262000-H: SUPPLEMENTAL LOW VOLTAGE ELECTRICAL DISTRIBUTION (16400-H)

Related Sections

Basis Guideline: 262000 – “Low Voltage Electrical Distribution”
260553-H – “Supplemental Electrical Equipment Identification”
262900-H – “Supplemental Motor Controls”

For an explanation of the use of these guidelines, see “Design Guidelines for UMHHC Facilities”

Standards:

All service and secondary distribution equipment shall, in general, be located in electrical rooms. Panels in these rooms shall be surface mounted.

Mount distribution equipment in electrical rooms directly to masonry walls. If walls are not masonry, install steel channels to wall, to support panels. Use two or more channels per panel.

Distribution equipment for kitchens, shops, computer rooms, and other areas noted in program statement/design development may be mounted adjacent to or in these locations. In these cases, flush mounted panels may be installed. Mount panel to framework of at least two steel studs.

If panels are to be located in other finished areas, these shall be flush mounted.

Panels

General Panel Requirements

1. Doors may be door-in-door, shall have concealed hinge, flush handle, lock with 2 keys and panel directory frame. All panel locks in the building shall be keyed alike.
2. Color code panels and label them per Guidelines Section 260553-H.
3. All bus shall be copper. Neutrals shall be fully rated. Ground bus shall also be fully rated. Where noted in schedule, provide isolated ground buses.

Safety Switches

1. Disconnect switches, junction box covers, etc., of emergency circuits shall be color coded for easy identification per Guidelines Section 260553-H.
2. Also see Section UMHHC 262900-H.

Fuses (Below 600 volts)

Where fuses are specified to protect electrical equipment, low-peak, dual-element current-limiting fuses shall be specified. Class L fuses shall be specified for 250-600 volt ranges. Class RK1 or RK5 fuses shall be specified for 1-250 volt ranges. They shall have interrupt ratings of 200kA RMS symmetrical. Five second minimum time-delay at 500% rated current.

Circuit Breakers (Below 600 volts)

Circuit breakers shall be bolt-on, molded-case type, UL 489 tested and rated for the voltage specified. They shall be thermal over-current, thermal magnetic, magnetic or electronic as specified. Single, two or three pole as noted on plans. Breakers supplying motor loads shall be rated as Motor Circuit Protectors (MCP) and shall have adjustable trip parameters. SWD Rating – 15 or 20A circuit breakers rated 347V or less may be marked “SWD”, meaning that they are suitable for switching fluorescent lighting loads on a regular basis (NEC240.83 (D)). HID Rating – 50A or less circuit breakers rated 480V or less may be marked “HID” meaning they are suitable for switching high intensity discharge or fluorescent lighting loads on a regular basis (NEC240.83 (D)). Where specified, circuit breakers shall be supplied with shunt-trip
option (RCCB) and/or auxiliary contacts. They shall have a visual positive trip indicator. Where ground-fault circuit breakers are required, specify solid-state trip units.

**Bus Duct**

Three-phase bus duct shall be totally enclosed, solid copper or copper-plated with integral 50% capacity ground bus. While an integral ground bus is preferred, an equivalent ground using the bus-duct housing is also acceptable. Each bus bar shall be insulated with Class B (130 degree) polyester film or epoxy powder coated material. Housing shall be code gauge steel and aluminum, with ANSI 49 grey epoxy painted exterior finish. It shall have the RMS symmetrical amperage rating and short circuit interrupt rating as specified on the plans. It shall have openings every 24” on both sides to accommodate plug-in devices.

Plug-in safety devices shall be mechanically interlocked with the bus duct to prevent removal while the switch is energized. The units shall also have interlocks to prevent the cover from being open when the switch is energized.

Plug-in devices shall make positive ground connection with the ground bus before the jaws make contact with the phase bars.

Fused plugs are to be used whenever possible

Installation of the bus duct shall be per NEMA Publication BU 1.1, Guide for Proper Installation, Operation and Maintenance of Busway Products.

**Execution**

1. Label/Name equipment as indicated in Guidelines Section UMHHC 260553-H, and as necessary to be consistent in an existing building.
2. If bus duct supplies other than normal power, also color code (paint) doors of bus plugs as noted in Section 260553-H.
3. Bus duct shall be installed so all plug-in locations are accessible and will provide proper working clearances when plug is installed.
4. Firestopping, and expansion provisions for the bus ducts shall be provided for in the design