GAMEWELL IDENTIFLEX 610 FIRE ALARM CONTROL PANEL

FIRE ALARM AND SMOKE DETECTION SYSTEM

1. GENERAL

1.1 RELATED DOCUMENTS

1.1.1. Related documents shall include drawings and general provisions of the Contract, including general and supplementary conditions and applicable sections of Division 1 and Division 16 specifications.

1.2 SCOPE

1.2.1. This Section shall include guidelines for the furnishing of all labor, equipment, materials, and performance of all operations associated with the installation of the Fire Alarm and Smoke Detection System as drawn and specified herein.

1.2.2. The intent of drawings and specifications is to result in a complete functional fire alarm and smoke detection system as described herein.

1.2.3. The Contractor shall provide all devices and components required to accomplish this intent whether or not specifically shown or specified.

1.2.4. The complete installation shall conform to the applicable sections of NFPA-72, NFPA-71, local code requirements and the National Electrical Code with particular attention to Article 760.

1.2.5. The work covered by this Section of the Specifications shall be coordinated with the related work as specified elsewhere under project specifications.

1.3 QUALITY ASSURANCE

1.3.1. Each and all components of the Fire Alarm System shall be listed as a product of a single fire alarm system manufacturer under the appropriate category by Underwriters' Laboratories, Inc. (UL), and shall bear the "UL" Label. All control equipment shall be listed under UL category UOJZ as a single control unit. Partial listing shall not be acceptable.

1.3.2. All control equipment shall have transient protection to comply with UL 864.

1.3.3. Where Fire Alarm circuits leave the building, additional transient protection shall be provided for each circuit.

1.3.4. Devices shall be UL listed under Standard #497B.

1.3.5. System control shall be UL listed for Power Limited Applications and all circuits shall be marked in accordance with NEC Article 760-23.

1.4 GENERAL SYSTEM REQUIREMENTS

1.4.1. System Requirements

1.4.1.1. One contractor shall furnish and install a complete Fire Alarm and Smoke Detection System as described herein and drawn

1.4.1.2. The contractor shall wired connect and make operational each and all components of the system.

1.4.1.3. The system shall include:

- Sufficient Fire Alarm Control Panels (FACPs)
- Annunciators
- Manual Stations
- Automatic Fire Detectors
- Smoke Detectors
- Alarm Indicating Appliances
- Miscellaneous Components
- Wiring
- Terminations
- Raceway System
- All other necessary material for a complete operating system.

1.4.1.4. The system shall meet all national and local codes.

1.4.2. Fire Alarm System Supplier

1.4.2.1. The fire alarm system shall be furnished and installed by:

Located at:
City: State: Zip:

1.4.2.2. The fire alarm shall be supplied by a Distributor authorized by the Fire Alarm System Manufacturer. The supplier's personnel shall be factory trained.

1.4.2.3. The fire alarm system supplier shall provide point to point wiring diagrams and equipment data sheets for submittal to the local

authority. Where required, the fire alarm system supplier shall obtain all permits required for the installation of the system from the local authority.

1.4.3. System Manufacturer

1.4.3.1. The system and components shall be supplied by one manufacturer who shall have produced similar systems for a period of at least three (3) years.

1.4.3.2. The manufacturer shall be able to refer to similar installations rendering satisfactory service.

1.4.4. System Software

1.4.4.1. The system shall be capable of self-programming upon initialization.

1.4.4.2. The system shall be capable of on-site programming to accommodate system expansion and facilitate changes in operation.

1.4.4.3. All software operations shall be stored in a nonvolatile programmable memory within the FACP.

1.4.4.4. Loss of primary and secondary power shall not erase the instructions stored in memory.

1.4.4.5. System programming shall be password protected and shall include full upload and download capability.

1.4.4.6. The system shall feature full flexibility for selective input/output control functions based on ANDing, ORing; NOTing, timing, and special coded operations shall also be incorporated in the resident software programming of the system.

1.4.4.7. Resident software shall allow for full configuration of initiating circuits. The system shall require no additional hardware to change from sensing normally open contact devices to sensing normally closed contacted devices or vice versa. Nor shall the system require additional hardware to change from sensing normally open contact devices to sensing—and distinguishing between—a combination of current limited and non-current limited devices on the same circuit. Nor shall the system require additional hardware for changing from a non-verification circuit to a verification circuit or vice-versa.

1.4.4.8. There shall be no limit, other than maximum system capacity, to the number of intelligent/analog devices which may be in alarm simultaneously.

1.4.4.9. The system shall have the capability of recalling alarm and trouble conditions in chronological order for the purpose of recreating an event history.

2. OPERATION

2.1 ALARM OPERATION

2.1.1. The actuation of any approved alarm initiating device shall automatically initiate the following operations where furnished as part of the system:

2.1.1.1. All audible alarm indicating appliances within corresponding building shall sound a fire alarm signal until the System Acknowledge key or the Signal Silence key is depressed.

2.1.1.2. All visible alarm indicating appliances shall flash continuously until the System Acknowledge key or the Signal Silence key is depressed.

2.1.1.3. The off-site central monitoring station shall be notified automatically until the System Acknowledge key or the Signal Silence key is depressed.

2.1.1.4. Shutdown of the corresponding HVAC system equipment shall occur until the System Acknowledge key or the Signal Silence key is depressed.

2.1.1.5. Activation of all programmed outputs assigned to the initiating device shall occur until the System Acknowledge key or the Signal Silence key is depressed.

2.1.1.6. Any subsequent zone alarm shall reactivate the alarm indicating appliances.

2.2 ALARM VERIFICATION

2.2.1. The activation of any system smoke detector or sensor shall initiate an alarm verification operation whereby the panel will reset the activated detector and wait for a second alarm activation.

2.2.2. If, within one (1) minute after resetting, a second alarm is reported from the same or any other smoke detector, the system shall process the alarm as described previously. If no second alarm occurs within one minute the system shall resume normal operation.

2.2.3. The alarm verification shall operate only on smoke detector alarms. Other activated initiating devices shall be processed immediately.

11..1 The alarm verification operation shall be selectable by zone.

2.3 ALARM INDICATION

2.3.1. The alarm shall be displayed on a 160 character (4x40) LCD display on the local Fire Alarm Control Panel, and, where applicable, the remote annunciator. The top line of 40 characters shall be the point label and the second line shall be the device type identifier.

2.3.2. The system alarm LED shall flash on the control panel and the remote annunciator until the alarm has been acknowledged. Once acknowledged, this same LED shall latch on.

1.1.1. A subsequent alarm received from another zone shall flash the system alarm LED on the control panel and remote annunciator. The LCD display shall indicate the new alarm information.

2.3.3. A pulsing alarm tone shall occur within the local building control panel, and where applicable, the remote annunciator until the event has been acknowledged.

2.3.4. A manual evacuation (drill) switch shall be provided to operate the alarm indicating appliances without causing other control circuits to be activated. However, should a true alarm occur, all alarm functions would occur as described previously.

2.3.5. The system shall have a single key that will allow the operator to display all alarms, troubles, and supervisory service conditions including the time of each occurrence.

2.3.6. Any momentary opening of an initiating or indicating appliance circuit wiring shall cause an audible signal to sound at the Building Fire Alarm Panel, and where applicable, the remote annunciator for four seconds indicating a trouble condition.

2.4 ALARM WALK TEST

2.4.1. The actuation of the "enable walk test" program at the control panel shall activate the "Walk Test" mode of the system, which shall initiate the following events:

2.4.1.1. The off-site central monitoring station connection shall be bypassed.

2.4.1.2. Control relay functions shall be bypassed.

2.4.1.3. Walk test shall be selectable by circuit.

2.4.1.4. Alarms received on normal circuits shall cause the control panel to go into alarm and override the walk test mode.

2.4.1.5. The control panel shall show a trouble condition.

2.4.1.6. The alarm activation of any initiation device shall cause the audible signals to activate for two seconds.

2.4.1.7. The panel shall automatically reset itself after signaling is complete.

2.4.1.8. The control panel shall automatically return to normal condition if there is no activity on a walk test circuit for a period of 30 minutes.

2.5 SUPERVISION

2.5.1. The system shall contain Class "A" or "B" (Style "B, C, D, or E") independently supervised initiating device circuits. The alarm activation of any initiation circuit shall not prevent the subsequent alarm operation of any other initiation circuit.

2.5.2. Each independently supervised circuit shall include a discrete LED readout to indicate disarrangement conditions per circuit.

2.5.3. The incoming power to the system shall be supervised so that any power failure must be audible and visually indicated at the control panel and the remote annunciator. A green "power on" LED shall be displayed continuously while incoming power is present.

2.5.4. The system batteries shall be supervised so that a low battery condition or disconnection of the battery shall be audibly and visually indicated at the control panel and the remote annunciator.

2.5.5. The system shall have provisions for disabling and enabling all circuits individually for maintenance or testing purposes.

2.6 POWER REQUIREMENTS

2.6.1. Each control panel or console shall receive 120 VAC power (as noted on the plans) via a dedicated circuit.

2.7 SHOP DRAWING AND PRODUCT DATA

2.7.1. The system shop drawings shall include complete wiring diagrams for all components of the project. Generic wiring diagrams, which do not apply specifically to the project, are not acceptable. Product data sheets covering all system devices shall be furnished with shop drawings in compliance with Specification Sections 01341 and 01343.

3. PRODUCTS

3.1 FIRE ALARM CONTROL PANEL

3.1.1. Panel Function

3.1.1.1. The Fire Alarm Control Panel shall provide power, annunciation, supervision and control for the detection and alarm system, as well as alarm signaling to alert occupants of a fire or other emergency situations.

3.1.1.2. Control panel construction shall be modular with solid state microprocessor based electronics.

3.1.1.3. Operation shall be guided via LEDs to simplify operation under any condition.

3.1.2. Local Audible Device

3.1.2.1. A local audible device shall sound during Alarm, Trouble or Supervisory conditions.

3.1.2.2. This audible device shall sound differently during each condition to distinguish one condition from another without having to view the panel.

3.1.2.3. This audible device also shall sound during each “key-press” to provide an audible feedback to ensure that the key has been pressed properly.

3.1.3. Primary Controls

3.1.3.1. The following primary controls shall be visible through a front access panel:

- 160 character liquid crystal display
- Individual red system alarm LED
- Individual red pre-alarm LED
- Individual yellow supervisory service LED
- Individual yellow trouble LED
- Individual yellow security LED
- Green “power on” LED
- Alarm Acknowledge touch switch
- Supervisory Acknowledge touch switch
- Trouble Acknowledge touch switch
- Alarm Silence touch switch
- Reset touch switch
- Manual evacuation (drill)

3.1.4. Interface Function

3.1.4.1. The control panel interface shall provide the following:

- Setting of time and date
- LED testing

- Alarm, trouble and abnormal condition listing
- Enabling and disabling of each monitor point separately
- Activation and deactivation of each control point separately
- Changing operator access levels
- Walk Test enable
- Running diagnostic functions
- Displaying software revision level
- Displaying historical logs
- Displaying card status
- Point listing

3.1.5. Point Lists Menu

3.1.5.1. For maintenance purposes the following lists shall be available from the point lists menu:

- All points list by address
- Monitor point list
- Signal/speaker list
- Auxiliary control list
- Feedback point list
- Utility point list
- LED/switch status list

3.1.6. Menu Lists

3.1.6.1. Scrolling through the menu options or lists shall be accomplished in a self-directing manner in which prompting messages shall direct the user.

3.1.6.2. Menu lists shall be password protected.

3.1.6.3. Acknowledgment for each abnormal condition shall be provided in accordance with NFPA 72 requirements:

3.1.7. Condition Display Order

3.1.7.1. The System shall display the first unacknowledged condition.

3.1.8. Acknowledge Password Protection

3.1.8.1. Acknowledge functions shall feature password protection if the user has insufficient privilege to acknowledge such conditions.

3.1.8.2. A message shall indicate insufficient privilege but shall allow the user to view the points without acknowledging them.

3.1.8.3. Should the user have sufficient privilege to acknowledge, a message will be displayed informing the user that the condition has been acknowledged.

3.1.9. Acknowledgement

3.1.9.1. After all points have been acknowledged, the LEDs shall glow without blinking and the audible signal shall be silenced.

3.1.9.2. The total number of alarms supervisory and trouble conditions shall be displayed along with a prompt to review each list chronologically. The end of the list shall be clearly defined.

3.1.10. Alarm Silencing:

3.1.10.1. When the "Alarm Silence" button is pressed all alarm signals shall cease operation, except during alarm silence inhibit mode.

3.1.10.2. It shall be possible to selectively program signal circuits as non-silenceable.

3.1.11. System Reset:

3.1.11.1. The system reset button shall be used to return the system to its normal state after an alarm condition has been remedied.

3.1.11.2. The LCD display shall step the user through the reset process with simple English Language messages including a final message indicating the system has been returned to the normal condition.

3.1.12. Function Keys:

3.1.12.1. Additional function touch switches shall be provided to access status data for the following points:

- Initiating device circuits
- Indicating appliance circuits
- Auxiliary relays
- Feedback points
- All other input/output points

3.1.13. Available Status Data

3.1.13.1. The following status data shall be available.

- Primary State of point
- Zone, Point Address and Card type information
- Circuit Status
- Current priority of outputs
- Disable/Enable status
- Automatic/Manual Control Status of output points (Hand-Off/Auto Switches)
- Relay Status

3.1.14. Utility Points:

3.1.14.1. Each control panel shall have dedicated utility point supervisory and acknowledge buttons. Activation of a utility point shall activate the system supervisory service audible signal and illuminate the appropriate utility point LED on the control panel, at the Master Control Console and at the guard shack network control panel.

3.1.14.2. Pressing the appropriate acknowledge button shall silence the audible alarm, while maintaining the LED 'ON' indicating the OFF-normal condition.

3.1.14.3. Restoring the condition to its normal position, or locally resetting the acknowledge switch shall extinguish the LED, indicating normal conditions.

3.1.14.4. The following utility point status shall be available:

- Door monitor contact status for each door on system
- Building #1 engine generator run signal
- Building #3 engine generator run signal
- Building #1 engine generator alarm signal

3.1.15. Alarm History Log:

3.1.15.1. The system shall be capable of logging and storing up to 1000 events in the History Log. These events shall be stored in a battery protected random access memory. Each recorded event shall include the time and date of that event's occurrence.

3.1.15.2. The following Alarm History events shall be stored:

- Alarms
- Alarm Acknowledgment
- Alarm Silence
- System Reset
- Alarm Historical log cleared

3.1.16. Trouble History Log

3.1.16.1. The following Trouble History events shall be stored:

- Trouble conditions
- Supervisory alarms
- Trouble acknowledgment
- Supervisory acknowledgment
- Walk Test results
- Trouble Historical log cleared

3.1.17. Access Levels

3.1.17.1. There shall be four (4) access levels with level 4 being the most secure level.

3.1.17.2. Level 1 actions shall not require a passcode.

3.1.17.3. Passcodes shall be numerical and shall consist of up to six (6) digits. Changes to passcodes shall be made only by authorized personnel.

3.1.18. Printer/CRT Interface Card:

3.1.18.1. The control panel shall include an output port (RS-232) capable of operating remote CRT's and/or printers from a Central Processing Unit.

3.1.19. Remote Station Interface:

3.1.19.1. A digital alarm communicator transmitter, remote station transmitter, or municipal tie shall provide interface with a remote control station for monitoring alarm and trouble conditions. Communication to central station shall be by way of two supervised telephone lines.

3.1.20. Addressable Interface Module:

3.1.20.1. The system must provide communication with initiating and control devices individually. All of these devices will be individually annunciated at the control panel. Annunciation shall include the following conditions for each point:

- Alarm
- Trouble
- Open
- Short
- Device missing/failed

3.1.21. All Addressable Devices

3.1.21.1. All addressable devices shall have the capability of being disabled or enabled individually.

3.1.21.2. Up to 126 addressable devices may be multi-dropped from a single pair of wires. Systems that require factory reprogramming to add or delete devices are unacceptable.

3.1.21.3. The communication format must allow t-tapping of the circuit wiring.

3.1.22. Alarm Signaling:

3.1.22.1. The Fire Alarm Control Panel shall provide sufficient power and signal circuit capability to meet the requirements of the plans and specifications and to comply with ADA (Americans with Disabilities Act) requirements.

3.1.22.2. The Fire Alarm Control Panel and Power Supplies shall be designed to accommodate all signaling circuits and 20% spare capacity.

3.1.22.3. The Fire Alarm Control Panel shall allow for field programming operation of the signal circuits (i.e. march time, zone coded, zone-signal linking, etc.) This capability shall be included in the system firmware with no additional cost to the Owner.

3.1.23. Annunciator Panel

3.1.23.1. The Fire Alarm Control Panel shall provide an LCD annunciator where drawings indicate remote area annunciation of the corresponding fire alarm signals.

3.1.23.2. The annunciator shall indicate Alarm, Supervisory and Trouble conditions by dedicated LED's and an audible signal.

3.1.23.3. The annunciator shall feature an acknowledge button which, when depressed, shall silence the audible signal.

3.1.23.4. A 160-character LCD display shall provide the same message as displayed on the corresponding Fire Alarm Control Panel. The annunciator panel shall be capable of alarm silence and system reset functions.

3.1.23.5. The annunciator shall be panel mounted with controls visible through a front access panel and operable only by activating an enable key switch.

3.1.23.6. The annunciator panel shall be Gamewell SAN or approved equal.

3.1.24. Cabinets and Consoles:

3.1.24.1. The Fire Alarm Control Panel and annunciator cabinets shall be sized to accommodate all components and modules specified and required for a complete system.

3.1.24.2. Additional space for future expansion shall be provided in the cabinet including, as a minimum, space for:

- Two addressable interface modules
- Conventional Interface Modules (CIM-4 or CIM-8)
- Building Control Modules (BC-4 or BC-8)
- Relay Modules (RM-4 or RM-8)
- Universal Signaling Modules (USM-4 or USM-8).
- Cabinets shall be capable of surface or flush mounting as indicated.
- Sheet steel cabinets shall be completely primed and finish painted.
- The Control Consoles shall accommodate, in one section, power supply, modules and components required for fire alarm control, and system network control and annunciator.

3.1.24.3. All Fire Alarm Control Panels shall be Gamewell IdentiFlex 650 or approved equal.

3.2 ALARM INITIATING DEVICES

3.2.1. Addressable/Analog Detectors:

3.2.1.1.1 All Addressable/Analog Detectors

3.2.1.1.2 All addressable/analog smoke and heat detectors as specified below shall be pluggable into their bases.

3.2.1.1.3 The detector unit shall contain electronics that communicate the detector chamber analog value to determine (normal, alarm, trouble) to the control panel over two wires. The same two wires shall also provide power.

3.2.1.1.4 Upon removal of the head, the base shall transmit a trouble signal to the control panel.

3.2.1.1.5 It shall be possible to change out detector heads without having to reprogram or address the unit.

3.2.1.1.6 The detector's address shall be stored in the base. Detectors that store address information in the head shall not be allowed.

3.2.1.1.7 Addressable/analog detectors shall be U.L. listed.

3.2.1.2. Ionization Type Detectors:

3.2.1.2.1 Addressable/analog ionization type smoke detectors shall be a two chamber type and shall operate on ionization principal activated by presence of combustion gases.

3.2.1.2.2 Units shall be restorable with individual indicating lamp.

3.2.1.2.3 Sensitivity of detectors shall be individually adjustable at the control panel.

3.2.1.2.4 Stable operation under varying conditions such as vibration, mechanical shock and changes in supply voltage, ambient temperature and barometric pressure.

3.2.1.2.5 A combustion gas signal verification circuit shall check to avoid false alarm.

3.2.1.2.6 A visual indication of alarm shall be provided by a LED on the detector.

3.2.1.2.7 Addressable/analog ionization detectors shall be Gamewell Model XP95-I or approved equal.

3.2.1.3. Photoelectric Type Detectors:

3.2.1.3.1 Addressable/analog photoelectric smoke detectors shall sense the presence of smoke particles between a light source and a receiver within the detector.

3.2.1.3.2 Sensitivity shall be set by the manufacturer and provisions shall be included to check the sensitivity at the control panel without generating smoke.

3.2.1.3.3 The unit shall be equipped with a visible LED for alarm indication.

3.2.1.3.4 The detector screen and cover shall be easily removable for field cleaning.

3.2.1.3.5 Addressable/analog photoelectric detectors shall be Gamewell Model XP95-P or approved equal.

3.2.1.4. Duct Type Detectors:

3.2.1.4.1 Addressable/analog duct type smoke detectors shall operate on ionization or photoelectric principal, as indicated and previously specified.

3.2.1.4.2 For mounting on ductwork the detector shall include a sampling tube which shall be field cut to size to cover complete duct width.

3.2.1.4.3 The unit shall be restorable.

3.2.1.4.4 The detector shall be cable of stable operation under varying conditions, including vibration, mechanical shock and changes in supply voltage, ambient temperature and barometric pressure.

3.2.1.4.5 Unit shall be complete with relay as required for fan shutdown, and auxiliary contacts for Building Automation System interface.

3.2.1.4.6 The unit shall be equipped with a visible LED for alarm indication.

3.2.1.4.7 The detector screen and cover shall be easily removable for field cleaning.

3.2.1.4.8 Addressable duct detectors shall be Gamewell Model No. XP95-PD or XP95-ID for use with ionization or photoelectric detectors specified above, or approved equal.

3.2.2. Addressable Manual Stations:

3.2.2.1. The addressable manual station shall be capable of field programming of its "address" location on an addressable initiating circuit.

3.2.2.2. The manual station shall be fitted with screw terminals for field wire attachment.

3.2.2.3. The manual station shall be non-coded, semi-recessed, and restorable.

3.2.2.4. The addressable manual station shall be U.L. listed.

3.2.2.5. The addressable manual station shall be Gamewell Model No. MS-95 or approved equal.

3.2.3. Fire System Components Provided by Others:

3.2.3.1. Supervised fire suppression system flow switches, pressure switches and other components provided by others shall be wired to meet the requirements of Division 16.

3.2.3.2. Conduit and wire shall comply with the requirements in other Division 16 sections.

3.2.4. Point Identification Device (PID):

3.2.4.1. A Point Identification Device (PID) shall be suitable for monitoring a single conventional initiating device type such as waterflow, manual station or non-addressable detectors, and for control of evacuation indicating appliances and AHU systems. Modules shall include cover for surface mounting. The PID shall provide for feedback to the FACP for positive confirmation of the controlled devices activity.

3.2.4.2. A Point Identification Device shall be provided for interfacing normally open direct contact devices to any of the addressable initiating circuits, and providing HVAC equipment shutdown. Control module relay contacts are rated 2A @ 120VAC or 28VDC, resistive.

3.2.4.3. A Point Identification Device shall be Gamewell Model No. PID-95 for single point applications and devices.

3.2.5. Collective Zone Interface Module (CZI):

3.2.5.1. A Collective Zone Interface Module (CZI) shall be suitable to connect supervised conventional initiating device or zone of initiating such as waterflow switches, tamper switches, detectors and other such devices to any of the intelligent analog loops.

3.2.5.2. The Collective Zone Interface Module shall be provided for configuring remotely located conventional zones on the analog circuit. The Collective Zone Interface shall provide power for up to 25 conventional type detectors. The Collective Zone Inteface are designed for surface or flush mounting and are provided with an LED for annunciation. The CZI shall utilize a 4 11/16" by 3" deep backbox and shall include a cover for surface mounting.

3.2.5.3. The Collective Zone Interface Module shall be Gamewell Model No. CZI-95.

3.2.6. Control Elements

3.2.6.1. A remote Control Element (CE) shall be provided for any devices that require control, activation or feedback during Fire Alarm condition such as stairwell pressurization fans, smoke exhaust, and damper control. Provide Gamewell Model No. CE-95 Control Element with one Form C relay Rated @10 amps @ 30VDC suitable for flush or surface mounting.

3.2.6.2. The Control Element shall be Gamewell Model No. CE-95.

3.3 ALARM INDICATING DEVICES

3.3.1. Visual Alarm Signals:

3.3.1.1. Visual units with flush trims and backboxes shall be provided for all locations as shown on the plans (office areas, etc.). Visual units shall provide 100 candela/second Xenon flash visible at all angles, and shall meet the requirements of the Americans with Disabilities Act (ADA).

3.3.1.2. Visual alarm signals shall be UL listed for fire protection service and shall produce a minimum intensity of 100 candela at all angles with a flash rate of 1 Hz minimum to 3 Hz maximum with continuously applied voltage. The xenon flash tube shall be enclosed in clear or nominal white (i.e., unfiltered or clear filtered white light) lens. The maximum pulse duration shall be two-tenths of one second ((0.2 sec) 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.

3.3.1.3. Visual Signals shall be Gamewell Model No. 70986 or approved equal.

3.3.2. Audible Alarm Signals:

3.3.2.1. Alarm horns shall be 4” vibrating type and shall include backboxes, flush mounted baffle and ceiling tile bridge.

3.3.2.2. Where indicated on the plane, provide a Gamewell Model No. 70990 Horn/Strobe combination with backbox.

3.3.2.3. Audible alarms shall not exceed sound levels of 120 dbA.

3.3.2.4. The visual alarm shall be mounted with the alarm horn where shown.

3.3.2.5. Horns shall be Gamewell Model No. 70398 or approved equal.

3.4 PRINTERS

3.4.1. Printers shall be provided and installed as shown.

3.4.2. All printed information shall include time and date.

3.4.3. A desktop 80 column printer shall provide a hard copy record of system events. The printer shall support the following features:

- 120 VAC input power
- 180 characters per second
- kilobytes buffer capacity
- Impact dot matrix
- Cartridge type ribbon
- Friction feed for cut forms
- Tractor feed for continuous 9-1/2" wide pin-to-pin fanfold paper
- UL listed

3.5 GRAPHIC CHART

3.5.1. CAD generated graphics charts shall be installed in each building indicating building floor plan(s) and initiating devices with circuit numbers.

3.5.2. Charts shall be 11 x 17 floor plans reduced from manufacturer's approved floor plan shop drawings, framed beneath non-glare glass for wall hanging.

4. EXECUTION

4.1 INSTALLATION

4.1.1. The contractor shall provide and install the system in accordance with the plans and specifications, all applicable codes and the manufacturer's recommendations.

4.1.2. Detector Installation

4.1.2.1. Detector locations shall be no closer than 4' from air supply outlets, nor in beam pockets deeper than 12". No detector shall be purposely recessed in a ceiling.

4.1.2.2. Duct type smoke detectors shall be provided under this section of the specification for mounting by the mechanical contractor. All conduit, wire and final connections shall be performed by the Division 16 contractor.

4.1.3. Programming

4.1.3.1. The Contractor shall perform all programming of system including local panel programming and network programming.

4.1.3.2. The Contractor shall perform the necessary assigning of system points.

4.1.4. Wiring

4.1.4.1. The contractor shall furnish and install in accordance with manufacturer's instruction all wiring, conduit, and outlet boxes for installation of a complete system as described herein and drawn.

4.1.4.2. All wiring shall meet NEC 760 for fire alarm system wiring. All wiring shall be tagged at junction points and shall test free of grounds and shorted between conductors. All additional labor costs incurred by the Fire Alarm System Technician to clear wiring faults shall be charged to the installing contractor.

4.1.4.3. All final terminations of the field wiring shall be made by or under the direct supervision of the Fire Alarm System Manufacturer's representative. Any damage to the panel as a result of the contractor terminating wires or powering up the panel without the supervision of an authorized representative of the Fire Alarm Panel Manufacturer shall be charged to the installing contractor.

4.1.5. Miscellaneous

4.1.5.1. All junction boxes shall be painted red and labeled "Fire Alarm." Color coded wiring shall be maintained throughout the installation.

4.1.5.2. Installation of equipment and devices relevant to other work in the contract shall be closely coordinated with the appropriate subcontractors.

4.1.5.3. The Contractor shall clean all dirt and debris from the interior and exterior of the fire alarm equipment after completion of the installation.

4.1.5.4. The manufacturer's Authorized Representative shall provide on-site supervision of installation.

1.1 ON-SITE START-UP

1.1.1. System Check

4.1.5.5. Prior to energizing any part of this system, the factory authorized representative shall check thoroughly the installation, and perform pre-start checks. This representative shall check all points, fire alarm panels and complete network to ensure proper operation, and make any needed repairs and/or replacements required. Sufficient time shall be included in the project bid to cover all required start-up assistance and testing.

1.1.2. Testing

4.1.5.6. The Contractor shall test fully the completed fire alarm system in accordance with NFPA-72 in the presence of the Owner's Representative and under the direction of the factory authorized representative.

4.1.5.7. Testing shall be provided as required by the local Fire Marshal.

4.1.5.8. Upon successful completion of tests, the Contractor shall so certify in writing to the Owner's Representative.

4.1.5.9. Alarm horn sound levels shall be tested during Owner's normal operating conditions to ensure emergency signaling is of an approved sound level over normal ambient noise. The test shall be performed during a 90-day period following the above "Fire Marshal" test on a date to be selected by the Owner.

1.2 TRAINING

1.2.1. Demonstration

4.1.5.10. A factory authorized representative shall demonstrate the the fire alarm system.

4.1.5.11. The demostration shall simulate possible operating conditions and alarms.

1.2.2. Scope of Training

4.1.5.12. Training shall include documentation and hands-on exercise necessary to enable the Owner's Representative to assume full programming and operating responsibility.

1.2.3. Project Bid

4.1.5.13. The project bid shall include sufficient time for required initial training and follow-up assistance.

4.1.6. Technical Support

4.1.6.1. Technical support and service by factory trained personnel shall be available from the manufacturer's representative.

4.2 CENTRAL STATION

4.2.1. The system shall be connected to an approved off-site central monitoring station with equipment and installation methods as required and approved by local fire department.

4.2.2. A three (3) year renewable contract with the central station shall be included beginning the day the system is successfully tested and completed.

4.2.3. The cost of the Central Station tie shall be broken out separately from the fire alarm system bid.

4.3 GUARANTY

4.3.1. The Installing contractor shall guaranty all wiring to be free from inherent mechanical and electrical defects for a period of one year from installation.

4.3.2. The Manufacturer's Representative shall provide the Owner's Representative and Certification of Installation for the entire system certifying that the system was installed and is operating properly and in accordance with these specifications.

4.3.3. The Manufacturer's Representative shall provide the Owner with a three (3) year Maintenance Proposal upon completion of the Project.