upon completion of installation work. Directory shall be type written.

F. Torque all made connections per manufacturer’s specifications and check torque of all factory connections before energization.

END OF SECTION 26 24 13