

SECTION 28 31 00
FIRE DETECTION AND ALARM SYSTEMS
Design Standard

PART 1 GENERAL

1.1 PURPOSE

- A. The San Mateo County Community College District utilizes Siemens XLS fire alarm systems at each of its three campuses and at the District Administration Building. This design standard describes each system's configuration and describes the descriptor protocol that shall be used by system programmers to name the devices. The design standards cited herein are intended to establish and maintain a consistency in fire alarm systems from campus to campus and from building to building, thereby maximizing quick fire emergency response activities, minimizing staff and emergency response personnel training, and facilitating excellence in the quality of the educational and work facilities of San Mateo County Community College District buildings.

PART 2 PRODUCTS

2.1 SIEMENS XLS FIRE ALARM SYSTEMS:

- A. SMCCCD has standardized on Siemens XLS Fire Alarm Systems. No other systems shall be considered equal.
- B. For small remodel projects in existing buildings with existing audible temporal horn appliances, continue to utilize the existing Siemens XLS Fire Alarm System with audible temporal horn appliances, if revising to EVACS is cost prohibitive. Present and review cost options with the District early in the design process, so the District can make an informed decision.
- C. For new buildings and major building modernization projects the design shall utilize the Siemens XLSV Emergency Voice Alarm Communications System (EVACS).
- D. In addition to performing the fire evacuation of the building, the EVACS will be utilized to transmit messages from the existing Event Annunciation System (EAS) to the building occupants. Siemens will provide the audio interface including relays and all required equipment for connection of the EAS to the Siemens XLSV fire alarm control panel for distribution of the EAS program over the fire alarm system speakers within the building. Siemens will coordinate with an audio contractor to provide the required equipment, connections, testing and commissioning of the audio interface.
- E. CSM, Skyline and Canada fire alarm systems have a peer to peer configuration.
- F. Briefly, a peer-to-peer system is a group of interconnected stand-alone fire alarm systems that can share "global" information of status changes within the overall system. Each system functions independently as a stand-alone system if there's a break in communications between panels/systems. There needs to be a minimum of one #16AWG, dedicated twisted shielded copper pairs of wire between each of the panels in order for the systems to communicate in a networked peer-to-peer configuration.
- G. The Siemens equipment shall be supplied and installed by the local Siemens Building Technologies, Inc., Hayward direct branch office; contact: Kirby Kinkead: (510) 861-9271.

- H. Smoke and heat detection is not required throughout the building. However, plan for installation of smoke and heat detection in non-occupied areas where fires may start and there is no regular occupancy – such as storage rooms, mechanical rooms, electrical rooms.
- I. For mechanical systems with greater than 2,000 cfm capacity, the local fire departments recommend that duct detectors trigger supervisory signals, to avoid nuisance false alarms.

2.2 DEVICE DESCRIPTORS

- A. Standardization of descriptors will facilitate operator training and allow quicker identification of device locations by facilities maintenance and operating personnel. Most importantly, it will facilitate quicker response time in the event of emergencies. The fire alarm system design professional shall ensure that these descriptor requirements are incorporated into construction specifications, so that these descriptors will be displayed on the XLS's PMI LCD displays.
- B. Definitions:
 - 1. Address:
 - a. These series of numbers identify each device on the XLS system.
 - b. The numbers are based on the node, the module and the device number (e.g., 02:135-068).
 - 1) Nodes are numbered from 01 to 64
 - 2) Modules are numbered from 001 to 253
 - 3) Devices are numbered from 001 to 254.
 - c. The standard address format is as follows: NN:MMM-DDD
 - 2. Descriptor:
 - a. This is the line of text that identifies and locates the device corresponding to the address.
 - b. Device:
 - 1) This is the type of device. It is identified by an abbreviation or code from the following table below. Examples are PS for a Pull Station or AUD for an audible device such as a horn or bell.

Initiating Devices		Communication Devices	
Smoke Detector	SD	Fireman's Phone	FP
Heat Detector	HD	Fireman's Jack	FJ
Duct Detector	DD		
Beam Detector	BD	Panels	
Air Sampling	AS	Fire Alarm Control Panel	FACP
Monitoring Device (By Name)	MSC	Printer	PRT
Pull Station	PS	Annunciator	ANN
Tamper Switch	TS	Video Display Terminal	VDT
Water Flow	WF	Voice Evac Panel	EVAC
Fire Smoke Damper	FSD	Fan Control Panel	FAN
		Network Control Center	NCC

Notification Devices		Aux Power Supply	PWR
Audible	AUD	Dialer	DIAL
Visual	VIS	Foreign System Interface	FSI
Audible/Visual	AV		
Voice Evac Speaker	SPK R		

3. Equipment ID:
 - a. The ID number of the piece of equipment that the device is monitoring (e.g., HV-5A)
 4. Building Number:
 - a. This is the number assigned to the building containing the device (e.g., B5 for building 5).
 5. Floor Number:
 - a. This is the number of the floor where the device is located (e.g., F3 for the third floor).
 6. Description:
 - a. This is a description of the location of the device. It may be a room number or name (e.g., Rm 2105 or Lobby). It may also be a directional guide (e.g., N.E. Corridor).
- C. Constraints:
1. Address:
 - a. The address is established during the design and programming of the system's ZEUS system software-programming tool.
 2. Descriptor:
 - a. The descriptor is limited to 32 characters. This includes letters, numbers, spaces, and punctuation marks.
- D. SMCCCD Descriptor Protocol:
1. Descriptors at SMCCCD XLS panels shall be developed following this standard SMCCCD protocol. No exceptions are allowed.
 2. Address, Device, Equipment ID (if needed), Building Number, Floor Number, Description
 3. If the device is monitoring or controlling a piece of equipment, then that equipment's ID shall immediately follow the Device. (e.g., HTRI HV-5A).
 4. If the description is to contain a single compass point, it should be spelled out (e.g., North). If the description uses multiple compass points such as North East it should be abbreviated (e.g., N.E.).
 5. If the description contains a room number, then state the building number followed by a dash and then the three digit room number. (e.g., 2-105)

6. Examples:
 - a. 02:002-007 PS B2 F1 RM 2-105
 - b. 02:001-047 SD B1 F3 MECH RM
 - c. 02:004-034 DD B7 F3 N.E. CORRIDOR
 - d. 02:004-059 HTRI HV-5A B7 F1 MCC

PART 3 EXECUTION

3.1 SUBSTITUTIONS

- A. No substitute to this device descriptor protocol is allowed.
 1. Pursuant to Section 3400 of the Public Contract Code: Siemens XLS fire alarm systems are now in use on the particular public improvement described as San Mateo County Community College District. At each instance in these specifications that a designated material, product, thing or service is designated by the brand name "Siemens XLS fire alarm systems" or "Siemens" is designated to match the existing systems that are in place at Skyline College, College of San Mateo, Cañada College and the District Administration Building. The Contractor will furnish and install "Siemens XLS fire alarm systems, supplied by the local Siemens Building Technologies, Inc., Hayward direct branch office" as required, and no substitutions shall be deemed to be "or equal" or allowed.

3.2 ASSOCIATED DESIGN STANDARDS AND CONSTRUCTION SPECIFICATIONS

- A. Emergency Vehicle Access and Fire Protection Considerations Design Standard
- B. Section 21 00 00 Basic Fire Protection System Design Standard
- C. Section 26 00 00 Basic Electrical Requirements
- D. Section 27 51 13 Event Annunciation System

3.3 Section 28 31 00 Fire Detection and Alarm Systems Construction Specification

GENERAL INSTALLATION REQUIREMENTS

- A. Spare Capacity
 1. Notification Appliance Circuits: Minimum 25 percent spare current capacity. Utilize UL maximum current draw values for notification appliances. Maximum 10 percent voltage drop.
 2. Speaker Amplifiers: Minimum 25 percent spare capacity.
 3. Signaling Line Circuit: Minimum 25 percent spare capacity.
- B. Terminations
 1. Terminate wires at terminal strips/connectors on control equipment.
 2. Provide terminal strips for connections within termination cabinets. Use of wire nuts or similar types of connectors is not permitted within termination cabinets.

C. Identification

1. At termination cabinets and termination points, provide identification tags on wires and cables.
2. Provide signs to identify rooms containing fire alarm equipment. Signs to be approved by Owner and fire department.

END OF SECTION