

SECTION 13852 – FIRE ALARM SYSTEMS  
(1 Oct 2004)

PART 1 - GENERAL

1.1 SCOPE

This specification covers fire detection and alarm systems (both analog-intelligent type and conventional zoned type) and fire reporting systems. This specification applies to the installation of new systems or the modification of existing systems to the extent indicated below.

A. Fire Detection and Alarm

This specification covers fire detection and alarm systems including, but not limited to: fire alarm control panel, alarm and supervisory initiating devices, notification appliances, AC power supply, battery power supply, and interconnecting conduit and wire. Fire alarm panels shall be compatible with Monaco radio transceivers. When a new system is being installed, the system shall have all new wiring. The old system including conduit and wiring shall be removed to the extent possible. Conduits embedded in concrete or brick may be reused. Refer to paragraph “DESCRIPTION OF WORK” below for specific work to be done on this project.

B. Fire Reporting

This specification covers fire reporting systems including, but not limited to: Monaco radio transceiver, antenna, service entrance cap, lightning protection, AC power supply, battery power supply, and interface wiring to the fire alarm control panel(s). When a new reporting system is being installed, the old reporting system including conduit and wiring shall be removed to the extent possible. The former fire alarm reporting cabinet shall not be used as a junction box. Refer to paragraph “DESCRIPTION OF WORK” below for specific work to be done on this project.

1.2 DESCRIPTION OF WORK

A. (provide fire detection and alarm details specific to this project)

B. (provide fire reporting details specific to this project)

1.3 REFERENCES

The publications listed below form a part of this specification to the extent referenced. Publications shall be the most recent updated version at the time of the contract. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI C135.30 Zinc-Coated Ferrous Ground Rods for Overhead or Underground Line Construction

ANSI S3.41 Audible Emergency Evacuation Signal

FACTORY MUTUAL ENGINEERING AND RESEARCH (FM)  
FM P7825 Approval Guide

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)  
IEEE C62.41 Surge Voltages in Low-Voltage AC Power Circuits

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 National Electrical Code  
NFPA 72 National Fire Alarm Code  
NFPA 90A Installation of Air Conditioning and Ventilating Systems  
NFPA 780 Lightning Protection Code

UNDERWRITERS LABORATORIES (UL)

UL-04 Fire Protection Equipment Directory  
UL 6 Rigid Metal Conduit  
UL 38 Manually Actuated Signaling Boxes for Use with Fire-Protective Signaling Systems  
UL 228 Door Closers-Holders, with or without Integral Smoke Detectors  
UL 268 Smoke Detectors for Fire Protective Signaling Systems  
UL 467 Grounding and Bonding Equipment  
UL 521 Heat Detectors for Fire Protective Signaling Systems  
UL 797 Electrical Metallic Tubing  
UL 864 Control Units for Fire-Protective Signaling Systems  
UL 1242 Intermediate Metal Conduit

#### 1.4 MAINTENANCE OF EXISTING FIRE PROTECTION SYSTEMS

The contractor shall maintain existing fire alarm and fire suppression systems in full operational condition to the maximum extent possible. Changeover from an old system to a new system shall be made during a normal 8-hour shift or during an approved utility outage. The contractor shall not leave an area unattended with an impaired fire alarm or fire suppression system without an approved utility outage.

- A. Shutdown of Fire Alarm Systems: Shutdown of both the fire alarm system and a fire suppression system at the same time shall not be allowed. Whenever possible the contractor shall perform work on fire alarm or fire suppression systems during normal duty hours and have the system restored to normal operation by the close of business each day. If the work cannot be accomplished during normal working hours, the Contractor shall request a Utility Outage to cover the time required to do the work. The Contractor shall request a Utility Outage 14 days prior to the outage.
- B. Notification: The contractor shall notify the Base Fire Department (777-3021) no fewer than ten days in advance of taking down any portion of a fire alarm or fire suppression system. Do not proceed with interruption of fire alarm or fire suppression system service without the fire department's and the Government project manager's permission. The contractor shall notify the Base Fire Department when the system has been restored to normal operation. The contractor shall notify the facility occupants prior to testing any notification appliances and notify the occupants when testing is complete.

- C. Request for Shop Assistance: The Contractor shall request shop assistance to shutdown or startup the High Pressure Fire Protection Loop. The Contractor may request shop assistance to shutdown or startup other systems. The Contractor shall call the Civil Engineering Project Manager and request East Zone Suppression assistance. At least 48 hours notice is required.
- D. Sequencing and Scheduling: Maintain the existing fire alarm/reporting equipment in fully operational condition until the new equipment has been tested and accepted. As new equipment is installed, label it "NOT IN SERVICE" until it is accepted. Remove labels from new equipment when put into service and label existing fire alarm/reporting equipment "NOT IN SERVICE" until removed from the building. After acceptance of the new fire alarm/reporting system, remove existing disconnected fire alarm/reporting equipment.

#### 1.5 GENERAL REQUIREMENTS

- A. Standard Products: Material and equipment shall be the standard products of a manufacturer regularly engaged in the manufacture of the products and shall be items that have been in satisfactory use for at least 4 years prior to bid opening. Equipment shall be supported by a service organization that can provide service within 24 hours.
- B. Nameplates: Major components of equipment shall have the manufacturer's name, address, type or style, voltage and current rating, and catalog number on a noncorrosive and nonheat-sensitive plate, which is securely attached to the equipment.
- C. Keys and Locks: Locks shall be keyed alike. Provide two keys for each fire alarm control panel and two keys for each Monaco transceiver panel. All keys shall have stamped identification numbers.
- D. Tags: Tags with stamped identification number shall be furnished for keys and locks.
- E. Verification of Dimensions: The Contractor shall become familiar with all details of the work, verify all dimensions in the field, and shall advise the Contracting Officer of any discrepancy before performing the work.
- F. Compliance: The fire detection and internal alarm system and the central reporting system shall be configured in accordance with NFPA 72. The equipment furnished shall be UL listed, FM approved, or approved by a nationally recognized testing laboratory in accordance with the applicable NFPA standards. The system shall be compatible with Monaco fire alarm radio transceivers and with the Monaco D-21 central receiving stations at Hill AFB, UTTR, and Little Mountain and listed by Underwriters Laboratories, or Factory Mutual Engineering and Research, or be approved or listed by a nationally recognized testing laboratory to operate in conjunction with the Monaco D-21 central receiving stations.

#### 1.6 INSTALLER QUALIFICATIONS:

- A. All contractor employees installing fire detection and alarm systems shall: (1) be National Burglar and Fire Alarm Association (NBFAA) certified in the State of Utah, (2) National Institute of Certification in Engineering Technologies (NICET) fire alarm level II certified, and (3) be authorized by the manufacturer of the fire alarm control panel to install their equipment. They shall carry proof of such certification at all times while working on the fire alarm system.

- B. All contractor employees installing the Monaco transceiver shall have the above qualifications as well as having Monaco Enterprise's certification enabling them to work on Monaco transceivers. They shall carry proof of such certification at all times while working on the fire alarm system. This is enforceable in the State of Utah. State inspectors frequently shut down system installation when they discover that the installer is not certified to perform the work. Hill AFB follows the same policy.

## 1.7 SYSTEM DESIGN

- A. The fire detection and alarm system shall conform to the applicable provisions of NFPA 72, Uniform Federal Accessibility Standard (UFAS) and Americans with Disabilities Act (ADA).
- B. Fire Alarm Control Panel (FACP): The FACP shall receive inputs from alarm initiating devices, supervisory initiating devices, self-monitoring, and pre-warning signals. The FACP shall process these signals to annunciate them at the FACP, to activate notification appliances, to perform fire safety control functions, and to report common and zone signals to the radio transceiver as indicated in the Input/Output Matrix located at the end of this section. All inputs shall require manual reset at the FACP, except for AC Power failure that shall be automatic reset. Signals, even if silenced, shall constantly report to the radio transceiver until restored to normal.
- C. Circuits:
  - 1. Signaling Line Circuits (SLC) shall be Class A, Style 6 or Style 7.
  - 2. Initiating Device Circuits (IDC) shall be Class A, Style D.
  - 3. Notification Appliance Circuits (NAC) shall be Class A, Style Z.
  - 4. Fire Safety Control Circuits shall be monitored for integrity unless the control device or auxiliary relay operates on loss of power.
  - 5. All class A circuits shall be installed such that the outgoing and return conductors, exiting from and returning to the FACP are routed separately as specified in NFPA 72.
- D. Initiating Devices: Initiating devices shall initiate an Alarm or a Supervisory signal. The normally open contacts on the devices shall be used to initiate either an Alarm or a Supervisory signal.
- E. Self Monitoring: The system's self-monitoring feature shall monitor the panel, circuits, and devices for proper operation and capability.

### F. Operational Features:

The system shall have the following operating features:

- 1. One person test mode - Activating an initiating device in this mode will activate an alarm for a short period of time, then automatically reset the alarm, without activating the transmitter during the entire process
- 2. Notification appliance silencing switch or switches which, when activated, will silence notification appliances, but will not affect the zone indicating lamps nor the operation of the transmitter. This switch shall be over-ridden upon activation of a subsequent alarm from an unalarmed zone and the notification appliances will be activated.
- 3. The FACP shall have sufficient memory to record 500 events.
- 4. Confirmation or verification modules used on smoke detection initiating circuits. The modules shall interrupt the transmission of an alarm signal to the system control panel for a factory set period. This interruption period shall be adjustable from 1 to 60 seconds and

be factory set at 20 seconds. Immediately following the interruption period, a confirmation period shall be in effect during which time an alarm signal if present will be sent immediately to the control panel. All fire alarm devices other than smoke detectors shall be prohibited on circuits controlled by confirmation or verification modules.

5. Smoke detectors shall have combined alarm initiating and power circuits.
  6. Fan shutdown shall be accomplished by the FACP energizing the normally closed contacts on a fan shutdown relay switch will cause the fan to shutdown.
  7. Zones shall be coordinated with the radio transceiver zones as indicated on the ZID Request form located at the end of this section.
  8. Each initiating device shall have the capability of being enabled or disabled at the FACP.
  9. Strobe appliances in the same room shall be synchronized.
- G. Primary Power: Operating power shall be provided as required by paragraph Power Supply for the System. Transfer from normal to emergency power or restoration from emergency to normal power shall be fully automatic and not cause transmission of a false alarm. Loss of ac power shall not prevent transmission of a fire alarm or supervisory signal to the Base Fire Department.
- H. Battery Backup Power: Battery backup power shall be through use of rechargeable, sealed-type storage batteries and battery charger.

## 1.8 SUBMITTALS

The following shall be submitted in accordance with SECTION 01000 GENERAL REQUIREMENTS:

- A. Product Data
1. Equipment: Certified copies of current approvals or listings issued by UL, FM or other nationally recognized testing laboratory, showing compliance with specified NFPA standards.
  2. Catalog Cuts: Provide manufacturer's catalog cuts etc. to demonstrate equipment complies with this specification. Data shall indicate the name of the manufacturer of each item of equipment, with data highlighted to indicate model, size, options, etc. proposed for installation.
- B. Qualifications
1. Designer: The Designer shall be either an individual who is registered as a professional fire protection engineer or an individual who has obtained National Institute for Certification in Engineering Technologies (NICET) Level III certification in fire alarm systems. Submit Designer qualifications, with verification of at least 4 years of current experience in the design of fire alarm systems. Provide a copy of engineering registration (with license number) or a copy of NICET certification as applicable. If the design involves a new transceiver, then Designer shall provide verification of having attended Monaco Enterprise's Fire Alarm Systems Design and Maintenance Training Class.
  2. Installers: Submit National Burglar and Fire Alarm Association (NBFAA), NICET fire alarm level II, and manufacturer's certification for all employees who will be working on the fire detection and alarm/reporting system. Also submit Monaco Enterprise's certification for all employees who will be working on the fire reporting system. Installer shall carry proof of such certification at all times while working on Monaco transceivers.

- C. Calculations: The following calculations shall be completed and signed by the Designer.
1. Battery Calculations: Substantiating battery calculations for standby and alarm mode operation power requirements. Ampere-hour requirements for each system component and each panel component, and the battery-recharging period shall be included.
  2. Voltage Drop: Voltage drop calculations for notification appliance circuits to indicate that sufficient voltage is available for proper appliance operation.
- D. Shop Drawings: Fire Alarm and Reporting System: Detail drawings shall be signed by the Designer. The drawings shall consist of a complete list of equipment and material, including manufacturer's descriptive and technical literature, catalog cuts, and installation instructions. Note that the contract drawings show layouts based on typical detectors. The contractor shall check the layout based on the actual detectors to be installed and make any necessary revisions in the detail drawings. The detail drawings shall also contain complete wiring and schematic diagrams for the equipment furnished, equipment layout, and any other details required to demonstrate that the system has been coordinated and will properly function as a unit. Detailed point-to-point wiring diagrams, showing all points of connection. Diagram shall include connections between system devices, appliances, control panels, supervised devices, and all equipment that is activated or controlled by the panel; this shall include connections between fire alarm control panel(s) and the Monaco transceiver, primary power source, battery power source, antennae system and the lightning protection system. Layout drawing shall show location of the Monaco transceiver, antenna, and fire alarm control panel(s).
- E. Zone Identification (ZID) Number Request Form: Submit the ZID Number Request Form filled out completely except for the ZID numbers to the Hill AFB Civil Engineering Electronics Shop (CEZS). A copy of the ZID Number Request Form is included at the end of this Section.
- F. Completion Documents
1. Record of Completion: Provide the "Record of Completion" form according to NFPA 72 to the Government Project Manager. This shall be signed by the Designer and shall be submitted prior to the government's acceptance of the system. Note: this requires testing each smoke detector with smoke.
  2. Record Drawings: Record drawings shall be signed by the Designer, showing conduit layout, equipment layout and wiring diagrams of the system as installed shall be submitted prior to the government's acceptance of the system. Drawings larger than 8.5" x 14" shall be provided on reproducible Mylar film.
  3. Operation and Maintenance Manuals: Provide three copies of operation and maintenance manuals outlining step-by-step procedures required for system startup, operation, shutdown, routine maintenance procedures, possible breakdowns and repairs. The manuals shall include the manufacturer's name, model number, service manual, parts list, and brief description of all equipment and their basic operating features. The manuals shall include spare parts data for each different item of material and equipment specified and a complete list of parts and supplies with the current unit prices and source of supply. Include a copy of Monaco's Installation Operation and Maintenance Manual; a copy of the approved ZID Request Form; a copy of the NFPA Acceptance Test; and a cover sheet showing the Building Number; Installing Contractor's name and phone number, Service Organization's name and phone number, and the year the project was completed.
  4. Testing and Test Reports: Provide all personnel and equipment necessary for performing all inspections and tests. Provide a written test report, signed by the Designer, showing compliance with all applicable NFPA 72 Acceptance Test requirements. Refer to "Inspection and Testing Form", which is located at Figure 10.6.2.3 of the 2002 edition of NFPA 72.

5. Intelligent Analog Fire Alarm Panel Software: Provide a copy of the panel programming on either a 3.5" floppy, ZIP, or CD along with a hard copy printout to the Hill AFB Civil Engineering Electronics Shop (CEZS).

- G. Submittals to Authorities Having Jurisdiction: In addition to distribution requirements for submittals specified in Division 1 Section "Submittals," make an identical submittal to authorities having jurisdiction. To facilitate review, include copies of annotated Contract Drawings as needed to depict component locations. Resubmit if required to make clarifications or revisions to obtain approval. On receipt of comments from authorities having jurisdiction, submit them to Project Manager for review.

#### 1.9 DELIVERY AND STORAGE

All equipment delivered and placed in storage shall be stored with protection from the weather, humidity and temperature variation, dirt and dust, and any other contaminants.

#### 1.10 EXTRA MATERIALS

Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Lamps for Remote Indicating Lamp Units: Quantity equal to 10 percent of amount installed, but not less than 1 unit.
2. Lamps for Strobe Units: Quantity equal to 10 percent of amount installed, but not less than 1 unit.
3. Smoke, Fire, and Flame Detectors: Quantity equal to 10 percent of amount of each type installed, but not less than 1 unit of each type.
4. Detector Bases: Quantity equal to 2 percent of amount of each type installed, but not less than 1 unit of each type.
5. Keys and Tools: One extra set for access to locked and tamperproofed components.
6. Audible and Visual Notification Appliances: One of each type installed.
7. Two spare fuses of each type and size required and five spare lamps and LED's of each type shall be furnished. Two percent of the total number of each different type of detector, but no less than two each shall be furnished.

- 1.11 TRAINING: Provide two hours training for Base Fire Department and Maintenance personnel. The training shall be conducted in the building where the system is installed. During the training the contractor shall demonstrate the operation and maintenance of the Monaco transceiver and the fire alarm control panel. The training shall start after the system is functionally completed but prior to final acceptance tests. The training shall cover all of the items contained in the operating and maintenance instructions.

#### 1.12 PREFINAL AND BENEFICIAL OCCUPANCY PROCEDURES

Both the Fire Detection and Alarm System and the Fire Alarm Reporting System shall be inspected as a complete package. After all tests and training have been completed; and after receipt of the acceptance test reports, operations and maintenance manuals, and record

drawings, a Prefinal Inspection shall be held. The Contractor, the Contracting Officer, the Using Agency, the Base Fire Department, the Base Fire Protection Maintenance Shop will be invited to attend the Prefinal Inspection. Following the inspection, the Contractor shall be notified of the results of the inspection. After all deficiencies, if any, have been corrected; the government shall accept the Fire Detection and Alarm System and the Fire Alarm Reporting System. The government will takeover operation & maintenance responsibilities and the 1-year warranty period shall begin.

## PART 2 - PRODUCTS

### 2.1 ACCEPTABLE MANUFACTURERS

- A. The following are the manufacturers of choice, any other manufacturer must meet or exceed their specifications:
1. Fire Control Instruments (FCI): 7200 Series Intelligent Analog Fire Control Panel.
  2. Siemens Cerb-Pyro: MXL
  3. Fire Control Instruments (FCI): 72.
  4. Siemens Cerb-Pyro: System 3.
  5. Edwards Systems Technologies EST II/III
  6. Notifier AFP Series (200, 400, 1010, 2020)
- B. If specifications are met or exceeded, the following is required with submittals:
1. All test equipment and computer software required to maintain the system, to reconfigure the system, or to make alterations to the system.
  2. Detailed component level schematics or diagrams for circuit boards so repairs can be effected by Electronic Systems Flight.
  3. Any submittal with "Proprietary Software" will be considered non-compliant.

### 2.2 FIRE ALARM CONTROL PANEL (FACP)

- A. Analog Intelligent Control Panels: Analog intelligent control panels shall comply with all the applicable requirements of UL 864. The fire alarm control panel shall be compatible with Monaco transceivers. Panel shall be modular, installed in either a flush, surface, or semi-flush mounted steel cabinet with hinged door and cylinder lock. Control panel shall be a clean, uncluttered, and orderly assembled panel containing all components and equipment required to provide the specified operating and self-monitoring functions of the system. The panel shall have prominent rigid plastic, phenolic or metal identification plates for all lamps, controls, meters, fuses, and switches. Nameplates for fuses shall also include ampere rating. The panel shall have a General Alarm (red), General Supervisory (distinct color or pattern), and a General Trouble (amber) indicator lamp. Panel shall have an 80 character alpha-numeric LCD display that will indicate type of alarm, type of device, device location, device address, and radio transceiver zone for each initiating device. Lamps shall be located on exterior of cabinet door or be visible through the cabinet door. Control panel switches shall be within the locked cabinet. A suitable means shall be provided for testing the control panel visual indicating devices (meters or lamps). Meters and lamps shall be plainly visible when the cabinet door is closed. Loss of power, including any or all batteries, shall not require the reloading of a

program. Upon restoration of power, startup shall be automatic, and shall not require any manual operation.

- B. **Conventional Control Panels:** Conventional control panels shall comply with all the applicable requirements of UL 864. The fire alarm control panel shall be compatible with Monaco transceivers. Panel shall be modular, installed in either a flush, surface, or semi-flush mounted steel cabinet with hinged door and cylinder lock. Control panel shall be a clean, uncluttered, and orderly assembled panel containing all components and equipment required to provide the specified operating and self-monitoring functions of the system. The panel shall have prominent rigid plastic, phenolic or metal identification plates for all lamps, controls, meters, fuses, and switches. Nameplates for fuses shall also include ampere rating. The panel shall have a General Alarm (red), General Supervisory (distinct color or pattern), and a General Trouble (amber) indicator lamp. Lamps shall be located on exterior of cabinet door or be visible through the cabinet door. Control panel switches shall be within the locked cabinet. A suitable means shall be provided for testing the control panel visual indicating devices (meters or lamps). Meters and lamps shall be plainly visible when the cabinet door is closed. Upon restoration of power, startup shall be automatic, and shall not require any manual operation.
- C. **Cabinets:** Cabinets shall be provided with ample gutter space to allow proper clearance between the cabinet and live parts of the panel equipment. If more than one modular unit is required to form a control panel, the units shall be installed in a single cabinet large enough to accommodate all units. Cabinets shall have manufacturer's standard finish and color.
- D. **Remote System Trouble Audible/Visual Appliance:** Audible appliance shall have a minimum sound level output rating of 85 dBA at 3.048 m (10 feet) and operate in conjunction with the panel buzzer. The audible device shall be silenced by the panel buzzer silence switch. A rigid plastic, phenolic or metal identification sign that reads "Fire Alarm System Trouble" shall be provided at the audible appliance. The visual appliance located with the audible appliance shall not be extinguished until the zone has been reset and the trouble condition has been cleared.
- E. **Circuit Connections:** Circuit conductors entering or leaving the panel shall be connected to screw-type terminals with each terminal marked for identification.

### 2.3 STORAGE BATTERIES

Storage batteries shall be provided and shall be the sealed type requiring no additional water. The batteries shall have ample capacity, with primary power disconnected, to operate the fire alarm system for a period of 24 hours. Following this period of operation via batteries, the batteries shall have ample capacity to operate all components of the system, including all alarm notification appliances in the total alarm mode for a minimum period of 5 minutes. Batteries shall be sized to deliver 50 percent more ampere/hours than required for the calculated capacities. Batteries shall be located at the bottom of the control panel or in a separate cabinet. Batteries shall be provided with overcurrent protection in accordance with NFPA 72.

### 2.4 BATTERY CHARGER

Battery charger shall be completely automatic, with high/low charging rate, capable of restoring the batteries from full discharge to full charge within 12 hours. A pilot light indicating when batteries are

manually placed on a high rate of charge shall be provided as part of the unit assembly if a high rate switch is provided. Charger shall be located in control panel or battery cabinet.

## 2.5 MANUAL FIRE ALARM BOXES

Manual fire alarm boxes shall conform to the applicable requirements of UL 38. Manual fire alarm boxes shall be connected into alarm-initiating circuits. Manual boxes shall be installed on either surface or semi-flush mounted outlet boxes. Manual fire alarm boxes shall be either single or double action type. Manual fire alarm boxes shall be finished in red, with raised letter operating instructions of contrasting color. Manual fire alarm boxes requiring the breaking of glass or plastic panels for operation are not acceptable. Manual fire alarm boxes employing glass rods are not acceptable. The use of a key ~~or wrench~~ shall be the only means required to reset the manual fire alarm box. Gravity or mercury switches are not acceptable. Switches and contacts shall be rated for the voltage and current upon which they operate. Manual fire alarm boxes shall have a separate screw terminal for each conductor. Surface mounted boxes shall be painted the same color as the manual fire alarm boxes. Addressable manual fire alarm boxes shall be capable of being field programmed, shall latch upon operation and remain latched until manually reset

## 2.6 FIRE DETECTING DEVICES

Fire detecting devices shall comply with the applicable requirements of NFPA 72, NFPA 90A, UL 268, and UL 521. The detectors shall be provided as indicated. Detector base shall have screw terminals for making connections. No solder connections will be allowed. Detectors shall be connected into alarm initiating circuits. Detectors located in concealed locations (above ceiling, etc.) shall have a remote visible indicator lamp. Installed devices shall conform to the classification of the area. Addressable fire detecting devices except flame detectors shall be dynamically supervised and uniquely identified in the control panel.

### A. Heat Detectors

Heat detectors shall be designed for detection of fire by either fixed temperature, combination fixed temperature and rate-of-rise principle, or rate-compensating principle as specified. Heat detectors shall be rated for a minimum of 15.2 m (50 foot) spacing (smooth-ceiling rated) in accordance with UL 521. Detectors located in areas subject to moisture, exterior atmospheric conditions or hazardous locations as defined by NFPA 70, shall be types approved for such locations. Heat detectors located in attic spaces or similar concealed spaces below the roof shall be intermediate temperature rated.

1. **Combination Fixed-Temperature and Rate-of-Rise Detectors:** Detectors shall be designed for either surface or semi-flush outlet box mounting and supported independently of wiring connections. Contacts shall be self-resetting after response to rate-of-rise principle. Under fixed temperature actuation, the detector shall have a permanent external indication that is readily visible. Detector units located in boiler rooms, showers, or other areas subject to abnormal temperature changes shall operate on fixed temperature principle only. Rating for fixed temperature portion shall be 57.2 degrees C (135 degrees F) or 93.3 degrees C (200 degrees F) in temperature conditioned spaces.
2. **Rate Compensating Detectors:** Detectors shall be either surface or flush mounted, vertical or horizontal type, with outlet box supported independently of wiring connections. Detectors shall be hermetically sealed and automatically resetting.

3. Fixed Temperature Detectors: Detectors shall be designed for either surface or semi-flush outlet box mounting and supported independently of wiring connections. Detectors are designed to detect high heat. The detectors shall have a specific temperature setting of 57.2 degrees C (135 degrees F) or 93.3 degrees C (200 degrees F).

B. Smoke Detectors

Detectors shall be designed for detection of abnormal smoke densities. Smoke detectors shall be either ionization, photoelectric, or projected beam type as specified. Detectors shall contain a visible indicator lamp that shows when the unit is in alarm condition. Detectors shall not be adversely affected by vibration or pressure. Detectors shall be the plug-in type in which the detector base contains terminals for making all wiring connections. Detectors that are in concealed (above false ceilings, etc.) locations shall have a remote visible indicator lamp.

1. Ionization Detectors: Ionization detectors with a dual chamber shall be responsive to both invisible and visible particles of combustion. One chamber shall be a reference chamber and the second a sampling chamber. Detectors containing radium shall not be provided. Detectors shall not cause an alarm condition due to anticipated fluctuations in relative humidity. The sensitivity of the detector shall be field adjustable to compensate for operating conditions. Detector shall require no replacement or readjustment to restore it to normal operation after an alarm condition. Each detector shall be capable of withstanding ambient air velocity up to 1.5 meters per second (300 fpm) in accordance with UL 268. Detectors shall have at least a two-stage sensitivity setting, with detectors initially set for normal sensitivity. A lower sensitivity shall be available for each detector. The lower sensitivity shall be within the limits established for that detector by UL or FM.
  2. Photoelectric Detectors: Detectors shall operate on a light scattering concept using an LED light source. Failure of the LED shall not cause an alarm condition. Detectors shall be factory set for sensitivity and shall require no field adjustments of any kind. Detectors shall have an obscuration rating between 1.9 and 2.4 percent per foot when tested in accordance with UL 268.
  3. Projected Beam Smoke Detectors: Detectors shall be designed for detection of abnormal smoke densities. Detectors shall consist of separate transmitter and receiver units. The transmitter unit shall emit an infrared beam to the receiver unit. When the signal at the receiver falls below a preset sensitivity, the detector shall initiate an alarm. The receiver shall contain an LED, which is powered upon an alarm condition. Long-term changes to the received signal caused by environmental variations shall be automatically compensated. Detectors shall incorporate features to assure that they are operational; a trouble signal shall be initiated if the beam is obstructed, the limits of the compensation circuit are reached, or the housing cover is removed. Detectors shall have multiple sensitivity settings in order to meet UL listings for the different distances covered by the beam. In the event of beam interference for more than three seconds a trouble alarm shall be transmitted.
- C. Combination Smoke and Heat Detectors: Combination smoke and heat detectors shall have an audible device (self-contained) and be designed for detection of abnormal smoke densities by the photoelectric principle and abnormal heat by a fixed temperature sensor. Smoke detectors shall be provided with an LED light source. Failure of the LED shall not cause an alarm condition and the sensitivity shall be factory set at a nominal 3 percent and require no field adjustments of any kind. Heat detector portion shall be fixed temperature sensor rated at 57 degrees C (135 degrees F). The audible appliances shall have a minimum sound output of at least 85 dBA at 3.048 m (10 feet). Detectors shall contain a visible indicator lamp that shows

when the unit is in alarm condition. Detectors shall not be adversely affected by vibration or pressure. Detectors shall be latching devices. Each detector shall be reverse polarity whereby, when connected to the notification appliance circuit, and in the event of a building alarm, the audible appliance shall sound. The smoke detection portion shall be separate from the heat detection portion. If the sensor detects smoke, the FACP will display smoke detector and the individual room sensor shall sound. If the sensor is actuated by heat, the FACP will display heat detector and all building notification appliances and room smoke detectors shall be activated.

D. Duct Smoke Detectors:

1. Photoelectric Smoke Detectors:

- a. Sensor: LED or infrared light source with matching silicon-cell receiver.
- b. Detector Sensitivity: Between 2.5 and 3.5 percent/foot (0.008 and 0.011 percent/mm) smoke obscuration when tested according to UL 268A.

2. Ionization Smoke Detectors:

- a. Sensor: Responsive to both visible and invisible products of combustion. Self-compensating for changes in environmental conditions.
- b. Detector Sensitivity: Between 0.5 and 1.7 percent/foot (0.0016 and 0.0056 percent/mm) smoke obscuration when tested according to UL 268A.

3. UL 268A listed, operating at 24-V dc, nominal.

4. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to the FACP.

5. Plug-in Arrangement: Detector and associated electronic components shall be mounted in a plug-in module that connects to a fixed base. The fixed base shall be designed for mounting directly to the air duct. Provide terminals in the fixed base for connection to building wiring.

- a. Weatherproof Duct Housing Enclosure: UL listed for use with the supplied detector. The enclosure shall comply with NEMA 250 requirements for Type 4X.

6. Self-Restoring: Detectors shall not require resetting or readjustment after actuation to restore them to normal operation.

7. Integral Visual-Indicating Light: LED type. Indicating detector has operated and power-on status. [Provide remote status and alarm indicator and test station where indicated.]

8. Remote Control: Unless otherwise indicated, detectors shall be analog-addressable type, individually monitored at the FACP for calibration, sensitivity, and alarm condition, and individually adjustable for sensitivity from the FACP.

9. Each sensor shall have multiple levels of detection sensitivity.

10. Sampling Tubes: Design and dimensions as recommended by manufacturer for the specific duct size, air velocity, and installation conditions where applied.

11. Relay Fan Shutdown: Rated to interrupt fan motor-control circuit.

E. Flame Detectors

The detectors shall comply with FM P7825. The detectors shall be sensitive to the micron range best suited for their intended use. The detectors shall operate over electrically supervised

wiring circuits and the loss of power to the detector shall result in a trouble signal. A self-test feature shall be provided for each detector to be individually tested.

~~1. Infrared (IR) Single Frequency Flame Detector: The detector shall be sensitive to the micron range best suited for the intended service.~~

~~2. Infrared (IR) Dual Frequency Flame Detector: The IR detector shall consist of two or more IR sensors, each selected for a different IR frequency. The primary sensor shall be sensitive to the Micron range best suited for the intended service. Secondary sensors are tuned to different IR wavelengths to null out the effect of black body radiation to the primary sensor.~~

~~3. Ultraviolet (UV) Flame Detectors: UV flame detector shall be of the narrow band response type which operates on radiated ultraviolet energy and shall be sensitive to the Micron range best suited for the intended service. The cone of vision shall be 80 degrees or greater. Each detector shall be completely insensitive to light sources.~~

**4.1. Combination UV/IR/IR Flame Detector: The UV/IR detector shall provide discrimination against false alarms by requiring both UV and IR flame detection before an alarm is sent. The UV sensor shall be sensitive in the range of 0.185 to 0.265 micrometers only. The IR sensor shall be sensitive in the micrometers range best suited for the intended service.**

## 2.7 NOTIFICATION APPLIANCES

Audible notification appliances shall be heavy duty and conform to the applicable UL. Appliances shall use the distinctive three-pulse temporal pattern as required by ANSI S3.41. The temporal pattern appliances shall be synchronized within a notification zone. Tones will be selectable. Audible appliances shall have at least 85 dB at 3.1 m (10 ft). Visible appliances shall be at least 100 Candela. Appliances shall be connected into alarm notification appliance circuits and shall have a separate screw terminal for each conductor. Appliances shall have manufacturer's standard red finish. Visible notification appliances in the same field of view shall flash in synchronization. The light source color shall be clear or nominal white.

- A. Alarm Bells: Bells shall be surface mounted with the matching mounting back box surface mounted or recessed. Bells shall be suitable for use in a self-monitored circuit. Bells shall be the underdome type producing a minimum output rating of 85 dBA at 3.1 m (10 feet). Bells used in exterior locations shall be specifically listed or approved for outdoor use and be provided with metal housing and protective grilles. Single stroke, electrically operated, self-monitored, solenoid bells shall be used for coded applications.
- B. Alarm Horns: Horns shall be surface mounted, with the matching mounting back box either surface or recessed mounted in either a single, or double projector vibrating type suitable for use in a self-monitoring circuit. Horns shall produce a minimum sound rating of at least 85 dBA at 3.1 m (10 feet). Horns used in exterior locations shall be specifically listed or approved for outdoor use and be provided with metal housing and protective grills.
- C. Chimes: Chimes shall be electrically operated, self-monitoring, single stroke, heavy-duty type with either a tempered, polished or chrome-plated tone bar and resonator to sound fire alarm code signals. Chimes shall have a minimum sound rating of 80 dBA at 3.1 m (10 feet).
- D. Visual Notification Appliances: Visual notification appliances shall have high intensity optic lens and flash tubes. Strobes shall flash at approximately 1 cycle per second and a minimum of 100 candela (8,000 peak candle power). Strobe shall be either surface or semi-flush mounted.

- E. Combination Audible/Visual Notification Appliances: Combination audible/visual notification appliances shall provide the same requirements as individual units except they shall mount as a unit in standard backboxes. All units shall be factory assembled. Any other audible indicating appliance employed in the fire alarm systems shall be approved by the authority having jurisdiction.

## 2.8 REMOTE ANNUNCIATION EQUIPMENT

- A. Remote Annunciator: Remote annunciator shall have an 80-character LCD display and alarm, trouble, and supervisory indicating lamps. The same information shall be annunciated at the remote annunciator as on the fire alarm control panel. Annunciator shall contain a lamp test switch, an audible buzzer and a buzzer silence switch to silence the audible alarm, but not extinguish the indicator lamps. Switches shall be located within a locked panel, and easily visible through a glass or plastic viewing plate. Panel door shall have a keyed lock identical to the lock on the control panel. Annunciator shall be either surface, semi-flush or flush mounted.
- B. Remote Graphic Annunciator: Remote graphic annunciator shall have a plan view of each floor of the building. Each alarm initiating device shall be indicated by a red LED lamp shown in its relative position in the building. Individual lamps shall be provided for each alarm initiating device and shall illuminate when that device is actuated. Plan views shall be approximately to scale and in no case smaller than 300 mm (12 inches) in length or width. Annunciator shall have a door with piano hinge and two point cylinder lock or two cylinder locks. Lock shall be operable using the same key as the control panel. Annunciator shall contain a lamp test switch, audible buzzer and a buzzer silence switch to silence the audible alarm, but not extinguish the indicator lamp. Annunciator shall be either surface, semi-flush or flush mounted.

## 2.9 FIRE DETECTION AND ALARM SYSTEM PERIPHERAL EQUIPMENT

- A. Ground Rods: Ground rods shall be of copper clad steel conforming to UL 467 not less than 15.9 mm (5/8 inch) in diameter by 2.4 m (8 feet) in length.
- B. Electromagnetic Door Hold-Open Devices: Devices shall be attached to the walls unless otherwise indicated. Devices shall comply with the appropriate requirements of UL 228. Devices shall operate on power from the fire alarm control panel. Compatible magnetic component shall be attached to the door. Under normal conditions, the magnets shall attract and hold the doors open. When magnets are de-energized, they shall release the doors. Magnets shall have a holding force of approximately 111.2 N (25 pounds). Devices shall be UL or FM approved. Housing for device shall be brushed aluminum. Operation shall be fail safe with no moving parts.
- C. Conduit: Conduit and fittings shall comply with UL 6, UL 1242 and UL 797.
- D. Wiring: Wiring for 120V ac power shall be No. 12 AWG minimum. Wiring for low voltage dc circuits shall be No. 16 or 14 AWG minimum. Power wiring (over 28 volts) and control wiring shall be isolated. All wiring shall conform to NFPA 70. System field wiring shall be solid/stranded copper with 600 volt THWN insulation and installed in metallic conduit or electrical metallic tubing, except rigid plastic conduit may be used under slab-on-grade. All conductors shall be distinctly color coded. Conductors used for the same functions shall be similarly color coded. Wiring code color shall remain uniform throughout the circuit. Pigtail or

T-tap connections to initiating device circuits (IDC), signaling line circuits (SLC) and notification appliance circuits (NAC) circuits are prohibited. Conductors between fire alarm control panel(s) and Monaco transceiver shall be #~~18~~-16 AWG. Grounding wire shall be sized per Monaco Enterprise's recommendation and NFPA 780.

- E. Raceways: Raceways for control panel power shall be rigid steel; all other raceways shall be rigid steel or electrical metallic tubing.

## 2.10 RADIO FIRE ALARM TRANSCEIVER

At Hill AFB including UTTR and Little Mountain the radio fire alarm transceiver shall be a Monaco BT2-7 NB, BT2-8NB (16 zone) or BT2-8NB (32 zone) compatible with the an existing Monaco D-21 Radio Fire Alarm Monitoring Systems. The transceivers shall operate on a frequency of 141.000 MHz. Provide a tamper switch on the transmitter housing which will transmit a Monaco Tamper Message when the switch is tripped. Provide antenna and lightning protection as recommended by Monaco. Each transmitter and interface device shall be the manufacturer's current commercial product completely assembled, wired, tested at the factory, and delivered ready for installation and operation. At Hill AFB the Monaco D-21 central receiving stations are located in Bldg 9 & Bldg 1151. At UTTR the receiving station is located in Bldg 40030 and for Little Mountain the receiving station is located in Bldg 4301.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

All work shall be installed as shown and in accordance with the manufacturer's diagrams and recommendations, unless otherwise specified. Smoke detectors shall not be installed until the building has been thoroughly cleaned. All work shall be installed as shown, in accordance with NFPA 70 & NFPA 72 standards, and in accordance with the manufacturer's recommendations. All necessary interconnections, services, and adjustments required for a complete and operational system shall be provided. Mechanically attach to the radio transceiver a plastic laminated label identifying Zone 3 as a Supervisory Zone.

- A. Power Supply for the System: A single dedicated 20 amp circuit connection for supplying power to each building fire alarm system shall be provided. The primary power shall be supplied as shown on the drawings. The power supply shall be equipped with a locking mechanism and marked "FIRE ALARM CIRCUIT CONTROL". If there is not already a single dedicated branch-circuit for the fire alarm system and fire reporting system, the contractor shall provide a single dedicated branch-circuit for the fire alarm/reporting system. Provide a disconnect switch for the Monaco transceiver located next to the transceiver. Provide surge arrester on the AC power supply that serves both the Monaco transceiver and the fire alarm control panel.
- B. Wiring: Conduit size for wiring shall be in accordance with NFPA 70. Wiring for the fire alarm/reporting system shall not be installed in conduits, junction boxes, or outlet boxes with conductors of lighting and power systems. No more than one conductor shall be installed under any screw terminal. All circuit conductors entering or leaving any mounting box, outlet box enclosure or cabinet shall be connected to screw terminals with each terminal marked in

accordance with the wiring diagram. Connections and splices shall be made using screw terminal blocks. The use of wire nut type connectors is prohibited in the system. Wiring within any control equipment shall be readily accessible without removing any component parts. The fire alarm equipment manufacturer's representative shall be present for the connection of wiring to the control panel. Interface wiring between the radio transceiver and the fire alarm control panels shall have its own distinguishing color code. The sum of the cross-sectional areas of individual conductors shall not exceed 40 percent of the interior cross-sectional area of the conduit. Ample gutter space to accommodate necessary wiring shall be provided. Ground shall be provided through ground wire and not the conduit.

- C. Control Panel: The control panel and its assorted components shall be mounted so that no part of the enclosing cabinet is less than 1.0 m (40 inches) nor more than 2 m (80 inches) above the finished floor.
- D. Detectors: Detectors shall be installed in accordance with NFPA 72. Detectors shall be at least 300 mm (12 inches) from any part of any lighting fixture. Detectors shall be located at least 900 mm (3 feet) from diffusers of air handling systems. Each detector shall be provided with appropriate mounting hardware as required by its mounting location. Detectors, which mount in free space, shall be mounted directly to the end of the stubbed down rigid conduit drop. Conduit drops shall be firmly secured to minimize detector sway. Where length of conduit drop from ceiling or wall surface exceeds 900 mm (3 feet), sway bracing shall be provided.
- E. Notification Appliances: Visible notification appliances shall be mounted such that the entire lens is not less than 2.03 m (80 in.) and not greater than 2.3 m (96 in.) above the finished floor.
- F. Annunciator Equipment: Annunciator equipment provided shall be mounted where indicated.
- G. Antennae: Location shall be chosen with the least possible obstructions and as far as possible from interference generating items. The contractor shall provide an optimum antenna to transceiver match as per manufacturer's recommendations. The equipment used to verify the match shall be either a SWR meter or a Watt meter rated 0.1 watts to 500 watts for frequencies from 25 to 1000 MHz. The contractor shall be responsible and bear all the costs to relocate an improperly located antenna.
- H. Lightning Protection: Ground rods shall not protrude more than 150 mm (6 inches) above grade. Noncurrent-carrying metallic parts associated with radio fire alarm equipment shall have a maximum resistance to solid "earth" ground not to exceed 25 ohms. Lightning arrester shall be mounted no higher than six feet above finished floor or ground level.

### 3.2 OVERVOLTAGE AND SURGE PROTECTION

All equipment connected to alternating current circuits shall be protected from surges per IEEE C62.41 and NFPA 70. All cables and conductors that serve as communications links, except fiber optics, shall have surge protection circuits installed at each end. Fuses shall not be used for surge protection.

### 3.3 GROUNDING

Grounding shall be provided to building ground or ground rods shall be driven. Maximum impedance to ground shall be 25 ohms. Ground rods shall not protrude more than 150 mm (6 inches) above grade.

### 3.4 TESTING

The Contractor shall notify the Contracting Officer 30 days before the preliminary and the final acceptance tests are to be conducted. The tests shall be performed in accordance with the approved test procedures in the presence of the Contracting Officer. The control panel manufacturer's representative shall be present to supervise all tests. The Contractor shall furnish all instruments and personnel required for the tests.

- A. Preliminary Tests: Test system conductors to determine that the system is free from grounded, shorted, or open circuits
- B. Operational Acceptance Test: The fire alarm system and the fire reporting system shall be tested as a complete package. Perform all applicable Initial/Reacceptance tests required by the latest edition of NFPA 72. For the 2002 edition this information is in Table 10.3.1 (Visual Inspection Frequencies) and Table 10.4.3 (Inspection Frequencies).
- C. Manufacturer's Recommended Tests: The reporting system shall be installed and tested as recommended by Monaco Enterprises Inc.
- D. Radio Transceiver Test: Prior to Acceptance Test, the radio transceiver shall be tested for a minimum of 7-days to assure that all panel functions operate properly including the central receiving interrogation feature.

### 3.5 SYSTEM CHANGEOVER

After all manufacturers' tests and the 7-day radio transceiver test have been completed, the radio transceiver shall be connected to the fire alarm control panel(s). Coordinate the changeover with the Base Fire Department.

### 3.6 PAINTING

All raceways, outlet boxes, junction boxes, pull boxes, cover plates and conduit associated with the fire detection and alarm system shall be identified by either painting red in all unimproved areas or by marking/tagging every 20 linear feet with the words "FIRE" or "FIRE EQUIPMENT" in improved areas. Furthermore, in improved areas all raceway, conduit, etc. shall be painted to match the color scheme of the adjacent area.

### 3.7 SALVAGE

Unless otherwise specifically indicated, existing fire alarm components that are removed and not specified for reinstallation, shall be turned over to the Hill AFB Civil Engineering Electronics Shop (CEZS). This includes Monaco transceivers and fire alarm control panels; it does not include initiation devices (manual pull stations, heat detectors, smoke detectors, etc.), notification appliances (horn, strobes, etc.), conduit and wire.



PART 4 - INPUT/OUTPUT MATRIX

SYSTEM INPUTS		SYSTEM OUTPUTS																									
		FACP ANNUNCIATION						NOTIFICATION					FIRE SAFETY CONTROL					REPORTING									
		Actuate Common Alarm Indicator	Act. Common Supervisory Indicator	Actuate Common Trouble Indicator	Actuate Audible Signal	Actuate Display		Act. 1 <sup>st</sup> Floor Evacuation Appliances	Act. 2 <sup>nd</sup> Floor Evacuation Appliances	Act. 3 <sup>rd</sup> -Floor Evacuation Appliances	Act. Individual Dorm Room Appl's	Actuate Dorm Room Appliances		Release Magnetic Door Holders	Shutdown Related Air Handler	Shutdown All Air Handlers	Recall Elevators to Primary Floor	Recall Elevators to Secondary Floor	Unlock Exits	Close Smoke/Fire Dampers		Report Common Alarm	Report Common Supervisory	Report Common Trouble	Report Zone Alarm	Report Zone Supervisory	Report Zone Trouble
1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5	6	7	1	2	3	4	5	6	7			
ALARM INITIATING DEVICES																											
A																											
B																											
C																											
D																											
E																											
F																											
G																											
H																											
I																											
J																											
K																											
L																											
M																											
SUPERVISORY INITIATING DEVICES																											
A																											
B																											
C																											
D																											
E																											
F																											
SELF-MONITORING FEATURE																											
A																											
B																											
C																											
D																											
E																											
F																											
G																											
H																											
PRE-WARNING SIGNALS																											
A																											

PART 5 - CIVIL ENGINEERING BT AND ZID NUMBER REQUEST FORM

The following two sheets contain forms that are to be used when requesting ZID numbers.

These forms are: Civil Engineering Master BT and ZID Number Request Form

and

Civil Engineering Slave BT and ZID Number Request Form

These two forms are also available in Microsoft Excel format by clicking on the following link.



C:\Documents and  
Settings\allan.twede\

# Civil Engineering Master BT and ZID Number Request Form

Building Number Request Date Assignment Date Acceptance Date

type # type date yy/mm/dd type date yy/mm/dd type date yy/mm/dd

Requestor: type company name Phone Number: type ten number's in a row

BT Type: BT2 type # BT Serial Number: type # BT Number: type #

Fire Alarm Control Panel Manufacture: type manufacturer's name Model Number: type # or name

Antenna Location: type description BT/Panel Location: type description

**Be aware that Zone 3 is dedicated to Supervisory signals i.e. tamper and PIV switches, not to exceed 20 devices looped together.**

ZID # _____	<b>Zone 1</b>	<u>RSA Relay Test</u>	Alarm
ZID # _____	<b>Zone 2</b>	<u>General Alarm/TBL</u>	Alarm/TBL
ZID # _____	<b>Zone 3</b>	<u>Type Supervisory or Tamper Name (PIV, OSY, Tamper)</u>	Supv/TBL
ZID # _____	<b>Zone 4</b>	<u>Example: Pull Stations</u>	Alarm/TBL
ZID # _____	<b>Zone 5</b>	<u>Example: Heat Detectors</u>	Alarm/TBL
ZID # _____	<b>Zone 6</b>	<u>Example: Flow Switch</u>	Alarm/TBL
ZID # _____	<b>Zone 7</b>	<u>Example: Duct Detectors</u>	Alarm/TBL
ZID # _____	<b>Zone 8</b>	<u>Example: Smoke Detectors</u>	Alarm/TBL
ZID # _____	<b>Zone 9</b>	_____	Alarm/TBL
ZID # _____	<b>Zone 10</b>	_____	Alarm/TBL
ZID # _____	<b>Zone 11</b>	_____	Alarm/TBL
ZID # _____	<b>Zone 12</b>	_____	Alarm/TBL
ZID # _____	<b>Zone 13</b>	_____	Alarm/TBL
ZID # _____	<b>Zone 14</b>	_____	Alarm/TBL
ZID # _____	<b>Zone 15</b>	_____	Alarm/TBL
ZID # _____	<b>Zone 16</b>	_____	Alarm/TBL

## HAFB

### Civil Engineering Slave BT and ZID Number Request Form

Building Number Request Date Assignment Date Acceptance Date

type # type date yy/mm/dd type date yy/mm/dd type date yy/mm/dd

Requestor: type company name Phone Number: type ten number's in a row

BT Type: BT2 type # BT Serial Number: type # BT Number: type #

Fire Alarm Control Panel Manufacture: type manufacturer's name Model Number: type # or name

Antenna Location: type description BT/Panel Location: type description

### Slave ZID Request Form Only

ZID # _____	Zone 17	Example: Pull Stations	Alarm/TBL
ZID # _____	Zone 18	Example: Heat Detectors	Alarm/TBL
ZID # _____	Zone 19	Example: Flow Switch	Alarm/TBL
ZID # _____	Zone 20	Example: Duct Detectors	Alarm/TBL
ZID # _____	Zone 21	_____	Alarm/TBL
ZID # _____	Zone 22	_____	Alarm/TBL
ZID # _____	Zone 23	_____	Alarm/TBL
ZID # _____	Zone 24	_____	Alarm/TBL
ZID # _____	Zone 25	_____	Alarm/TBL
ZID # _____	Zone 26	_____	Alarm/TBL
ZID # _____	Zone 27	_____	Alarm/TBL
ZID # _____	Zone 28	_____	Alarm/TBL
ZID # _____	Zone 29	_____	Alarm/TBL
ZID # _____	Zone 30	_____	Alarm/TBL
ZID # _____	Zone 31	_____	Alarm/TBL
ZID # _____	Zone 32	_____	Alarm/TBL

# HAFB