

SECTION 26 25 13 - TRACK BUSWAY SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. **KROGER DIRECT BUY PROGRAM:** Owner supplied/Contractor installed.
 - a. The Kroger Co. will supply track busway systems indicated on Drawings for three-phase track busway system with the following features:
 - 1) Extruded aluminum busway housing with conductors.
 - 2) Power feed.
 - 3) Plug-in units for power distribution.
 - 4) Monitoring.
 - 5) Installation tool and joint kits.
 - 6) Optional accessories.
 - b. Comply with requirements in Division 00 Section "General Conditions."
2. Contractor supplied items:
 - a. Accessories as required for a complete installation.
3. Contractor installed items:
 - a. Track busway systems.
 - b. Accessories as required for a complete installation.

1.2 REFERENCES

- A. Reference Standards: Design and manufacture track busway system to the following standards:
1. National Fire Protection Agency (NFPA) – 70, National Electric Code (NEC)
 2. National Electric Code (NEC) – Article 368 – Busways
 3. National Electrical Manufacturers Association (NEMA) - AB1, Molded Case Circuit Breakers and Molded Case Switches (if applicable)
 4. National Electrical Manufacturers Association (NEMA) – KS-1, Enclosed and Miscellaneous Distribution Equipment Switches (600 VAC) (if applicable)

1.3 SUBMITTALS

- A. The Owner will provide the following submittals for the Contractor's review. The Contractor shall review and return submittals as specified in Division 00 Section "General Conditions."
1. Product Data:

- a. Detailed equipment assemblies and dimensions.
 - b. Weights, location, and identification of each field connection for each type of busway.
 - c. Wiring Connection: For power and monitoring wiring.
 - d. Orientation plug-in units will face in final installation.
 - e. Plug-in schedule with detailed description.
 - f. Electrical characteristics and connection requirements for the system and accessories.
2. Shop Drawings: For each busway and related equipment.
 - a. Indicate special receiving and handling procedures.

1.4 QUALITY ASSURANCE

- A. Manufacturers Qualification: A minimum of 10 years' experience in the manufacturing of the busway products.
- B. Source Limitations: Obtain enclosed bus assemblies and plug-in devices through one source from a single manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle enclosed bus assemblies according to NEMA BU 1.1, "General Instructions for Proper Handling, Installation, Operation and Maintenance of Busway Rated 600 Volts or Less."

1.6 COORDINATION

- A. Coordinate layout and installation of track busway systems and suspension system with other construction that interfere with track busway systems, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Refer to Division 01 Section "Vendor Contact List" for information on track busway system supplied by the Owner.
 1. Enclosed bus assembly components and accessories shall be manufactured by Starline Holdings LLC, 168 Georgetown Rd., Canonsburg, PA 15317, (724) 597-7800.

2.2 TRACK BUSWAY SYSTEM

- A. Electrical Requirements:
 1. System voltage: up to 600V.
 2. Frequency: 60 Hz.

3. Ampacity: As indicated on Drawings.
4. Neutral Ampacity: Minimum of 100 percent of rating (optional 200 percent for 100T3).
5. Short Circuit Rating: As indicated on Drawings.
6. Conductors: 3 phase conductors, 1 neutral conductor solid copper, tin plated.
7. Grounding: Aluminum casing or 1 dedicated conductor solid copper, tin plated.

B. Operational Requirements:

1. Environmental Conditions: Capable of operating continuously in the following environmental conditions without mechanical or electrical damage, degradation, or derating of operating capability:
 - a. UL Operating Temperature: Operate with continuous load with no derating up to 40 deg. C. (104 deg. F), 0.90 multiplier at 50 deg. C (122 deg. F), 0.85 at 55 deg. C (131 deg. F), and 0.825 at 60 deg. C (140 deg. F).
 - b. IEC Operating Temperature: busway shall operate with continuous load with no derating up to 55 deg. C (131 deg. F), 0.95 at 60 deg. C (140 deg. F), 0.925 at 65 deg. C (149 deg. F), and 0.9 at 70 deg. C (158 deg. F).
 - c. Relative Humidity: 0 to 95 percent, noncondensing.
 - d. Altitude: Sea level to 6,600 ft. (2000 m).

C. Components

1. Track Busway Housing:

- a. Material: Extruded aluminum, certified to serve as a 100 percent ground.
- b. Housing Lengths: Customizable, between 2 feet and 20 ft. (0.6 m and 6 m).
- c. Provide housing with a slot to receive rod mount hangers to hang from a ceiling. Housing to be open on the bottom to accept plug-in units anywhere along its length. Opening shall pass UL's hypothetical finger probe test.
- d. Conductors: Copper, sized to handle 100 percent of its rating continuously up to the maximum ambient temperature. Electrically isolate conductors from the housing. Insulators must be UL and IEC compliant.
 - 1) Ground Conductor: Supply internal, 100 percent ground conductor.
- e. Track Busway Housing Sections: Joined together by a 'press fit' that requires no bolted connection and no future maintenance.
- f. Track Busway T5 Series: Provide an included data channel built into the housing to accommodate optional, color-coded data cabling accessories.
- g. Track Busway Housing Colors: Standard silver, red, blue, black, white, or custom RAL colors.

2. Power Feed:

- a. The power feed shall provide the connections from the incoming cables to the track busway system.
 - 1) Provide internal connection to a section of busway conductors.
 - 2) Provide end feeds, top feeds, center feeds, and bottom feeds depending upon what track busway system is required.

- 3) Provide feeds with option to be designed with mechanical or compression type lugs.

3. Plug-In Units:

- a. Polarized to avoid incorrect installation.
- b. Configured so that plug-in units can be added, removed, or repositioned without de-energizing the busway.
- c. Use either a circuit breaker or a fuse for branch circuit protection as shown in the schedule on the Drawings.
- d. Capable of being built with customer-specified circuit protection, outlets, and accessories.
- e. Capable of mounting to busway without the use of any tools.
- f. Plug-in units shall not have a mechanism in order to engage the electrical connection to the busway conductors.
- g. Provide units with locking clips or bolt-on tabs to secure units to the busway.
- h. Manufacture drop cord units with cord grips and receptacles as indicated on the Drawings.
- i. Configure units to balance the load based on quantity of plug-in unit types provided.
- j. Provide units with the ability to provide up to a 400-amp load in certain plug-in unit configurations.
- k. Ampere Interrupting Capacity: Minimum of 10kAIC and the ability to obtain a maximum of 200kAIC.
- l. Interchangeable within each track busway series (T1, T2, T3, T5).
- m. Available with optional, revenue grade metering devices.
- n. Include manufacturer's ratings label as proof of authenticity.

D. Accessories (OPTIONAL)

1. Closure Strip and Access Panels: For conductor access points to minimize accidental contact or build-up of debris.
2. Integrated Cable Management Solutions: As part of the aluminum housing (T5 series), capable of handling accessories such as the data channel cover, hinged wire way, data cable strap, and multi-use mounting bracket.
 - a. Provide color-coded data channel covers for integrated cable management solutions.
3. Universal Server Cabinet Mounting Brackets: Provide as an alternative hanging solution; meant for mission critical applications.

E. Monitoring (OPTIONAL)

1. Power Feed Monitoring: The power feed is to be provided with the following power measurements and remote monitoring interface:
 - a. Input voltage (L/L and L/N).
 - b. Current per phase (Min/Max).
 - c. Voltage per phase (Min/Max).
 - d. Neutral current.

- e. Power factor.
 - f. Frequency.
 - g. Power (active, reactive, apparent).
 - h. Demand (kWH).
 - i. Current peak demand.
 - j. Lug temperature.
 - k. Communications: Modbus RTU, Modbus TCP, Ethernet SNMP, BACnet, and optional wireless.
 - l. Display: LED colored, 4.9 inches (125 mm).
2. Plug-In Unit Monitoring: The plug-in units as indicated on the schedule on the Drawings shall have the following power measurements and remote monitoring interface:
- a. Input voltage (L/L and L/N).
 - b. Current per phase (Min/Max).
 - c. Voltage per phase (Min/Max).
 - d. Power factor.
 - e. Frequency.
 - f. Power (active, reactive, apparent).
 - g. Demand (kWH).
 - h. Current peak demand.
 - i. Accuracy: Better than 0.5 percent.
 - j. Communications: Modbus RTU, Modbus TCP, Ethernet SNMP, BACnet, and optional wireless plus available daisy chain Ethernet topology.
 - k. Optional display.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install track busway in accordance with the manufacturer's instructions.
- 1. Track Busway Runs: Lengths as indicated on Drawings.
 - 2. Plug-In Unit Orientation: As indicated on Drawings.
 - 3. Busway Mounting: Hang from structure above the busway, using supplied busway hangers. Connect hangers to busway, and to an all-thread rod provided by the installer.
 - a. Hanger Spacing: 10 ft. (3 m).
 - 4. Install busway with the open access channel facing downward, or to the side for special applications. Special installation shall be agreed upon by the manufacturer.
 - 5. Connecting Sections of Track Busway: At a junction of track busway sections, use a joint kit (includes housing couplers and bus connector) installation tool supplied by the manufacturer. Two sections are joined together by a 'press fit' that requires no bolted connection and no future maintenance.
 - 6. End of Runs: Install end caps at the end of each run.
 - 7. Closure Strip (Optional): Cut and fit to cover the bottom opening of the track busway housing to prevent dust and debris. Field modify for fit as required.

- B. Install non-bolted, compression fit track busway joints requiring no maintenance after installation.
- C. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs as specified in Division 26 Section "Identification for Electrical Systems."
- D. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."
- E. Connect wiring according to Division 26 Section "Low Voltage Electrical Power Conductors and Cables."

3.2 FIELD QUALITY CONTROL

- A. Prepare for acceptance tests as follows:
 - 1. Test insulation resistance for each busway, component, connecting supply, feeder, and control circuit.
 - 2. Test continuity of each circuit.
- B. Perform the following field tests and inspections and prepare test reports:
 - 1. Perform each electrical test and visual and mechanical inspection stated in NETA ATS, Section 7.5 for switches and Section 7.6 for molded-case circuit breakers. Certify compliance with test parameters.
 - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
 - 3. Set field adjustable circuit breaker "trip" ratings in compliance with manufacturer's recommendations.
- C. Manufacturers Field Services: Track busway shall be accompanied by optional services, such as on-site support and system startup, ongoing support, metering services and extended warranty programs. These services include:
 - 1. On-site training.
 - 2. Installation inspection, commissioning, and certification.
 - a. Includes comprehensive visual inspection and certified report once results are satisfactory, which extends standard factory warranty from one to two years.
 - 3. Load bank testing.
 - 4. IR scanning and other ongoing support.
 - 5. Extended warranty programs (meter programming, commissioning, and support).
 - 6. 24/7 emergency service and phone support.

END OF SECTION 26 25 13