

SECTION 262500 – ENCLOSED BUS ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. This Section specifies the busway, plug-in switches and circuits breakers, and tap boxes for buildings and structures.
- 2. Provide all labor, materials, and equipment as necessary to complete all work as indicated on the drawings, and as specified herein for a complete operating system.

- B. Related Sections:

- 1. Applicable sections of Division 26 - Electrical

1.3 SUBMITTALS

- A. Shop Drawings

- 1. Busway
- 2. Plug-in switches
- 3. Plug-in circuit breakers
- 4. Tap boxes
- 5. Enclosed bus assembly layout

1.4 QUALITY ASSURANCE

- A. All straight lengths, fittings, and plug-in units shall be UL listed and this listing shall include mounting of the bus way in any position, i.e., horizontal, flatwise, and vertical without derating.

1.5 DESIGN REQUIREMENTS

- A. The ampere ratings, approximate footage, fittings, plug-in units, etc., are shown on the drawings. The Contractor shall be responsible for routing the bus way to coordinate with the other trades. Final field measurements shall be made by the Contractor prior to release of the

bus way for fabrication. Coordination with other trades will assure that the bus way specified will fit.

PART 2 - PRODUCTS

2.1 GENERAL INFORMATION

- A. Furnish and install a complete prefabricated bus way distribution system as shown on the drawings. Bus way shall be 480 volt, 3 phase, 3 wire, and 120/208 volt, 3 phase, 4 wire. Each bus way shall have a 50% capacity integral ground bus.

2.2 HOUSING

- A. The bus way system shall be of the low impedance type and totally enclosed for protection against mechanical damage and dust accumulation. Bus way having a perforated housing will be acceptable only in areas where protection against mechanical damage or dust accumulation is not needed. In order to comply with the NEC paragraph 246-6 on "Through walls and floors", the bus way must be totally enclosed where passing through a floor for a distance of six feet above the floor. The bus way approval drawings shall show this detail and show design detail of the portion of the bus way which is totally enclosed. The totally enclosed housing shall be manufactured by the bus way manufacturer. Modification of bus way, to make it totally enclosed, by other than the manufacturer voids the U.L. label. Bus way so modified is not acceptable. Firestops or barriers shall be included as an integral part of each feeder bus way length and fitting.

2.3 JOINTS

- A. Bus way joints shall be of the one-bolt type. The bolt shall be torque indicating, fully insulated and at ground potential. The bolt shall be a two-headed design to indicate when proper torque has been applied and require only a standard long handle wrench to be properly activated. Access shall be required to only one sided of the bus way for tightening joint bolts. It shall be possible to remove any one length in a run without disturbing adjacent lengths.

2.4 BUS BARS

- A. The bus bars shall be electrolytically tin-plated. Bus bars shall be copper. All bolted connections shall be equipped with Belleville washers. Each bus bar shall be insulated over its entire length. The temperature rise at any point in the bus way shall not exceed 55 degrees C. rise above ambient temperature when operating at rated load current.

2.5 PLUG-IN OPENINGS

- A. On plug-in bus way there shall be five plug-in openings on each side of ten foot lengths, and all openings shall be usable simultaneously. Bus way shall be installed so that plugs are side mounted to permit practical use of all 10 plug-in openings. Hangers shall not block any plug-in opening. Each phase position of a plug-in opening shall be individually insulated. It shall be possible to inspect the plug-in opening and bus bars prior to the installation of the plug-in unit.

2.6 PLUG-IN UNITS

- A. Plug-in units shall be fusible switch type with visible blade quick-make and quick-break mechanism. Plug-in units which cannot be operated directly from the floor shall be equipped with suitable means for hookstick operation.

2.7 PLUG-IN UNIT SAFETY DEVICES

- A. Each plug-in unit rated 100 amperes or below shall be mechanically interlocked with the bus way housing to prevent installation or removal of plug-in units while the switch is in the ON position, and be equipped with an operating handle which always remain in control of the switching mechanism. Plug-in unit enclosures shall make positive ground connection to the bus way housing before the jaws make contact with the bus bars. The grounding method shall be such that it cannot be defeated by future painting of the bus way housing. The plug-in units shall be equipped with internal barriers to prevent accidental contact of fish tape and conductors with live parts on the line side of the protective device during time of wire pulling. Covers of all plug-in units must have "releasable" type interlocks to prevent the cover from being opened while the switch is in the ON position. The plugs must be provided with means for padlocking the switch in the OFF position. Plug-in units must be equipped with means for direct positioning on the bus way before the plug-in jaws make contact.

2.8 SUPPORT OF BUSWAY

- A. Hanger spacing shall be as shown on the drawings. Plug-in bus way shall be sway braced as detailed on the drawings for unbalanced weight of units or ladder with man against the bus way.

2.9 SHORT CIRCUIT RATINGS AND TESTS

- A. The short circuit rating of the feeder bus way shall be 100,000 amperes RMS symmetrical.
- B. The short circuit rating of the plug-in bus way shall be according to NEMA Standards No. BU 1-1978. This rating must be based upon actual tests at the rated short circuit current in accordance with NEMA Testing Standards BU 1-3.04 in which typical plug-in units are installed on one of the two lengths of bus way under test. The insulation and jaws of the plug-in units must be capable of withstanding the motion of the bus bars under the short circuit condition without damage.

2.10 VOLTAGE DROP

- A. The voltage drop is specified with the bus way operating under the following conditions:
 - 1. Rated current load.
 - 2. Ambient temperature 30 degrees C.
 - 3. Bus way at stabilized operating temperature at full rated current.
 - 4. Alternating current, 60 hertz.

- B. The three-phase, line-to-line plug-in bus way voltage drop shall not exceed 2.2 volts per hundred feet at 40% power factor distributed load which condition may exist during instant motor starting, thus causing voltage dips. The line-to-line voltage drop shall not exceed 2.2 volts per hundred feet at the load power factor which produces maximum voltage drop in the bus way.

2.11 APPROVED MANUFACTURERS

- A. All bus way shall be Square D I-Line or approved equal.

PART 3 - EXECUTION

Not used.

END OF SECTION 262500