SECTION 283105 - MODIFICATIONS TO FIRE ALARM SYSTEM

Change title to suit existing system. This section is written as a guide to make additions or modifications to existing systems.

1. GENERAL

Include article below only when a specific allowance is being used for portions of the work and has been approved for use by the business unit leader. Modify the article below to coordinate with the products and/or services negotiated as being provided under the specific allowance. Include negotiated specific allowance value in appropriate article in section 012100. All specific allowances must be submitted to OSC for approval prior to bidding.

* + - 1. ALLOWANCES
				1. An allowance for the following portions of the Work of this Section is included in Section 012100:

Services of the Company Field Advisor as described in QUALITY ASSURANCE.

All items listed in SUBMITTALS.

Engineering and reprogramming associated with the installation of the new equipment and updating existing information.

All products listed in PART 2 of this Section except:

Protective devices.

Terminal strip cabinets.

Conductors and cable.

Signs, labels, markers, and nameplates.

Labor for installation of the products is not included in the allowance and shall be included in the contract sum.

Spare parts listed in Part 1 of this Section except protective devices.

* + - 1. REFERENCES
				1. Underwriters Laboratories Inc.

In paragraph below add “ and 13” for sprinkler system alarm and supervision. Add “and 20” for fire pump supervision.

* + - * 1. National Fire Protection Association Standard 72.
			1. DEFINITIONS
				1. Initiating Device Circuit: A circuit to which automatic or manual initiating devices are connected where the signal received does not identify the individual device operated. Example:

Circuits from PPSSs and ICUs to non-addressable signal initiating devices.

* + - * 1. Notification Appliance Circuit: A circuit or path directly connected to a notification appliance. Example:

Circuits from PPSSs and ICUs to notification appliances.

* + - * 1. Signaling Line Circuit: A circuit or path between any combination of circuit interfaces, control units, or transmitters over which multiple system input signals or output signals, or both are carried. Examples:

Circuits from PSS to building PPSSs and ICUs.

Circuits from PPSSs and ICUs to addressable devices.

* + - * 1. Operating Mode:

Private Mode:

Audible and visible signaling only to those persons directly concerned with the implementation and direction of emergency action initiation and procedure in the area protected by the fire alarm system, and:

Audible and visible signaling only to those persons within special designated areas where private mode operation is specified to be applicable.

Public Mode: Audible and visible signaling to occupants or inhabitants of the area protected by the fire alarm system.

Article below is an example of a brief existing system description, suitable for minor system modifications.

* + - 1. DESCRIPTION OF EXISTING SYSTEM
				1. The existing Simplex Time Recorder Co. 4120 System operates as an integrated multiplexed protected premises and proprietary fire alarm, monitoring and control system. Changes in the status of monitored points are detected by the micro-processor based proprietary supervising station (PSS) and protected premises subsidiary stations (PPSSs) located in buildings throughout the facility.

Article below is an example of comprehensive system description, applicable to significant system modifications.

* + - 1. DESCRIPTION OF EXISTING SYSTEM

Do not use description of existing system solely as written. It is only a guide. Modify to suit existing system. Change company, system identification and terminology to suit.

* + - * 1. The existing Simplex Time Recorder Co. 2120 System operates as an integrated multiplexed protected premises and proprietary fire alarm, monitoring and control system. Changes in the status of monitored points are detected by the micro-processor based proprietary supervising station (PSS) and protected premises subsidiary stations (PPSSs) and remote control units (RCUs) located in buildings throughout the facility.

Smoke detectors and smoke sensors operate in conjunction with the systems’ alarm verification program.

The alarm verification operation is selectable by zone for smoke detectors and by individual devices for smoke sensors.

The activation of any smoke detector within its zone initiates the alarm verification program.

Smoke sensors act as intelligent and addressable devices. The smoke sensor converts the condition of its smoke sensing chamber to an analog value. This analog value is digitized and transmitted to the FACP(s).

Actual smoke density and temperature measurements are referenced from average sample measurements and are compared to programmable values of threshold sensitivity.

Sensor “dirty” and “excessively dirty” trouble conditions are reported automatically through a maintenance advisory and alert program procedure.

System individually identifies each addressable initiating device and other addressable monitor functions using multiplexing techniques.

System is capable of individually operating each alarm notification appliance, and other control functions, using multiplexing techniques.

Alarms are processed by the system at 3 levels of priority:

Fire alarms have the highest priority.

Other alarms that require interaction by the attendant have the second level of priority.

Monitored points which do not require interaction by the attendant are the third level of priority.

Access to the system functions are controlled thru at least 3 levels of access security to prevent program modifications or use by unauthorized personnel.

Alarms, supervisory signals, and trouble signals are distinctively and descriptively annunciated.

Switches for silencing audible trouble and supervisory signals transfers the audible signal to a lamp or other visible indicator adjacent to the switches.

All system visual and audible trouble signals and visible indication of their restoration is indicated at the PSS.

Each building’s visual and audible trouble signals and visible indication of their restoration is indicated at its PPSS.

Monitoring of ground fault conditions indicate a ground fault trouble condition at the PSS.

Summary reports are displayed and printed at the PSS upon appropriate keyboard or function command.

Life safety control-by-event functions are retained in a non-volatile programmable memory and are not alterable through normal operation of the system.

The life safety control-by-event control points may be manually operated at any time by authorized personnel thru appropriate system commands.

Dedicated switches in the remote annunciator/control centers (RA/CCs) allow personnel to manually operate specific pre-programmed life safety control-by-event control points.

Life safety control-by-event functions are printed and displayed at the PSS.

User programmable control-by-event functions may be programmed thru appropriate system commands to automatically activate any user programmable control point upon a status change from any programmable monitor point.

The user programmable control-by-event control points may be manually operated at any time by the authorized personnel thru appropriate system commands.

Dedicated switches in the RA/CCs allows personnel to manually operate each pre-programmed user programmable control-by-event control point.

Assigned messages, date and time are printed and displayed at the PSS for the control points activated by the user programmable control-by-event function.

User programmable parameters for automatic time-initiated functions (start/stop, on/off, secure/access, etc.) may be added, omitted and altered thru appropriate system commands.

The time-initiated user programmable control points may be manually operated at any time by authorized personnel thru appropriate system commands.

Dedicated switches in the RA/CCs allows personnel to manually operate each pre-programmed user programmable time-initiated control point.

Assigned messages, date and time are printed and displayed at the PSS for the control points activated by the time-initiated control point.

* + - * 1. The PSS activates immediately and performs its alarm functions upon receipt of system alarm condition thru actuation of automatic or manual initiating devices:

The PSS sounds its audible alarm and illuminates its system alarm lamp or flashing display.

The PSS displays the point and type of alarm condition.

The PSS prints the assigned message with date and time on the printer for the point in alarm.

The fire department is automatically called.

An authorized person at the PSS presses the acknowledge button which silences its audible alarm and causes a print-out and CRT display of the assigned message for the point in alarm with date, time and an acknowledge prefix.

* + - * 1. Life Safety Control-By-Event Functions: The PSS, PPSSs and ICUs immediately perform life safety control-by-event functions upon system alarm condition:

Audible alarm signal sounds:

Refer to existing project specification or existing submittals for example of alarm signal operation. Insert information here to briefly explain existing audible signal operation.

\_\_\_\_\_\_\_\_\_\_\_\_.

An authorized person may silence any alarm signal in progress through a silence command, but subsequent actuation of non-addressable initiating devices in other zones cause the system to resound and record the alarm. Subsequent actuation of another addressable initiating device also causes the system to resound and record the alarm.

An authorized person may activate the alarm notification appliances on selected floors, and all floors, each building, and all areas of the facility.

Visual indicators in the RA/CC at the PSS indicate on/off status of the alarm notification appliances.

Alarm signal does not sound in stairwells or elevators.

Actuation of smoke detecting devices in stairwells, or elevator shafts do not sound the alarm signal, but activates all other system alarm functions.

Visual alarm notification appliances illuminate and flash a fire warning signal.

Electromagnetic door hold-open devices de-energize, allowing the associated smoke doors to close.

Fail safe door lock mechanisms release so that associated doors may be opened.

Selected HVAC equipment (fans, air handling units) shut down.

Selected fans pressurize stairwells, and elevator hoistway.

Fire dampers and smoke dampers close.

Non-motorized rolling fire shutters and non-motorized rolling fire doors close when the associated smoke detecting devices are actuated.

Motorized rolling fire shutters and motorized fire doors close when the associated smoke detecting devices are actuated.

Heat and smoke roof vents open when the associated smoke detecting devices are actuated. Visual indicators in the RA/CCs illuminate, indicating which roof vents are open.

Elevator hoistway heat and smoke vents open when the associated smoke detecting devices are actuated. Visual indicators in the RA/CCs illuminate, indicating which vents are open.

Phase I automatic elevator recall for fire fighter’s service operates upon actuation of an elevator lobby smoke detecting device (excluding the designated floor lobby smoke detecting device) or actuation of an associated hoistway or machine room smoke detecting device. All elevators that service that lobby return non-stop to the designated floor. (If the smoke detecting device at the designated floor is activated, the elevators that serve that level return non-stop to the alternate floor).

The elevator automatic (smoke detecting devices) and manual (two and three position key switches) Phase I Emergency Recall Operation and the Phase II Emergency In-Car Operation operate in accordance with the applicable ANSI/ASME A17.1 Rules 211.3 thru 211.8 and NFPA 72 3-9.3.

Each elevator lobby, hoistway, and machine room smoke detecting device, when actuated, initiates a system alarm condition. The alarmed zone, or addressable device is visually annunciated at the PSS and the ICUs associated with the elevators.

Elevators shutdown prior to sprinkler operation.

* + - * 1. Personnel at remotely located emergency fire telephones may communicate with the attendant at the PSS via private line emergency fire telephone system.

Supervision of emergency telephone circuit wiring and wiring for audible and visual signal indicator indicates trouble conditions at the master telephone and PSS.

In subparagraphs below, omit reference to printing if printer is not used.

* + - * 1. An authorized person manually resets system at conclusion of alarm condition. When an alarm condition is corrected, a print-out and display occurs at the PSS stating the assigned reset message for the point in alarm with the date, time and reset suffix.
				2. Primary and Secondary Power Supplies:

Failure of primary power supplies automatically transfers the affected portions of the system to the secondary power supplies.

Utilizing the secondary battery power supplies, the system operates under maximum normal load conditions for 24 hours and then is capable of operating all alarm notification appliances used for evacuation for 5 minutes.

Upon restoration of primary power supply, the system reverts to normal operation without loss, attendant intervention, or manual re-start procedures.

* + - * 1. Monitoring Integrity of Installation Conductors and Other Signaling Channels:

Performance of Signaling Line Circuits:

Circuits from PSS to PPMCU’s: NFPA 72, Class A, Style 7. A print-out and display occurs to identify trouble conditions.

Circuits from PPMCU’s and ICUs to Addressable Devices: NFPA 72, Class B, Style 4. A print-out and display occurs to identify trouble conditions.

Performance of Initiating Device Circuits (Buildings \_\_\_\_\_\_\_\_\_\_\_\_):

Circuits from PPMCU’s and ICUs to Initiating Devices (Fire Alarm): NFPA 72, Class B, Style C. A print-out and display occurs to identify trouble conditions.

Performance of Notification Appliance Circuits (Buildings \_\_\_\_\_\_\_\_\_\_\_\_):

Circuits from PPMCU’s and ICUs to Notification Appliances: NFPA 72, Class B, Style Y. A print-out and display occurs to identify trouble conditions.

Monitoring Integrity of Power Supplies:

An audible and visual alarm, display and print-out indicates failure of the primary (main) power supplies, within the system, at the PSS.

The system also monitors the secondary (battery) power supplies for battery trouble conditions (low voltage/no batteries, high current and charging current).

* + - * 1. Interconnection of Fire Safety Control Functions:

Monitoring of wiring to the protected premises fire safety function relays and appliances causes a print-out and display to occur at the PSS to identify trouble conditions.

* + - * 1. Sprinkler System Alarm and Supervision:

Flow of water through a waterflow fire alarm switch causes a system alarm.

Supervision of sprinkler system signal attachments (sprinkler valve supervisory switches, pressure switches, etc.) indicates circuit trouble and supervisory signal conditions at the PSS.

Control valves in the sprinkler system are supervised.

* + - * 1. Supervision of Pressure Sources Associated with Fire Suppression Systems:

Pressure sources are supervised to initiate two separate and distinct signals, one indicating that the required pressure has been increased or decreased, and the other indicating restoration of the pressure to its required value.

* + - * 1. Supervision of Water Storage Containers Associated with Fire Suppression Systems:

Water storage containers associated with fire suppression systems are supervised to obtain a distinctive signal, indicating that the required water level is abnormal (high or low).

Water storage containers are temperature supervised.

* + - * 1. Supervision of Centrifugal Fire Pumps:

Activation of contacts in the fire pump controller in Fire Pump Room are indicated by an audible signal at the PSS and a visual indicator in the RA/CC.

* + - * 1. Supervision of All Fire Suppression Systems for Tampering:

In addition to the specific supervision functions of each fire suppression system, each system indicates trouble condition at the PSS whenever components of the system are tampered with, opened or removed.

* + - 1. MODIFICATIONS TO EXISTING SYSTEM

List and explain modifications to existing system. Examples:

* + - * 1. Provide sprinkler valve supervisory and sprinkler alarm capability.
				2. Provide additional smoke sensors.
				3. Provide additional smoke detectors.
				4. Provide additional heat sensors.
				5. Provide additional heat detectors.
				6. Provide ICU, signal initiating devices, notification appliances, etc. as shown on the drawings so that system within Building 25 operates in same manner as described for existing Buildings 16, 17, and 18.
				7. Provide remote annunciator in Building 4 to monitor and control the ICU in Building 25 in the same manner as described for existing Buildings 16, 17, and 18.

Describe completed system operation. Next two articles are examples:

* + - 1. DESCRIPTION OF COMPLETED SYSTEM

Change “with the followings exceptions:” to suit, such as “also:”, “additionally:”, etc.

* + - * 1. The completed system shall operate as outlined in DESCRIPTION OF EXISTING SYSTEM, with the following exceptions:

Actuation of sprinkler pressure switch does not sound the alarm signal, but indicates supervisory signal conditions for each circuit at the PSS.

Control valves in the sprinkler system are supervised to initiate 2 separate and distinct signals indicating movement of the valve from its normal position.

The off-normal signal is initiated during the first 2 revolutions of a hand wheel or during 1/5 of the travel distance of the valve control apparatus from its normal position.

The second signal indicates restoration of the valve to its normal position. (The off-normal signal remains until the valve is restored to its normal position).

* + - 1. DESCRIPTION OF COMPLETED SYSTEM
				1. The system shall continue to operate for Buildings 16, 17, and 18 as outlined in DESCRIPTION OF EXISTING SYSTEM.
				2. The system in Building 25 shall operate as outlined in DESCRIPTION OF EXISTING SYSTEM with the following exceptions:

The remote annunciator at the guard station in Building 25 shall be equipped to allow attendant to perform all of the same monitor and control functions as the attendant at the remote annunciator in Building 4.

ICU in Building 25 shall be equipped with communicator module and accessories as required for direct connection to a Simplex 2120 monitoring and control system.

Alarm conditions from fire alarm initiating devices other than smoke detectors are annunciated immediately on the system. Alarm conditions from smoke detectors are confirmed thru actuation of the system’s alarm verification program.

* + - 1. SUBMITTALS
				1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
				2. Manufacturer’s installation instructions shall be provided along with product data.
				3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
				4. Waiver of Submittals: The “Waiver of Certain Submittal Requirements” in Section 013300 does not apply to this Section.
				5. Preliminary Submittal: Existing system test report.
				6. Submittals Package: Submit the shop drawings, product data, and quality control submittals specified below at the same time as a package.

Company Field Advisor Letter: With the submittals package include a letter from the Company Field Advisor stating that he/she has reviewed the Submittals Package for accuracy and completeness, and approves all materials and installation methods included in the Submittals Package.

* + - * 1. Shop Drawings:

Composite wiring and/or schematic diagrams of the modifications as proposed to be installed (standard diagrams will not be acceptable).

Indicate circuits which are power-limited if power-limited wiring is proposed for use.

For 2-hour fire rated cable assemblies show proposed routes and installation details (include UL classification data, listing and system number).

Include transient surge and lightning protection grounding details for signaling line circuits, initiating device circuits, and ac power conductors entering and leaving each fire alarm control panel.

* + - * 1. Product Data:

Catalog sheets, specifications and installation instructions.

Bill of materials.

Detailed description of completed system operation. Format similar to DESCRIPTION OF COMPLETED SYSTEM.

Include for each system component which utilizes batteries the battery ampere-hour capacity recommended for each component by the Company producing the system, for the specified duration.

Statement from the Company producing the system, for each size and type of single conductor and multiconductor cable proposed for use, indicating that the electrical characteristics meet the requirements of the Company.

Data from the Company furnishing the products, proving that detection devices that receive their power from the initiating device circuit or a signaling line circuit of a fire alarm control unit are UL listed for use with the control unit.

Submit data proving that the software and firmware is listed for use with the control panel.

Submit data proving that the initiating devices are listed for the intended application. Also for specific applications, such as:

Specific listings are required for many applications. See subparagraphs below for examples.

Smoke door release accomplished directly from the smoke detecting device, show listing for release service.

Air duct smoke detecting devices, showing listing indicating complete range of air velocities, temperature and humidity expected at the device when the air handling system is operated.

Smoke detecting devices installed in supply air duct downstream of the fan and filters, show detector listed for the air velocity present.

For smoke detecting devices installed in return air system, show listing for the air velocity present where the air leaves each smoke compartment, or in the duct system before the air enters the return air system common to more than one smoke compartment.

Submit data proving that relays and appliances connected to the fire alarm system which are used to initiate control of fire safety functions are listed for the purpose.

Submit data proving that the method of monitoring the connection between the fire alarm system and controlled electrical and mechanical systems for integrity is listed for the purpose.

Detailed description of procedure proposed to test individual initiating devices.

Include product information pertaining to the test equipment that will be used to perform the tests.

Include certified statement that the proposed test method meets the test requirements of NFPA 72 and UL 268 (cite reference to the applicable NFPA and UL paragraphs).

Include subparagraph below if “elevator shutdown prior to sprinkler operation” subparagraph is used in modification to existing system. See section 283102 for detailed operation example. Refer to NFPA 73 3-9.4.

Response time index comparison between the elevator hoistway and machine room heat detecting devices and sprinkler heads proving that the heat detecting devices will respond and will cause elevator power shutdown prior to sprinkler operation.

* + - * 1. Quality Control Submittals:

Copy of license required by New York State General Business Law Article 6-D for installing Fire Alarm Systems.

Also include copy of identification card issued by the Licensee for each person who will be performing the Work.

Company Field Advisor Data: Include:

Name, business address and telephone number of Company Field Advisor secured for the required services.

Certified statement from the Company listing the qualifications of the Company Field Advisor.

Copy of NICET Letter of Approval indicating Level III or higher Fire Alarm Systems certification.

Services and each product for which authorization is given by the Company, listed specifically for this project.

* + - * 1. Contract Closeout Submittals:

System acceptance test report.

Certificates:

Affidavit, signed by the Company Field Advisor and notarized, certifying that the system meets the contract requirements and is operating properly.

NFPA Record of Completion (NFPA 72 Figure 1-6.2.1) for the modifications.

Operation and Maintenance Data:

Deliver 2 copies, covering the installed products, to the Director’s Representative. Include:

Operation and maintenance data for each product.

Complete point to point wiring diagrams of the modifications as installed. Identify all conductors and show all terminations and splices. (Identification shall correspond to markers installed on each conductor.)

* + - 1. QUALITY ASSURANCE
				1. UL Listing: The system products for the modifications shall be listed in the UL Fire Protection Equipment Directory under product category “Control Units System (UOJZ)”.
				2. Company Field Advisor: Company Field Advisor shall be National Institute for Certification in Engineering Technologies (NICET) certified as Level III or higher Fire Alarm Protection/Fire Alarm Systems Engineering Technician.

EDIT NUMBER OF HOURS TO SUIT.

Secure the services of a Company Field Advisor from the Company of the existing system for a minimum of 24 working hours at the contract site for the following:

Render advice and witness test of existing system.

Render advice regarding modifications to the system.

Assist in reprogramming the system.

Witness final system test and then certify with an affidavit that the modifications were installed in accordance with the contract documents and are operating properly.

* + - 1. MAINTENANCE

Modify spare parts to suit.

* + - * 1. Spare Parts:

10 percent spare of each type initiating device.

10 percent spare of each type notification appliance.

10 percent spare of each type protective device.

1. PRODUCTS

Specify required products. Refer to section 283101, 283102, and 283103 for additional products. Verify that products specified are compatible with existing system (specify only the company that is compatible with the existing system).

* + - 1. PEER-TO-PEER NETWORK
				1. Network: Equip the fire alarm control panels and other network devices with network interface modules able to function with the existing network communication bus signaling line circuit.
				2. Fire Alarm Control Panels/Interconnected Control Units: Edwards’ EST-2, EST-3, Notifier’s AFP-200, AFP-300, AFP-400, AFP-1010, AM2020, Simplex’s 4120, 4100, 4020, 4010:

Base selection of each fire alarm control panel upon its capacity and capabilities to the specific requirements of the system at the panels’ location.

Equip the approved fire alarm control panels to function as the PPMCU’s and ICU’s.

Permanently record the installed software and firmware version number within each fire alarm control panel.

14 gage metal cabinet. Size as recommended by the Company producing the system.

Control switches, inaccessible behind hinged and locked door.

Alarm display and lamps visible when door is closed.

Annunciator (or display) which individually identifies addressable devices and identifies groups of non-addressable devices by zones.

Do not load visual alarm appliance circuit outputs to more than 70 percent of the FACP’s power limited rating.

Input circuits suitable for operation on 120 Vac primary (main) power supply and 24 Vdc secondary (battery) power supply.

24 Vdc Secondary (Battery) Power Supplies: Sealed, lead-acid gelled electrolyte or maintenance free lead-calcium batteries:

Change subparagraph below to suit.

Ampere-hour capacity to operate for the same duration and conditions as the existing system.

Battery charger with charging characteristics as recommended by battery manufacturer.

Meters for battery voltage and charging current.

Batteries and charger integrally mounted or separate cabinet mounted as recommended by the company producing the system.

Accessories as required for each FACP perform its required functions upon failure of network communications.

Transient surge and lightning protection for signaling line circuits, initiating device circuits, and ac power conductors entering and leaving each fire alarm control panel:

Signaling Line Circuits and Initiating Device Circuits: UL listed to Standard 497B; Edwards’ LTP, Notifier’s T11325-2M, or Simplex’s 2081-9027, 2081-9028, 2081-9034, 2081-9043.

AC Power Conductors: Edwards’ TSP, Notifier’s \_\_\_\_\_\_\_\_, or Simplex’s 2081-9033, 2081-9042.

* + - * 1. Remote Auxiliary Power Supplies: Edwards’ BPS, Notifier’s FCPS-24, Simplex’s 2080 Series:

14 gage surface mounted metal cabinet. Size as recommended by the Company producing the system.

Control switches, inaccessible behind hinged and locked door.

Input circuit suitable for operation on 120 Vac primary (main) power supply.

Regulated and filtered 24 Vdc output.

24 Vdc Secondary (standby) Power Supply: Sealed, lead-acid gelled electrolyte or maintenance free lead-calcium batteries:

Ampere-hour capacity to operate under load conditions specified in SYSTEM DESCRIPTION.

Battery charger with charging characteristics as recommended by battery manufacturer.

Meters for battery voltage and charging current.

Batteries and charger integrally mounted or separate cabinet mounted as recommended by the Company producing the system.

Activated by host FACP via signaling line circuit loop thru addressable modules:

Addressable control monitor activates the power supply outputs.

Addressable monitor module senses power supply trouble conditions.

Supervised power supply, battery, and notification appliance circuits.

* + - * 1. Remote Addressable Network Modules(RANM):

Show remote addressable network modules in conjunction with non-addressable devices that are not available addressable when it is desirable to have them addressable for identification, monitoring and/or control functions.

Individual Addressable Module (IAM): Edwards’ SIGA-CT1, SIGA-CT2, SIGA-MM1, SIGA-WTM, SIGA-UM, Notifier’s MMX-101, or Simplex’s 2190-9172, 2190-9173.

Addressable Zone Adapter Module Control and Monitor Relays (ZAM): Edwards’ SIGA-CC1, SIGA-CC2, SIGA-UM, SIGA-CR, Notifier’s MMX-1, MMX-2, CMX-2, or Simplex’s 2190-9163, 2190-9164, 2190-9155, 2190-9156, 2190-973.

Include 24V dc auxiliary circuit(s) as required by RANM type to suit relay operations for control, monitoring, or supervisory functions; or interconnection of fire safety control functions.

* + - * 1. Remote Annunciator/Control Centers (RA/CCs): Edwards’ 2-3 ANN/D, 2-6 ANN/D, 3-ANN, Notifier’s INA/ACS, or Simplex’s Network Node Unit, with:

Edit next three subparagraphs as required for enclosure type.

Surface mounted enclosure.

Flush mounted enclosure.

Desk mounted enclosure.

LCD which is capable of displaying all system points.

Master enable/disable key switch for all control switches behind hinged and locked door having windows for visibility of system functions.

If it is desired to have visual indication for more than the one specific life safety control-by-event function specified below, add it below. Coordinate subparagraph with description of completed system.

Annunciator modules for visual indication of specific life safety control-by-event functions:

Status of alarm notification appliances.

Coordinate subparagraph below with description of completed system.

Annunciator modules for visual indication of specific user programmable control-by-event functions specified in DESCRIPTION OF COMPLETED SYSTEM. Identify each visual indicator with appropriate message.

Annunciator modules for visual indication of speaker status.

If it is desired to have more than the one specific life safety control-by-event function specified below controlled by a dedicated switch, add it below. Coordinate subparagraph below with description of completed system.

Switch modules for manual operation of specific life safety control-by-event control points:

Alarm notification appliances.

Switch modules for manual operation of each user programmable control-by-event control point which is utilized for this project.

Switch modules for manual operation of each user programmable automatic time-initiated control point which is utilized for this project.

* + - 1. REMOTE FIRE SERVICE DEVICES
				1. Fire Warden Remote Floor Communication Station Telephones: Edwards’ 6831 Series, Notifier’s AFAWS Series, or Simplex’s 2084 Series, with:

Select one of next two subparagraphs.

Flush mounted cabinet.

Surface mounted cabinet.

Telephone handset attached to unit with armored cable.

Select one of next three subparagraphs for door type.

Lockable door.

Non-lockable door.

Door having break-rod feature to open.

Verify compatibility of subparagraph below with existing system operation.

Buzzer and visual indicator to indicate call from existing master telephone.

Front of door labeled “Fire Warden Station”.

Permanently imprinted instructions for use and operation of the telephone. Include warning to call 911 or pull nearest manual fire alarm station in event that emergency call is not answered.

* + - * 1. Fire Service Jacks and Telephones:

Remote Telephone Jack Stations: Edwards’ 6833-1, Notifier’s FPJ or RPJ-1, or Simplex’s 2084-9001.

Telephone Handsets: Edwards’ 6830-3, Notifier’s FHS Series, or Simplex’s 2084-9014.

Storage Racks/Cabinets: Edwards’ 6830 Series, Notifier’s FHSC Series, or Simplex’s 2084-9015 (rack) and 8589 (cabinet).

* + - 1. INITIATING DEVICES
				1. General:

Fire detection devices that receive their power from the initiating device circuit or a signaling line circuit of a fire alarm control unit shall be listed for use with the control unit.

Where individually identifiable (addressable) devices are required, but not available from the Company producing the system, either:

Use non-addressable devices and individually wire each device to the FACP’s as separate monitor points, making each non-addressable device individually identifiable, or:

Employ remote addressable network modules to make each non-addressable device individually addressable.

* + - * 1. Ceiling Mounted Detectors (Non-Addressable, Non-Intelligent):

General:

Heat detectors, ionization type smoke detectors, and photoelectric type smoke detectors shall have common mounting base which accommodates interchanging of the different type detectors.

Smoke Detectors:

Ionization Type with LED: Edwards’ 6250B, Notifier’s 1451, or Simplex’s 2098-9576.

Use subparagraph below in locations where photoelectric type detector is required, except when the 135 degrees f rating of the thermal device may be inadequate. In such areas use second subparagraph below (without thermal device).

Photoelectric Type.

With 135 degrees F Thermal Device and LED: Edwards’ 6270B-003, Notifier’s 2451 TH, or Simplex’s 2098-9202.

With LED: Edwards’ 6270B, Notifier’s 2451, or Simplex’s 2098-9201.

Subparagraph below is required for OMH projects. (sensitivity level of 2.5 is the recommend average sensitivity).

Photoelectric type smoke detectors shall have sensitivity level of 3.2.

Remote Alarm Indicator For Use with Smoke Detectors: LED type indicator mounted on single gang stainless steel faceplate.

Heat Detectors:

Fixed Temperature:

135 degrees F: Edwards’ 293B, Notifier’s 5451, or Simplex’s 4098 Series.

190/200 degrees F: Edwards’ 294B, Notifier’s 4451 HT, or Simplex’s 4098 Series.

Combination Rate-of-Rise/Fixed Temperature:

135 degrees F: Edwards’ 291B, Notifier’s 5451 TH, or Simplex’s 4098 Series.

190/200 degrees F: Edwards’ 292B, or Simplex’s 4098 Series.

* + - * 1. Ceiling Mounted Sensors (Intelligent, Addressable, Analog):

General:

Heat sensors, ionization smoke sensors, and photoelectric smoke sensors shall have common mounting base which accommodates interchanging of the different type sensors.

Smoke Sensors:

Ionization Type: Edwards’ SIGA-IS, Notifier’s CPX-551, or Simplex’s 4098-9716/9798.

Photoelectric Type: Edwards’ SIGA-PS, Notifier’s SDX-551, or Simplex’s 4098-9714/9798.

Subparagraph below is required for OMH projects. (sensitivity level of 2.5 is the recommended average sensitivity).

Photoelectric type smoke sensor shall have initial sensitivity level of 3.2.

Multi-Sensor Type:

Multi-sensor type should be considered were early detection is required (computer rooms), or where single element detectors might be prone to false alarms.

Photoelectric/Heat: Edwards SIGA-PHS 3D or Notifier’s \_\_\_\_\_\_\_\_.

Photoelectric/Ionization/Heat: Edwards’ SIGA-IPHS 4D or Notifier’s IPX-751.

Remote Alarm Indicator For Use With Smoke Sensors: Edwards’ SIGA-LED, Notifier’s RA-400, or Simplex’s 4098-9782.

Heat Sensors:

135 degrees F (fixed temperature): Edwards’ SIGA-HFS, Notifier’s FDX-551, or Simplex’s 4098-9733/9789.

135 degrees F (fixed temperature/R.O.R.): Edwards’ SIGA-HRS, Notifier’s \_\_\_\_\_\_\_\_, or Simplex’s \_\_\_\_\_\_\_\_.

* + - * 1. Air Duct Smoke Detectors (Non-Addressable):

Photoelectric duct smoke detectors are preferred. Ionization type are not recommended for air duct application.

Photoelectric Type: Edwards’ 6266B-001, Notifier’s DH400P, or Simplex’s 2098-9649/9201.

Listed for the air velocity present at each air duct detector’s location.

Sampling tube to suit installation.

Local relay (for fire safety control functions from duct detector when applicable):

Form C contact(s) rated minimum 1A @ 28V dc power-limited, 1/2A @ 120V ac nonpower-limited.

24V dc auxiliary power circuit(s) as required to suit relay operation and function.

Show location of remote alarm indicators and test stations for smoke detectors, if used.

Remote Alarm Indicator For Use With Air Duct Smoke Detectors: LED type indicator mounted on single gang stainless steel faceplate.

Subparagraph below is required for OMH projects.

Remote Alarm Indicator And Test Switch For Use With Air Duct Smoke Detector’s: LED type indicator and key operated switch mounted on single gang stainless steel faceplate.

* + - * 1. Air Duct Smoke Sensors (Intelligent, Addressable, Analog):

Photoelectric duct smoke sensors are preferred. If ionization type are considered, consult with manufacturer’s representative for catalog number and proper application.

Photoelectric Type: Edwards’ SIGA-PS w/SIGA-DH, Notifier’s DHX-501/SDX-551, or Simplex’s 4098-9752/3 with 4098-9714.

Listed for the air velocity present at each air duct smoke sensor’s location.

Sampling tube to suit installation.

Local relay (for fire safety control functions from duct detector when applicable):

Relay operation programmable from FACP.

Form C contact(s) rated minimum 1A @ 28 Vdc power-limited, 1/2A @ 120V ac nonpower-limited.

24 Vdc auxiliary power circuit(s) as required to suit relay operation and function.

Show location of remote alarm indicators and test stations for smoke sensors, if used.

Remote Alarm Indicator For Use With Air Duct Smoke Sensors: LED type indicator mounted on single gang stainless steel faceplate.

Subparagraph below is required for OMH projects.

Remote Alarm Indicator And Test Switch For Use With Air Duct Smoke Sensors: LED type indicator and key operated switch mounted on single gang stainless steel faceplate.

Specify flame detecting devices under paragraph below, if required. Several types of specialized flame detecting devices are available. Consult manufacturer’s catalogs.

Use flame detecting devices in areas where ignition is almost instantaneous (flammable liquids, combustible gases, etc.) Refer to NFPA 72 2-4.

* + - * 1. Flame Detecting Devices (Non-Addressable):

Explosion proof detectors also available 190 degrees f r.o.r./f.t. and 135 degrees or 190 degrees f fixed temperature. Suitable for class 1 group d; class ii group e, f, g. Also available moisture proofed.

* + - * 1. Explosion Proof Rate-of-Rise/Fixed Temperature Heat Detectors (Non-Addressable):

135 degrees F: Edwards’ EPB501, Notifier’s 302-EPM-135, or Simplex’s 2098-9430.

Projected beam detectors may be suitable for use in a building with a high ceiling and large space where it is not practical to install numerous spot type smoke detecting devices. Refer to NFPA 72 2-3.6.3.

* + - * 1. Projected Beam Type Detectors (Non-Addressable): Edwards’ 6424, Notifier’s 6424, or Simplex’s 2098 Series.
				2. Manual Fire Alarm Boxes:

Non-Addressable:

Single Action Pull Type: Edwards’ 276B Series, Notifier’s BNG-1R, NBG-12LX, or Simplex’s 2099-9754 Series.

Security Type (Key Operated): Edwards’ 1534 Series, Notifier’s NBG-10P, or Simplex’s 2099-9828 Series. Furnish 2 keys with each station. Furnish 2 tools for installing and servicing the stations (vandal resistant fasteners).

Addressable:

Single Action Pull Type: Edwards’ SIGA-270, Notifier’s BGX-101, Simplex’s 2099-9795.

Security Type (Key Operated): Edwards’ \_\_\_\_\_\_\_\_, Notifier’s \_\_\_\_\_\_\_\_\_, or Simplex’s \_\_\_\_\_\_\_\_\_\_. Furnish 2 keys with each station. Furnish 2 tools for installing and servicing the stations (vandal resistant fasteners).

Add other type security devices as required in paragraph below.

* + - * 1. Security (Non-Addressable):

Magnetic Switches: Edwards’ 62 Series, Notifier’s \_\_\_\_\_\_\_\_, or Simplex’s 2760-9019.

* + - 1. NOTIFICATION APPLIANCES
				1. General:

Audible signal appliances shall be UL 464 listed:

Classified “Public” or “Private Mode Only” to suit application.

Marked “F.A. Service” or “F.A. Service - Private Mode Only” to suit application.

Visual signal devices shall be UL listed:

For private mode applications, UL 1638 “Fire Protective Visual Signaling Appliance”.

For public mode applications, UL 1971 “Signaling Devices for the Hearing Impaired”.

For wall mounting or ceiling mounting to suit application.

Do not show visual alarms and audible alarms connected on the same circuits. In lieu of separate appliances, use paragraph below as the preferred appliance when a combination audible/visual appliance can meet all audible and visual design requirements.

* + - * 1. Audible/Visual Appliances:

Show separate visual alarm circuit and audible alarm circuit to Type AVA appliances. Type AVA is suitable for ADA compliance.

Type AVA: Edwards’ 757 Series, Notifier’s SpectrAlert PS24 Series, or Simplex’s 4903/92\_ \_Series, with:

Xenon flashtube strobe:

AVA-15/75:15/75 candela.

AVA-30/75: 30/75 candela.

AVA-110: 110 candela.

Clear lens having FIRE imprinted thereon in red letters, or clear lens with red base having FIRE imprinted thereon in white letters.

Audible alarm notification appliance:

Type as indicated on the drawings.

Speakers and chimes also available.

Front mounted, if bells or horns.

Surface or flush mounted enclosure as indicated on the drawings.

* + - * 1. Vibrating Bells: Edwards’ 439D-10AW, Notifier’s MB-610-24-R, or Simplex’s 2901 Series Modular Audible Signaling Devices, with:

10 inch bells.

Surface or flush mounted type as indicated on the drawings.

Weatherproof bell kits where installed in damp or wet locations.

* + - * 1. Horns: Edwards’ 757 Series, Notifier’s SpectrAlert Series, or Simplex’s 4901 Series Modular Horns, with:

Surface or flush mounted type as indicated on the drawings.

Basic grille type except where projector type is indicated on the drawings.

Weatherproof model where installed in damp or wet locations.

Chimes: Edwards’ 757 Series, Notifier’s CH7D-24 Series, or Simplex’s 2902 Series Modular Chimes

Visual Appliances:

Type VA is suitable for ADA compliance.

Type VA: Edwards’ 405 Series, Notifier’s S24 Series, or Simplex’s 4904 Series, with:

Xenon flasher:

VA-15/75:15/75 candela.

VA-30/75: 30/75 candela.

VA-110: 110 candela.

Clear lens having FIRE imprinted thereon in red letters, or clear lens with red base having FIRE imprinted thereon in white letters.

Surface or flush mounted enclosure as indicated on the drawings.

* + - 1. ELECTROMAGNETIC DOOR HOLD-OPEN RELEASE DEVICES

Coordinate with hardware group. Construction may include specified devices in paragraph below or other types in their contract.

* + - * 1. Electromagnetic Door Hold-Open Devices: Edwards’ 1500 Series, Notifier’s FM Series, or Simplex’s 2088 Series, having:

Door hold-open devices shall be monitored for integrity (NFPA 72 3-9.6.3). NFPA 72 3-9.2.1 exception allows relays or appliances that operate on loss of power to be considered self-monitoring for integrity.

When using 120vac, show local 120vac circuits controlled by relays connected to the ICU’s.

When using 24vdc, verify that ICU power supply can accommodate the required number of door hold open devices. Modify subparagraph below to suit.

Input circuit suitable for operation on 120Vac.

Listed relay for control of 120Vac door hold-open release devices suitable for operation on 24Vdc. Relay operates on loss of power to release door (self-monitoring for integrity).

Show where electromagnetic door holders are required and type of mounting (single door, double door, wall, type of armature/contact plate). Avoid floor mounting (hard to clean around and people trip over them).

Style (single door, double door, wall, type of armature/contact plate) suitable for the application.

Wall style designed for surface or flush mounting as indicated on the drawings.

* + - 1. AUTOMATIC FIRE SUPPRESSION SYSTEM SIGNAL ATTACHMENTS

Coordinate with plumbing. Plumbing may include the specified attachments or other types in their contract.

* + - * 1. General:

Use non-addressable devices and individually wire each device to the FACP’s as separate monitor points, making each non-addressable device individually identifiable, or:

Employ remote addressable network modules to make each non-addressable device individually addressable.

* + - * 1. Sprinkler Valve Supervisory Switches:

For Outside Screw & Yoke Gate Valves: Grinnell’s Model F640, Notifier’s OSY2, Potter Electric Signal Co.’s OSYSU Series, or Simplex’s 2097 Series.

For Post Indicator Valves: Potter Electric Signal Co.’s PCVS Series, Notifier’s P1BV2, or Simplex’s 2097 Series.

For Gate Valves (Non-Rising Stem) and Special Applications: Potter Electric Signal Co.’s PTS, Notifier’s \_\_\_\_\_\_\_, or Simplex’s 2097 Series.

Other type signal attachments are available for air pressure, water level, and temperature.

* + - * 1. Tamper Switches: By Micro Switch or Square D Company to suit installation conditions.
				2. Waterflow Switch, Vane Type: Autocall Div., Federal Signal Corp.’s 4160, Potter Electric Signal Co.’s VSR, Reliable’s Model A, or Simplex’s 2097 Series having:

Corrosion-resistant vane.

Splash/dust resistant enclosure with anti-tamper switch.

Adjustable pneumatic retard.

Screw type wiring terminals.

Switch rated minimum 7.0 amps at 125 Vac and 0.25 amps at 125 Vdc.

* + - 1. PROTECTIVE DEVICES

Refer to NFPA 72 2-1.3.1 for initiating device protection requirements and 4.2.3 for notification appliance protection requirements.

Show pull stations equipped with protective shields in areas subject to vandalism and prank alarms.

* + - * 1. Pull Station Protective Shield: Clear Lexan shield and red frame covering manual pull station. When shield is lifted a battery powered warning horn is activated. The horn is silenced by lowering and realigning the shield.

Edwards’ STI Series Stopper II, Notifier’s STI Stopper II, Safety Technology International Inc.’s STI Stopper II, or Simplex’s 2099Series (STI) including:

Batteries.

Weatherproof shield for damp and wet locations.

Mounting accessories.

Show bells equipped with protective grid where subject to significant impact or vandalism.

* + - * 1. Protective Grid for Bells: Edwards’ Full Cast Grid, Notifier’s \_\_\_\_\_\_\_\_, or Simplex’s \_\_\_\_\_\_\_\_.

Show initiating devices and notification appliances equipped with steel web guards in locations where subject to moderate impact or physical abuse.

* + - * 1. Steel Web Guards.

For Smoke and Heat Detecting Devices: Edwards’ 1206B, Notifier’s STI Steel Web Stoppers, Safety Technology International Inc.’s STI Steel Web Stoppers, or Simplex’s 2098-Series.

Steel Web Guards for General Application (Horns, Strobes, Beam Detectors, Speakers, Bells, etc.):

Other gages and finishes are available.

Construction:

All welded 7 gage wire.

Nickel plated finish with lacquer coating.

Manufacturer: Chase Security Systems, Inc. 5947 North Milwaukee Avenue, Chicago, IL 60646, Telephone (773) 775-7148, FAX (773) 594-0078.

* + - 1. TERMINAL STRIP CABINETS
				1. Lockable, vandal resistant, surface mounted cabinets constructed of 14 gage steel, size as recommended by the Company producing the system. Equip cabinets with barrier type double screw terminals rated 300 V minimum, meeting UL 94 requirements for materials classed 94 V-0. Use identification strips, tags or labels to identify each conductor. Paint cabinets fire department red and stencil on front in 1/2 inch high white letters, the purpose of each terminal strip cabinet.
			2. POWER-LIMITED INSULATED CONDUCTORS
				1. All electrical characteristics shall meet the requirements of the Company producing the system (conductor to conductor capacitance, dc resistance, velocity of propagation etc.).
				2. Multiconductor Cables N.E.C. Type FPLP, FPLR, FPL:

Insulated copper conductors.

Conductors twisted, shielded and jacketed as recommended by the Company producing the system.

Voltage rating of not less than 300 volts (Voltage rating not marked on cable except where cable has multiple listings and voltage marking is required for one or more of the listings).

* + - * 1. Other types of cables may be used in accordance with N.E.C. Table 760-61 “Cable Uses and Permitted Substitutions”, as approved, if listed as being suitable for the purpose.
			1. NONPOWER-LIMITED INSULATED CONDUCTORS
				1. All electrical characteristics shall meet the requirements of the Company producing the system (conductor to conductor capacitance, dc resistance, velocity of propagation, etc.).
				2. Conductors twisted, shielded and jacketed as recommended by the Company producing the system.
				3. Single Conductors:

No. 18 and No. 16 AWG: Insulated copper conductors suitable for 600 volts, N.E.C. types KF-2, KFF-2, PAFF, PTFF, PF, PFF, PGF, PGFF, RFH-2, RFHH-2, RFHH-3, SF-2, SFF-2, TF, TFF, TFN, TFFN, ZF, ZFF.

Larger Than No. 16 AWG: Insulated copper conductors suitable for 600 volts, in compliance with N.E.C. Article 310.

Conductors with other types and thickness of insulation may be used if listed for nonpower-limited fore alarm circuit use.

* + - * 1. Multiconductor Cables N.E.C. Types NPLFP, NPLFR, NPLF:

No. 18 and No. 16 AWG: Insulated copper conductors rated 600 volts, N.E.C. types KF-2, KFF-2, PAFF, PTFF, PF, PFF, PGF, PGFF, RFH-2, RFHH-2, RFHH-3, SF-2, SFF-2, TF, TFF, TFN, TFFN, ZF, ZFF.

No. 14 AWG and Larger: Insulated copper conductors suitable for 600 volts, one of the types listed in N.E.C. Table 310-13 or one that is identified for nonpower-limited fire alarm circuit use.

Marking: NPLFP, NPLFR, and NPLF marked to suit listings and marked with a maximum usage voltage rating of 150 volts.

* + - 1. MC CABLE
				1. Metal-Clad Cable, N.E.C. Type MC:

All electrical characteristics shall meet the requirements of the Company producing the system (conductor to conductor capacitance, dc resistance, velocity of propagation, etc.).

Conductors twisted, shielded and jacketed as recommended by the Company producing the system.

Interlocked flexible galvanized steel armor sheath conforming to UL requirements for type MC metal clad cable.

Insulated copper conductors suitable for 600 volts.

No. 18 and No. 16 AWG: A type listed in N.E.C. Table 402-3 with a maximum operating temperature not less than 90°C, or types KF-2, KFF-2, PAF, PAFF, PTFF, PF, PFF, PGF, PGFF, PTF, PTFF, SF-2, SFF-2, ZF, ZFF.

No. 14 AWG and Larger: One of the types listed in N.E.C. Table 310-13 or of a type identified for use in Type MC cable.

Acceptable Companies: AFC Cable Systems Inc., Coleman Cable Co.

Connectors for MC cable: AFC Fitting Inc.’s AFC Series, Arlington Industries Inc.’s Saddle Grip, or Thomas & Betts Co.’s Tite-Bite with anti-short Bushings.

* + - 1. 2-HOUR FIRE RATED CABLE ASSEMBLIES
				1. Fire Alarm Circuit Integrity (CI) Cable: Cables identified as meeting the requirements for circuit integrity shall have the additional classification using the suffix “CI”. Examples: FPLP-CI, FPLR-CI, FPL-CI, NPLFP-CI, NPLFR-CI, NPLP-CI.

Cables shall have a minimum 2-hour fire resistance rating for the cable when tested in accordance with the Standard for Tests of Fire Resistive Cables-UL 2196.

* + - * 1. MI Cable: AFC Cable Systems’ MI cable, or BICC/Pyrotenax Mineral Insulated System 1850 Pyrotenax Cable:

MI cable is available in several configurations and materials. Consult manufacturer’s catalogs. Also available no. 16 AWG.

All electrical characteristics shall meet the requirements of the Company producing the system (conductor to conductor capacitance, dc resistance, velocity of propagation, etc.).

Solid copper conductors, twisted, shielded as recommended by the Company producing the system.

System 1850 copper is rated to 1850 degrees F and is suitable for general use. Stainless steel systems are available, rated 2000 and 2200 degrees F, and are suited to some applications where corrosion or chemicals may be deleterious to copper sheath.

Seamless copper sheath.

Two hour fire resistive rating UL system classified, listed in UL Building Materials Directory product category Fire Resistive Cables (FHJR).

Include subparagraph below for areas where increased corrosion protection is required.

PVC or HDPE jacketing (where shown on drawings).

Accessories as required for a complete system to suit installation conditions.

* + - * 1. Other 2-Hour Fire Resistive Cables: Listed in UL Building Materials Directory, product category Electrical Circuit Protective Systems (FHIT), or Fire Resistive Cables (FHJR):

Type MC/CI: Rockbestos – Surprenant Cable Corp.’s VITALink MC Circuit Integrity Cable (FHJR System No. 17).

PVC jacketing (where shown on drawings).

Type FPL/EMT: Rockbestos – Surprenant Cable Corp.’s VITALink FA UL Listed Type FPL installed within ¾” EMT steel conduit (FHIT System No. 22).

* + - 1. SIGNS, LABELS, MARKERS, AND NAMEPLATES
				1. Procedure Sign:

Complete Unit: Card holder with aluminum or stainless steel frame, plexiglass front and sheet aluminum card backing plate. Minimum size card 8 x 10 inches. For each procedure sign, furnish l blank card in holder and 5 spare blank cards suitable for typing future procedures thereon.

Revised Cards: Size as required to fit existing holder, suitable for typing revised procedures thereon.

Include paragraph below for system utilizing zones. Not required for addressable system.

* + - * 1. Zone Locator:

Complete Unit: Card holder with aluminum or stainless steel frame, plexiglass front and sheet aluminum card backing plate. Minimum size card 8 x 10 inches. Type on card the zone number and location of each zone.

Revised Cards: Size as required to fit existing card holder. Type on card the zone number and location of each zone.

Include paragraph below if a coded system is used.

* + - * 1. Code Locator: Card holder with aluminum or stainless steel frame, plexiglass front and sheet aluminum card backing plate. Minimum size card 8 x 10 inches. Type all codes on the card and the area associated with each coded alarm signal.

Include paragraph below if RACC is used.

* + - * 1. Alarm Notification Appliance Locator: Card holder with aluminum or stainless steel frame, plexiglass front and sheet aluminum card backing plate. Minimum size card 8 x 10 inches. Type on card the switch numbers and location of notification appliances controlled by each switch.
				2. Nameplates: Precision engrave letters and numbers with uniform margins, character size minimum 3/16 inch high.

Phenolic: Two color laminated engraver’s stock, 1/16 inch minimum thickness, machine engraved to expose inner core color (white).

Aluminum: Standard aluminum alloy plate stock, minimum .032 inches thick, engraved areas enamel filled or background enameled with natural aluminum engraved characters.

Materials for Outdoor Applications: As recommended by nameplate manufacturer to suit environmental conditions.

* + - * 1. Fire Alarm Signs: 9 x 12 inches, metal, with the words “FIRE ALARM” imprinted thereon in white letters upon a red background. Include a white arrow pointing down, left or right showing the route to, or actual location of the fire alarm stations. Frame the outside edges of the signs in red and white diagonal stripes.

Sign Mounting Styles:

Single face for mounting flat against the wall.

Double faced for mounting extended from wall.

* + - * 1. Manual Fire Alarm Box Signs: Precision engrave letters with uniform margins, character size minimum 1/8 inch high, stating “LOCAL ALARM ONLY - NOT CONNECTED TO FIRE DEPARTMENT-CALL FIRE DEPARTMENT BY TELEPHONE”.

Phenolic: Two color (red surface, white core) laminated engraver’s stock, 1/16 inch minimum thickness, machine engraved to expose inner core color.

* + - * 1. Markers:

Premarked self-adhesive; W.H. Brady Co.’s B292, B708, Ideal Industries’ Mylar/Cloth wire markers, or Markwick Corp.’s permanent wire markers, Plastic Extruded Parts Inc.’s Flexible Sleeve or ID Band Markers, or Thomas and Betts Co.’s E-Z Code WSL self-laminating.

Other Styles: To suit application by W.H. Brady Co., Ideal Industries, Marwick Corp., Plastic Extruded Parts, Inc., or Thomas and Betts Co.

* + - 1. SYSTEM KEYING
				1. All system locks, key switches, etc., shall match existing keying.
			2. ACCESSORIES
				1. Include accessories required to perform the functions summarized in DESCRIPTION OF COMPLETED SYSTEM and indicated on the drawings.
1. EXECUTION
	* + 1. VERIFICATION OF CONDITIONS
				1. Testing Existing System:

Prior to modifying the system, make the following tests to ascertain the operating condition of the existing system:

Revise next 2 subparagraphs to suit requirements. Reference to zones is not applicable to addressable systems.

Test spare zones that will be utilized for the work.

Test active zones which will be modified.

Test PSS, PPSS and ICU functions associated with the modifications.

Test shall be witnessed by the Company Field Advisor and the Director’s Representative.

Include subparagraph below when specifically requested by client agency (most applicable to OGS projects).

Conduct tests that are disruptive to facility personnel after normal working hours as directed.

Prepare a written report for the Director’s Representative indicating the repairs required, if any, to make the existing sub-systems function properly.

Repairs to the existing sub-systems are not included in the Work unless requested by Order on Contract.

* + - 1. INTERRUPTIONS TO EXISTING SUB-SYSTEMS
				1. Maintain the existing system in its present condition to the extent possible while installing new Work.

Use paragraph below for standard procedure. Use second paragraph below when specifically requested by Client Agency (most applicable to OGS projects). Second paragraph below may also be applicable for extensive rehab projects where the existing F.A.S. may be out of service for extended periods due to requirements of protecting smoke detecting devices from airborne dust and debris (required by section 015000). Refer to NFPA 101 7-6.1.8.

* + - * 1. Prior to making changes or removals relative to the existing system, notify the Director’s Representative and have procedures approved.
				2. When changes or removals are required to the existing fire alarm system such that it’s ability to act as a fire alarm system is impaired, provide a temporary fire alarm system so that the building is protected at all times by a functioning fire alarm system. Notify Building Supervisor (thru Director’s Representative) of proposed temporary measures and scheduling. Both the proposed temporary measures and the scheduling must be approved by the Director’s Representative.
				3. Provide signs, instructions and alternate methods for reporting a fire.
			1. INSTALLATION
				1. Install the Work in accordance with the Company’s printed instructions unless otherwise indicated.
				2. Reprogram the system to include new monitor and control points and update existing system program to include changes and additions requested by facility.

Obtain from the facility personnel through the Director’s Representative, a list of desired system program changes, additions, etc.

* + - * 1. Do not install smoke detecting devices until the Work (including cleaning) of all trades in the area has been completed. Protect installed smoke detecting devices from airborne dust and debris.
				2. Mount smoke detecting devices, and seal air holes in the back of the devices (including interior of raceways and holes associated with installation of boxes and raceways) so that air flow from inside of housing or from the periphery of the housing will not prevent entry of smoke during a fire or test condition. Seal air holes with gaskets, expanding silicone foam, or other sealants as approved.

Coordinate paragraph below with Elevator Designers.

* + - * 1. Wiring for Elevator Recall for Fire Fighter’s Service and Other Elevator Emergency Functions:

Show wiring from PPSS’s and ICU’s to terminal strip cabinet in elevator machine room for all elevator emergency operations.

Provide wiring to and including a terminal strip cabinet in elevator machine rooms.

Contractor responsible for elevator installation will provide elevator control equipment for elevator operation and final electrical connections between terminal strip cabinet and the elevator controllers.

* + - * 1. Wiring For Survivability:

Signals from manual fire alarm boxes and other fire alarm initiating devices within a building transmitted over the same signaling line circuit shall not interfere with the manual fire alarm box signals when both types of initiating devices are operated at the same time.

Failure of equipment or a fault on one or more installation wiring conductors of one notification appliance circuit shall not result in functional loss of any other notification appliance circuit.

Connect PPSSs, ICUs and other system components requiring a primary power supply to dedicated branch circuits.

Do not connect PPSS’s and ICUs to a 2 pole device which can trip both poles at once, such as a 2 pole circuit breaker with handle tie (omit the tie).

Splices in wiring in vertical risers is prohibited, except when the length of conductors approximate 150 feet in vertical risers, terminal strip cabinet may be used. Exception: For 2-hour fire rated cable assembly, use UL listed methods to maintain 2-hour rating.

Avoid splices in horizontal runs. When splices are necessary, use junction boxes. Exception: For 2-hour fire rated cable assembly, use UL listed methods to maintain 2-hour rating.

Make splices with mechanical or hydraulic type pressure connectors. The use of wire nuts is prohibited.

Paint cover of terminal strip cabinets and junction boxes fire department red.

For subparagraph below refer to NFPA 72 3-8.4.1.1.4

Protect notification appliance circuits and other circuits necessary for the operation of the notification appliance circuits from the point at which they exit the fire alarm panel until the point that they enter the notification zone that they serve using one or more of the following methods:

A 2-hour fire rated cable assembly.

If a 2-hour rated shaft, enclosure or stairwell is a viable method, identify the 2-hour rated area on the drawings and show wiring routed therein. If 2-hour rated areas are not available, omit 2 subparagraphs below, and identify wiring on drawings as 2-hour rated cable assembly.

A 2-hour rated shaft or enclosure.

A 2-hour rated stairwell in a building fully sprinklered.

Subparagraph below is required by NFPA 72 3-4.2.2.2 for class a circuits. Edit for styles used for project. If class a, style 6, 7, d, e, or z circuits are used, show the raceway system looped back to the PPSS’s or ICU’s. Do not show both legs of wiring loop returned to PPSS’s or ICU’s in the same raceway nor along same route. Show separate raceway or 2-hour fire rated cable assembly.

Wiring Class A, Style 6, 7, D, E, or Z Signaling Line Circuits, Initiating Device Circuits and Notification Appliance Circuits: Do not install both legs of Class A, Style 6, 7, D, E, or Z circuits in same cable assembly, enclosure, or raceway back to PPSS’s or ICUs.

Run return legs along another route to obtain maximum benefit of these alternate path circuits.

Include paragraph below if applicable.

* + - * 1. Existing RA/CC: Rearrange existing annunciator and switch modules to accommodate new annunciator and switch modules.

Install new annunciator and switch modules in same function location as existing annunciator and switch modules. Arrange the new and existing modules in logical sequential order.

* + - * 1. Identification, Labeling, Marking:

Extensive additional signage for floor evacuation procedures during a fire emergency and instructions for use of elevators and exits is required by NYSUFP&BC 735.1(n) and 765.1(n) for buildings equipped with elevators. Coordinate signage with construction contract, section 101423. If no construction contract, include section 101423 under this contract.

Procedure Sign Adjacent to PSS: Install revised card in existing procedure sign to suit modifications made to procedures.

Include subparagraph below. If a coded system is used.

Code Locator: Install revised card in existing holders. Provide new holders with revised cards to suit modifications.

Include two subparagraphs below for system utilizing zones. Not required for addressable system.

Alarm Notification Appliance Locator:

New RA/CCs: Install new zone locator adjacent to RA/CCs.

Existing RA/CCs: Install revised card in existing zone locators to suit modifications made to the RA/CCs.

Edit subparagraphs below to suit project.

Nameplates:

Install on each manual fire alarm box a nameplate stating: Floor number, and location (1st Fl, east, etc.).

Omit subparagraph below if RA/CC is not used.

Install adjacent to each RA/CC annunciator module and switch module a nameplate indicating function of module.

Show all equipment requiring a primary power supply connected to branch circuits supplied by a diesel-alternator system when available

Label the device used as the circuit disconnecting means for the dedicated branch circuits serving the system “FIRE ALARM CIRCUIT CONTROL” with white letters on a red background.

Install on each system component requiring a primary power supply a label stating the location of its circuit disconnecting means.

Install nameplate on each remote alarm indicator stating the location of its smoke detecting device and the area protected by the smoke detecting device and its function (IN DUCT SMOKE DETECTOR ALARM FOR \_\_\_\_\_\_\_\_).

Power-Limited Circuits: Mark circuits at terminations, indicating that circuit is a power-limited fire protective signaling circuit.

Indicate number of signs in subparagraph below. To suit jo conditions. The signs are required by NYSUFP&BC 1060.2(b)(6).

Fire Alarm Signs: Where directed, install \_\_\_\_\_\_\_\_ single face signs mounted flat against the wall and \_\_\_\_\_\_\_\_ double faced signs mounted extended from the wall at conspicuous locations, drawing attention to the manual fire alarm boxes. Fasten signs to walls with vandal resistant fasteners.

Manual fire alarm box signs in subparagraph below are required by the NYS UFP&BC 1163.13( c)(4) if system is not directly connected to a central station alarm service, municipal alarm system or local manned fire alarm dispatch station.

Identification of Manual Stations Which Do Not Transmit Alarm to Fire Department: Install manual fire alarm box sign above each manual fire alarm box.

Identification of Circuits: Identify wires and cables by system and function in interconnection cabinets, and FACP’s to which they connect with premarked, self-adhesive, wraparound type markers. Designations shall correspond with point to point wiring diagrams.

Battery Data: Insert a copy of the battery warranty in each battery compartment and mark on batteries the date placed in service.

Alarm Verification Warning Marking: Affix to the inside of each FACP, a list indicating:

Affected circuits.

Delay (seconds).

The smoke detector model numbers used.

* + - * 1. Fire Suppression Systems Signal Attachments:

Show tamper switches and connection to all tamper switches.

Install tamper switches.

Coordinate subparagraph below with plumbing. Plumbing may include the installation of attachments in their contract. Also coordinate installation of attachments for each fire suppression system.

Install sprinkler system signal attachments.

* + - * 1. Protective Devices: Install where indicated on the drawings.

Where devices are installed on wood or masonry surfaces, attach protective devices directly to the surface with vandal resistant fasteners.

Where devices are installed on suspended ceiling provide additional supports in the ceiling, such as channel support system, angle iron or additional runner bars. Fasten the additional supports rigidly to the ceiling runner bar system. Attach frame or brackets of protective device to the supports with vandal resistant fasteners. Install metal spacers between the protective device frame and the supports so that the ceiling tiles will not be a part of the support system.

Use finishing collar between surface and protective device where protective device cannot be mounted tight against surface due to job conditions.

* + - 1. FIELD QUALITY CONTROL
				1. Preliminary System Test:

Preparation: Have the Company Field Advisor adjust the portion of the system applicable to the Work, and then operate it long enough to assure that it is performing properly.

Run a preliminary test for the purpose of:

Determining whether the system is in a suitable condition to conduct an acceptance test.

Checking and adjusting equipment.

Training facility personnel.

* + - * 1. System Acceptance Test:

Preparation: Notify the Director’s Representative at least 3 working days prior to the test so arrangements can be made to have a Facility Representative witness the test.

Supply all equipment necessary for system adjustment and testing.

Make the following tests:

Test the portion of the system applicable to the Work in accordance with NFPA 72, Chapter 7.

Follow test methods stated in Table 7-2.2.

Record results on NFPA 72 Figure 1-6.2.1 Record of Completion.

Test system operation step by step as summarized in DESCRIPTION OF COMPLETED SYSTEM.

Submit written report of test results signed by Company Field Advisor and the Director’s Representative. Also complete an NFPA Record of Completion.

Mount a copy of the written report of test results, and the NFPA 72 Record of Completion in plexiglass enclosed frame assemblies adjacent to the PSS (one framed assembly for each report).

Include paragraph below when specifically requested by client agency (most applicable to OGS projects).

* + - * 1. Conduct tests that are disruptive to facility personnel after normal working hours as directed.
			1. INSULATED CONDUCTOR SCHEDULE - TYPES AND USE

For overhead or underground wiring, see conductor schedule in section 283103.

* + - * 1. Signaling Line Circuits, Initiating Device Circuits and Notification Appliance Circuits:

Power-Limited Circuits: For interior wiring (in raceways) use power-limited insulated multiconductor cable types specified in PART 2 except where a 2-hour fire rated cable assembly is required.

Number of conductors and conductor size as recommended by the Company producing the system, except that conductor size shall not be less than No. 18 AWG for signaling line circuits and not less than No. 16 AWG for initiating device circuits and notification appliance circuits.

Using Non-power-Limited Wiring On Power-Limited Circuits: Wiring size and types specified for NONPOWER-limited circuits may be used for power-limited circuits if power-limited circuits are reclassified and the power-limited markings are eliminated. Refer to NEC Article 760-52(a) Exception No. 3.

Nonpower-Limited Circuits: For interior wiring (in raceways) use nonpower-limited insulated single conductors or multiconductor cable types specified in PART 2 except where a 2-hour fire rated cable assembly is required.

Number of conductors and conductor size as recommended by the Company producing the system, except that conductor size shall not be less than No. 18 AWG for signaling line circuits, not less than No. 16 AWG for initiating device circuits, and not less than No. 14 AWG for notification appliance circuits.

Where wiring is specifically indicated on drawings not to be run in raceway, use metal-clad cable type MC (concealed, unless otherwise indicated), except where a 2-hour fire rated cable assembly is required.

* + - * 1. Signaling Line Circuit Between PPMCU’S and Networked ICU’s (Network communication bus, voice communication bus, and telephone):

Use 2-hour rated cable assembly.

Where MI or MC/CI cable is used and run in areas subjecting cable to corrosion use PVC or HDPE jacketed cable (nonmetallic jacketed cable is not suitable for use in ducts, plenums or other spaces used for environmental air). Use nonmetallic jacketed cable in the following areas:

Indicate areas where nonmetallic jacketed cable is required.

\_\_\_\_\_\_\_\_\_\_\_.

Include section 271525 and paragraph below when applicable (OGS projects). Optical fiber cables are not available as a 2-hour fire rated cable assembly. Investigate possibility of running cable in 2-hour rated shafts or enclosures or other 2-hour rated construction and protecting cable with a method listed in UL building materials directory product category electrical circuit protective systems (FHIT) or electrical circuit protective materials (FHIY).

* + - * 1. Signaling Line Circuits Between PPMCU’s and Networked ICUs: Use Type LAN-O or type LAN-I optical fiber cables (Section 271525) in raceways for network communication bus circuits.
				2. Other Circuits for Which 2-hour Fire Rated Cable Assembly is Specified or Indicated:

Use CI cable in rigid steel conduit, MI cable, MC/CI cable or FPL/EMT.

Where MI or MC/CI cable is used and run in areas subjecting cable to corrosion use PVC or HDPE jacketed cable (nonmetallic jacketed cable is not suitable for use in ducts, plenums or other spaces used for environmental air). Use nonmetallic jacketed cable in the following areas:

Indicate areas where nonmetallic jacketed cable is required.

\_\_\_\_\_\_\_\_\_\_\_.

* + - * 1. Control Circuits Associated with the Fire Alarm System: use Class 1, 2, and 3 wiring specified in Section 260519.
				2. Primary Supply Circuits and Secondary Supply Wiring:

Use electric light and power wiring specified in Section 260519.

END OF SECTION 283105

THE REMAINDER OF THIS SECTION IS FOR INFORMATION ONLY. NOT TO BE INCLUDED IN PROJECT SPECIFICATIONS.

 1. Codes, Standards, and References applicable to the installation of Fire Alarm Systems:

 a. National Fire Protection Association (Handbooks):

 1) Fire Protection Handbook.

 2) Fire Alarm Signaling Systems.

 3) National Fire Alarm Code Handbook.

 b. National Fire Protection Association – NFPA 72 National Fire Alarm Code, 1999 edition Chapter 9 and it’s referenced mandatory documents:

 1) NFPA 10, Standard for Portable Fire Extinguishers, 1998 edition.

 2) NFPA 13 Standard for the Installation of Sprinkler Systems, 1999 edition.

 3) NFPA 13D, Standard for the Installation of Sprinkler Systems in One-and Two-Family Dwellings and Manufactured Homes, 1999 edition.

 4) NFPA 13R, Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height, 1999 edition.

 5) NFPA 20, Standard for the Installation of Stationary Pumps for Fire Protection, 1999 edition.

 6) NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems, 1998 edition.

 7) NFPA 37, Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines, 1998 edition.

 8) NFPA 54, National Fuel Gas Code, 1999 edition.

 9) NFPA 58, Liquefied Petroleum Gas Code, 1998 edition.

 10) NFPA 70, National Electrical Code*,* 1999 edition.

 11) NFPA 75, Standard for the Protection of Electronic Computer/Data Processing Equipment, 1999 edition.

 12) NFPA 90A, Standard for the Installation of Air-Conditioning and Ventilating Systems, 1999 edition.

 13) NFPA 101, Life Safety Code*,* 1997 edition.

 14) NFPA 110, Standard for Emergency and Standby Power Systems, 1999 edition.

 15) NFPA 111, Standard on Stored Electrical Energy Emergency and Standby Power Systems, 1996 edition.

 16) NFPA 601, Standard for Security Services in Fire Loss Prevention, 1996 edition.

 17) NFPA 780, Standard for the Installation of Lighting Protection Systems, 1997 edition.

 18) NFPA 1221, Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems, 1999 edition.

 19) ANSI A-58.1, Building Code Requirements for Minimum Design Loads in Buildings and Other Structures,

 20) ANSI S1.4a, Specifications for Sound Level Meters, 1985.

 21) ANSI S3.41, Audible Emergency Evacuation Signal, 1996.

 22) ANSI/ASME A17.1, Safety Code for Elevators and Escalators,1998.

 23) ANSI/IEEE C2, National Electrical Safety Code, 1997.

 24) ANSI/UL 217, Standard for Safety Single and Multiple Station Smoke Alarms, 1997.

 25) ANSI/UL 268, Standard for Safety Smoke Detectors for Fire Protective Signaling Systems, 1999.

 26) ANSI/UL 827, Standard for Safety Central-Station for Watchman, Fire-Alarm and Supervisory Services, 1997.

 27) ANSI/UL 985, Standard for Safety Household Fire Warning Control Units, 1994.

 28) ANSI/UL 1971, Signaling Devices for Hearing Impaired, 1995.

 29) EIA Tr 41.3, *Telephones* (Electronic Industries Alliance, 2500 Wilson Boulevard, Arlington, VA 22201-3834.)

 30) International Municipal Signal Association, P.O. Box 539, Newark, NY 14513 (Wire and Cable Specifications).

 31) National Institute for Certification in Engineering Technologies, 1420 King Street, Alexandria, VA 22314-2794. (NICET Certification in the Field of Fire Protection and Engineering Technology)

 c. National Fire Protection Association – NFPA 72 National Fire Alarm Code, 1999 edition, Appendix C and it’s referenced informational documents:

 1) NFPA 11, Standard for Low-Expansion Foam, 1998 edition.

 2) NFPA 11A, Standard for Medium- and High-Expansion Foam Systems, 1999 edition.

 3) NFPA 12, Standard on Carbon Dioxide Extinguishing Systems, 1998 edition.

 4) NFPA 12A, Standard on Halon 1301 Fire Extinguishing Systems, 1997 edition.

 5) NFPA 14, Standard for the Installation of Standpipe and Hose Systems, 1996 edition.

 6) NFPA 15, Standard for Water Spray fixed Systems for Fire Protection, 1996 edition.

 7) NFPA 17, Standard for Dry Chemical Extinguishing Systems, 1998 edition.

 8) NFPA 80, Standard for Fire Doors and Fire Windows, 1999 edition.

 9) NFPA 90B, Standard for the Installation of Warm Air Heating and Air Conditioning Systems, 1999 edition.

 10) NFPA 92A, Recommended Practice for Smoke-Control Systems, 1996 edition.

 11) NFPA 92B, Guide for Smoke Management Systems in Malls, Atria, and Large Areas, 1995 edition.

 12) NFPA 170, Standard for Fire Safety Symbols, 1999 edition.

 13) ANSI S3.2, Method for Measuring the Intelligibility of Speech Over Communications Systems, 1989.

 14) IEC 60849, Sound Systems for Emergency Purposes, Second Edition: 1998.

 15) IEC 60268, Part 16, The Objective Rating of Speech Intelligibility by Speech Transmission Index, Second Edition: 1998.

 d. NYS Uniform Fire Prevention and Building Codes:

 1) 735.1(n) Floor Evacuation Procedure Signs (Multiple Dwellings).

 2) 739.4(d)(8) Shafts (Multiple Dwellings).

 3) 724 Fire Protection Equipment (Multiple Dwellings).

 4) 765.1(n) Floor Evacuation Procedure Signs (General Building Construction).

 5) 771.4(h)(10) Shafts (General Building Construction).

 6) 774 Fire Protection Equipment (General Building Construction).

 7) 791 Fire and Smoke Detecting System (Public Assembly).

 8) 850 General Provisions for Systems and Equipment.

 9) 1060 Fire Protection Equipment.

 10) 1061 Coordinated Fire Safety System.

 11) 1062.7(b) Emergency Operation (Elevators).

 12) 1101.4(j) Emergency Warning Systems (Facilities for the Physically Handicapped).

 13) 1101.5( c)(6) Communication Area of Refuge (Facilities for the Physically Handicapped.

 14) 1101.5( c)(8)(ii) Pressurized Elevator Lobby/Shaft (Facilities for the Physically Handicapped).

 15) 1163.13( c)(4) sign “Call Fire Department by Telephone.”

 16) 1250.1 Applicability (Reference Standards).

 17) 1250.3 Reference standards applicable to State Uniform Fire Prevention and Building Code.

 e. Underwriters Laboratories Inc.:

 1) Fire Protection Equipment Catalogue (Listings and Classifications).

 2) UL 13 Power-Limited Circuit Cables.

 3) UL 38 Manually Actuated Signaling Boxes for Use with Fire-Protective Signaling Systems.

 4) UL 44 Rubber-Insulated Wires and Cables.

 5) UL 83 Thermoplastic-Insulated Wires and Cables.

 6) UL 193 Alarm Valves for Fire-Protection Service.

 7) UL 217 Single and Multiple Station Smoke Alarms.

 8) UL 228 Door Closers-Holders, With or Without Integral Smoke Detecting devices.

 9) UL 268 Smoke Detectors for Fire Protective Signaling Systems.

 10) UL 268A Smoke Detecting devices for Duct Application.

 11) UL 346 Waterflow Indicators for Fire Protective Signaling Systems.

 12) UL 393 Indicating Pressure Gauges for Fire-Protection Service.

 13) UL 444 Communications Cables.

 14) UL 464 Audible Signal Appliances.

 15) UL 497A Secondary Protectors for Communications Circuits.

 16) UL 497B Protectors for Data Communications and Fire Alarm Circuits.

 17) UL 521 Heat Detecting devices for Fire Protective Signaling Systems.

 18) UL 539 Single and Multiple Station Heat Detecting devices.

 19) UL 753 Alarm Accessories for Automatic Water-Supply Control Valves for Fire Protection Service.

 20) UL 864 Control Units for Fire Protective Signaling Systems.

 21) UL 910 Test For Cable Flame – Propagation and Smoke Density Values for Electrical and Optical-Fiber Cables Used in Spaces Transporting Environmental Air.

 22) UL 1076 Proprietary Burglar Alarm Units and Systems.

 23) UL 1424 Cables for Power-Limited Fire-Alarm Circuits.

 24) UL 1480 Speakers for Fire Protective Signaling Systems.

 25) UL 1481 Power Supplies for Fire Protective Signaling Systems.

 26) UL 1638 Visual Signaling Appliances – Private Mode Emergency and General Utility Signaling.

 27) UL 1711 Amplifiers for Fire Protective Signaling Systems.

 28) UL 1971 Signaling Devices for Hearing Impaired.

 f. American National Standards Institute:

 1) ASME/ANSI A17.1 Safety Code for Elevators and Escalators.

 2) ASME/ANSI A17.3 Safety Code for Existing Elevators and Escalators.

 3) ANSI A117.1 – Accessible and Usable Buildings and Facilities.

 4) ANSI S-1.4a Specifications for Sound Level Meters.

 5) ANSI S3.41 Audible Emergency Evacuation Signal.

 g. National Electrical Manufacturers Association (NEMA).

 1) Guide for Proper Use of Smoke Detectors in Duct Application.

 2) Guide for Proper Use of System Smoke Detectors.

 3) Quality Automatic Fire Detection and Alarm System Installation.

 4) Training Manual on Fire Alarm Systems.

 2. Indicate on drawings where specific initiating devices are to be used. In general:

 a. Use combination rate-of-rise/fixed temperature heat detectors or heat sensors (135 degrees F) as the basic heat detecting device except where temperature could rise more than 15 degrees F per minute (use fixed temperature heat detector).

 1) Use combination R.O.R./F.T. (190/200 degrees F) for higher ambient temperature locations: boiler rooms, etc. Heat sensors are not available above 135 degrees F.

 b. Use fixed temperature heat detecting devices (135 degrees or 190/200 degrees F to suit ambient conditions) where temperature could rise more than 15 degrees F per minute: near heating supply registers, in generator rooms, near large exterior doors, etc.

 c. Use rate compensation/fixed temperature heat detectors or heat sensors where a faster acting heat detecting device may be required (computer rooms, etc.):

 1) Rate compensation/fixed temperature heat detectors have a tube 3 inches long which extends down from the ceiling, making them more prone to damage and less aesthetically pleasing.

 d. Use ionization type smoke detectors or smoke sensors as spot type detecting devices in areas where the following statement would be applicable: “Ionization detection is more responsive to invisible (less than one micron in size) particles produced by most flaming fires. It is somewhat less responsive to the larger particles typical of most smoldering fires”. Do not use ionization type for the following applications:

 1) OMH projects (they require photoelectric type smoke detecting devices).

 2) In dirty laundry storage areas (urine fumes activate ionization type smoke detecting device.

 3) In areas subject to high velocity air movements (especially not in front of heating and air conditioning supply registers).

 4) In areas where people can gather to smoke.

 5) In kitchens, shops, garages and other areas where smoke or fumes are given off during normal activities.

 6) In areas where ether or other volatile chemicals are used.

 e. Use photoelectric type smoke detectors or smoke sensors as spot type detecting devices in areas where the following statement would be applicable: “Photoelectric light scattering detection is more responsive to visible (more than one micron in size) particles produced by most smoldering fires. It is somewhat less responsive to the smaller particles typical of most flaming fires. It is also less responsive to black smoke than to lighter colored smoke”.

 1) Also use photoelectric type smoke detecting devices where normal activities might cause ionization type to alarm (listed in d. above).

 2) OMH requires use of photoelectric smoke detecting devices for their projects.

 3) Since photoelectric smoke detecting devices sense particles of combustion differently than ionization type, a more effective coverage could be achieved by using both types in critical locations: Sleeping area, corridors, etc.

END OF INFORMATION 283105