

SECTION 26 25 00 - ENCLOSED BUS ASSEMBLIES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Feeder-bus assemblies.
2. Plug-in bus assemblies.
3. Bus plug-in devices.

1.2 SUBMITTALS

A. Shop Drawings: For each type of bus assembly and plug-in device.

1. Show fabrication and installation details for enclosed bus assemblies.
2. Show fittings, materials, fabrication, and installation methods for listed fire-stop barriers and weather barriers.
3. Wiring Diagrams: Power, signal, and control wiring.
4. Seismic-Restraint Details: Signed and sealed by a qualified professional engineer.
 - a. Design Calculations: Calculate requirements for selecting seismic restraints.
 - b. Detail fabrication, including anchorages and attachments to structure and to supported equipment.

B. Field quality-control test reports.

C. Operation and maintenance data.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NEMA BU 1, "Busways."

C. Comply with NFPA 70.

1.4 PROJECT CONDITIONS

A. Derate enclosed bus assemblies for continuous operation at indicated ampere ratings for ambient temperature not exceeding 122 deg F (50 deg C).

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or approved equal:
1. Calvert Company (The).
 2. Eaton Electrical Inc.; Cutler-Hammer Products.
 3. General Electric Company; Electrical Distribution & Control Division.
 4. Siemens Energy & Automation, Inc.
 5. Square D; Schneider Electric.

2.2 ENCLOSED BUS ASSEMBLIES

- A. Feeder-Bus Assemblies: NEMA BU 1, low-impedance bus assemblies in nonventilated housing; single-bolt joints; ratings as indicated.
1. Seismic Fabrication Requirements: Fabricate mounting provisions and attachments for feeder-bus assemblies with reinforcement strong enough to withstand seismic forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems" when mounting provisions and attachments are anchored to building structure
 2. Voltage: **[120/208] [240] [480] [277/480] V**; 3 phase; **[100] [200] [percent neutral capacity]**.
 3. Temperature Rise: 55 deg C above 40 deg C ambient maximum for continuous rated current.
 4. Bus Materials: Current-carrying copper conductors, fully insulated with Class 130C insulation except at joints; plated surface at joints.
 5. Ground:
 - a. 50 percent capacity internal bus bars of material matching bus material.
 6. Enclosure: Steel with manufacturer's standard finish.
 7. Fittings and Accessories: Manufacturer's standard.
 8. Mounting: Arranged flat, edgewise, or vertically without derating.
- B. Plug-in Bus Assemblies: NEMA BU 1, low-impedance bus assemblies in nonventilated housing; single-bolt joints; ratings as indicated.
1. Seismic Fabrication Requirements: Fabricate mounting provisions and attachments for switchboards with reinforcement strong enough to withstand seismic forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems" when mounting provisions and attachments are anchored to building structure.
 2. Voltage: **[120/208] [240] [480] [277/480] V**; 3 phase; **[100] [200] [percent neutral capacity]**.
 3. Temperature Rise: 55 deg C above 40 deg C ambient maximum for continuous rated current.
 4. Bus Materials: Current-carrying copper conductors, fully insulated with Class 130C insulation except at stabs and joints; plated surface at stabs and joints.

5. Ground:
 - a. 50 percent capacity internal bus bar of material matching bus material.
6. Enclosure: Steel, with manufacturer's standard finish, plug-in openings 24 inches (610 mm) o.c., and hinged covers over unused openings.
7. Fittings and Accessories: Manufacturer's standard.
8. Mounting: Arranged flat, edgewise, or vertically without derating.

2.3 PLUG-IN DEVICES

- A. Fusible Switches: NEMA KS 1, heavy duty; with **[R-type rejection]** **[J-type]** **[L-type]** fuse clips to accommodate specified fuses; hookstick-operated handle, lockable with two padlocks, and interlocked with cover in closed position. See Division 26 Section "Fuses" for fuses and fuse installation requirements.
- B. Molded-Case Circuit Breakers: NEMA AB 1; hookstick-operated handle, lockable with two padlocks, and interlocked with cover in closed position.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Support bus assemblies independent of supports for other elements such as equipment enclosures at connections to panelboards and switchboards, pipes, conduits, ceilings, and ducts.
 1. Design each fastener and support to carry load indicated by seismic requirements and to comply with seismic-restraint details according to Division 26 Section "Vibration and Seismic Controls for Electrical Systems."
 2. Design each fastener and support to carry 200 lb (90 kg) or 4 times the weight of bus assembly, whichever is greater.
 3. Support bus assembly to prevent twisting from eccentric loading.
 4. Support bus assembly with not less than 3/8-inch (10-mm) steel rods. Install side bracing to prevent swaying or movement of bus assembly. Modify supports after completion to eliminate strains and stresses on bus bars and housings.
 5. Fasten supports securely to building structure according to Division 26 Section "Hangers and Supports for Electrical Systems."
- B. Install expansion fittings at locations where bus assemblies cross building expansion joints. Install at other locations so distance between expansion fittings does not exceed manufacturer's recommended distance between fittings.
- C. Construct rated fire-stop assemblies where bus assemblies penetrate fire-rated elements such as walls, floors, and ceilings. Seal around penetrations according to Division 07 Section "Penetration Firestopping."

- D. Install weather seal fittings and flanges where bus assemblies penetrate exterior elements such as walls or roofs. Seal around openings to make weathertight. See Division 07 Section "Joint Sealants" for materials and application.
- E. Install a concrete curb at least 3 inches (75 mm) high around bus-assembly floor penetrations.
- F. Coordinate bus-assembly terminations to equipment enclosures to ensure proper phasing, connection, and closure.
- G. Tighten bus-assembly joints with torque wrench or similar tool recommended by bus-assembly manufacturer. Tighten joints again after bus assemblies have been energized for 30 days.
- H. Install bus-assembly, plug-in units. Support connecting conduit independent of plug-in unit.
- I. Set field-adjustable, circuit-breaker trip ranges and overload relay trip settings as indicated.

3.2 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Tests and Inspections:
 - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
 - 2. Infrared Scanning: Two months after Substantial Completion, perform an infrared scan of bus assembly including joints and plug-in units.
 - a. Use an infrared-scanning device designed to measure temperature or detect significant deviations from normal values. Provide documentation of device calibration.
 - b. Perform 2 follow-up infrared scans of bus assembly, one at 4 months and the other at 11 months after Substantial Completion.
 - c. Prepare a certified report identifying bus assembly checked and describing results of scanning. Include notation of deficiencies detected, remedial action taken, and scanning observations after remedial action.

END OF SECTION 26 25 00