

SECTION 16470

PANELBOARDS

1. PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Branch Circuit Panelboards.
- B. Distribution Panel.
- C. Transformers.

1.2 RELATED WORK

- A. Section 16480 - Motor Control: Motor Starters.

1.3 REFERENCES

- A. FS W-C-375 - Circuit Breakers, Molded Case, Branch Circuit and Service.
- B. FS W-F-870 - Fuseholders (For Plug and Enclosed Fuses).
- C. FS W-P-115 - Power Distribution Panel.
- D. FS W-S-865 - Enclosed Knife Switch.
- E. NEMA AB 1 - Molded Case Circuit Breakers.
- F. NEMA KS 1 - Enclosed Switches.
- G. NEMA PB 1 - Panelboards.
- H. NEMA PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.
- I. NEMA PB 1.2 - Application Guide for Ground-fault Protective Devices for Equipment.

1.4 SPARE PARTS

- A. Keys: Furnish 2 each to Owner.
- B. Fuses: Furnish to Owner 6 spare fuses of each type and rating installed.
- C. Fuse Pullers: Furnish 6 fuse pullers to Owner.

## 2. PART 2 PRODUCTS

### 2.1 Enclosures:

- A. All enclosures shall be NEMA 3R or 4X steel construction and corrosion resistant.
- B. Detention Area A, B, and F Structures, Detention Area E Inlet Control Structure, Detention Area E Outlet Control Structure shall be 24 space panels, as shown on the circuit schedules.
- C. I-496 Remote I/O stations shall have 12 space panel as shown on circuit schedule.

### 2.2 ACCEPTABLE MANUFACTURES - PANELBOARDS

- A. Square D.
- B. Allen-Bradley.

### 2.3 BRANCH CIRCUIT PANELBOARDS

- A. Lighting and Appliance Branch Circuit Panelboards: NEMA PB1; circuit breaker type.
- B. Enclosure: NEMA PB 1; Type 3R, 4X steel construction and corrosion resistant.
- C. Cabinet Size: 6 inches deep; as indicated for wire bending space per NEC.
- D. Provide surface cabinet front with concealed trim clamps, concealed hinge and flush lock all keyed alike. Finish in manufacturer's standard gray enamel.
- E. Provide panelboards with copper or aluminum bus, ratings as scheduled on plans. Provide copper ground bus in all panelboards.
- F. Minimum Integrated Short Circuit Rating: 10,000 amperes rms symmetrical for 240 volt panelboards; 14,000 amperes rms symmetrical for 480 volt panelboards, or as shown on plans.
- G. Molded Case Circuit Breakers: NEMA AB 1; bolt-on (600 Volt) or plug-on (250 Volt) type thermal magnetic trip circuit breakers, with common trip handle for all poles. Provide circuit breakers UL listed as Type SWD for lighting circuits. Provide UL Class A ground fault interrupter circuit breakers where scheduled on plans.

### 2.4 FUSES

- A. Fuses 600 Amperes and Less: Dual element, current limiting, time delay, one-time fuse, 250 or 600 volt, UL Class RK as scheduled on plans.
- B. Fuses 601 Amperes and Larger: Current limiting time delay one time fuse, 600 volt, UL Class L.
- C. Interrupting Rating: 200,000 rms amperes.

2.5 DISTRIBUTION PANEL

- A. Manufacturer to match panelboard manufacturer.
- B. Electrical Specifications:
  - 1. 480/277 volt.
  - 2. 3-phase.
  - 3. 200Amp main.
  - 4. Disconnects:
    - a. 30 Amp, to Pump 1.
    - b. 30 Amp, to Pump 2.
    - c. 50 Amp, to LPE-Pump.
    - d. 50 Amp, to LPE-inlet.

2.6 TRANSFORMERS

- A. Manufacturer: Square D
- B. Electrical requirements: Single-phase, 480V primary 240V secondary, 25KVA rating.
- C. Sizes in accordance with NEC and plans.
- D. See Drawings for locations.

3. PART 3 EXECUTION

3.1 INSTALLATION

- A. Install panelboards plumb and flush with wall finishes, in conformance with NEMA PB 1.1 in locations indicated on plans.
- B. Height: 6 foot.
- C. Install per circuit schedules. Balance phase loads as necessary.
- D. Install filler plates for unused spaces in panelboards and distribution panel.
- E. Install typed circuit directory for each branch circuit panelboard. Revise directory to reflect circuiting changes required to balance phase loads.
- F. Stub 5 empty one inch conduits to accessible location above ceiling and/or below floor out of each recessed panelboard.
- G. Install distribution panel in accordance with manufacturer's instructions. Properly label each disconnect with methods listed in other Sections.
- H. Install transformers in Detention Area E Outlet Control Structure and Detention Area E Inlet Control Structure in accordance with plans and manufacturer's instructions.

3.2 FIELD QUALITY CONTROL

- A. Measure steady state load currents at each panelboard feeder. Should the difference at any panelboard between phases exceed 20 percent, rearrange circuits in the panelboard to balance the phase loads within 20 percent. Take care to maintain proper phasing for multi-wire branch circuits.
- B. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers, fusible switches, and fuses.

END OF SECTION