

FLORIDA STATE COLLEGE AT JACKSONVILLE

FIRE ALARM SYSTEM DESIGN STANDARDS

Edition 1.2

Prepared by:

System Fire Protection LLC
4910 Quality Drive
Fredericksburg, VA 22408

November 18, 2003
{Revised: September 6, 2013 By
FSCJ Fire Safety Inspector}

1. Introduction

The purpose of the Fire Alarm System Design Standards for Florida State College at Jacksonville is to convey the fire alarm system features desired by the College to Architects and Engineers (A/E) for use in preparation of design documents which will be later used by installation contractors. The Design Standards are the minimum acceptable. Features exceeding the minimums may be presented to the College by the A/E. These standards apply to all new buildings and all projects involving complete replacement of fire alarm systems. The Design Standards are also in excess and/or in addition to the code requirements, which are not presented in this document.

2. Design Documentation

2.1 General

Design documents prepared by the A/E are expected to include specifications and drawings, typically for use in bidding by installing contractors.

2.2 Specifications

Performance based specifications shall be used. The specifications shall be presented in Division 13 of the specification manual.

2.3 Drawings

Drawings for the fire alarm system shall be a separate series from other drawings and shall be designated as "FA". For example, the fire alarm drawings are to be included in the overall A/E drawing package, but shall not be combined with electrical drawings or lighting drawings, or any other drawings, the fire alarm drawings shall include floor plans drawn to not less than 1/8 inch scale.

3. Submittal Requirements

The design shall require the installation contractor to submit certain items for review and approval. Simultaneous submittal shall be required to the A/E, the College Project Manager, and the College Fire Safety Inspector. The A/E shall perform the reviews and recommend appropriate action to the College. The possible actions are acceptance, rejection, or acceptance with correction(s). The items to be required to be submitted are as follows:

- Shop drawings
- Product data and cut sheets
- Battery Calculations
- Installation designer qualifications (Minimum NICET Level III)
- Preliminary test results
- Final test results
- Certificate of Installation
- Operation and Maintenance Manuals (4 sets)
- As-built drawings
- Spare parts (at least 10% of installed parts, unless property is covered by a full maintenance contract, in which case no spare parts are needed)

4. System Basis

4.1 General

The design shall require that all fire alarm system components be new and UL Listed for use with the brand of Fire Alarm System being installed. No used or remanufactured parts shall be used.

The design is to be performance-based and suitable for installation of any brand of fire alarm system meeting the requirement. The exception to this is if all or a portion of a fire alarm system network has previously been installed on the particular College campus. In that case, equipment from the same fire alarm system manufacturer must be used in order to maximize digital communications in that network. At this time, the following campus networks have been initiated, and the indicated manufacturer shall be specified by the A/E:

<u>Campus</u>	<u>Manufacturer</u>
Cecil Field	Notifier & Simplex/Grinnell
Deerwood	Notifier
Downtown	Simplex/Grinnell
Kent	Cerberus Pyrotronics
Nassau	Simplex/Grinnell
North	Cerberus Pyrotronics & Simplex/Grinnell
South	Simplex/Grinnell

The College intends ultimately to network all buildings on each campus to the other buildings on that particular campus. If the head-end of the network has been installed, the A/E shall require the new system being designed to be connected to the head-end and networked.

4.2 System Architecture

System architecture shall be based on the following:

	Building Description	Type of System
A	All buildings housing educational facilities, any high rises, an buildings with total floor areas exceed 200,000 square feet.	Intelligent and addressable with voice alarm annunciation.
B	Building with occupancy other than educational facilities, not high rise, total floor area 5,000 to 200,000 square feet.	Addressable without voice alarm.
C	Building with occupancy other than educational facilities, not high rise, total floor area 2,000 to 5,000 square feet.	Conventional without voice alarm.

Educational facilities is intended to encompass all areas used for classrooms, laboratories, auditoriums, and all areas that students frequent, except areas used solely for office and administration functions.

5. System Components

5.1 Fire alarm Control Panels

Fire Alarm Control Panels (FACP) shall be UL listed for use with all necessary components. The technology used shall be consistent with System Architecture. Each building shall have a separate FACP.

The preferred location for FACP’s is in the Security Office for the building, if the building has a Security Office that is physically separated from the remainder of the building such as a separate room. If the building does not have a separate Security Office, then the FACP shall be mounted in an electrical or mechanical room, separated from public access.

5.2 Remote Annunciation

Alpha-numeric remote annunciators, with at least 24 character displays shall be used on all systems except conventional systems. Remote annunciators shall be installed in all of the following locations in a building:

- Security Office (unless the FACP is installed at that location)
- Front Entrance
- Facility Maintenance Office (if there is one in the building)

5.3 Power

Primary power for fire alarm systems shall be provided by a dedicated circuit marked as a life-safety circuit and with lock-outs installed on breaker switches to prevent inadvertent disconnection. Back-up power shall be provided by batteries internal to the fire alarm system. Reliance on other back-up systems, such as generators, is not permitted. Back-up batteries shall be required to be sufficient to provide 48 hours of back-up power in detection mode, and plus 15 minutes of system alarm. Doors on hold-opens shall not be included in back-up power requirements or connected to back-up power circuits. The FACP shall be protected against power surge.

5.4 Smoke Sensors

Smoke sensors shall be photoelectric, ceiling-mounted only. Single station smoke detectors are not permitted. Smoke detector(s) shall be required on all storage rooms and other unoccupied rooms such as janitor closets and utility rooms, in any building which houses educational facilities. A smoke detector shall be installed in all maintenance rooms, except for those rooms for which a smoke detector would likely experience frequent false or nuisance alarm. Combination smoke/heat sensors are permitted in lieu of smoke sensors.

5.5 Heat Sensors

Heat sensors shall be rate-of-rise, ceiling-mounted only. Heat detector(s) shall be installed in all maintenance rooms, in lieu of a smoke detector, in those cases for which a smoke detector would likely experience frequent false or nuisance alarm.

5.6 Manual Fire Alarm Stations

Manual fire alarm stations shall be double-action, wall-mounted, with the operating mechanism located 46 to 48 inches above the finished floor. Break glass or Break-glass rods are not permitted. In areas for which mischievous operation of the manual fire alarm stations is likely, the A/E shall consider the use of alarmed covers for the manual fire alarm stations. Manual fire alarm stations shall be located within 5 feet of all exit doors.

5.7 Alarm Indicating Appliances

Speakers shall be used for audible notification in all buildings for which a voice alarm is being installed, to include all buildings housing educational facilities. Speakers may be ceiling-mounted or, if combined with strobes in combination units, shall be ceiling or wall-mounted. All mounting height shall be in accordance with the current adopted Florida Administrative Codes.

Horns shall be used for audible notification in all buildings in which a voice alarm system is not to be installed. Horns may be ceiling-mounted or, if combined with strobes in combination units, shall be wall-mounted. Wall mounting height shall be in accordance with mounting for strobes as indicated below.

Strobes shall be used in all buildings for visual alarm notification. A strobe shall be installed in all conference rooms, classrooms and laboratories and in all rooms used for education. Wall-mounted appliances shall be mounted such that the entire lens is not less than 2.0 m (80 in.) and not greater than 2.4 m (96 in.) above the finished floor. Ceiling-mounted strobes are permitted and shall be mounted in accordance with the current adopted Florida Administrative Code. Strobes shall be required to be synchronized as per the NFPA Standards.

Horns, speakers and strobes shall be addressable.

6. Connections and Outputs

6.1 Building

Trouble and alarm outputs within the protected building shall be immediate. No pre-alarm arrangements are permitted. Outputs shall be to the FACP, remote annunciators, and both audible and visual alarm indicating devices.

Fire Alarm system circuits shall be arranged to provided redundancy and continuing signals in the event of circuit shorts, grounds, or breaks, in accordance with the following circuit types:

Alarm initiating circuits -	Style D
Alarm indicating circuits -	Style Z
Signaling line circuits -	Style 6

All system wiring shall be required to be installed in a minimum of ¾ inch conduit or electrical metallic tubing (EMT).

Output from a voice alarm system shall consist of the following:

A temporal pulse alert tone of 10 seconds followed by a digitally recorded evacuation message of

“May I have your attention please, may I have your attention please. There is a fire emergency in the building. Please proceed to the nearest exit to evacuate the building.

The evacuation message portion shall repeat continuously until the fire alarm system is selected or reset.

6.2 Campus output

Output of trouble and alarm condition shall be transmitted to the main security station, if the campus has a main security station. If the campus has a fire alarm system network, trouble and alarm conditions, as well as maintenance alerts shall be transmitted to all FACP's on the network as well as the Network Controller.

6.3 College output

Each fire alarm system, except systems in buildings 5000 square feet and under, shall include notification via email to the College Fire Safety Inspector. The email notification shall include all trouble and alarm notification, and shall provide the custom-label for the component.

6.4 Central Station

Each fire alarm system shall include automatic notification to the Central Station used by the College.

7. Execution

7.1 Removal of Old Systems

Replacement fire alarm systems shall be completely installed and operation for a minimum of 30 days prior to removal of the old system. Exceptions to this provision may be permitted with specific written approval from the College Fire Safety Inspector. In those cases, the installing fire alarm contractor shall be required to provide an approved fire watch during all times that any area is without complete and operational fire alarm system service.

7.2 Testing

The installing contractor shall be required to pre-test all components of the fire alarm system, and provide the results of that test, prior to requesting final acceptance test. For the final acceptance test, the fire alarm contractor shall conduct a full test including all components and all system outputs. The results of the final test shall be provided in writing.

7.3 Training

The installing contractor shall be required to provide training on all systems, Training shall include 3 sessions, of 4 hours each, training in operations and control of FACP; 1 session, of 4 hours, training in basic maintenance procedures and information; and 1 refresher session of both the operation and control and the maintenance training, of 4 hours each, 12 months after the initial training, unless requested earlier by the College.

Florida State College at Jacksonville is a member of the Florida College System and is not affiliated with any other public or private university or college in Florida or elsewhere.

Florida State College at Jacksonville does not discriminate against any person on the basis of race, color, ethnicity, genetic information, national origin, religion, gender, marital status, disability, or age in its programs or activities. Inquiries regarding the non-discrimination policies may be directed to the College's Equity Officer, 501 West State Street, Jacksonville, Florida 32202 | (904) 632-3221 | equityofficer@fsci.edu.

Florida State College at Jacksonville is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award the baccalaureate and associate degree. Contact the Commission on Colleges at 1866 Southern Lane, Decatur, Georgia 30033-4097, or call (404) 679-4500 for questions about the accreditation of Florida State College at Jacksonville. The Commission is to be contacted only if there is evidence that appears to support an institution's significant non-compliance with a requirement or standard.