SECTION 283103 **-** PROPRIETARY FIRE ALARM SYSTEM

This section should be used when the facility has a proprietary supervising station. (report alarms to owners proprietary supervising station on the owner’s contiguous or non-contiguous property where trained, competent personnel are in constant attendance at THE PSS).

This section covers the operation and supervising functions required of a proprietary supervisory station (PSS). The PSS is multiplexed to each buildings protected premises fire alarm system.

In addition to the New York State Uniform Fire Protection and Building Code (NYSUFP&BC), this section was written to meet: for the individual buildings (in conjunction with sections 283101 and/or 283102): NFPA 72 chapter 3 protected premises fire alarm systems.

For the proprietary portion of the system: NFPA 72 5-3 proprietary supervising station systems.

for alarm retransmission to the fire department, either: NFPA 72 5-4 remote supervising station fire alarm systems when system is connected to remote station.

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

For voice communication: NFPA 72 3-8.4.1.3 and 3-8.4.1.3.5.

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, NYC projects, 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 283101 for buildings under 70 feet in height.

* + - * 1. Protected Premises Fire Alarm System: Section 283101.

Include section 283102 for buildings over 70 feet in height.

* + - * 1. Protected Premises Fire Alarm/Emergency Communication System: Section 283102.

Include paragraph below when a main security console is being utilized for mounting the PSS therein.

* + - * 1. Main Security Console: Section 281601.
			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. Signaling Line Circuit: A circuit or path between any combination of circuit interfaces, control units, or transmitters over which multiple system input signals or output signals, or both are carried. Examples:

Circuits from PSS to building PPMCU’s.

* + - 1. SYSTEM DESCRIPTION
				1. The system operates as an integrated multiplexed protected premises and proprietary fire alarm signaling, monitoring, and control system.

Show location of PSS. Refer to NFPA 72 5-3.3 for requirements for locating PSS and associated equipment.

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

Show CRT (with keyboard) adjacent to PSS.

Show automatic emergency lighting at PSS (NFPA 72 5-3.3.4).

Changes in the status of all system monitored points are detected by the microprocessor based proprietary supervising station (PSS) utilizing distributed processing peer-to-peer networked, protected premises master control units (PPMCU’s) located in buildings throughout the facility.

Buildings for which Section 283101 - Protected Premises Fire Alarm System is applicable utilize a main fire alarm control panel (MFACP) as its PPMCU.

Changes in the status of monitored points in each building are indicated at its MFACP, utilizing distributed processing, peer-to-peer networked interconnected control units (ICU’s) located throughout each building.

Buildings for which Section 283102 - Protected Premises Fire Alarm/Emergency Communication System is applicable, utilize a fire command station (FCS) as its PPMCU.

Changes in the status of monitored points in each building are indicated at its FCS utilizing distributed processing, peer-to-peer networked interconnected control units (ICU’s) located throughout each building.

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 PSS upon failure of the network communication and data processing cycle.

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

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

The PSS individually identifies each addressable initiating device and other addressable monitor functions using multiplexing techniques, thru the building PPMCU’s.

The PSS is capable of operating alarm notification appliances, and performing other control functions, using multiplexing techniques, thru the building PPMCU’s.

Alarms are processed by the PSS 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, at the PSS.

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 PSS.

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

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

Access to the PSS 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 PSS on 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 PSS 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 PSS.

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 PSS 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 PSS 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) to the future Direct Digital Control System 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). See related Fire Alarm Section(s).

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

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

The 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 5-3.4.6 for alarm annunciation requirements.

The PSS 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 PSS 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.

An alarm retransmission to a fire department or other acceptable location is required (see NFPA 72 5-3.6.3 and 5-3.6.4). Select appropriate subparagraph below. Omit similar subparagraphs from the related fire alarm sections.

If fire company is to be called, specify method required by the fire department. Modify subparagraphs below to suit. (signal must be transmitted to fire department for b4, c6.2 and c6.3 occupancy). Refer to NYSUFP&C 1060.2(a)(4).

References for connection to fire departments through municipal fire alarm systems, public fire alarm reporting systems, or other type supervising stations are: supervising station fire alarm systems: NFPA 72 Chapter 5. Public fire alarm reporting systems: NFPA 72 chapter 6.

The fire department is automatically called.

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

The PSS 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 PSS and relay indicates trouble conditions at the PSS.

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 PSS 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 PSS and remote station indicates trouble conditions at the PSS.

Subparagraph below is an example of the 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, central station service or other facility meeting criteria of supervising station). Refer to NFPA 3-8.4.4.2.

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

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.

* + - * 1. Life Safety Control-By-Event Functions: The PSS, PPMCU’s and ICU’s immediately perform life safety control-by-event functions upon system alarm condition. See related Fire Alarm Section(s). Also:

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

The system allows the attendant to:

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

Silence any alarm signal in progress through a silence command issued from the PSS, 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 in selected areas of each building, all areas of each building, and all buildings. The attendant chooses the method of activating the alarm notification appliances:

Appropriate keyboard commands issued from the PSS.

Omit subparagraph below if RA/CC is not used.

Dedicated switches in the RA/CC at the PSS.

Include subparagraph below in conjunction with touchscreen PSS.

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 PSS indicate on/off status of the alarm notification appliances.

* + - * 1. In buildings equipped with one-way voice communication, attendant at the PSS may activate the multi-channel one-way voice communication portion of the system and call over speakers in selected areas of each building, all areas of each building, and all buildings 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 PSS.

Omit subparagraph below if RA/CC is not used.

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

Include subparagraph below in conjunction with touchscreen PSS.

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 PSS indicate on/off status of the speakers.

Reference for subparagraph below is NYSUFP&BC 791.2.

The system allows the attendant at the PSS 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 related sections.

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 next two paragraphs fire warden’s two-way telephone communication service and fire service (fire department) two-way communication service refer to NFPA 72 3-12.8, NYSUFP&BC 1061.3(a), 1004.2(f)(2). For two-way communication to elevators, consult with Elevator Designers.

* + - * 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.

Fire Warden’s Two-Way Telephone Communication System:

In buildings equipped with remote telephones, the attendant at the PSS 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.

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 PSS 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 PSS.

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 PSS 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 PSS.

The attendant at the PSS 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 it can be accommodated by the 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 PSS (or RA/CC adjacent to PSS) the attendant at the PSS 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).

The attendant may permit fire wardens at each remote telephone location to make announcements over the one-way voice communication system.

* + - * 1. User Programmable Control-By-Event Functions. See related Fire Alarm Section(s).
				2. User Programmable Automatic Time-Initiated Functions (Start/Stop, On/Off, Secure/Access, etc.). See related Fire Alarm Section(s).

Paragraph below is an example. If used, coordinate facility procedure with requirements of NFPA 72. 3-8.5, 5-3.6.6.2, NFPA 601, NYSUFP&BC 1060.8 and related fire alarm system sections.

* + - * 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 PSS 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 PSS 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 PSS 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 PSS 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.

* + - * 1. The attendant manually resets the PSS at conclusion of alarm condition. When an alarm condition is corrected, a print-out and display occurs at the PSS stating the assigned reset message for the point in alarm with the date, time and reset suffix.

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.

* + - * 1. Primary and Secondary Power Supplies:

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

Edit subparagraph below 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.

The PSS power requirements are transferred to the secondary power supplies.

See related Fire Alarm Section(s) for other power transfer requirements.

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

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

Sounding of the PSS’s audible alarm.

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

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

Change 24 hours to 60 hours in subparagraph below if system is connected to fire department via auxiliary or remote system. The time period of 24 (or 60) hours in subparagraph 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 under alarm condition for 5 minutes.

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.

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

Performance of Signaling Line Circuits.

Other classes and style are available then 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 PSS to PPMCU’s: NFPA 72, Class A, Style 7. A print-out and display occurs to identify trouble conditions.

Circuits from PPMCU’s to ICU’s: See related Fire Alarm Section(s).

Performance of Initiating Device Circuits: See related Fire Alarm Section(s).

Performance of Notification Appliance Circuits: See related Fire Alarm Section(s).

Monitoring Integrity of Emergency Voice/Alarm Communication Systems:

Voice Communication Main Audio Bus:

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

Circuits from PPMCU’s to ICU’s: See related Fire Alarm Section(s).

Two-Way Telephone Communication Main Bus:

Two-way telephone communication circuits are monitored for a short-circuit fault that would cause the telephone communications 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 PSS.

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

* + - * 1. Interconnection of Fire Safety Control Functions: See related Fire Alarm Section(s).
				2. Sprinkler System Alarm and Supervision: See related Fire Alarm Section(s).
				3. Supervision of Pressure Sources Associated with Fire Suppression Systems: See related Fire Alarm Section(s).
				4. Supervision of Water Levels Associated with Fire Suppression Systems: See related Fire Alarm Section(s).
				5. Supervision of Electric Motor Driven Centrifugal Fire Pumps: See related Fire Alarm Section(s).
				6. Supervision of Diesel Engine Driven Centrifugal Fire Pumps: See related Fire Alarm Section(s).
				7. Supervision of Room Temperature: See related Fire Alarm Section(s).
				8. Halon and Dry Chemical Systems: See related Fire Alarm Section(s).

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.

* + - * 1. The system operates in conjunction with existing sub-systems (fire alarm systems).

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

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

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

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

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 PSS, and location of all other major components associated with the system.

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

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

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

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 PSS 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 the proposed products, circuits, and wiring diagrams are UL listed (UOJZ).

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

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.

* + - * 1. Quality Control Submittals:

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

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

Company Field Advisor Data: Include:

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

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

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

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

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).

The application program listing for the system as installed at the time of acceptance (disk and hard copy printout).

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.

* + - 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.

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).

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

Four ribbons for printer.

1. PRODUCTS
	* + 1. PEER-TO-PEER NETWORK
				1. Network (To Operate in Conjunction with Related Fire Alarm Sections): Edwards Systems Technology’s (Unit of GS Building Systems Corp) EST-3, Notifier 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 for reference only.

Edwards est-3 network 160,000 points.

Notifier: noti•fire•net/200,000 points.

Simplex: network 50,000 points.

* + - * 1. Fire Alarm Control Panels (General): See related Fire Alarm Section(s).
				2. PSS Fire Alarm Control Panel: Edwards’ EST-3, Notifier’s AFP-200, AFP-300, AFP-400, AFP-1010, AM2020, Simplex’s 4120, 4100, 4020, 4010:

Base selection of the PSS fire alarm control panel upon its capacity and capabilities to the specific requirements of the PSS at its location within the network.

Equip the approved fire alarm control panel to function as the PSS.

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

Accessories as required for the PSS 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.

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 with company representative for size estimates.

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

120 Vac, 60 Hz, input voltage.

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

UL listed for proprietary supervising station use.

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 the PSS 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.

Use paragraph below and its subparagraphs for monitor (non-touch screen) PSS . If a graphic/touch screen PSS is required obtain data from section 283102 and insert it herein in lieu of specified PSS.

* + - * 1. Proprietary Supervising Station (PSS):

See PSS Fire Alarm Control Panel for basic requirements.

Design and layout the PSS 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 PSS on the drawings.

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

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

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

Master microphone.

Amplifier equipment located in building ICU’s.

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

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

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

Subparagraph below is an example for a project in a 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.

2 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.

Specify fire department key switches only in this section. Delete from related fire alarm section(s).

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 console mounted PSS solely as written (it is an example). Consult manufacturers catalogs and specify mounting equipment to exactly suit project requirements.

Console PSS 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 PSS. 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 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).

Coordinate subparagraph below with system description and Elevator Designers. Modify to suit.

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

* + - * 1. Interconnected Control Units (ICU’s): See related Fire Alarm Section(s).
				2. Remote Addressable Network Modules: See related Fire Alarm Section(s).
				3. 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.

Only visual indication associated with alarm, supervisory, or trouble conditions should be in an RA/CC associated with the PSS. 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.

* + - * 1. 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 in buildings equipped with speakers.

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 for buildings equipped with speakers.

* + - 1. REMOTE FIRE SERVICE DEVICES
				1. Fire Warden Remote Floor Communication Station Telephones: See related Fire Alarm Section 283102.
			2. GUARDS TOUR STATIONS
				1. See related Fire Alarm Section(s).

Specify master transmitter only in this section. Delete from related fire alarm section(s).

* + - 1. 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 PSS.

Provide relays and equipment in PSS 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:

* + - 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. INSULATED CONDUCTORS FOR EXTERIOR USE
				1. Underground Cables:

Electronic Cable:

IMSA Style: International Signal Association Inc. (IMSA) Specification 19-1, 19-2, 20-1, 20-2, or 50-2.

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

Type TC: UL listed cable assembly Type TC power and control tray cable:

Conductors: Minimum No. 18 AWG copper, stranded, Class B.

Insulation: PVC/nylon, THHN or TFFN, rated 600V, 90 degrees C dry and 75 degrees C wet.

Outer jacket minimum 0.45 mils thick, identified for direct burial use.

Shielding of twisted pairs as recommended by the Company producing the system.

Where IMSA style cables are used and individually twisted and shielded conductor pairs are required, each pair shall be a cable in accordance with IMSA 19-2, 20-2, or 50-2.

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.

Optical Fiber Cable: See Section 271525.

* + - * 1. Aerial Cables:

Electronic Cable:

IMSA Style: International Signal Association Inc. (IMSA) Specification 19-1, 19-2, 20-1, or 20-2.

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

Type TC: UL listed cable assembly Type TC power and control tray cable:

Conductors: Copper, concentric stranded, Class B.

Insulation (14, 12, and 10 AWG): THHN/THWN, rated 600V, 90 degrees C dry and 75 degrees C wet.

Outer jacket sunlight resistant polyvinyl chloride, minimum 0.60 mils thick.

Shielding of twisted pairs as recommended by the Company producing the system.

Where IMSA style cables are used and individually twisted and shielded conductor pairs are required, each pair shall be a cable in accordance with IMSA 19-2 or 20-2.

Number of conductors and conductor size as recommended by the Company producing the system, except that conductor size shall not be less than No. 14 AWG.

Minimum 1/2 inch diameter, 7 strand utility grade messenger, 25,000 pound breaking strength, galvanized steel strand ASTM A 475, galvanized coating weight B.

Lash cables to messenger with .045 stainless steel Alloy 430 lashing wire.

Optical Fiber Cable: See Section 271525.

* + - 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. Alarm Notification Appliance Locator: Card holder with aluminum or stainless steel frame, plexiglass front and sheet aluminum card backing plate. Minimum size card 8 x 10 inches. Type on card the switch numbers and location of notification appliances controlled by each switch.

Edit paragraph below to suit project.

* + - * 1. Building Locator: Flip type bound file, indexed with tabs and equipped with 8-l/2 x 11 inch (minimum) plan of each floor in each 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 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. 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. ACCESSORIES
				1. Include accessories required to perform the functions summarized in SYSTEM DESCRIPTION and indicated on the drawings.
			3. 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. INSTALLATION
				1. Install system in accordance with the Company’s printed instructions unless otherwise indicated.
				2. Wiring for Survivability:

Connect system components requiring a primary power supply to dedicated branch circuits.

Install underground cables continuous from PSS to PPMCU’s. Splices, terminations, or connections will not be permitted underground.

Protect underground and aerial cables between the PSS and PPMCU’s within buildings from entrance into building to PSS (and PPMCU’s) to maintain 2-hour fire rating.

Proprietary Supervising Station: Protect wiring between the PSS and PSS control equipment which is remote from PSS, and wiring between PSS control equipment and the primary supply by using one or more of the following methods:

A 2-hour fire rated cable assembly. See related Fire Alarm Section(s).

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 fire rated cable assembly.

A 2-hour fire rated shaft or enclosure.

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

For Class A, style 6, 7, D, E, or Z circuits, show the wiring looped back to the PPS. Do not show both legs of wiring loop returned to the PPS in the same raceway nor along same route.

Wiring Class A, Style 6, 7, D, E, or Z Circuits: Do not install both legs of Class A, Style 6, 7, D, E, or Z circuits in same cable assembly, enclosure, or raceway or path back to PPS.

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

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

Procedure Sign: Install adjacent to PSS.

Omit subparagraph below if RA/CC is not used.

Alarm Notification Appliance Locator: Install adjacent to RA/CC.

Building Locator:

Install adjacent to PSS (show all buildings).

Wiring Diagram: Install adjacent to PSS.

Nameplates:

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

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

Refer to NFPA 72 5-3.3.3 for other locations where fire extinguishers are required.

* + - * 1. Locate fire extinguisher proximate to PSS.
			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 PSS (one framed assembly for each report).

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

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

Select one of next two subparagraphs to suit.

Use IMSA style cable, or jacketed direct burial type TC cable in underground conduit.

Use optical fiber cable in underground conduit.

* + - * 1. Aerial Cables:

Select one of next two subparagraphs to suit.

Use messenger supported IMSA style cable, or jacketed sunlight resistant type TC cable on pole line.

Use messenger supported optical fiber cable on pole line.

* + - * 1. Signaling Line Circuits, Initiating Device Circuits and Notification Appliance Circuits: See related Fire Alarm Sections.
				2. Building Control Circuits Associated with the Fire Alarm System:

See related Fire Alarm Section(s).

* + - * 1. 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 between PSS control equipment and their primary supplies.

END OF SECTION 283103

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

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

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

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

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

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

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

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

 d. NYS Uniform Fire Prevention and Building Codes:

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

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

 3) 724 Fire Protection Equipment (Multiple Dwellings).

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

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

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

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

 8) 850 General Provisions for Systems and Equipment.

 9) 1060 Fire Protection Equipment.

 10) 1061 Coordinated Fire Safety System.

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

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

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

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

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

 16) 1250.1 Applicability (Reference Standards).

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

 e. Underwriters Laboratories Inc.:

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

 2) UL 13 Power-Limited Circuit Cables.

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

 4) UL 44 Rubber-Insulated Wires and Cables.

 5) UL 83 Thermoplastic-Insulated Wires and Cables.

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

 7) UL 217 Single and Multiple Station Smoke Alarms.

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

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

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

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

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

 13) UL 444 Communications Cables.

 14) UL 464 Audible Signal Appliances.

 15) UL 497A Secondary Protectors for Communications Circuits.

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

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

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

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

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

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

 22) UL 1076 Proprietary Burglar Alarm Units and Systems.

 23) UL1277-Electrical Power and Control Tray Cable.

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

 25) UL 1480 Speakers for Fire Protective Signaling Systems.

 26 UL 1481 Power Supplies for Fire Protective Signaling Systems.

 27 UL 1638 Visual Signaling Appliances - Private Mode Emergency and General Utility Signaling.

 28) UL 1711 Amplifiers for Fire Protective Signaling Systems.

 29) UL 1971 Signaling Devices for Hearing Impaired.

 f. American National Standards Institute:

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

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

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

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

 5) ANSI S3.41 Audible Emergency Evacuation Signal.

 g. National Electrical Manufacturers Association (NEMA).

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

 2) Guide for Proper Use of System Smoke Detectors.

 3) Quality Automatic Fire Detection and Alarm System Installation.

 4) Training Manual on Fire Alarm Systems.

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