SECTION 283102 - PROTECTED PREMISES FIRE ALARM/EMERGENCY COMMUNICATION SYSTEM

This section should be used for buildings more than 70 feet in height which are required to have a New York state uniform fire prevention and building code coordinated fire safety system (NYSUFP&BC 774.9), utilizing emergency voice communications and several additional requirements (NYSUFP&BC 1061.1) in addition to fire and smoke detecting functions.

This section covers a system which has a microprocessor based fire command station (fcs) having fire alarm, security, control, and real time capabilities. Initiating and control devices are hard wired or multiplexed to interconnected control units (ICU’S). ICU’S are multiplexed to the fire command station.

In addition to the NYSUFP&BC, this section was written to meet:

1. for the building: NFPA 72 chapter 3 protected premises fire alarm systems.

2. For multiple buildings (in conjunction with section 283103): NFPA 72 5-3 proprietary supervising station systems.

3. For alarm retransmission to the fire department, either:

a. NFPA 72 5-4 remote supervising station fire alarm systems when system is connected to remote station.

b. NFPA 72 6-16 auxiliary fire alarm systems, when system is connected to municipal fire alarm system.

4. fFor voice communication: NFPA 72 3-8.4.1.3 & 3-8.4.1.3.5.

5. The essence of all the additional codes, standards and references listed under information at end of section. However, you must evaluate the codes and standards for requirements which are relevant to only specific applications such as hospitals, other health and mental care facilities, educational facilities, industrial buildings, day care areas, retail sales areas, storage facilities, hazardous areas, etc. And modify this section to accommodate their special requirements.

See information at end of section.

1. GENERAL
   * + 1. RELATED WORK SPECIFIED ELSEWHERE
          1. Video Training Programs: Section 017900.

Section 271525 is required for OGS projects.

* + - * 1. Optical Fiber Cables: Section 271525.

Include section 283103 when section 283102 is part of a proprietary fire alarm system (NFPA 72 5-3).

* + - * 1. Proprietary Fire Alarm System: Section 283103.
      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 ICUs to non-addressable signal initiating devices.

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

Circuits from 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 FCS to ICUs.

Circuits from ICUs to ICUs.

Circuits from ICUs to addressable devices.

Floor communication station telephones.

* + - * 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.

* + - 1. SYSTEM DESCRIPTION
         1. The system operates as an integrated multiplexed protected premises fire alarm/emergency communication monitoring and control system.

Changes in the status of monitored points are indicated at the microprocessor based fire command station (FCS) utilizing distributed processing, peer-to-peer networked, interconnected control unit’s (ICU’s) located throughout the building.

1. Show location of FCS and ICU’S.

2. Show printer (120 v ac fan fold style) adjacent to FCS.

3. Show CRT (with keyboard) adjacent to FCS.

4. Show emergency lighting at FCS.

5. Refer to NFPA 72 3-8.4.1.3.3 and 3-8.4.1.3.5.5 for requirements for locating FCS and associated equipment.

S6. how a smoke detecting device in each area where fire alarm control panels are installed and the area is not continuously occupied (NFPA 72 1-5.6).

The network micro-processors continually monitor the communications and data processing cycles of the system.

A communications failure indication (print-out, display and audible alarm) occurs at the FCS upon failure of the network communication and data processing cycle.

Upon FCS failure, an audible and visual alarm alerts attendant.

Complete failure of the FCS does not interfere with the ability of each ICU to perform its functions.

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

In areas where alarm verification feature is desired for additional protection against false alarms or unwarranted discharge of fire suppression systems, alarm verification zones for smoke detectors, or individual smoke sensors operating in verification mode must be indicated on the drawings. Refer to NFPA 72 3-8.3.2.3.1.

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.

The panel resets the activated detector and waits for a second alarm activation. If within one minute a second alarm is reported from any detector within the zone, the system alarms. If no second alarm within one minute, the system resumes normal operation.

The system can display the number of times (tally) a smoke detector zone or smoke sensor has gone into a verification mode. A trouble condition occurs when the tally reaches a pre-programmed number.

Smoke sensors act as intelligent and addressable devices. The smoke sensor converts the condition of it’sits smoke sensing chamber to an analog value. This analog value is digitized and transmitted to the ICUs and FCS.

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.

The system continuously performs an automatic self-test routine on each sensor which checks sensor electronics to ensure the accuracy of the values being transmitted to the ICUs. Sensors that fail are identified and indicate a trouble condition.

System automatically performs NFPA 72 sensor sensitivity testing by:

Frequent routine individual sensor alarm simulation testing.

Trouble signal when sensor is outside its acceptable sensitivity range.

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, supervisory and trouble signals take precedence, in that respective order of priority, over all other signals.

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.

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

Fire alarm signals are distinctive in sound from other signals, and this sound is not used for any other purpose.

Supervisory signals are distinctive in sound from other signals.

System differentiates between supervisory device activation and trouble (wiring faults) on independent supervisory service initiating circuits.

Trouble signals are indicated by distinctive audible signals. Exception: The same sound may be used for both supervisory signal and trouble signal if distinction is made between signals by visible annunciation.

Switches for silencing audible trouble and supervisory signals transfers the audible signal to an identified lamp or other visible indicator adjacent to the switches. The visible indication persists until the condition has been corrected. The audible signal sounds when the switch is in its silence position and no trouble or supervisory condition exists.

Trouble silencing switch does not prevent sounding of supervisory signal. Subsequent supervisory signals from other zones causes the supervisory signal to resound. A switch left in the silence position where there is no supervisory off-normal signal operates a visible signal silence indicator and causes the trouble signal to sound until the switch is returned to normal.

A silenced audible trouble signal resounds at programmable time intervals (every 24 hours or less) as a reminder that the trouble condition has not been corrected. Re-sounded signal is retransmitted to all locations required of the original trouble signal.

System visual and audible trouble signals and supervisory signals and visible indication of their restoration is indicated at the FCS.

Each ICU’s visual and audible trouble signals and supervisory signals and visible indication of their restoration is indicated at the ICU.

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

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

At the lowest level of access the system automatically receives, displays and prints alarms, and performs control-by-event life safety functions. The attendant has minimum access to the system functions:

Alarm acknowledge.

Print alarm summary.

Silence alarms.

Perform other basic system functions that require interaction by the attendant (cannot change program parameters).

At mid-level of access, the attendant may change user programmable parameters and print all summaries.

At the highest level of access, programs may be modified by the system manager (life safety control-by-event programs may be field or factory modified).

System access functions (log on, log off, access level authority) are displayed and printed with date, time, and person’s name.

Additional information may be added to the basic messages required to be printed and displayed for each monitor and control point. Using appropriate programming procedures, the system manager may add up to 5 lines (70 characters/line) of specific instructions and pertinent information to each monitor and control point.

Summary reports are displayed and printed at the FCS upon appropriate keyboard or function command. Active control points are identified by an assigned message. Spare control points are identified by a point number. The summary reports can be interrupted and terminated and the system returned to normal operation by a manual reset control or automatically if the system senses a change of status signal. The summary reports include:

Current Alarm, Trouble, and Supervisory Conditions: Lists all points not in normal state (print and display).

Alarm historical log report.

Trouble and supervisory historical log report.

All Points: Lists every point in the system and current status of the point (print only, display not required).

Control by Event Programs: Lists data for event initiated programs (print only, display not required).

Control by Time Programs: Lists data for time initiated programs (print only, display not required).

Diagnostics:

Alarm verification cycles initiated by a smoke detector zone or individual smoke sensors.

Smoke sensor service report: Device number, device type, custom label, presently selected alarm set point information, present average value, present value, peak observed values, service status.

Smoke sensor status report: Device number, device type, custom label, present sensitivity in % for smoke sensors and in degrees for temperature sensors, present status, and sensor range (normal, almost dirty, dirty).

Location of a wiring faults.

Devices which fail automatic tests.

Walk test reports.

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

The life safety control-by-event control points may be manually operated at any time by the attendant thru appropriate keyboard commands.

If subparagraph below is used, show schedule on drawing for each RA/CC indicating number of specific pre-programmed switches required. Coordinate with RA/CC requirements in part 2.

Dedicated switches in the remote annunciator/control centers (RA/CC’s) 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 FCS.

User programmable control-by-event functions may be programmed thru appropriate keyboard 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 attendant thru appropriate keyboard commands.

If subparagraph below is used, determine if each pre-programmed point needs to have a dedicated switch. If not, modify subparagraph and show RA/CC schedules on the drawings. Coordinate with RA/CC requirements in part 2.

Dedicated switches in the RA/CC’s 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 FCS for the control points activated by the user programmable control-by-event function.

User programmable control-by-event functions which do not require an alarm or supervisory interaction are not attendant acknowledged.

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

The time-initiated user programmable control points may be manually operated at any time by the attendant thru appropriate keyboard commands.

If subparagraph below is used, determine if each pre-programmed point needs to have a dedicated switch. If not, modify subparagraph and show RA/CC schedules on the drawings. Coordinate with RA/CC requirements in part 2.

Dedicated switches in the RA/CC’s 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 FCS for the control points activated by the time-initiated function.

Automatic time-initiated functions are not attendant acknowledged.

Touchscreen and mouse subparagraphs below are required for OGS projects.

Touchscreen and mouse commands:

Personnel having the proper system level of access may program and modify all system functions and parameters thru use of touchscreen commands, and mouse “point and click” commands in addition to keyboard commands.

Life safety control-by-event control points, user programmable control-by-event functions, and user programmable automatic time initiated functions in addition to keyboard commands, may also be operated manually thru touchscreen commands and mouse “point and click” commands.

Summary reports, in addition to keyboard commands, may also be displayed and printed thru touchscreen commands and mouse “point and click” commands.

The two subparagraphs below are required for OGS projects, but they are examples from a project and must be verified with OGS for each application.

OGS Direct Digital Control System Interconnection: The status of each system initiating device, monitored point, life safety control-by-event function, control-by-event function and programmable automatic time-initiated function is transmitted thru a EIA RS-232C port via an Ethernet LAN using the ASHRAE BACnet protocol (or through a protocol sharing arrangement) that controls and operates the building HVAC equipment. The Direct Digital Control System to be installed in the future may be manufactured by one of the following companies:

Johnson Controls, Inc.

Landis Division, Siemens Building Technologies.

Trane, Inc.

An attendant at a remote IBM compatible personal computer may dial in over a telephone line to access the system data. The attendant has minimum access to the following system summary reports:

Standby battery and UPS condition summary.

Alarm summary.

Supervisory signal summary.

Trouble condition summary.

Control-by-event summary.

Programmable automatic time initiated-event summary.

One person may test the system (walk test).

When in testing mode:

Alarm activation of an initiating device circuit is silently logged as an alarm condition in the historical data file. The system automatically resets after logging each alarm.

The momentary disconnection of an initiating device or notification appliance circuit is silently logged as a trouble condition in the historical data file. The system automatically resets after logging each trouble condition.

The person testing the system may also choose to have the system activate the alarm notification appliances for a maximum of two seconds upon initiating device testing and a maximum of four seconds upon trouble condition testing.

If in the test mode for an inappropriate (programmable) amount of time, the system automatically reverts to normal mode.

The municipal or remote station connection is bypassed.

The system shows a trouble condition.

Control relay functions are bypassed.

Testing groups allow portions of the system to be placed in test mode while the non-test groups remain in normal mode.

Include subparagraph below when there are multiple FCS’S.

The primary FCS in control is identified by a visible indication at that FCS. Visible indicators at the other FCS(s) inform attendant(s) that manual system operation has been established by the FCS in use.

Other locations for which control is possible, such as voice communication modules in lobbies or assembly areas, have access request button with deny access indication to allow attendant at the primary FCS to maintain system control.

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

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

The audible alarm pulses until the system acknowledge button is depressed.

The system alarm lamp remains illuminated until the alarm condition has been corrected and the system reset.

Refer to NFPA 72 1-5.7.3 for alarm annunciation requirements.

The FCS displays the point and type of alarm condition on the CRT/keyboard. Addressable devices are individually identified. Groups of non-addressable devices are identified by zones.

Omit subparagraph below if remote CRT’S are not required.

Duplicate information is also displayed on remote CRT’s.

The FCS prints the assigned message with date and time on the fan fold style printer for the point in alarm. Assigned messages, date and time are also printed for the control-by-event functions activated by the point in alarm.

Check with client agency if fire department is to be called, or if other procedures are required. (signal must be transmitted to fire department for b4, c6.2 and c6.3 occupancy). Refer to NYSUFP & BC 1060.2(a)(4).

If fire company is to be called, specify method required by the fire department. Modify subparagraphs below to suit.

References for connection to fire departments through municipal fire alarm systems, public fire alarm reporting systems, or other type supervising stations are:

1. supervising station fire alarm systems: NFPA 72 chapter 5.

2. Public fire alarm reporting systems: NFPA 72 chapter 6.

4. the fire department is automatically called.

Subparagraph below is an example for auxiliary type operation (local energy, shunt, or parallel telephone). Indicate where the signal is to be sent.

The FCS activates a relay through the municipal connection and transmits the alarm condition to (\_\_\_\_\_\_\_\_\_\_\_\_).

Omit subparagraph below for shunt type operation or parallel telephone municipal systems where the lines are supervised from the municipal station.

Supervision of wiring between FCS and relay indicates trouble conditions at the FCS.

Subparagraph below is an example for remote station type operation. Indicate where signal is to be sent. Change leased lines to other type connection if required.

The FCS transmits the alarm condition to remote station (\_\_\_\_\_\_\_\_\_\_\_\_) via leased lines.

Omit subparagraph below when the leased lines are supervised from the remote station. If a DACT is used, modify all parameters to suit (refer to NFPA 72 5-5.3.2).

Supervision of wiring between FCS and remote station indicates trouble conditions at the FCS.

Subparagraph below is an example of the building fire alarm system transmitting trouble conditions to a supervising station (a facility that receives signals and at which personnel are in attendance at all times to respond to these signals). Indicate name of supervising station (fire department, general station service or other facility meeting criteria of supervising station). Refer to NFPA 3-8.4.4.2.

Trouble conditions received at the protected premises control unit (FCS), including loss of primary or secondary power are also transmitted to the supervising station (\_\_\_\_\_\_\_\_\_\_\_\_). Relays or modules providing transmission of trouble conditions to the supervising station are arranged to provide fail-safe operation.

In subparagraph below change “fire department” to “central station operating company” or other appropriate terminology.

For system test, a switch in the FCS enables attendant to prevent a signal transmission to the fire department. When disconnected, a system trouble condition is indicated, also, a separate lamp illuminates indicating the disconnected mode.

The attendant at the FCS 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.

A printing suppression program eliminates superfluous system alarm acknowledge messages. Only alarm acknowledge messages that are essential to the attendant for system operation are printed.

Subparagraph below is required by NYSUFP&BC 1060.2( a)(4) for group B4, C6.2 and 6.3 occupancy.

A procedure sign at the FCS instructs personnel on procedure to be followed in the event of a fire.

If a positive alarm sequence alarm or a presignal feature is preferred, modify life safety control-by-event functions below to suit operation. Refer to NFPA 72 1-5.4.11, NFPA 101 7-6.3.2 and NYSUFP&BC 1060.2( a)(6). There are many occupancies listed in NFPA 101 where either positive alarm sequence or presignal or both are prohibited.

Show where audible notification appliances are required. Refer to NFPA 72 chapter 4, NYSUFP&BC 1060.2(c), and ANSI a117.1. Show sufficient number of audible appliances so that, when tested, the system will meet the specified private and public mode sound level parameters.

Show notification appliance wiring run to an ICU from each area where alarm is to be sounded (floor by floor, area by area, etc). Coordinate wiring with function specified. Refer to NFPA 72 3-8.4.1.1, 3-8.4.1.3, 3-8.4.1.3.5.6, 3-8.4.1.3.6.

* + - * 1. Life Safety Control-By-Event Functions: The FCS and ICU’s immediately perform life safety control-by-event functions upon system alarm condition:

Indicate where building manager alarm annunciators are required. Refer to NYSUFP&BC 791.2, 1060.2(4) & (5), 1061.2(e).

Building manager alarm annunciators are activated in fire command room, supervisor’s office, and mechanical equipment rooms, drawing attention to the alarm condition.

Private mode audible signals sound, having a sound level of not less than 45 dBA at 10 Feet, nor more than 120 dBA at the minimum hearing distance from the audible appliance. Also, the audible signal has a sound level at least 10 dBA above the average ambient sound level or 5 dBA above the maximum sound level having a duration of at least 60 seconds, whichever is greater, measured 5 feet above the floor in the occupiable area.

45 dBA private mode audible signals sound in:

Edit list below. Where occupants are incapable of evacuating themselves because of age, physical or mental disabilities, or physical restraint, also use the 45 DBA private mode. Specify the areas. Refer to NFPA 72 4-3.3., NFPA 101 7-6.3.5 and UL 464.3.2.

Fire command room.

Supervisor’s office.

Elevator cars.

Restrooms.

Patient sleeping areas.

Reference for subparagraph below is NFPA 72 4-3.1.4, 4-3.3.2 and appendix a4-3.3.2.

Private mode audible signals in mechanical equipment rooms sound, having a sound level of not less than 100 dBA at 10 feet, nor more than 120 dBA at the minimum hearing distance from the audible appliance. Also, the audible signal has a sound level at least 10 dBA above the average ambient sound level or 5 dBA above the maximum sound level having a duration of at least 60 seconds, whichever is greater, measured 5 feet above the floor.

For systems where relocation of occupants is the intent of the building’s fire management plan, use two subparagraphs below when a pre-recorded relocation message is desired in addition to an audible relocation alarm.

Public mode audible alarm signals sound. A public mode alert tone of 3 to 10 seconds continuous duration sounds and is followed by a pre-recorded message (or messages over the systems’ multi-channel function). The message is repeated 3 times to direct the occupants of the alarmed zone to other zones in accordance with the building’s fire management plan. Failure of the pre-recorded message causes the audible alarm to immediately sound a relocation signal on the alarm floor and the floor above.

Alert tone, pre-recorded message and audible alarm relocation signal have a sound level of not less than 75 dBA at 10 feet nor more than 120 dBA at the minimum hearing distance from the audible appliance. Also, the audible signal has a sound level at least 15 dBA above the average ambient sound level or 5 dBA above the maximum sound level having a duration of at least 60 seconds (whichever is greater) measured 5 feet above the floor in each occupiable area.

Include next two subparagraphs below when the intent is managed relocation of personnel only during normal working hours in a fully occupied building. Modify subparagraphs as required to suit project conditions.

Between 7:00 a.m. and 5:00 p.m., Monday thru Friday (regularly scheduled working days): Audible alarm notification appliances sounds the alert tone and pre-recorded message on the alarm floor and the floor above in accordance with the building’s fire management plan.

Holidays, weekends and after 5:00 p.m. to 7:00 a.m. Monday thru Friday: Audible alarm notification appliances sound an ANSI S3.41 evacuation signal throughout the building. Evacuation signal is synchronized within each notification zone.

For systems where relocation of occupants is the intent of the building’s fire management plan, use three subparagraphs below when a pre-recorded message is not desired. (attendant must be on duty 24 hours per day).

Public mode audible signals sound. A public mode alert tone of 3 to 10 seconds continuous duration sounds and is followed by an attendants live message (or messages over the systems’ multi-channel function). The attendant directs the occupants of the alarmed zone to other zones in accordance with the building’s fire management plan.

Alert tone and message have a sound level of not less than 75 dBA at 10 feet nor more than 120 dBA at the minimum hearing distance from the audible appliance. Also, the audible signal has a sound level at least 15 dBA above the average ambient sound level or 5 dBA above the maximum sound level having a duration of at least 60 seconds (whichever is greater) measured 5 feet above the floor in each occupiable area.

Alert tone automatically sounds on the alarm floor and the floor above.

Use two subparagraphs below where evacuation of occupants is the intent of the building’s fire management plan.

Audible alarm notification appliances sound a public mode ANSI S3.41 evacuation signal in the alarm signal initiation zone and other zones in accordance with the buildings fire evacuation plan. Evacuation signal is synchronized within each notification zone.

Audible alarm evacuation signal has a sound level of not less than 75 dBA at 10 feet nor more than 120 dBA at the minimum hearing distance from the audible appliance. Also, the audible signal has a sound level at least 15 dBA above the average ambient sound level or 5 dBA above the maximum sound level having a duration of at least 60 seconds (whichever is greater) measured 5 feet above the floor in each occupiable area.

Reference to subparagraph below is NFPA 72 4-3.1.5.

Prerecorded, synthesized, and live emergency voice/alarm messages are reproduced with voice intelligibility.

Voice intelligibility exceeds the requirements of IEC 60849 (Sound Systems for Emergency Purposes) Annex B, Clause B1, and other methods of determining intelligibility in accordance with NFPA 72 A4.3.1.5.

The system allows the attendant to:

Reference for areas of public assembly in subparagraph below is NFPA 101 8-3.4 and NYSUFP&BC 791.2.

Determine that the alarm signals in areas of public assembly occupiable by more than 300 persons are being received in those areas.

Override previously initiated alarm signals on each channel for live voice instruction, and have priority over any subsequent automatically initiated signals on that channel.

Silence any alarm signal in progress through a silence command issued from the FCS, but subsequent actuation of initiating devices on other initiating device circuits or subsequent actuation of addressable initiating devices on signaling line circuits causes the system to resound and record the alarm.

Silencing of an audible alarm does not cancel any visible zone alarm indicators.

A silencing means that is left in the “off” position when there is no alarm operates an audible trouble signal until the means is restored to normal.

Activate the alarm notification appliances on selected floors, and all floors. The attendant chooses the method of activating the alarm notification appliances:

Appropriate keyboard commands issued from the FCS.

Omit subparagraph below if RA/CC is not used.

Dedicated switches in the RA/CC at the FCS.

Include subparagraph below in conjunction with touchscreen FCS.

Touchscreen and mouse “point and click” commands.

Omit reference to RA/CC if not required in subparagraph below.

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

Reference for subparagraph below is NFPA 101 7-6.3.2.

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 FCS alarm functions.

Show where visual notification appliances are required. Refer to NFPA 72 chapter 4, NYSUFP&BC 1060.2(a)(7), and ANSI a117.1 chapter 7. Do not show visual alarms and audible alarms connected on the same circuits.

Refer to NFPA 72 4-4 for public mode visible characteristics andcharacteristics and NFPA 72 4-5 for private mode visible characteristics.

Public and private mode visual alarm notification appliances illuminate and flash a fire warning signal.

Public mode visible signaling flash rate does not exceed 2 flashes per second, nor less than one flash every second throughout the listed voltage range of the appliance.

The maximum pulse duration is 0.2 seconds with a maximum duty cycle of 40 percent. The pulse duration is defined as the time interval between initial and final points of 10 percent of maximum signal.

NYSUFP&BC 1060.2(a)(7), in schools for the deaf, required fire alarm systems shall be provided with red signal lights in rooms where students congregate, in addition to the sounding devices.

The light source is clear or nominal white and does not exceed 1000 candela (effective intensity).

All strobes are synchronized to flash simultaneously to reduce the probability of photo-sensitive reactions.

Visual alarms continue to flash until the initiating devices are restored to normal condition and the system is manually reset.

Reference for subparagraph below is NFPA 72 2-10.6, 3-9.6, NYSUFP&BC 1060.9, 1061.2( c)(4) & NFPA 101 7-6.5.

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

Coordinate subparagraph below with hardware designer. Refer to NFPA 72 3-9.7, NYSUFP&BC 1061.2( c)(5), 1061.4 & NFPA 101 7-6.5.

Locked doors for re-entry from exit stairwells, exit doors, and emergency exits release their fail safe door lock mechanisms so that associated doors may be opened.

If any of the next several subparagraphs applicable to smoke/fire control are used, refer to NFPA 72 3-9.5, NFPA 90, 92A, 92B, and NYSUFP&BC 1004.2(e)(2) (3) & (4), 1004.2(f)(2), and 1061.2( c)(6). Coordinate with HVAC. They may include a smoke/fire control system in their contract. Specify the functions that the automated building HVAC system will control upon signal from the fire alarm system.

Reference for subparagraph below is NYSUFP&BC 1004.2(e)(3) & NFPA 90A 4-4.4.2.

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

Coordinate subparagraphCoordinate subparagraph below. In a sprinklered building fire alarm zones may also be same as sprinkler zones.

Fire alarm zones are coordinated with the smoke control zones that they actuate.

Reference for subparagraph above and below is NFPA 72 3-9.5.4.

Include subparagraph below if there is a connection to a DDC system and edit to suit operation. Refer to NFPA 72 3-9.2.5.

Fire alarm zone(s) activated by fire alarm system automatic or manual initiating devices (including sprinkler waterflow switch) causes HVAC equipment to shut down (or perform other required program operation) withinoperation) within the alarmed fire alarm zone(s) thru connection (network or other digital communication technique) to the direct digital building control system.

Reference for subparagraph below is NFPA 72 3-9.5.3 and NFPA 90A 4-4.4.2.

Actuation of air duct smoke detecting devices used solely for HVAC system shutdown does not sound the alarm signal but activates all other FCS alarm functions.

Reference for subparagraph below is NFPA 90A 4-2.

Each air distribution system supply, return, and exhaust fan can be manually stopped by the attendant at the FCS during an emergency.

Reference for subparagraph below is NYSUFP&BC 1004.2(e)(4). Show location of switch.

An emergency switch for each system ventilating an assembly space is located to enable manual shut down of the system in case of fire or smoke. A sign located adjacent to the switch states instructions for system shut down.

Reference for subparagraphs below is 90a 4-4.2 & 4-4.3.

Smoke detectors listed for use in air distribution systems and located as indicated below, automatically stop their respective fan(s) on detecting the presence of smoke:

Downstream of the air filters and ahead of any branch connections in air supply systems having a capacity greater than 2000 ft.³/min.

At each story prior to the connection to a common return and prior to any recirculation or fresh air inlet connection in air return systems having a capacity greater than 15,000 ft.³ /min. and serving more than one story.

Reference for subparagraphs below is NYSUFP&BC 1004.2(e)(2).

Safety controls operate for every system using recirculated air and serving an area of public assembly, or more than one fire area, or more than one story of a building:

When the air in the system contains smoke of predetermined intensity or has an abnormal rise in temperature, the fans causing normal circulation in such area stops and requires manual reset at the fire alarm control panel.

Smoke detectors located in the return air system on each floor function as the safety controls and stop the recirculating fans serving the affected area, and activate an alarm at the FCS.

Reference for subparagraph below is NYSUFP&BC 1004.2(e)(5).

Automatic devices for systems ventilating high hazard spaces stop the fans when the air in the system contains smoke of a pre-determined quantity or has an abnormal rise in temperature. Controls require manual reset.

Reference for subparagraph below is NYSUFP&BC 1101.5( c)(8)(ii) for area of refuge vestibule and elevator lobby.

Selected fans pressurize stairwells, and elevator lobby and its adjoining elevator shaft.

Fire dampers and smoke dampers close.

Actuation of air duct smoke detecting devices used solely for the closing of dampers does not sound the alarm signal but activates all other FCS alarm functions.

Reference for three subparagraphs below is NFPA 90a 4-3.

Attendant at the FCS may manually position the smoke dampers.

Smoke dampers which isolate the air-handling system close automatically when the system is not in operation.

Smoke dampers installed in smoke barriers may remain open during fan shutdown provided that their associated controlling damper actuators and smoke detecting devices remain operational. Dampers close automatically when the fan system they are serving is not in operation.

Reference for subparagraph below is NFPA 75 8-1.1.

Dampers in HVAC systems serving computer areas and automatic fire and smoke dampers installed where ducts pass through fire-resistant-rated construction operate upon activation of smoke detecting devices and by operation of the computer room disconnecting means for all electronic equipment, dedicated HVAC systems servicing the computer room, and uninterruptible power supplies.

1. Show smoke detecting device specifically associated with the operation of each rolling fire shutter and fire door. Refer to NFPA 80 1-10, 6-4.1, 6-4.2.

2. Show emergency releasing device control panel (by others) associated with each rolling fire shutter and door which is connected to the fire alarm system.

3. Show 120vac circuit connected to releasing device control panel in addition to power circuit required for motor operator if so equipped (additional 120VAC circuit may not be required in all cases for motorized systems depending on motor horsepower and type of operator).

4. Show wiring from fire alarm panel to releasing device control panel. Fire alarm system can only actuate closing. There is no provision available within the releasing device control panel to have the fire alarm system monitor the battery or any other trouble conditions. There is a form c contact available that could be connected to the fire alarm system showing that the releasing device control panel has operated.

5. Verify that the specification for the emergency releasing device control panel in section 083323 encompasses the operation specified in subparagraphs below.

Non-motorized rolling fire shutters and fire doors close when the associated smoke detecting devices are actuated. The fire alarm system initiates closure through the fire door’s emergency releasing device control panel:

There is a ten second delay before door releases.

An audible and visual warning occurs during the time delay and during closing cycle that the door is closing.

The releasing device control panel independently performs other safety and operational functions associated with fire door closing during alarm condition.

Motorized rolling fire shutters and fire doors close when the associated smoke detecting devices are actuated. The fire alarm system initiates closure through the fire door’s emergency releasing device control panel:

For doors which require mechanical resetting after release:

There is a ten second delay before door releases.

An audible and visual warning occurs during the time delay and during closing cycle that the door is closing.

Electric operator closes the door with motor power upon alarm, when power is available to the motor operator.

When power is not available to the motor operator during alarm condition, the ten second delay and warnings are initiated before door releases.

The releasing device control panel independently performs other safety and operational functions associated with fire door closing during alarm condition.

For doors which do not require mechanical setting:

Electric operator closes the door with motor power upon alarm, when power is available to the motor operator.

When power is not available to the motor operator (alarm condition or no alarm condition) the door closes by gravity as soon as power fails.

The releasing device control panel independently performs other safety and operational functions associated with fire door closing during alarm condition.

For next two subparagraphs refer to NYSUFP&BC 739.4(d)(8), 771.4(h)(10), 1060.9, 1061.2( c)(3).

1. Show smoke detecting device specifically associated with the operation of each roof vent.

2. Show wiring to each roof vent emergency electric release device.

3. Show wiring to each roof vent “open” switch.

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

Check with elevator designers for details on hoistway venting. Modify subparagraph below to suit. Refer to NFPA 72 3-9.3.4 exception no. 2.

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

For the next several subparagraphs pertaining to elevator emergency recall operation, refer to NFPA 72 3-9.3, ANSI/ASME A17.1, and NYSUFP&BC 1062.7(b). Coordinate with Elevator Designers.

For elevator recall for fire fighters’ service, NFPA 72 3-9.3.4 states that “smoke detectors shall not be installed in elevator hoistways” (with 2 exceptions). In subparagraphs below remove the word “hoistway” unless it complies with exception no. 1 (where the top of the elevator hoistway is protected by automatic sprinklers), or exception no. 2 (where a smoke detector is installed to activate the elevator hoistway smoke relief equipment).

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).

Each elevator lobby, hoistway and machine room smoke detecting device is capable of initiating elevator recall when all other devices on the same initiating device circuit have been manually or automatically placed in the alarm condition.

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.

For each group of elevators, three separate elevator control circuits terminate at the designated elevator controller within the group’s elevator machine room.

The smoke detecting devices actuate the three elevator control circuits as follows:

The smoke detecting devices located in the designated elevator recall lobby actuates the first elevator control circuit. In addition, where the elevator is equipped with front and rear doors, the smoke detecting devices in both lobbies at the designated level actuate the first elevator control circuit.

The first control circuit prevents recalling the elevators and discharging passengers to the designated floor when the designated floor is the fire location, and to provide for an alternate recall location when the designated floor is reporting a fire condition;

The smoke detecting devices in the remaining elevator lobbies actuate the second elevator control circuit.

The second control circuit provides standard recall to the designated floor when any other elevator lobby, machine room or hoistway smoke detecting device is in alarm;

The smoke detecting devices in elevator hoistways and the elevator machine room(s) actuate the third elevator control circuit. In addition, where the elevator machine room is located at the designated level, that elevator machine room smoke detecting device also actuates the first elevator control circuit.

The third control circuit is for the safety of the fire fighters who may be using the elevators to bring equipment to staging areas. This circuit also overrides the fire fighter’s key operation and brings the elevators to a safe level of discharge prior to equipment shutdown due to fire in hoistway or machine room. The circuit also sounds a warning in the elevator cab notifying the fire fighters using the elevator to immediately move to a safe floor and exit the elevators;

Two subparagraphs below are required by NFPA 72 3.9.3.6.

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 FCS and the ICUs associated with the elevators.

Additionally, the hoistway and machine room smoke detecting devices visually annunciate at the FCS and ICUs separately and distinctly from other visual annunciation, to alert fire fighters and other emergency personnel that the elevators are no longer safe to use due to smoke and fire intrusion into the hoistways and machine rooms.

Check with Elevator Designers for details of elevator shutdown. Show design on drawings. Type of heat detecting device used must be coordinated with sprinkler heads to ensure that heat detecting device will respond before the sprinkler heads. Refer to ANSI a17.1, rule 102.2 and NFPA 72 3-9.4.

Elevator Shutdown Prior to Sprinkler Operation:

The following subparagraphs specify one method of accomplishing elevator shutdown. Other methods include (check with sprinkler designer for appropriate method):

1. Uuse heat detector to shunt trip the circuit breaker. A second set of contacts in the heat detector is used to monitor the alarm. Remote addressable network modules monitor power to shunt trip circuit.

2. Heat detector operates solenoid valve to allow water to flow into the system. This method usually operates through a control panel for monitoring, alarm and tripping functions.

Dedicated elevator shutdown ICUs located in each elevator machine room, in conjunction with heat detecting devices located within two feet of each sprinkler head monitors the hoistways and machine rooms for heat/fire conditions.

The heat detecting device has both a lower temperature rating and a higher sensitivity as compared to the sprinkler, to ensure heat detecting device response prior to sprinkler head operation.

The elevator shutdown ICUs and heat detecting devices are independent of the sprinkler system.

Smoke detecting devices located in each hoistway and elevator machine room monitor the hoistways and machine rooms for smoke/fire conditions. The smoke detecting devices are connected to system ICUs. The smoke detecting devices are not connected to the elevator shutdown ICUs. Sequence of Events:

Smoke in a machine room or hoistway during the initial stages of a fire activate the system smoke detecting devices, causing the system to perform the elevator recall functions.

As the intensity of the fire builds, the elevator shutdown heat detecting devices actuate, causing the elevator shutdown ICU to shunt trip the circuit breaker serving the main power line to affected elevators prior to the application of water..water. The sprinkler system operates independently after the affected elevator has shutdown.

Activation of elevator machine room or hoistway heat detecting devices are indicated by an audible alarm and a visual indicator in the FCS.

For subparagraph below, refer to NFPA 72 3-9.4.4 and appendix a3-9.4.4. For diagram showing typical method of providing elevator power shunt trip supervisory signal.

Control circuits to shut down elevator power are monitored for presence of operating voltage. Loss of power to the control circuit for the disconnecting means causes a supervisory signal to be indicated at the ICU and FCS. Refer to NFPA 72 A-3.9.4.4 for a typical method of providing elevator power shunt trip supervisory signal.

Subparagraph below is required under certain conditions by NFPA 101 7-4.7.

Elevator machine rooms that contain solid-state equipment for elevators automatically operates the elevator machine rooms’ independent ventilation or air conditioning system to maintain room temperature during fire fighters’ service operation.

The operating temperature must remain at or below the temperature established by the elevator equipment manufacturer’s specifications.

When elevator room operating temperature is exceeded, a supervisory signal is indicated at the FCS.

If subparagraph below is used, refer to NFPA 101 7-6.5.

Emergency lighting energizes.

If subparagraph below is used, refer to NFPA 101 7-6.5.

Gas and fuel supplies shut off.

For one-way loudspeaker requirements in elevator groups in subparagraph below refer to NFPA 72 3-8.4.1.3.5.6.3. Consult with Elevator Designers. For stairways refer to NFPA 72 3-8.4.1.3.5.6.4.

* + - * 1. Attendant may activate the multi-channel one-way voice communication portion of the system and call over speakers on selected floors, all floors, each stairwell, and each elevator to deliver verbal instructions to building occupants or request persons responsible for building fire safety to deliver status reports via the two-way telephone communication system.

The attendant chooses the method of selecting the speakers:

Appropriate keyboard commands issued from the FCS.

Omit subparagraph below if RA/CC is not used.

Activation of dedicated switches in the RA/CC at the FCS.

Include subparagraph below in conjunction with touchscreen FCS.

Touchscreen and mouse “point and click” commands.

Pressing a constant pressure push-to-talk switch on the microphone causes the selected speakers to respond immediately and the active audible alarm signals to be silenced while speakers are used for live voice instructions. Releasing switch self-restores system to the interrupted audible alarm signal.

Omit reference to RA/CC if not required in subparagraph below.

Visual indicators in the RA/CC at the FCS indicate on/off status of the speakers.

Reference for subparagraph below is NYSUFP&BC 791.2.

The system allows the attendant at the FCS to determine that the verbal instructions in areas of public assembly occupiable by more than 300 persons are being received in those areas.

Verbal instructions are delivered at the same sound level in dBA and voice intelligibility as required for the emergency voice/alarm messages.

During an alarm condition, the multi-channel feature of the system allows the attendant to continue to selectively and simultaneously deliver messages over speakers which have not been activated for use as audible alarm notification appliances.

For fire wardens two-way telephone communication service and fire service (fire department) two-way communication service refer to NFPA 72 3-8.4.1.3.7 and NYSUFP&BC 1061.3(a), 1004.2(f)(2).

* + - * 1. Two-Way Telephone Communications Service:

Reference to subparagraph below is NFPA 72 4-3.1.5.

Telephone messages are reproduced with voice intelligibility.

Voice intelligibility exceeds the requirements of IEC 60849 (Sound Systems for Emergency Purposes) Annex B, Clause B1, and other methods of determining intelligibility in accordance with NFPA 72 A4.3.1.5.

For fire wardens two-way telephone system show at least one fire warden remote floor communication station telephone in each voice paging zone (NFPA 72 3-8.4.1.3.7.7), on every floor (NYSUFP&BC 1061.3(b)), and also in each area specified below.

Fire Warden’s Two-Way Telephone Communication System:

Attendant may use the fire warden’s two-way telephone communication system to converse with building fire warden personnel at each remote floor communication station telephone and with other persons responsible for building fire safety on elevators, in elevator machine rooms, telephone rooms, pump rooms, mechanical equipment rooms, and emergency equipment rooms.

It is not intended for the telephones provided to be used to report fire or other emergency conditions. If it is desired that the telephones are to be used to report fires or other emergencies, then the remote telephones must be arranged so that their use will automatically produce all of the signaling functions required of a manual fire alarm station and not require operator response for alarm initiation (UL 864 57.4.3).

Fire warden remote floor communication station telephones do not function as alarm initiating devices. A sign on the telephone cabinet instructs the person needing to report an emergency condition to call 911 or pull the nearest manual fire alarm box.

Building fire warden personnel at fire warden remote floor communication station telephones and other persons responsible for building safety at other remote locations may communicate with the attendant at the FCS via the private line, two-way telephone communication system.

Show on the drawings private line circuits from building fire warden remote floor communication station telephones to FCS.

Removing the receiver from its cradle at a remote telephone cabinet causes an audible tone to sound within the telephone or a lamp to illuminate on the cabinet indicating that the telephone is in operating condition. The tone continues until the call is answered.

Use subparagraph below when touchscreen/mouse is not used.

The attendant at the FCS is alerted to incoming calls (off-hook condition) from remote telephones by individual line flashing lamps for each telephone and a common audible signal. When the attendant picks up the master telephone, the audible signal may be silenced, but resounds for each remote telephone going off-hook. Line lamp continues to flash until the call is answered by placing individual line switches in the talk position. The line lamp for the answered call will then remain constantly illuminated until the attendant terminates call. A silenced audible signal operates a visible indicator and sounds a trouble signal whenever the silence means is in the silence position and there are no telephone circuits in the off-hook condition.

Use subparagraph below in conjunction with touchscreen FCS.

The attendant at the FCS is alerted to incoming calls (off-hook condition) from remote telephones by a flashing icon or display and a common audible signal. When the attendant picks up the master telephone, the audible signal may be silenced, but resounds for each remote telephone going off-hook. The icon or display continues to flash until the call is answered. A silenced audible signal operates a visible indicator and sounds a trouble signal whenever the silence means is in the silence position and there are no telephone circuits in the off-hook condition.

Use subparagraph below with either of the two preceding subparagraphs.

The attendant may communicate privately with an individual or simultaneously with as many as 5 personnel.

Subparagraph below is not required by codes but can be accommodated by fire alarm companies if the call feature to remote telephones is desired to enhance system capabilities. Omit reference to fa/cc if not used.

By activating switches at the FCS (or RA/CC adjacent to FCS) the attendant at the FCS can activate an audible and visual indicator at each remote telephone location to alert personnel at that location to pick up telephone. (Separate momentary contact switch for each remote telephone).

For fire service telephone system show a remote fire service jack per floor and at least one jack per exit stairway, and in each fire pump room (NFPA 72 3-8.4.1.3.7.6).

Fire Service (Fire Department) Two-Way Telephone Communication System: Fire service personnel may communicate with the attendant at the FCS via common talk two-way telephone communication system.

Show on the drawings a common talk circuit from all fire service jacks to FCS.

Plugging a telephone handset into a remote telephone jack station causes an audible tone to sound within the telephone handset or an LED to illuminate on the faceplate indicating that the telephone in operating condition. The tone continues until the call is answered.

The attendant at the FCS is alerted to an incoming call (off-hook condition) by a flashing lamp and audible signal. When the attendant picks up the master telephone, the audible signal is silenced. The lamp will remain constantly illuminated until the attendant terminates call. A silenced audible signal operates a visible indicator and sounds a trouble signal whenever the silence means is in the silence position and there are no telephone circuits in the off-hook condition.

The attendant may communicate simultaneously with as many as 5 fire service personnel.

Consult with elevator designers regarding method to be used for elevator two-way communication (fire warden’s two-way telephone communication system subparagraphs above or elevator two-way communication system subparagraphs below). NYSUFP&BC 1061.3 requires two-way voice communication from elevators to the fire control panel and ANSI a.17.1 rules 211(a)(2) & (3) and 211(b) require two-way communications (with source of standby power) between the car and a readily accessible location outside the hoistway which is available to emergency personnel. NFPA 72 3-8.4.1.3.7.1 requires the system to be listed for two-way telephone communication service.

Elevator Two-Way Communication System: Attendant may use the elevator zoned two-way voice communication system master station (Section 142871) located in the FCS console to communicate with persons responsible for building safety on elevators, in elevator machine rooms, telephone rooms, pump rooms, mechanical equipment rooms and emergency equipment rooms.

For area of refuge paragraph below, refer to NYSUFP&BC 1101.5. Area of refuge is not mandated as part of a fire alarm system, but the fire alarm companies can accommodate area of refuge with their own equipment, or by using a separate control panel manufactured by communication companies to meet area of refuge requirements.

* + - * 1. In locations designated as “Area of Refuge”, a two-way voice communication system, including visible and audible signals with instructions for use, allows handicapped persons in need of aide to obtain assistance from facility personnel.

Area of Refuge initiation causes supervision signal to sound at FCS and in building manager alarm annunciators.

* + - * 1. User Programmable Control-By-Event Functions:

Next several subparagraphs are examples of control-by-event functions. Edit to suit. Control-by-event functions pertaining to routine operation or monitoring portions of an HVAC system should be part of a building’s direct digital control system if available.

Operation of photo cell on the building causes activation of exterior lighting on and activation of fence lighting, parking lot lighting and street lighting.

Omit reference to RA/CC if not used in next 3 subparagraphs.

Activation of high level alarm contacts in sewage pump control panel is indicated by a supervisory signal at the FCS and a visual indicator in the RA/CC.

Subparagraph below is required by NFPA 101 32-8.5(f) for high rise buildings.

Diesel-alternator status conditions (Section 263215) are indicated by a supervisory signal at the FCS and a visual indicator in the RA/CC.

Activation of trouble contacts in central station battery units (Section 263323) are indicated by a supervisory signal in the FCS and visual indicators in the RA/CC.

The door status conditions (open, closed) are indicated by visual indicators at the FCS. Doors located on the First Floor, Lobby, may be unlocked with commands from the FCS.

The stairwell smoke hatches can be opened with commands from the FCS. The stairwell smoke hatch status conditions (open, closed) are indicated by visual indicators at the FCS.

Coordinate subparagraph below with HVAC equipment operation specified under life safety control-by-event functions. State which equipment is to be operated.

HVAC equipment (fans, air handling units, \_\_\_\_\_\_\_\_) can be manually operated for fire/smoke control. Hand-Off-Automatic commands from the FCS allow the attendant to control each HVAC equipment. The equipment status conditions (running, off, automatic) are indicated by visual indicators at the FCS.

The Computer Room (First Floor):

Air conditioning unit status is indicated by a supervisory signal and visual indicators at the FCS.

Water alarm status is indicated by a supervisory signal and visual indicators at the FCS.

Reference for subparagraph below is NFPA 75 6-2.2.

Electric power status to the interlock and shutdown devices is indicated by a supervisory signal and visual indicators at the FCS.

Security system functions:

Each security zone has 2 modes (bypass and secure). Each zone may be independently placed in either bypass or secure mode by means of appropriate keyboard commands. When a zone is placed in the access mode or returned to secure mode, the FCS prints and displays the assigned message for the zone with date, time and appropriate access or secure suffix.

Activation of a security sensor in a secured zone causes:

The FCS to display the point and type of alarm on its display screen.

The FCS to print the assigned message with date and time on its printer for the point in alarm.

Doors D-1 thru D-6 to lock.

The security lights to illuminate.

The audible alarms to sound.

* + - * 1. User Programmable Automatic Time-Initiated Functions (Start/Stop, On/Off, Secure/Access, etc.):

Next several subparagraphs. Are examples of automatic time-initiated functions. Edit to suit. Routine user programmable automatic time-initiated building operation functions should be part of a building’s direct digital control system if available.

Exterior building lighting may be energized and de-energized at times selected by facility personnel.

Parking lot lighting fixtures HPS-1 thru HPS-6 are energized from 6 p.m. to 1 a.m., Monday thru Friday.

Exhaust fan EF-1 operates from 7 a.m. to 5 p.m. Monday thru Friday. The fan does not operate on weekends or legal holidays.

Door D-1 is locked from 6 p.m. to 6 a.m. daily. From 6 a.m. to 6 p.m. the door is automatically unlocked and placed in an access mode.

Designated lobby doors are locked from 6 p.m. to 6 a.m. daily. From 6 a.m. to 6 p.m. the doors are automatically unlocked and placed in an access mode.

Designated lobby doors remain locked at all times.

Paragraph below is an example. If used, coordinate facility procedure with requirements of NFPA 72 3-8.5, NFPA 601 and NYSUFP&BC 1060.8.

* + - * 1. Guard’s tour supervisory service performs in accordance with the procedure established by the facility security personnel.

Normal: The guard inserts a key into the switch at a guard’s tour station in accordance with the established procedure. Upon turning the key, the FCS prints and displays the date, time, and station identification.

Alarm: If the guard does not key a station in accordance with the established procedure:

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

The audible alarm pulses until the system acknowledge switch is depressed.

The system alarm lamp remains illuminated until the alarm condition has been corrected.

The FCS displays the point and type of alarm condition on the CRT/keyboard.

Omit subparagraph below if remote CRT’S are not included with the system.

Duplicate information is also displayed on remote CRT’s.

The FCS prints the assigned message with date and time on the printer for the point in alarm. Assigned messages, date and time are also printed for the functions activated by the point in alarm.

Duress: The guard inserts the key into the switch at a guard’s tour station and turns the key in the opposite direction from normal. The system responds same as an alarm condition plus stating a duress message.

The attendant manually resets the system at the FCS at conclusion of alarm condition. When an alarm condition is corrected, a print-out and display occurs at the FCS stating the assigned reset message for the point in alarm with the date, time and reset suffix.

Manually resetting the system requires only one attendant operation.

Only reset messages that are of significant importance to the attendant for system operation are printed.

A printing suppression program eliminates superfluous system reset messages.

Resetting the system does not disturb system control points or functions.

Primary and Secondary Power Supplies:

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

Edit next two subparagraphs for items not required, or that cannot be energized by the secondary power supplies.

Initiating, notification, print recording/printer, visual indication (including CRT/keyboard), and supervisory functions of the system are transferred without loss to the secondary power supplies.

Ground fault indication, battery trouble conditions, remote CRT’s, and remote printers, are not required to transfer to the secondary power supplies.

System power requirements are transferred to the secondary power supplies except door hold open devices, door lock releases, controls for selected HVAC equipment, fire dampers, and smoke dampers.

Audible and visual indication of alarm condition when operating system on secondary power supply is:

Performance of each ICU’s assigned audible and visual alarm functions.

Sounding of the FCS’s audible alarm.

Illumination of the FCS’s system alarm lamp or flashing display.

Display and printing of assigned message on CRT/Keyboard and printer at the FCS.

Change 24 hours to 60 hours in next two subparagraphs below if system is connected to fire department via auxiliary or remote system. The time period of 24 (or 60) hours in first two subparagraphs below may be reduced to 4 hours if a diesel-alternator system meets the requirements of NFPA 72 1-5.2.6(b) and 1-5.2.10.

Utilizing the secondary battery power supplies, the system operates under maximum quiescent load (system functioning in a non-alarm condition) for 24 hours and then is capable of operating all alarm notification appliances used for evacuation or to direct aid to location of an emergency for 5 minutes.

The emergency voice/alarm communications service operates under maximum quiescent load for 24 hours and then is capable of operating during a fire or other emergency condition for a period of 2 hours. Fifteen minutes of evacuation alarm operation at maximum connected load shall be considered the equivalent of 2 hours of emergency operation.

At the end of the time period the secondary battery power supplies also have capacity to operate the rolling fire shutter, fire door and heat and smoke roof vent emergency electric release devices.

The maximum power required to operate each heat and smoke roof vent emergency electric release device is 2.5 amperes at 24V dc for 1 minute.

Include subparagraph below if the time period of 24 (or 60) hours previously specified has been reduced to 4 hours.

The secondary supply in addition to the battery standby power supplies, also includes connection to an automatic starting diesel-alternator system which will operate the system for 24 hours.

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

Monitoring Integrity of Installation Conductors and Other Signaling Channels:

Performance of Signaling Line Circuits:

Other classes and style are available other than those indicated below. Refer to NFPA 72 table 3-6. Optical fiber cables are only available style 4 or 7. Electronic cables are available for all styles.

Circuits from FCS to ICUs: NFPA 72, Class A, Style 7. A print-out and display occurs to identify trouble conditions.

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

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

Include subparagraph below if modem units are used.

Modem Unit Signaling Line Circuits from FCS to ICUs: NFPA 72, Class B, Style 1. A print-out and display occurs to identify trouble conditions.

Performance of Initiating Device Circuits:

Other classes and styles are available other than those indicated in subparagraph below. Refer to NFPA 72 table 3-5. Omit reference to sprinkler if not applicable.

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

Subparagraph below is an example for supervising the basic type of security circuit specified in system description under user programmable control-by-event functions. Other type security circuits may require other methods of supervision.

Circuits from ICUs to Initiating Devices (Security): A ground, short, or open in sensor loop wiring, opening an ICU cover, or any tampering with the sensor loops that cause a plus or minus 50 percent deviation in supervisory current causes the system to perform the same functions as specified for activation of a security sensor in a secure zone (print/display, lock doors, illuminate security lights, sound audible alarms, etc.).

Performance of Notification Appliance Circuits:

Other classes and styles are available other than those indicated in subparagraph below. Refer to NFPA 72 table 3-7.

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

Monitoring Integrity of Emergency Voice/Alarm Communications Systems:

Audio amplifier failure indicates trouble condition (system switches to spare audio amplifier upon failure of active amplifier).

Tone-generating equipment failure indicates trouble condition.

Voice Communication Main Audio Bus:

Circuits from FCS to ICU’s: NFPA 72, Class A, Style 6. A print-out and display occurs to identify trouble conditions.

Circuits from ICU’s to ICU’s: NFPA 72, Class A, Style 6. A print-out and display occurs to identify trouble conditions.

Two-way Telephone Communication Main Bus:

Two-way telephone communication circuits are monitored for a short-circuit fault that would cause the telephone communication circuit to become inoperative.

Monitoring Integrity of Power Supplies:

Primary and secondary power supplies are monitored for presence of voltage at the point of connection to the system. Failure of either supply results in a system trouble condition.

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

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

Interconnection of Fire Safety Control Functions:

Subparagraphs below relate most closely with the preceding subparagraphs specifying life safety control by event functions upon alarm condition. Refer to NFPA 72 3-9 and NFPA 101 7-6.5

Show relay or appliance and wiring thereto within three feet of the equipment that performs fire safety functions (building and fire control functions that are intended to increase the life safety for occupants or to control the spread of fire)

A listed relay or other listed appliance connected to the fire alarm system is used to initiate control of protected premises fire safety functions and is located within 3 feet of the controlled circuit or appliance.

The installation wiring between the fire alarm control unit and the relay or other appliance is monitored for integrity.

Relays and appliances that operate on loss of power are considered self-monitoring for integrity.

The method(s) of interconnection between the fire alarm system and controlled electrical and mechanical systems is monitored for integrity and is achieved by one of the following recognized means:

Electrical contacts listed for the connected load.

Listed digital data interfaces, such as serial communication ports and gateways.

Other listed methods.

Fire safety functions do not interfere with other operations of the fire alarm system.

1. Fire safety function control devices and gateways are listed as compatible with the fire alarm control unit so as to prevent interference with control unit operation caused by controlled devices and to ensure transmission of data to operate the controlled devices.

Indicate on drawings fire safety control functions that require manual control.

Controls provided specifically for the purpose of manually overriding automatic fire safety functions provide visible indication of the status of the associated control circuits.

Status indicators for emergency equipment and fire safety functions are arranged to reflect the actual status of the associated equipment or function.

Where the fire alarm system is a component of a life safety network, and it communicates data to other systems providing life safety functions:

The path for communicating data is monitored for integrity, including the physical communication media and the ability to maintain intelligible communications.

Data received from the network does not affect the operation of the fire alarm system in any way other than to display the status of life safety network components.

Where non-fire alarm systems are interconnected to the fire alarm system using a network or other digital communication techniques, a signal (for example, heartbeat, poll, ping, query) is generated between the fire alarm system and the non-fire alarm system. Failure of proper receipt by the fire alarm system of confirmation of the transmission indicates a trouble condition.

Next several paragraphs pertain to fire protection system supervisory signal service. Refer to NFPA 72 2-6, 2-7, 2-9, 3-8.3.3; and NYSUFP&BC 1060.4(e), 1060.5(f)(2).

Sprinkler System Alarm and Supervision:

Show sprinkler water flow alarms connected to sprinkler water flow alarm zones. Do not connect sprinkler water flow alarms on same zone with other type initiating devices. Refer to NFPA 13 3-10.2, 5-15.1.6 and NFPA 72 3-8.3.2.4.

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

Show sprinkler control valve supervision circuits connected to sprinkler control valve supervision zones.

Supervision of sprinkler system signal attachments (sprinkler valve supervisory switches, pressure switches, etc.) are arranged to indicate circuit trouble and supervisory signal conditions at the FCS for each circuit.

Removal of covers from water flow alarm switches indicates trouble condition at the FCS.

Control valves in the sprinkler system are supervised to initiate 2 separate and distinct and distinct signals at the FCS, 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. 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.

A pressure supervisory signal initiating device for a pressurized limited water supply, such as a pressure tank, indicates both high and low pressure conditions. A signal is obtained where the required pressure is increased or decreased 10 psi from the required pressure value.

Reference for subparagraph below IS NFPA 72 2-9.2(b).

A pressure supervisory signal initiating device for dry-pipe sprinkler system indicates both high and low pressure conditions. A signal is obtained when the required pressure is increased or decreased 10 psi from the required pressure value.

Reference for subparagraph below is NFPA 13 4-3.2.3.

A pressure supervisory switch for non-interlock or double interlock preaction sprinkler system initiates a signal when the pressure is not maintained at 7 psi.

A steam pressure supervisory initiating device indicates a low pressure condition. A signal is obtained where the pressure is reduced to a value that is 110 percent of the minimum operating pressure of the steam operated equipment supplied.

For paragraph below refer to NFPA 72 2-9.4.

Supervision of Water Levels Associated with Fire Suppression Systems:

Water storage containers associated with fire suppression systems are supervised to obtain two separate and distinct signals, one indicating that the required water level has been lowered or raised and the other indicating restoration:

A pressure tank supervisory initiating device detects both high and low water level conditions. A signal is initiated when the water level falls 3 inches or rises 3 inches.

A supervisory signal initiating device for other than pressure tanks initiates a low-water level when the level falls 12 inches.

Water storage containers exposed to freezing conditions are supervised to initiate 2 separate and distinctive signals, one indicating that the temperature of the water has decreased to 40 degrees F, and the other indicating restoration to a temperature above 40 degrees F.

For paragraph below refer to NFPA 20 Chapter 6 & 7.

* + - * 1. Supervision of Electric Motor Driven Centrifugal Fire Pumps:

Edit location of fire pump controller location to suit project.

Activation of contacts in the fire pump controller in Fire Pump Room are indicated by an audible signal at the FCS and a visual indicator in the RA/CC. Separate indication for each of the following conditions:

Main power source available visible indicator (visible indicator, constantly illuminated, demonstrating that operating voltage is available to the contactor coil).

Controller connected to alternate source (controller has been transferred to the alternate source, alternate source supplying power to the controller).

Disconnecting means is open.

Loss of alarm power sources.

Controller has operated into a motor running condition (fire pump running).

Loss of line power on line side of fire pump controller, in any phase (all phases monitored).

Phase reversal on line side of fire pump controller.

Automatic transfer switch isolating switch open.

Switch at FCS allows attendant to start fire pump for non-automatic continuous operation independent of the pressure-actuated switch. Remote station switch cannot stop the fire pump.

For paragraph below refer to NFPA 20 Chapter 8 & 9.

* + - * 1. Supervision of Diesel Engine Driven Centrifugal Fire Pumps:

Edit location of fire pump location to suit project.

Activation of contacts in the engine controller in the Fire Pump Room are indicated by an audible signal at the FCS and a visual indicator in the RA/CC. Separate indication for each of the following conditions:

Engine running.

The controller main switch has been turned to off or manual position.

Several engine conditions are required to be monitored at the controller. Refer to NFPA 20 9-4.1.3 if it is desired to have all the conditions separately indicated at the fcs instead of a common signal specified in paragraph below. Refer to NFPA 20 9-4.2(3).

Trouble on the controller or engine (common signal).

Switch at FCS allows attendant to start fire pump for non-automatic continuous operation independent of the pressure-actuated switch. Remote station switch cannot stop the fire pump.

For paragraph below refer to NFPA 72 2-9.5 & 3-8.3.3.1.1.

* + - * 1. Supervision of Room Temperature: A temperature supervisory device in areas exposed to freezing conditions associated with water automatic fire suppression systems indicates a decrease in water temperature to 40 degrees F and its restoration to above 40 degrees F.

Low temperature is indicated by an audible alarm at the FCS and visual indication in the RA/CC for:

Add additional locations where temperature should be montioredmonitored.

Fire pump area.

Valve closets.

In paragraph below state the specific types of automatic fire suppression systems. Refer to NFPA 72 3-8.3.2.5, 3-8.3.3, 3-8.3.4.1, 3-8.4.3 and NYSUFP&BC 1060.7.

* + - * 1. Halon and Dry Chemical Systems:

The system operates in conjunction with Halon, and Dry Chemical automatic fire suppression systems (AFSS’s).

Alarm and trouble conditions in the AFSS’s are indicated at the FCS and at the ICUs to which the AFSS’s are connected.

A supervisory signal at the FCS indicates off-normal condition and its restoration to normal for each automatic fire suppression system.

Subparagraph below is an example of interconnection of existing systems other than FAS.

The system operates in conjunction with existing Halon, and Dry Chemical Automatic Fire Suppression Systems (AFSS).

Alarm conditions in the existing AFSS’s are indicated at the FCS and at the ICUs to which the existing AFSS’s are connected.

Trouble conditions are indicated at the FCS as common trouble for each AFSS.

A supervisory signal at the FCS indicates off-normal condition and its restoration to normal for each existing AFSS. (Each AFSS is separately reset at its own control panel).

In subparagraph below indicate type of existing fire alarm sub-systems and expound interconnection details if required. Omit reference to RA/CC’S if not applicable.

The system operates in conjunction with existing sub-systems (fire alarm systems).

Alarm conditions in the sub-systems are indicated at the FCS and RA/CC’s as individual zones.

Trouble conditions are indicated at the FCS as a common trouble for each sub-system.

The FCS and RA/CC control existing alarm notification appliances.

For paragraph below refer to NFPA 72 3-8.3.4.1.

Supervision of All Fire Suppression Systems for Tampering:

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

Removal of covers from junction boxes on the outside of buildings.

Valves installed in the connection between a signal attachment and the fire suppression system to which it is attached.

Operation of disconnect switches which are used to allow system testing without activating the fire suppression system.

* + - 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.

Omit paragraph below if existing system report is not required.

* + - * 1. Preliminary Submittal: Existing system test report.
        2. 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 complete system 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.

Scaled floor plans and elevation drawings showing location of the FCS, and location of all other major components associated with the system.

Demonstrate that the allotted space is sufficient for the installation of the proposed FCS and all other major components.

Scaled drawings of the FCS showing layout of, and indicating the function of each switch, button, lamp, and accessory. Also include:

In subparagraph below change “console” to “wall mounted fcs, desk and equipment rack” or other description to suit fcs installation requirements.

* + - * 1. Color and finish samples.

Photographs:

Color photograph of an example of a console having characteristics similar to that proposed for installation.

Use a digital camera.  Use electronic flash capable of supplying sufficient light to evenly illuminate the subject.

Minimum digital requirements:

Format shall be .jpg or .tif

The resolution shall be 12 Megapixels or greater.

Submit photographs to electronic submittal website for approval and record.

Include subparagraph below when fcs is installed in architecturally sensitive area.

Full color architectural rendering of the FCS from a perspective viewpoint, demonstrating that its layout, design, style, materials and colorings will complement the architectural surroundings in which the FCS is to be installed.

Scaled drawings of each RA/CC showing layout of, and indicating the function of each annunciator module, switch module, and accessory.

Omit two subparagraphs below if not required

Iinterconnection details between new system and existing sub-systems.

Subparagraph below is required for OGS projects.

Interconnection details between system and future direct Digital Building Control System.

* + - * 1. Product Data:

Catalog sheets, specifications and installation instructions.

Bill of materials.

Detailed description of system operation. Format similar to SYSTEM DESCRIPTION.

Sample procedure, programming and print-out for alarm, acknowledgment, and system reset.

Total electrical load of the complete system in supervisory and alarm conditions.

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 panel are UL listed for use with the control panel.

Submit copy of the control unit “Installation Manual Wiring Diagrams” that were a part of the UL “UOJZ” approval UOJZ” approval process showing that the proposed products, circuits, and wiring diagrams are UL listed “Control Units System (UOJZ) for use with the control panel.

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 subparagraph below for examples.

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

Air duct smoke detecting devices, show 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.

* + - * 1. 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.
        2. Submit data proving that the method(s) of monitoring the connection between the fire alarm system and controlled electrical and mechanical systems for integrity are 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).

* + - * 1. Name, address and telephone number of nearest fully equipped service organization.

Include list of service technicians who are NICET Level II or higher Fire Alarm Systems certified.

Include subparagraph below if modem units are used.

* + - * 1. State grade and number of leased telephone lines required for use with modem units.

Include subparagraph below if “elevator shutdown prior to sprinkler operation” subparagraph is used in system description. Refer to NFPA 72 3-9.4.

* + - * 1. 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.
        2. 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.

Outline of Onsite Training Programs Required of Company Field Advisor:

Provide a separate outline of the training programs to be used to train the maintenance and security personnel, including:

System overview.

System programming.

Operation of system equipment.

System maintenance.

Estimated length (time) of each segment.

* + - * 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)

* + - * 1. The application program listing for the system as installed at the time of acceptance (disk and hard copy printout).
        2. 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 entire system as installed. Identify all conductors and show all terminations and splices. (Identification shall correspond to markers installed on each conductor.)

Name, address, and telephone number of nearest fully equipped service organization.

Include subparagraph below when smoke control is a function of this system (NFPA 101 7.3.1).

A suggested maintenance and testing program that will insureensure operational integrity of the smoke control functions of the system.

* + - 1. QUALITY ASSURANCE
         1. Equipment Qualifications For Products Other Than Those Specified:

At the time of submission provide written notice to the Director of the intent to propose an “or equal” for products other than those specified. Make the “or equal” submission in a timely manner to allow the Director sufficient time to review the proposed product, perform inspections and witness test demonstrations.

If products other than those specified are proposed for use furnish the name, address, and telephone numbers of at least 5 comparable installations that can prove the proposed products have performed satisfactorily for 3 years. Certify in writing that the owners of the 5 comparable installations will allow inspection of their installation by the Director's Representative and the Company Field Advisor.

Make arrangements with the owners of 2 installations (selected by the Director) for inspection of the installations by the Director's Representative. Also obtain the services of the Company Field Advisor for the proposed products to be present. Notify the Director a minimum of 3 weeks prior to the availability of the installations for the inspection, and provide at least one alternative date for each inspection.

Only references from the actual owner or owner’s representative (Security Supervisor, Maintenance Supervisor, etc.) will be accepted. References from dealers, system installers or others, who are not the actual owners of the proposed products, are not acceptable.

Verify the accuracy of all references submitted prior to submission and certify in writing that the accuracy of the information has been confirmed.

The product manufacturer shall have test facilities available that can demonstrate that the proposed products meet the contract requirements.

Make arrangements with the test facility for the Director's Representative to witness test demonstrations. Also obtain the services of the Company Field Advisor for the proposed product to be present at the test facility. Notify the Director a minimum of 3 weeks prior to the availability of the test facility, and provide at least one alternative date for the testing.

Provide written certification from the manufacturer that the proposed products are compatible for use with all other equipment proposed for use for this system and meet all contract requirements.

* + - * 1. UL Listing: The system shall be listed in the UL Fire Protection Equipment Directory under product category “Control Units System (UOJZ)”.
        2. Test Facility: The Company producing the system shall have test facilities available which can demonstrate that the proposed system meets contract requirements.
        3. 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 for a minimum of 60 working hours at the contract site for the following:

Render advice regarding installation and final adjustment of the system.

Assist in initial programming of the system.

Render advice on the suitability of each signal initiating device for its particular application.

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

Edit number of sessions and hours to suit in next two subparagraphs.

Train facility maintenance personnel in operation, programming and routine maintenance of the system (minimum of 16 hours).

Train facility security personnel on the operation and programming of the system (minimum of four 2-hour sessions).

Explain available service programs to facility supervisory personnel for their consideration.

Include paragraph below when existing sub-systems are interfaced with the new system. Adjust number of hours and modify terminology to suit.

* + - * 1. Company Field Advisor (Existing Sub-Systems): Secure the services of a Company Field Advisor from the Company of each existing sub-system for a minimum of 8 working hours at the contract site for the following:

Render advice and witness test of existing sub-systems.

Render advice on the interconnection of existing sub-systems with the new system.

Witness the final test of the combined new system and existing sub-systems.

* + - 1. MAINTENANCE
         1. Service Availability: A fully equipped service organization capable of guaranteeing response time within 8 hours to service calls shall be available 24 hours a day, 7 days a week to service the completed Work.

Service organization personnel shall include service technicians who are National Institute for Certification in Engineering Technologies (NICET) certified as Level II or higher Fire Alarm Protection/Fire Alarm System Engineering Technician.

* + - * 1. Spare Parts:

50 percent spare of each type fuse.

30 percent spare of each type lamp (except LED type).

Modify subparagraph below if projected beam defectors are used. State the actual number of spares required, if any. Change next two subparagraphs to 20 percent for high risk areas.

10 percent spare of each type initiating device.

10 percent spare of each type notification appliance.

Omit subparagraph below if protective devices are not required.

10 percent spare of each type protective devices.

Printer paper (2 cases, 3200 sheets per case for fanfold style printer).

Four ribbons for printer.

Two tools to remove and install each type and size of vandal resistant fastener.

1. PRODUCTS
   * + 1. PEER-TO-PEER NETWORK
          1. Network: Edwards’ Systems Technology’s (Unit of GS Building Systems Corp) EST-3, Notifier’s Fire Systems Noti Fire Net, or Simplex Time Recorder Co. 4120:

Equip the fire alarm control panels and other network devices with network interface modules able to function with the type of wiring specified for the network communication bus signaling line circuit.

System capacities are indicated below only for reference. Do not edit panels from text. Company supplying the system must choose proper panel for each location based upon required functions and capacity.

Edwards: EST-3 network 160,000 points, each panel 2500 points.

Notifier: NOTI fire NET/200,000 points; panels AFP 200/198 points, AFP 300/198 points, AFP 400/396 points, AFP 1010/792 points, AM 2020/1980 points.

Simplex: network 50,000 points; panels 4120/4100/1000 points, 4020/508 points, 4010/254 points.

* + - * 1. Fire Alarm Control Panel/Interconnected Control Units(ICU’s): Edwards’ 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 within the network.

Equip the approved fire alarm control panels to function as the FCS and ICUs.

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

Accessories as required for each fire alarm control panel to perform its required functions upon failure of network communications.

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

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.

Amplifiers, number and size as recommended by the Company producing the system.

Amplifier secondary power supplies can require a significant amount of physical space. Consult company representatives for size estimates.

Multi-channel audio system shall utilize distributed audio design; centralized, banked audio systems are not acceptable. Arrange system so that one spare audio amplifier is provided in each distributed audio cabinet to automatically transfer upon failure of an active amplifier and not prevent the transmission of audible signals to its speaker circuits.

Equipment racks and cabinets as recommended by the Company producing the system.

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

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

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

Two rate automatic battery charger with charging characteristics as recommended by battery manufacturer.

Meters for battery voltage and charging current.

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

Secondary power supply batteries can require a significant amount of physical space. Consult company representative for size estimates.

120Vac Secondary (Battery) Power Supplies: Uninterruptible power supplies (UPS), having:

120 Vac, 60 Hz, input voltage.

120 Vac, 60 Hz, output voltage or other ac output voltage to suit ac operated equipment.

Lead calcium batteries (minimum 10 year warranty) of suitable capacity to supply and maintain at not less than 87-l/2 percent of nominal battery voltage the full volt-amp rating of the unit under load conditions specified in SYSTEM DESCRIPTION.

Battery monitor and alarm (low and high battery voltage).

Low battery voltage cut-off (not less than 80 percent of nominal battery voltage).

Free standing NEMA 1 cabinet with totally enclosed batteries and circuit breakers.

Omit subparagraph below if unit is located in controlled area.

Doors equipped with Yale No. 511S locks with brass cylinder rosette, blind fastened from inside of door. Furnish 2 No. 47 keys with each lock.

Output circuit breakers.

Positive means for disconnecting the input and output of each UPS system while maintaining continuity of power supply to its load.

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

City Connection Circuit Wiring (Reverse Polarity Type): UL listed to Standard 497A; Edwards’ \_\_\_\_\_\_\_\_, Notifier’s \_\_\_\_\_\_\_\_, or Simplex’s 2081-9045.

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. Fire Command Station:

See Fire Alarm Control Panels for basic requirements.

Design and layout the FCS to facilitate operation of all its components and functions while presenting a unified professional appearance, color coordinated, trimmed and finished to complement the décor in the area which it is to be installed.

Do not show signal initiating or notification appliance circuits connected to the FCS on the drawings.

Do not connect signal initiating circuits or notification appliance circuits to the fire alarm control panel selected to function as the FCS.

Design the system so that the FCS can be moved to any location on the network peer-to-peer bus with a minimal amount of system re-wiring.

Modify subparagraph below to suit telephone system(s) for the project.

Master telephone and equipment for private line two-way voice communication to remotely located fire warden floor communication station telephones, and common talk communication to remotely located fire service telephones.

Equipped for simultaneous multi-channel one-way voice communication.

Master microphone.

Amplifier equipment located in ICUs.

Coordinate subparagraph below with system description and elevator designers. Modify to suit.

Elevator zoned two-way voice communication system master station (Section 142871) mounted in the FCS.4

Printer (fan fold style): Edwards’ PT-1 Series, Notifier’s PRN-4, or Simplex’s 2190 Series.

Use subparagraph below for basic monitor type FCS (no graphics).

CRT/Keyboard: Edwards’ CCA Series, Notifier’s CRT-2, or Simplex’s 4190 Series.

Use subparagraph below and its subparagraphs for graphic/touchscreen FCS (required for OGS projects).

10. Color Touchscreen Monitor/Keyboard/Mouse/Computer high resolution finger or light pen touch screen: Edwards’ Fireworks Series, Notifier’s NRTP, or Simplex’s 4120/4190 Graphic Command Center.

For more switch functions than indicated in subparagraph below, consider use of RA/CC mounted as an integral part of the FCS for control of speakers, etc. (to allow faster and more flexible control of system functions than that possible thru one touchscreen function at a time type operation).

Panel mounted switches and LED’sLEDs for control of system wide functions:

Alarm acknowledge.

Trouble acknowledge.

Silence.

Reset.

Operating system with main menus, sub-menus and icons to control and annunciate the followings functions:

Subparagraphs below are examples of programs required for the touchscreen graphics. Explain what is required of the system programs in as much detail as possible . Coordinate with system description.

Visual alarm notification appliance control and status.

Multi-channel one way voice communication audio control and status.

Two-way floor communication station telephone and fire service telephone control and status.

Automatic fire suppression systems (AFSS’s) status for each system.

AFSS discharged.

AFSS trouble.

Sprinkler system status.

Waterflow alarm.

Control valve in off normal position.

Waterflow switch tamper.

Fire pump status.

Fire pump motor running.

Fire pump loss of power.

Fire pump phase reversal.

Diesel-alternator status.

Diesel-alternator running.

Diesel-alternator supplying load.

Battery charger malfunctioning.

Low oil pressure.

Low water temp. (less than 50 degrees F.)

Excessive water temperature.

Low fuel (less than 3 hours).

Overcrank (failure to start).

Overspeed.

Alternator overload.

HVAC equipment control (Hand-Off-Automatic) and status of each air handling or fan unit.

Door control and status of each door.

Elevator recall and status.

Stairwell smoke hatch control and status of each vent.

Boiler status:

Boiler No. 1: Low water.

Boiler No. 1: Off safety.

Boiler No. 2: Low water.

Boiler No. 2: Off safety.

Additional menu’s system programming, etc. as directed:

Messages shall be approved by the facility engineer.

Provide custom messages as directed.

Descriptors shall utilize room/space designations and numbers used by the facility after occupancy and shall be approved by the facility engineer.

Coordinate subparagraph below with OGS direct digital control system interconnection subparagraph specified under system description in part 1.

An EIA RS-232-C communication input/output port with modem for communicating over a Ethernet LAN with the future Direct Digital Building Control System.

A EIA RS-232-C communication port with dial in modem to allow a remote IBM compatible PC to access System data. Include software for the remote PC.

Two spare EIA RS-232-C communication input/output ports.

Subparagraph below is an example for a project in large city. Modify for type operations used by the city. Include subparagraph below only when specifically required by the local fire department. Indicate key number.

Three position key switch, keyed with fire department standard key No. \_\_\_\_\_\_\_\_ (to operate in conjunction with central station operating company procedures):

10 o’clock position - Silent test, central station operating company notified automatically. Flashing red light and audible trouble device (no silencing feature) to operate when switch is in this position.

12 o’clock position - Automatic mode (alarm), key removable only in this position.

12 o’clock position - Fire drills, shunts out central station operating company (to be notified by telephone). Flashing red light and audible trouble device (no silencing feature) to operate when switch is in this position.

Subparagraph below is example for small city system. Include subparagraph below only when specifically required by the local fire department.

Two position key switch, keyed with fire department standard Key No. \_\_\_\_\_\_\_\_, and trouble indicating lamp for fire department disconnect mode.

Do not use subparagraphs below pertaining to wall mounted or console mounted FCS soleysolely as written (they are examples). Consult manufacturers catalogs and specify mounting equipment to exactly suit project requirements.

Use next several subparagraphs for wall mounted FCS.

Surface wall mounted cabinet containing FCS components, having:

Control switches, inaccessible behind hinged and locked doors.

Include subparagraph below only when specifically required by the local fire department. Specify key required.

Lock keyed to local fire department standard key. The key is \_\_\_\_\_\_\_\_.

Alarm indicating lamps visible when door is closed.

Desk/Enclosure (for CRT, keyboard, printer, storage, etc.):

Steel, minimum 16 gage, painted with rust resisting primer and 2 coats of paint.

Height, depth and width to accommodate equipment mounted thereon.

Components arranged so that all equipment is legible from one control point and can be manned by one attendant.

Desk equipped with writing surface at normal desk height and a storage area consisting of 2 file type drawers or shelves with door.

Chair: Adjustable tilt swivel, open arms, 5 leg pedestal with casters, upholstered foam cushion back and seat. Style to match desk/enclosure.

Wall mounted fcs above or console FCS below may not be suitable as specified for applications in architecturally sensitive areas. Consult with the Architects to assist in designing and specifying a suitable FCS. Specified equipment is available with color, texture and trim modifications. Custom fabricated equipment is available in the marketplace (refer to Thomas registry - “consoles”).

Use subparagraph below for console rack mounted equipment (not mounted in console with other systems). Console specified is free standing, rear accessible. Modify specification if console is mounted against wall.

Console: Vertical front, welded steel frame, modular cabinet rack; Premier Metal Products Co.’s Trimline TVA series, or Winsted Corp’s K series, having:

Number of sections as shown on drawings (each section 23 inches deep by 19 inches wide by 70 inches high panel space).

Skeletal frame including top and bottom.

Matching 45 degree wedge sections as shown.

Textured charcoal gray frame finish.

Front, Back, and Side Panels:

Back panels hinged with locking door handle.

Blank panels to cover all front panel space where equipment is not installed.

Louvers in back and side panels to provide adequate ventilation of components.

Beige tan enamel finish.

White plastic laminate (Formica) covered writing shelf, one piece construction which spans front of console and includes provisions for mounting CRT/keyboard and printer.

Aluminum trim with black vinyl inlay.

Accessories as required for mounting and support of equipment.

Multi-outlet strips mounted within the enclosure with number of 15 amp, 120 V ac receptacles (3 wire grounding type) as required for equipment. (Not less than 6 receptacles in each section).

* + - * 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 circuits 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, Simplex’s 2190-9172, 2190-9173.

* + - * 1. 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, 2190-9173.

Include 24 Vdc 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 CRT/Keyboard: Edwards’ CCA Series, Notifier’s CRT-2,or Simplex’s 4190 Series.

Use paragraph below when remote CRT’S are required.

* + - * 1. Remote CRT: Edwards’ VDU-3, Notifier’s CRT-2, or Simplex’s 4190 Series.
        2. Remote Printer (Fan Fold Style): Edwards’ PT-1 Series, Notifier’s PRN-4, or Simplex’s 2190 Series.

Not all RA/CC’S need have identical functions. Specify, or show on drawings, annunciator and switch modules required in each RA/CC (usually only the RA/CC adjacent to the FCS would include annunciator modules and switch modules, other RA/CC’S would essentially function as remote annunciators). Only visual indication associated with alarm, supervisory, or trouble conditions should be in an RA/CC associated with the FCS. Visual indication specified to be on for normal operation (pump on, lights on, etc.) Should be in a separate RA/CC to reduce possibly of distraction to attendant operating the system during alarm conditions.

Remote Annunciator/Control Centers (RA/CC’s): Edwards’ 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 system description.

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

Status of alarm notification appliances.

Coordinate subparagraph below with system description.

Annunciator modules for visual indication of specific user programmable control-by-event functions specified in SYSTEM DESCRIPTION. 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 system description.

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.

Switch modules for manual operation of speakers.

* + - * 1. Building Manger Alarm Annunciators: Edward’s 3-ANN, Notifer’s INA/ACS, or Simplex’s 4603, having:

Select one of next two subparagraphs.

Surface mounted enclosure.

Flush mounted enclosure.

LCD which is capable of displaying all system points.

System alarm indication (audible and visual). Silence at FCS.

System supervision alarm indication (audible and visual). Silence at FCS.

System trouble indication (audible and visual). Silence at FCS.

Lamp test switch or supervised lamps.

* + - 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.

Include subparagraph below if call feature to remote telephones is included in description of system.

Buzzer and visual indicator to indicate call from 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

See information at end of section for smoke and heat sensing device application guides.

* + - * 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 ICUs 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 2451Notifier’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 detector 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 HD, 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, 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 \_\_\_\_\_\_\_\_.

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 at 28 Vdc power-limited, 1/2A at 120 Vac 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 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 Detectors: 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 contract(s) rated minimum 1A at 28 Vdc power-limited, ½ A at 120 Vac 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, or Simplex’s 2099-9754 Series.

Addressable:

Single Action Pull Type: Edwards’ SIGA-270, Notifier’s BGX-101, NBG-12LX, or Simplex’s 2099-9795.

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. 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.

* + - * 1. Chimes: Edwards’ 757 Series, Notifier’s CH7D-24 Series, or Simplex’s 2902 Series Modular Chimes.
        2. 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 flashtube strobe:

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. Speakers: Speakers and their enclosures shall be listed for voice/alarm signaling service.

Do not use speakers recessed in fire rated ceilings unless special consideration can be given to proper installation to retain the ceilings listed fire resistance rating. Quote from UL fire resistance directory: “fire resistance ratings apply only to assemblies in their entirety, except for those separately rated structural members supporting tested assemblies, individual components are not assigned a fire resistance rating and are not intended to be interchanged between assemblies but are designated for use in a specific design in order that the ratings of the design may be achieved.” Fire rated ceiling assemblies do not appear to be approved for use with recessed speakers.

Show separate visual alarm circuit and audible alarm circuit to speakers equipped with xenon flashtube strobes.

Use type a as the basic speaker, except in suspended ceilings or in high ambient noise areas. Bi-directional housing available. Type a is not suitable for use in fire rated ceiling.

Type A: 4 inch cone type speaker, 1/4, 1/2, 1 and 2 watt taps; Edwardstaps; Edwards’ 757 Series, Notifier’s V400R, or Simplex’s 2902-9712, with surface or flush mounting accessories to suit installation requirements.

Type A/S: Same as Type A, equipped with xenon flashtube strobe with clear lens having FIRE imprinted thereon in red letters, or clear lens with red base having FIRE imprinted thereon in white letters.

A/S – 15/75:15/75 candela.

A/S – 30/75:30/75 candela.

A/S – 110:110 candela.

Type B & B-1 are not suitable for use in fire rated ceiling. Use flush mounted in non-fire rated suspended ceilings. Round or square baffle available.

Type B: 4 inch cone type speaker, 1/4, 1/2, 1 and 2 watt taps; Edwards’ 757 Series, Notifier’s SP101W, or Simplex’s 4902 Series, with baffle and enclosure for flush mounting in suspended ceiling.

Type B/S: Same as Type B, equipped with xenon flashtube strobe with clear lens having FIRE imprinted thereon in red letters, or clear lens with red base having FIRE imprinted thereon in white letters.

B/S – 15/75:15/75 candela.

B/S – 30/75:30/75 candela.

B/S – 110:110 candela.

Type B-1: 8 inch cone type speaker, 1/2, 1, 2 and 4 watt taps; Edwards’ 964/965 Series, Notifier’s ET90-W, or Simplex’s 2902-9705, with round baffle and enclosure for flush mounting in suspended ceiling.

Type B-1S: Same as Type B-1, equipped with xenon flashtube strobe with clear lens having FIRE imprinted thereon in red letters, or clear lens with red base having FIRE imprinted thereon in white letters.

B-1S – 15/75:15/75 candela.

B-1S – 30/75:30/75 candela.

B-1S – 110:110 candela.

Use type C & C-1 in high ambient noise level areas.

Type C: Double re-entrant horn loudspeaker, 2, 4, 8 and 15 watt taps; Edwards’ 757 Series, Notifier’s STH-15 Series, or Simplex’s Type 2902-9701, with accessories for surface mounting.

C-1 is not suitable for use in fire rated ceiling.

Type C-1: Double re-entrant horn loudspeaker, 2, 4, 8 and 15 watt taps; Edwards’ 757 Series, Notifier’s STH-15 Series, or Simplex’s Type 2902-9702, with baffle and accessories for flush mounting in suspended ceiling.

Type C-1S: Same as Type C-1, equipped with xenon flashtube strobe with clear lens having FIRE imprinted thereon in red letters, or clear lens with red base having FIRE imprinted thereon in white letters.

C-1S – 15/75:15/75 candela.

C-1S – 30/75:30/75 candela.

C-1S – 110:110 candela.

* + - 1. GUARDS TOUR STATIONS
         1. Key operated switch on stainless steel faceplate, to enable guard tour operation specified under SYSTEM DESCRIPTION. Engrave lettering on faceplate stating “TOUR STATION”.
      2. MASTER TRANSMITTER FOR MUNICIPAL CONNECTION

Check with operators of the municipal system or remote station to which tie-in is required. Each system requires specific equipment and procedures. Paragraph below is an example for a large city system.

* + - * 1. The Office of General Services will secure an agreement with a central station operating company. Contractor shall:

Install transmitters furnished by the central station operating company.

Provide conduit and wiring between transmitters and FCS.

Provide relays and equipment in FCS as required to operate in conjunction with central station operating company system.

Paragraph below is an example for small city system. Modify as required for actual fire department name, type of equipment required, and contact person’s name, address and telephone number.

* + - * 1. Comply with \_\_\_\_\_\_\_\_\_\_\_\_ Fire Department requirements:

Master Fire Alarm Box: Gamewell Corp.’s Three Fold Master Fire Alarm Box Data Sheet 3130, shunt type, flush mounted, wheel code #22.

Contact:

If digital alarm communicator system is the method used for alarm transmission to a central supervising station, refer to NFPA 72 5-5.3.2. Two separate means of communication are required (NFPA 72 5-5.3.2.1.6&7). The DACT’S furnished by the specified companies employ the use of two telephone lines.

* + - 1. DIGITAL ALARM COMMUNICATOR SYSTEMS
         1. Digital Alarm Communicator Transmitter (DACT): Edwards’ FACP module, Notifier’s FACP module, or Simplex’s Model 2080-9024:

Input circuit suitable for operation on 24 Vdc primary and secondary power supplies.

DACT may be separately wall mounted or an integral module in a fire alarm control panel.

UL-864 listing.

NFPA 72 compliance, operation with two telephone lines.

Compatible with central supervising station DACR and regulations.

* + - * 1. Digital Alarm Communicator Receiver (DACR).

Subparagraph below specifies an example of a DACR. Modify to suit. Add central supervising location address.

The central supervising station DACR is an Ademco Model 685, located at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The contact person is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* + - 1. MODEM UNITS

These modems are used for long distance communication over leased telephone lines to interface remote system equipment (fire alarm panels, CRT/keyboards, printer, annunciators).

* + - * 1. Modems: Edwards’ SHM-M/SHM-F, Notifier’s TP1-232, or Simplex’s 4100-0131 FSK Series:

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

Full duplex operation requires 2 pairs of leased lines. Half duplex operation is available for receive only devices. Arrangements for the proper grade of leased lines must be made by the facility. Notify the client agency during design that leased lines are required.

Full duplex operation.

UL-864 listing.

In subparagraph below, dial-up operation is also available for use with dial-up pair telephone lines.

Dedicated leased line operation.

RS232C to DC converter.

DC to RS232C converter.

Select one of next two subparagraphs.

Surface mounted cabinets, housing components of each unit.

Recessed mounted cabinets, housing components of each unit.

* + - 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 release 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 120 VAC, show local 120 VAC circuits controlled by relays connected to the ICU’S.

When using 24 VDC, 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 120 Vac.

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

Show where electromagnetic door hold-open devices 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 ICUs 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 requirement and 4-2.3 for notification appliance protection requirement..REQUIREMENT.

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, Simplex’s 2099 Series (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 Detection Devices: Edwards’ 1206B, Notifier’s STI Steel Web Stoppers, Safety Technology International Inc.’s STI Steel Web Stoppers, 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 CompanyCompany.

producing the system (conductor to conductor capacitance, dc resistance, velocity of propagation, etc.).

* + - * 1. 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.

* + - * 1. 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.

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

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

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.

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 listing, 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. Coordinate with insulated conductor schedule in part 3.

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).

Type FPL/EMT: Rockbestos – Surprenant Cable Corp.’s VITALinks 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: 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.
         2. Speaker and 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 speakers and notification appliances controlled by each switch.

Edit paragraph below to suit project.

* + - * 1. Floor Locator: Flip type bound file, indexed with tabs and equipped with 8-l/2 x 11 inch (minimum) plan of each floor in building. Show location of all major equipment associated with the system. Also show location of each manual fire alarm box, remote floor communication station telephone, and tour station. Enclose each floor plan in clear plastic envelope so that floor plans can be removed and updated.
        2. Wiring Diagram: One line diagram showing interconnection of all major components associated with the system. Encase with aluminum or stainless steel frame, and plexiglass front.
        3. 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.

Change color of sign from blue to red if telephone is used as a signal initiating device.

* + - * 1. Remote Floor Communication Station Telephone Signs: 9 x 12 inches, metal, with the words “FLOOR COMMUNICATION STATION” imprinted thereon in white letters upon a blue background. Include a white arrow pointing down, left or right showing the route to, or actual location of the remote telephones. Frame the outside edges of the signs in blue and white diagonal stripes.

Sign mounting styles:

Single face for flat mounting 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 operate with the same key.
      2. PAINTING OF EQUIPMENT
         1. Paint enclosing cases for fire alarm, sprinkler alarm, smoke detection and associated systems alarm apparatus fire alarm red, except lobby information display equipment may be painted or finished to match lobby décor.
      3. ACCESSORIES
         1. Include accessories required to perform the functions summarized in SYSTEM DESCRIPTION and indicated on the drawings.
      4. FIRE EXTINGUISHER
         1. CO2 type fire extinguisher, minimum 20 pound unit by Amerex Corp., Ansul Inc., Fire-End & Croker Corp., or Walter Kidde Portable Equipment, Inc.

1. EXECUTION
   * + 1. VERIFICATION OF CONDITIONS
          1. Testing Existing Sub-Systems:

Indicate which sub-systems are to be tested.

Prior to installing the new system, test the existing sub-systems (\_\_\_\_\_\_\_) to ascertain their operating condition:

Individually test initiating devices (except non-restorable types).

Test each initiating device circuit.

Test notification appliances.

Test each notification appliance circuit.

Test all control panel functions.

Do not discharge fire suppression systems.

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 sub-systems in their 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 sub-systems, 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

Show on the drawings a one line diagram of complete system including initiating device circuits, notification appliance circuits, signaling line circuits, voice communication and telephone circuits, but do not show number or size of wires (see information at end of section 260532 indicating alternate methods for showing the risers on the drawings). Do not show any 120 VAC wiring (such as door hold open devices) run in the same raceway with 24 VDC circuits.

* + - * 1. Install system in accordance with the Company’s printed instructions unless otherwise indicated.
        2. 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.
        3. 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 FCS and ICUS 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 FCS, ICUs and other system components requiring a primary power supply to dedicated branch circuits.

Do not connect FCS 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 junction boxes fire department red.

Requirements of subparagraph below must be indicated on drawings (not required for class A, style Z). Show speakers wired alternately on separate amplifiers within each speaker zone. Also:

1. Do not show speakers located near remote floor communication station telephones.

2. In order to comply with NFPA 72 3-8.4.1.1 separate risers may be required to avoid total loss of paging when equipment or installation wiring is attacked by fire.

3. Refer to NFPA 72 3-8.4.1.3.5.6 and chapter 4 for speaker location requirements.

4. Refer to NFPA 72 chapter 4 for sound level design guidance.

Speaker Circuiting: Wire speakers alternately on separate amplifiers within each speaker zone.

Circuit speakers so that adjacent speakers in each zone are connected to the system in such a manner that 50 percent of the system remains operable for the transmission of verbal instructions and signals in the event of the failure of the other 50 percent.

For subparagraph below refer to NFPA 72 a3-8.4.1.1.4 & 3-8.4.1.3.3.3 for other possibilities.

Fire Command Station: Protect wiring between the FCS and FCS control equipment which is remote from FCS, and wiring between FCS control equipment and the primary supply by 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 drawing as 2-hour rated cable assembly.

A 2-hour rated shaft or enclosure.

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

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 drawing 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 paragraph below 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 FCS or ICU’S. Do not show both legs of wiring loop returned to fcs 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, Notification Appliance Circuits, and Voice Communication 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 FCS or ICU’s.

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

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

* + - * 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.

Fire Command Center: Mark the equipment at the location which will be utilized by the fire department as the fire command center.

Use nameplates and signs to mark and explain operating controls for use by fire department personnel.

Procedure Sign: Install adjacent to FCS.

Omit reference to RA/CC if not used.

Speaker and Alarm Notification Appliance Locator: Install adjacent to each RA/CC and ICU.

Floor Locator:

Install adjacent to FCS.

Install adjacent to each ICU (show area protected by ICU).

Edit subparagraphs below to suit project.

Nameplates:

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

Install adjacent to each 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 two subparagraphs below. To suit job conditions. The signs are required by NYSUFP&BC 1060.2(b)(6) and 1061.3(c).

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.

Remote Floor Communication Station Telephone 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 remote telephones. Fasten signs to walls with vandal resistant fasteners.

Manual fire alarm box signs in subparagraph below are required by the NYSUFP&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, FCS and ICUs 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 ICU, 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. Refer to system description for required tamper switch applications.

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. Locate fire extinguisher proximate to FCS.
      1. FIELD QUALITY CONTROL
         1. Preliminary System Test:

Preparation: Have the Company Field Advisor adjust the completed system 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 system 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 SYSTEM DESCRIPTION.

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 FCS (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
         1. Signaling Line Circuits, Initiating Device Circuits and Notification Appliance Circuits:

Power-Limited Circuits: For interior wiring (in raceways), use power-limited multi-conductor 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 Nonpower-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 N.E.C. 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 FCS and Networked ICU’s (Network communication bus, voice communication bus, and telephone bus):

Use 2-hour fire 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 MI cable is required.

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

Include section 271525 and subparagraph 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 FCS and Networked ICU’s: 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 jacked 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, except where a 2-hour fire rated cable assembly is the method used for wiring between FCS control equipment and their primary supplies.

END OF SECTION 283102

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. New York State 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 -– Propogationropagation 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 Applications.

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.

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