

STATE UNIVERSITY CONSTRUCTION FUND

PROGRAM DIRECTIVES

DIRECTIVE 16-9

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SURGE PROTECTION AND LIGHTNING PROTECTION SYSTEMS

1. General

The purpose of this directive is to outline the procedures and requirements for designing surge and lightning protection systems for projects that involve new building construction, additions or significant renovations.

2. Codes and Standards

- a. NFPA 70, "National Electrical Code"
- b. NFPA 780, "Standard for the Installation of Lightning Protection Systems"
- c. UL 96A, "Installation Requirements for Lightning Protection Systems"
- d. UL 1449, "Standard for Safety for Surge Protective Devices"

3. Surge Arresters and Surge Protection Devices

a. Power Distribution Systems

- (1) Provide surge arresters, per NFPA 70 Article 280, for the 15kV and 5kV main electrical equipment.
- (2) Provide surge protection devices, per NFPA 70 Article 285, for the 480/277V and 208/120V main electrical equipment.
- (3) Provide surge protection devices for panelboards that serve data/telecommunication, access control, security, building management and CCTV systems.
- (4) The surge suppressor units shall be provided with indicator lights for power and protection status and with contacts for remote monitoring.

- b. Communication Systems: For projects that include exterior copper conductors for data, communication, fire alarms, building management or other special systems, provide solid state primary protectors per NFPA 70 Article 800.

4. Lightning Protection for Structures

- a. Prepare and submit the NFPA 780 Simplified Risk Assessment to SUCF with the Schematic Design Phase submission. Include with the assessment, calculations for determining the equivalent collection area (A_e), the tolerable

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lightning frequency (Nc), the annual threat of occurrence (Nd) and the factors and coefficients used with these calculations.

- b. SUCF and the Campus will review the assessment and make a determination regarding the need for a lightning protection system.
 - (1) When the probability of a strike occurrence is less than 1 in 100 potential events per year ($Nd < .01$), a lightning protection system will not be required.
 - (2) Lightning protection for specific equipment shall be provided as required by the projects applicable NFPA Standards. As an example, NFPA 22 requires lightning protection for fire protection water storage tanks.
- c. When a lightning protection system is included with the project, provide detailed drawings and specifications for this system. Performance type specifications, which delegates the design to the Contractor during construction, is not acceptable.

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