CITY OF FORT WAYNE MASTER UPDATED: 11/16/18

SECTION 26 28 13

FUSES

1. GENERAL
	1. DESCRIPTION
		1. Scope:
			1. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install fuses with size and trip rating as shown or specified.
			2. Cartridge fuses rated 600-V ac and less for use in enclosed switches and enclosed controllers.

NTS: Retain item below if applicable.

* + - 1. Spare-fuse cabinets.
		1. Coordination:
			1. Review installation procedures under other Sections and coordinate installation of items to be installed with or before Fuses.
		2. Related Sections:

NTS: List below only sections covering products, construction, and equipment specifically identified in this section and specified in another section and directly referenced in this specification. Do not list administrative and procedural division 01 sections.

* + - 1. Section 26 05 05, General Provisions for Electrical Systems.
			2. Section 26 05 53, Identification for Electrical Systems.
			3. Section 26 28 16, Enclosed Switches and Circuit Breakers.
			4. Section 26 24 19, Motor Control Centers.
			5. Section 26 29 13, Motor Controllers.
	1. REFERENCES

NTS: Retain applicable standards and add others as required.

* + 1. Standards referenced in this Section are:
			1. UL 486A, Standard for Safety for Wire Connectors and Soldering Lugs for Use With Copper Conductors
			2. UL 248-1 Low-Voltage Fuses – Part 1: General Requirements
			3. UL 248-4 Low-Voltage Fuses – Part 4: Class CC Fuses
			4. UL 248-8 Low-Voltage Fuses – Part 8: Class J Fuses
			5. UL 248-10 Low-Voltage Fuses – Part 10: Class L Fuses
			6. UL 248-12 Low-Voltage Fuses – Part 12: Class R Fuses
			7. NEMA FU 1, Low Cartridge Fuses
			8. NFPA 70, National Electrical Code.

NTS: Edit article “1.3” below to suit the Project. DO NOT DELETE (NOT USED) ITEMS.

* 1. SUBMITTALS
		1. Action Submittals: Submit the following:
			1. Product Data:
				1. For each type of product.
			2. Shop Drawings: Include the following for each fuse type indicated:
				1. Dimensions and manufacturer's technical data on features, performance, electrical characteristics, and ratings.
				2. Current-limitation curves for fuses with current-limiting characteristics.
				3. Time-current coordination curves (average melt) and current-limitation curves (instantaneous peak let-through current) for each type and rating of fuse.
				4. Coordination charts and tables and related data.
			3. Samples (NOT USED)
		2. Informational Submittals: Submit the following:
			1. Certificates. (NOT USED)
			2. Delegated Design Submittal (NOT USED)
			3. Test and Evaluation Reports. (NOT USED)
			4. Manufacturer’s Instructions (NOT USED)
			5. Source Quality Control Submittals. (NOT USED)
			6. Field Quality Control Submittals. (NOT USED)
			7. Manufacturer Reports. (NOT USED)
			8. Sustainable Design Submittals. (NOT USED)
			9. Special Procedure Submittals. (NOT USED)
			10. Qualifications Statements
				1. Submit manufacturer qualifications when requested by Engineer.
		3. Closeout Submittals.
			1. Maintenance Contracts. (NOT USED)
			2. Operation and Maintenance Data
				1. Submit complete installation, operation and maintenance manuals including test reports, maintenance data and schedules, and description of operation.
				2. Recommended Spare Parts and Extra Stock Materials: Include list of additional spare parts or extra stock materials recommended for use with enclosed molded-case circuit breakers. Describe each recommended part, quantity recommended, current unit price, and ordering information.
				3. Comply with Section 01 78 23, Operations and Maintenance Data.
			3. Bonds. (NOT USED)
			4. Warranty Documentation
				1. Submit manufacturer’s warranty documentation.
			5. Record Documentation. (NOT USED)
			6. Sustainable Design Closeout. (NOT USED)
			7. Software. (NOT USED)
		4. Maintenance Material Submittals. (NOT USED)
			1. Spare Parts
				1. a. Furnish one set of spare fuses for each size and type to be installed.
			2. Extra Stock Materials. (NOT USED)
			3. Tools.
				1. Furnish one set of fuse pullers for each size and type installed.
	2. QUALITY ASSURANCE
		1. Regulatory Requirements:

NTS: Retain applicable regulations and add others as required.

* + - 1. NEC Article 240, Overcurrent Protection.
			2. Fuses shall bear the UL label.
			3. National Electrical Code (NEC): Components and installation shall comply with National Fire Protection Association (NFPA) 70.
		1. Where ambient temperature to which fuses are directly exposed is less than 40 degrees F (5 degrees C) or more than 100 degrees F (38 degrees C), apply manufacturer’s ambient temperature adjustment factors to fuse ratings.
		2. Manufacturer:
			1. Manufacturer shall have not less than five years of experience producing substantially similar equipment to that required and, upon request, shall submit documentation of not less than five installations in satisfactory operation for not less than five years in the United States.
			2. Fuses shall be product of a single manufacturer.

coordination

* + 1. A. Coordinate fuse ratings with utilization equipment nameplate limitations of maximum fuse size and with system short-circuit current levels.
1. - PRODUCTS
	1. MANUFACTURERS
		1. Subject to compliance with requirements, provide products by the following:
			1. Cooper Bussmann, Inc. (Eaton)
			2. Mersen SA
			3. Littlefuse, Inc.
		2. The listing of specific manufacturers above does not imply acceptance of their products that do not meet the specified ratings, features and functions. Manufacturers listed above are not relieved from meeting these specifications in their entirety.
	2. CARTRIDGE FUSES
		1. Characteristics: NEMA FU 1, nonrenewable cartridge fuses with voltage ratings consistent with circuit voltages.

NTS: Delete paragraph “2.3” if not required.

* 1. SPARE-FUSE CABINET
		1. Characteristics: Wall-mounted steel unit with full-length, recessed piano-hinged door and key- coded cam lock and pull.
			1. Size of cabinet: Adequate for storage of spare fuses specified with 15 percent spare capacity minimum.
			2. Finish: Gray, baked enamel.
			3. Identification: "SPARE FUSES" in 1-1/2-inch- (38-mm-) high letters on exterior of door.
			4. Fuse Pullers: Provide for each size of fuse.
			5. List of fuse sizes/types provided.
1. - EXECUTION
	1. EXAMINATION
		1. Examine fuses before installation. Reject fuses that are moisture damaged or physically damaged.
		2. Examine holders to receive fuses for compliance with installation tolerances and other conditions affecting performance, such as rejection features.
		3. Examine utilization equipment nameplates and installation instructions. Install fuses of sizes and with characteristics appropriate for each piece of equipment.
		4. Evaluate ambient temperatures to determine if fuse rating adjustment factors must be applied to fuse ratings.
		5. Proceed with installation only after unsatisfactory conditions have been corrected.
	2. FUSE APPLICATIONS
		1. Provide fuses in accordance with equipment nameplates and manufacturers’ requirements.
		2. Application:
			1. Main Service: Class L, fast acting.
			2. Main Feeders: Class J, time delay.
			3. Motor Branch Circuits: Class RK1, time delay.
			4. Other Branch Circuits: Class RK5, non-time delay.
		3. Cartridge Fuses:
			1. Motor/VFD Branch Circuits: Class RK1, time delay.
			2. Other Branch Circuits: Class RK1, time delay.
			3. Feeder or Large Motor Circuits 601 - 4000A: Class L, time delay.
			4. Elevator Branch Circuits: Class J, fast acting.
			5. Control Circuits: Class CC, time delay, and control transformer duty.
	3. INSTALLATION
		1. Install fuses in fusible devices. Arrange fuses so rating information is readable without removing fuse.

NTS: Delete paragraph “B” if not required.

* + 1. Install spare-fuse cabinet(s) in main electric rooms and mechanical rooms as directed by University Electric Shop, stock with list of inventory, spares and fuse pullers.
	1. IDENTIFICATION
		1. Install labels complying with requirements for identification specified in Section 26 05 53, Identification for Electrical Systems and indicating fuse replacement information on inside door of each fused switch and adjacent to each fuse block, and holder.

NTS: Delete paragraph “3.5” if not required.

* 1. COORDINATION STUDY
		1. Where coordination study recommends changes in types, classes, features or ratings of equipment or devices specified herein from those indicated, make written request for instructions. Obtain instructions from ENGINEER before ordering equipment or devices recommended to be changed.

+ + END OF SECTION + +