



.1 General Description

- .1 The University requires that all new fire alarm system control panel, components, and devices, as required for the project, be Secutron 2900 Series and fully compatible with the existing fire alarm infrastructure on campus..

.2 System Description

- .1 Fully supervised, microprocessor-based, fire alarm system, utilizing digital techniques for data control, and multiplexing techniques for data transmission.
- .2 System to carry out fire alarm and protection functions, including receiving alarm signals; initiating single-stage alarm; supervising components and wiring; actuating graphic displays and auxiliary functions; initiating trouble signals and signaling to the University Campus monitoring system.
- .3 Zoned, coded, single-stage.
- .4 Modular in design to allow for future expansion.
- .5 Operation of system shall not require personnel with special computer skills.
- .6 System is to include but not be limited to:
 - .1 New Central Control Unit (CCU) in separate enclosure with power supply, stand-by batteries, central processor with microprocessor and logic interface, main system memory, input-output interfaces for alarm receiving, annunciation/display, and program control/signaling.
 - .2 Power supply.
 - .3 Initiating/input circuits.
 - .4 Output circuits.
 - .5 Auxiliary circuits.
 - .6 Class A wiring configuration.
 - .7 Addressable manual and automatic initiating devices.
 - .8 Audible and visual signaling devices.
 - .9 End-of-line resistors.
 - .10 Remote annunciation and general alarm activation.
 - .11 Field control modules

.3 System Operation

- .1 Activation of any manually actuated or automatic detection, or sprinkler system addressable alarm device is to:
 - .1 Cause audible and visual alarm indication at CCU and visual indication at remote annunciator.
 - .2 Cause controlled operation of the audible and visual signal devices throughout the building (capability for both continuous and temporal sound patterns).
 - .3 Indicate device that initiated the alarm at CCU.
 - .4 Transmit signal to University Campus monitoring station.
- .2 Provision to silence signals by "alarm silence" switch at control unit and remote annunciator.
- .3 Subsequent alarm, received after previous alarm has been silenced, to re-activate signals.
- .4 Actuation of any sprinkler system supervisory device to:
 - .1 Indicate respective supervisory zone at CCU and remote annunciator.
 - .2 Cause audible signal to sound at CCU and visual indication at remote annunciator.



- .3 Display the activated device type and location.
- .5 Resetting alarm or supervisory device to return system indications/functions back to normal at control unit and remote annunciator.
- .6 Trouble on system to:
 - .1 Give audible and visible indication of circuit in trouble at the CCU and visual indication at remote annunciator.
 - .2 Acknowledge trouble condition to silence audible indication; visual indication to remain until trouble is cleared and system is back to normal at control unit and remote annunciator.
- .7 Trouble on system: suppressed during course of alarm.
- .8 Trouble condition on any circuit in system is not to initiate alarm conditions.
- .9 In the event of a CCU microprocessor failure, alarm-initiating circuits are to report alarms in the conventional collective mode for each addressable line, and alert signals are to sound throughout.
- .10 Response time, from initiation of an alarm to registration at the CCU and activation of all signaling devices, is not to exceed 10 seconds.
- .11 Signaling devices are to be active for 1 minute before they can be de-activated.
- .4 Control Panel**
 - .1 Central Control Unit (CCU): Secutron 2900 Series.
- .5 Auxiliary Circuits**
 - .1 Auxiliary contacts for control functions.
 - .2 Actual status indication (positive feedback) from controlled device.
 - .3 Alarm and/or supervisory trouble on system to cause operation of programmed auxiliary output circuits.
 - .4 Upon resetting system, auxiliary contacts to return to normal or to operate as pre-programmed.
 - .5 Auxiliary circuits: rated at 2 A, 24 VDC or 120 VAC, fuse-protected.
- .6 Products-Of-Combustion Detectors**
 - .1 Smoke Detector – Addressable Dual chamber, photoelectric, twistlock, plug-in type with fixed wire-in base assembly with integral red alarm LED. Detector to be addressable type c/w electronics to communicate detector's status, and field adjustable address setting.
 - .2 Duct Smoke Detector – Addressable Dual chamber, ionization, twistlock, plug-in type with fixed wire-in base assembly with integral red alarm LED. Detector to be addressable type c/w electronics to communicate detector's status, and field adjustable address setting.
- .7 Heat Detectors**
 - .1 Thermal fire detectors, addressable, combination fixed temperature and rate of rise, non-restorable fixed temperature element, self-restoring rate of rise.
 - .2 Thermal detectors, addressable, fixed temperature: 57°C.
- .8 Remote Led Alarm Indicator**
 - .1 Remote indicating LED #RA400ZA to indicate status of concealed devices.
- .9 Manual Alarm Stations**
 - .1 Addressable manual pull station compatible with fire alarm panel.



.10 Audible Signal Appliances (Gongs/Bells)

- .1 Bells 250mm diameter, red..
- .2 Audible signal alarms in Suites - sonalerts complete with built-in silence switch supervised isolation module for each device. Group modules in electrical closets on respective floors.

.11 Visual Signal Appliances (Strobe Lights)

- .1 Visual signal alarms in suites designated for hearing impaired –combination temporal horn/strobe complete with silence switch and supervised isolation module for each device. Group modules in electrical closets on respective floors.

.12 Fault/Isolation Modules

- .1 Provide fault/isolation modules for all fire alarm zones and supervisory circuits.

.13 Smoke Alarms

- .1 In suites: Dual ionization type, 120VAC.
- .2 In suites designated for hearing impaired: Dual ionization type complete with horn/strobe, 120VAC.

.14 Door Holders

- .1 Provide electromagnetic hold-open devices for smoke control doors.
- .2 Door holders to be complete with all necessary mounting hardware and accessories. Provide flush mounting boxes in finished areas and matching surface boxes in unfinished areas or as required to suit the application. Provide solid backing for all mounting boxes.
- .3 Provide the following features:
 - .1 Rated for 120V AC. continuous service.
 - .2 Power source for hold-open devices in nearest electrical panelboard or as indicated. Install breakers as required and label clearly. Group hold-open devices on dedicated circuits on a floor by floor basis or to suit layout.
 - .3 De-energize hold-open devices during an alarm condition, using appropriate addressable output modules. Do not use relays energized by a bell circuit. Provide dual voltage relays as required.
- .4 Provide manual switch override of magnetic door holders and locate in Main Electrical Room.

.15 Mechanical System Control

- .1 Provide control of mechanical system air handling equipment during an alarm condition, as indicated on the drawings and specified under the Mechanical Division.
- .2 Provide addressable output modules to enable smoke removals fans as described in the Mechanical Specifications. Provide separate override control switches in both the control panel and the remote annunciator panel(s).
- .3 Provide relay contact to DDC system to signal the status of the fire alarm system.
- .4 Provide relay contacts to DDC system to signal the status of the smoke removal switches.



.16 Kitchen Equipment Fire Suppression System

- .1 Provide relay interlocks to kitchen cooking equipment fire suppression system control panel for fire alarm activation and cooking equipment shut-down as indicated on plans.

.17 Sprinkler System

- .1 Provide waterflow/tamper modules for connection to sprinkler system for monitoring of flow switches and valves. .
- .2 Provide input modules for connection of pressure switches for monitoring.
- .3 Provide alarm/trouble indication of heat tracing system at the control panel and remote annunciator panel.
- .4 Where the building is equipped with a fire pump, provide four trouble LED annunciation zones on the fire alarm system indicating the following:
 - .1 Pump or motor running
 - .2 Loss of phase
 - .3 Phase reversal
 - .4 Controller connected to alternate source

.18 Annunciator

- .1 Provide and install flush mounted LED back-lit remote graphic annunciator c/w driver, LCD display, scroll, acknowledge button, system re-set system trouble, power on, and signal silence, where indicated on plans.
- .2 Annunciator to be complete with brushed aluminum trim and hinged lockable cover.
- .3 Where the building is equipped with a fire pump, provide four trouble LED annunciation zones on the fire alarm system indicating the following:
 - .1 Pump or motor running
 - .2 Loss of phase
 - .3 Phase reversal
 - .4 Controller connected to alternate source
- .4 Provide 100 watt, 120 volt ceramic strip heater inside annunciator enclosure for exterior weatherproof mounted annunciator panels. Monitor strip heater via the fire alarm system and provide trouble indicator. Provide 120 volt power to heater, whether shown or not on plans.

.19 Wire And Cable

- .1 Conductor Insulation: Minimum rating 300 volts. Single conductor RW90XLPE (X-link).
- .2 Multi-conductor cables 105°C with outer PVC jacket, colour coded, FAS rated.
- .3 Conductor sizes as follows:
 - .1 To initiating circuits: #18 AWG minimum, and in accordance with manufacturer's requirements.
 - .2 To signal circuits: #16 AWG minimum, and in accordance with manufacturer's requirements.
 - .3 To control circuits: #12 AWG minimum, and in accordance with manufacturer's requirements.
 - .4 Size all fire alarm wiring for maximum 3% voltage drop at maximum load at last device in run.
- .4 Fire alarm bell circuits to be Red/Black stranded 2C#12 only.



Construction Standards

- .5 Red fire alarm LV cable 3C#18 or 5C#18 with "fire alarm" written on jacket is to only be used for fire alarm.
- .6 All wiring to be copper.
- .7 All wiring to be tag identified at the points of connection.
- .8 Provide a ground conductor with all system wiring and bond all metal parts including device boxes.
- .9 All fire alarm system wiring to be in conduit except short drops from ceiling junction box to detectors mounted in T-Bar ceiling may be rated fire alarm system cable.conduit and boxes