

SECTION 16422 - SURGE PROTECTION FOR HIGH VOLTAGE EQUIPMENT

City of San Diego, CWP Guidelines

PART 1 - GENERAL

1.1 WORK OF THIS SECTION

- A. The WORK of this Section includes providing surge arresters for the protection of electrical power equipment against surges caused by lightning or switching operations.

1.2 RELATED SECTIONS

- A. The WORK of the following Sections applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.
 - 1. Section 16050 Basic Electrical Materials and Methods
 - 2. Section 16300 Medium Voltage Distribution
 - 3. Section 16310 Secondary Unit Substation
 - 4. Section 16360 Medium Voltage Switching Center
 - 5. Section 16421 Surge Arresters

1.3 CODES

- A. The WORK of this Section shall comply with the current editions of the following codes as adopted by the City of San Diego Municipal Code:
 - 1. NFPA 70, National Electrical Code (NEC)

1.4 SPECIFICATIONS AND STANDARDS

- A. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section:
 - 1. ANSI C 62.1 Surge Arresters for AC Power Circuits
 - 2. NEMA LA 1 Surge Arresters

1.5 SHOP DRAWINGS AND SAMPLES

- A. The following shall be submitted in compliance with Section 01300:
 - 1. Catalogue literature for arresters proposed for installation, identifying materials, ratings, losses.
 - 2. Shop drawings showing arrester mounting.
 - 3. Information on at least one successfully performing installation of comparable size and complexity designed and fabricated in the recent past by the manufacturer responsible for this WORK, including contact names, addresses, and telephone numbers.

1.6 OWNER'S MANUAL

- A. The following shall be included in the OWNER'S MANUAL in compliance with Section 01300:
 - 1. Certified factory test data.
 - 2. Manufacturer's operation and maintenance instructions.

1.7 QUALIFICATIONS

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NTS: In the paragraph below, define the terms "comparable size and complexity" for the equipment or system specified. Requiring experience of more than one successful project requires sound justification and prior written approval from the City Project Manager.

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- A. **Manufacturer:** Company specializing in production of surge arresters and all accessories required for this project with minimum of one successfully performing installation of comparable size and complexity designed and fabricated in the recent past by the manufacturer responsible for this WORK, including contact names, addresses, and telephone numbers. Installations of comparable size and complexity shall have the following characteristics: [].

PART 2 - PRODUCTS

2.1 GENERAL

- A. The surge arresters shall be valve-type or gapless metal oxide or silicon carbide designed to protect electrical power distribution equipment against overvoltages due to surges from lightning strokes or switching operations.
- B. Surge arresters shall be appropriate for the indicated indoor or outdoor location.

2.2 SURGE ARRESTER SELECTION

- A. On circuits of 1 kV and over, the rating of surge arresters shall be not less than 125 percent of the maximum continuous phase-to-ground voltage available at point of application.
- B. All substation primary sides intermediate or distribution class arresters shall be metal oxide heavy duty type.
- C. On all parts of the circuit on the secondary sides of the substations arresters shall be normal duty silicon carbide type.

2.3 MOUNTING

- A. The manufacturer shall provide all necessary mounting hardware.

2.4 FACTORY TESTS

- A. The following tests shall be made at the factory on each arrester in conformance with ANSI C 62.1:
 - 1. Power-frequency spark-over
 - 2. Radio influence voltage
 - 3. Sealing
- B. The manufacturer shall provide certified copies of design test data on the arrester provided showing that the arresters are in compliance with ANSI C 62.1.
- C. The OWNER and the CONSTRUCTION MANAGER (at the option of either) reserve the right to witness factory tests. The CONTRACTOR shall inform the CONSTRUCTION MANAGER of the test schedule at least [2] weeks in advance.

2.5 MANUFACTURERS

- A. Products of the type and model indicated shall be manufactured by one of the following (or equal):
 - 1. Substation primary side

Westinghouse, Type HMX
General Electric
 - 2. Substation secondary side

Westinghouse, Type LV
General Electric

PART 3 - EXECUTION

3.1 CONSTRUCTION

- A. Unless otherwise specified, the surge arresters shall be mounted at [] kV bus as indicated. The terminations shall be torqued as recommended by the manufacturer.
- B. Surge arresters shall be installed in accordance with the manufacturer's written installation instructions.

3.2 FIELD TESTING

- A. Surge arresters shall be inspected after installation and field tested in accordance with Section 16050.

** END OF SECTION **