Fire Alarm Installation and Testing

Just the Basics

Presented
By
Amy Cote'
John Stukenberg

Fire Alarm Installation

Presented

By

John Stukenberg

All Information Provided Should Be Considered Informational Please:

Main Components of a Fire Alarm System

Detection → Control → Notification

Input → Process → Output

Typical Main Components

Initiating Devices

Smoke Detector

Heat Detector

Control Panel (FACP)

Notification Appliances

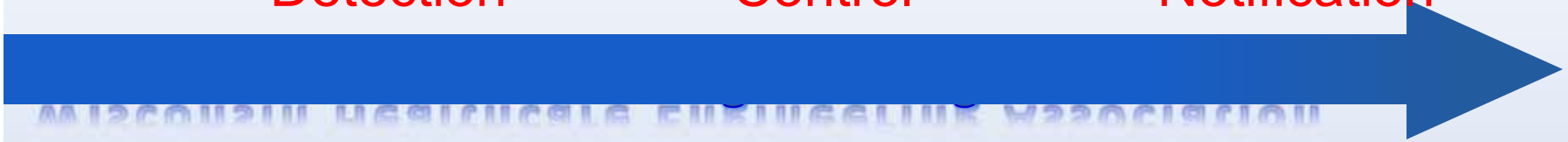
Ceiling Mounted Horn Strobe

Waterflow Switch

Manual Station

Wall Mounted Horn Strobe

Detection → Control → Notification



Ancillary Devices

Control Panel

Door Holder/Releases

Remote Annunciator

Control Relays

Printer

Off Premise Signaling

Digital Alarm Communicators

- **Digital Alarm Communicator Transmitter (DACT)**

- Digital Alarm Communicator Receiver (DACR)

Central Station Monitoring

Telephone Line Network Connection

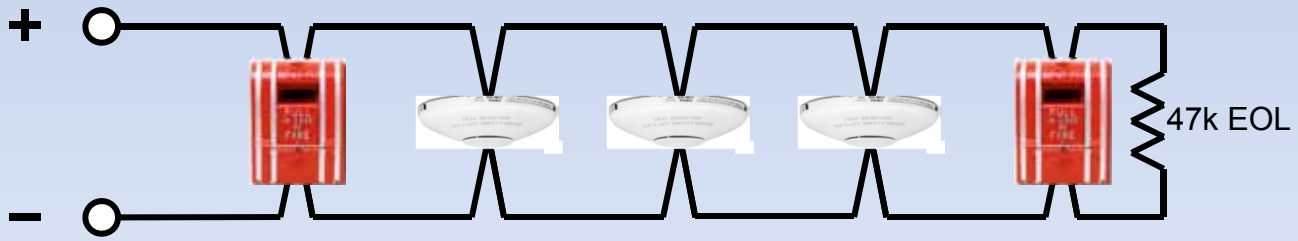
- The DACT seizes the connected telephone line, dials a pre-selected number to connect to a DACR, and transmits signals indicating a status change of the initiating devices.

- This is commonly referred to as a dialer.

- A system that accepts and displays signals from digital alarm communicator transmitters (DACTs) sent over the telephone network.
- Commonly referred to as the CENTRAL STATION or the MONITORING COMPANY.

Fire Alarm Circuits

IDC Initiating Device Circuit



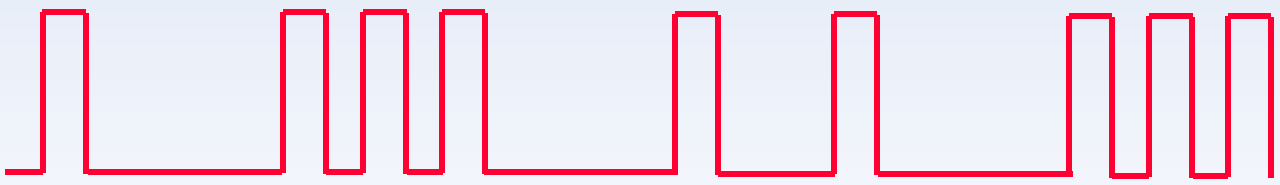
- A circuit to which automatic or manual initiating devices are connected where the signal received does not identify the individual device operated.

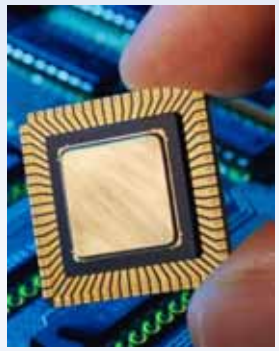
NAC - Notification Appliance Circuit

- A circuit which contains notification appliances is called a *Notification Appliance Circuit* or NAC.

SLC Signaling Line Circuit

- A circuit or path between any combination of circuit interfaces control units, or transmitters over which multiple system input.
- Signals or output signals, or both, are carried.

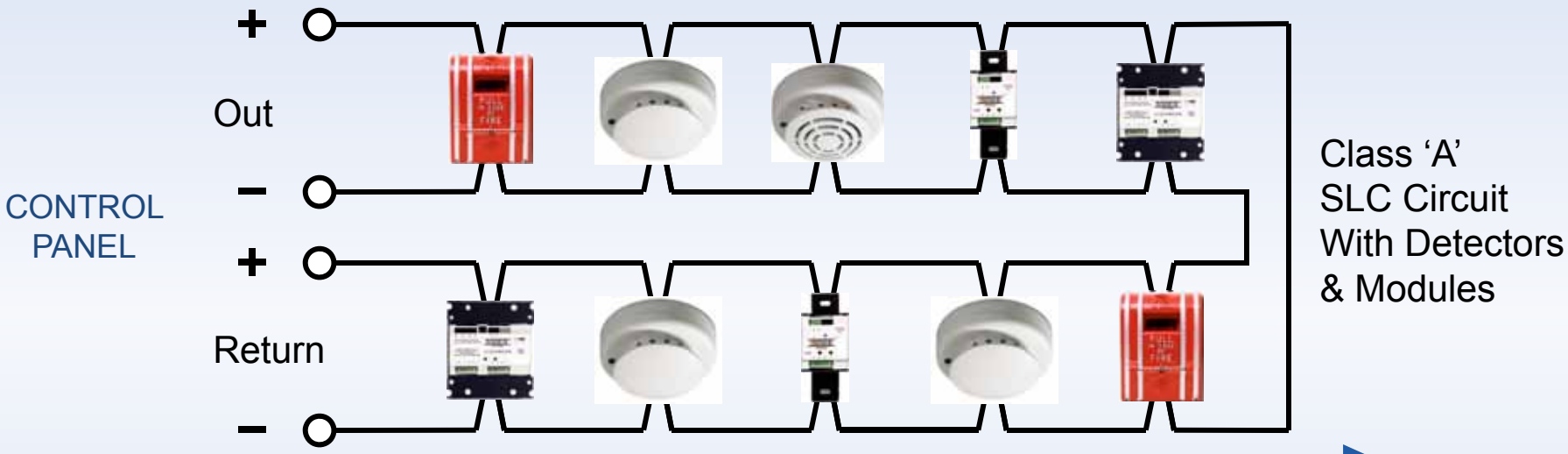




SLC Signaling Line Circuits

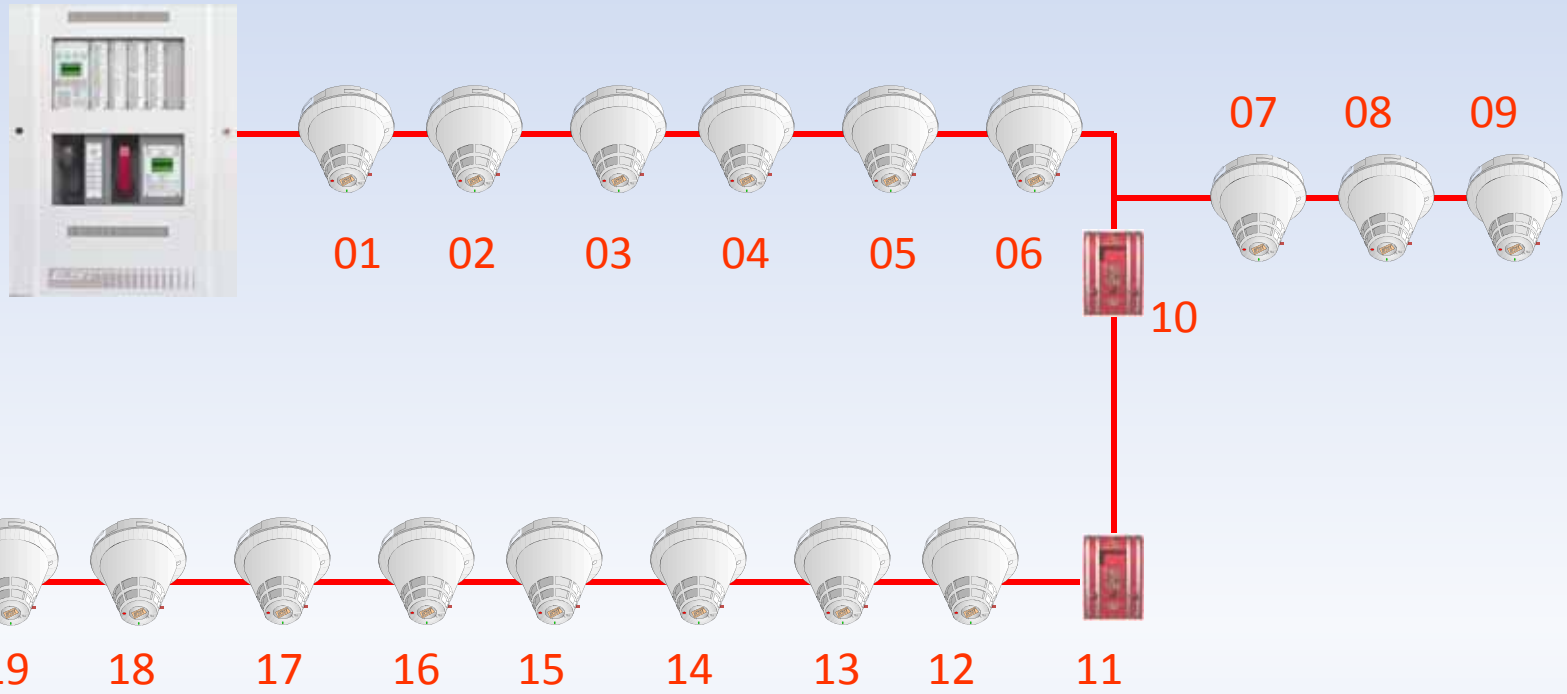
- Usually have a Class ‘A’ or ‘B’ connection option
- Input and output devices can be on the same circuit
- Control panel device communication is sometimes called a protocol

T-Tap option on class B

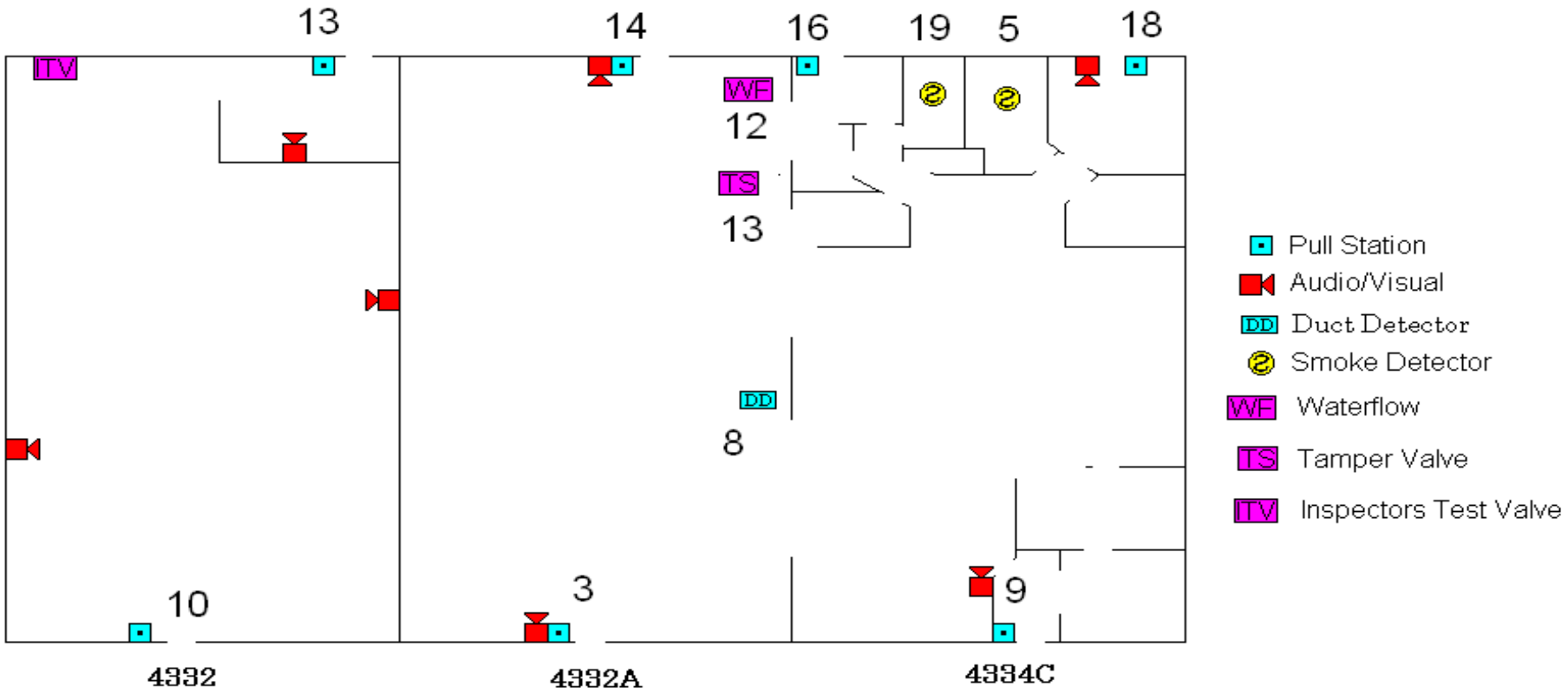


Addressable Fire Alarm Circuit

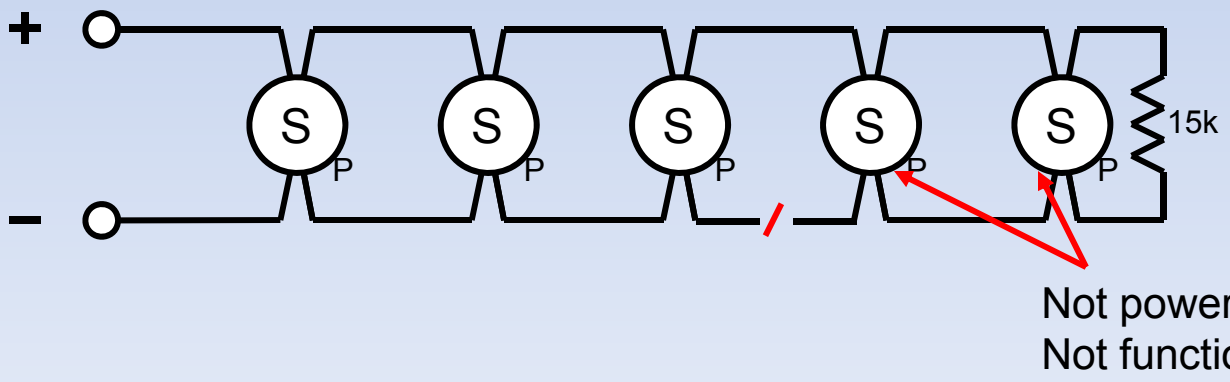
Each device has a unique identifier, or address, so that it is unique to the system.



Addressable
Fire Alarm Circuit

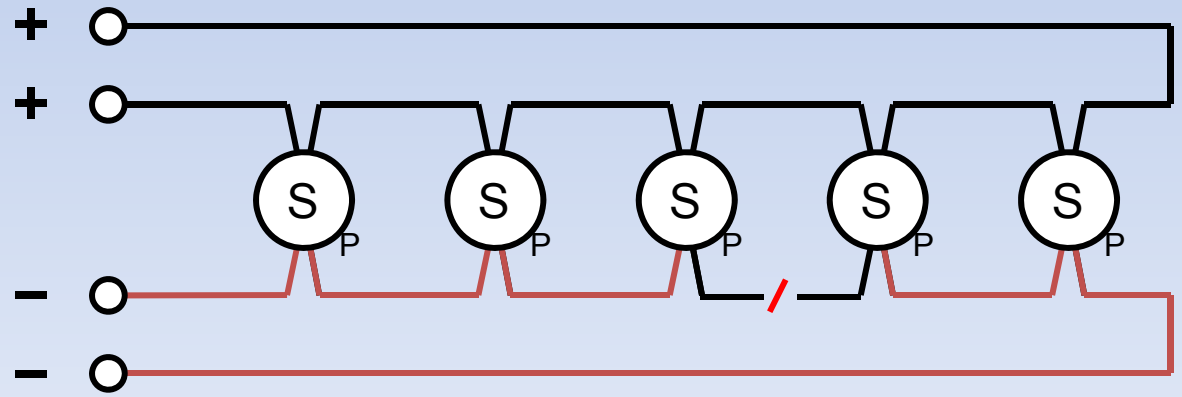


Class ‘B’ Circuit



- Arrangement of supervised initiating, notification, or signaling
- devices on a circuit so that a single open or ground will initiate a trouble event. The open or ground fault may prevent the circuit from operating. A wire-to-wire short or a device activation initiates an alarm event.

Class ‘A’ Circuit



- Arrangement of supervised initiating, notification, or signaling
- devices on a circuit so that a single open or ground will initiate a trouble event. The open or ground fault will not prevent the circuit from operating. A wire (+)-to-wire(-) short or a device activation initiates an alarm event.

Fire Alarm circuits are supervised

- Circuit is on continuously
- Circuit is monitored
- If the circuit moves out of specification, a trouble event occurs
- A trouble event usually
  - turns on an LED
  - turns on a signal
  - causes a message

LED = Light Emitting Diode

Signal

Initiating Devices are….

Manual or Automatic

Manual Stations

Smoke

Heat

Waterflow

Flame

Alarm Initiating Devices

1. A device that initiates an alarm condition
2. May be automatic or manual
3. May be activated by smoke, heat, waterflow, flame, or manual operation

Smoke

Manual Stations

Heat

Waterflow

Flame

Conventional Devices

- Normally-opened (N.O.) or normally-closed (N.C.) devices are used on older and smaller FACPs. With conventional devices, you can only determine the zone (area) of occurrence.

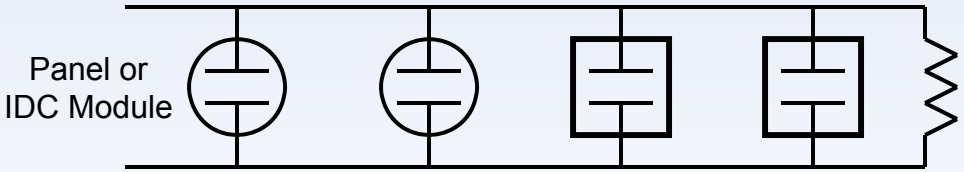

Heat

Manual Stations


Waterflow

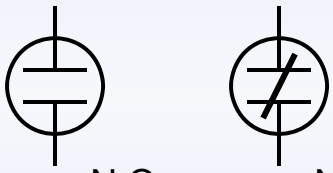
Typical N.O. Conventional Devices

Suggest 2-wire "Y" schematic connections



A CIRCUIT or ZONE of conventional initiating devices

Suggest you show two wires out of each device



Device Schematics

Use IDC type circuits

Intelligent or Analog/Addressable Devices

- Detectors and modules used on small to large FACPs, where each device has a unique address.
- If the device makes the alarm decision then it may be called Intelligent.

Use SLC type circuits

Define ‘Intelligence’

- Device returns sensor values for panel processing.
- Device maintains environmental data base for one or more sensors and makes alarm decision.
- Devices can give additional information such as % dirty.

Smoke Detectors

- Ionization (Ion) (Smell)
- Photoelectric (Photo) (Sight)
- Multi-Sensor

  Photo Heat (Individual)

  Photo Heat (Work together)

  Ion Photo Heat (Work together)
- Aspiration Detectors

  Air Sampling

Conventional
Photo or Ion

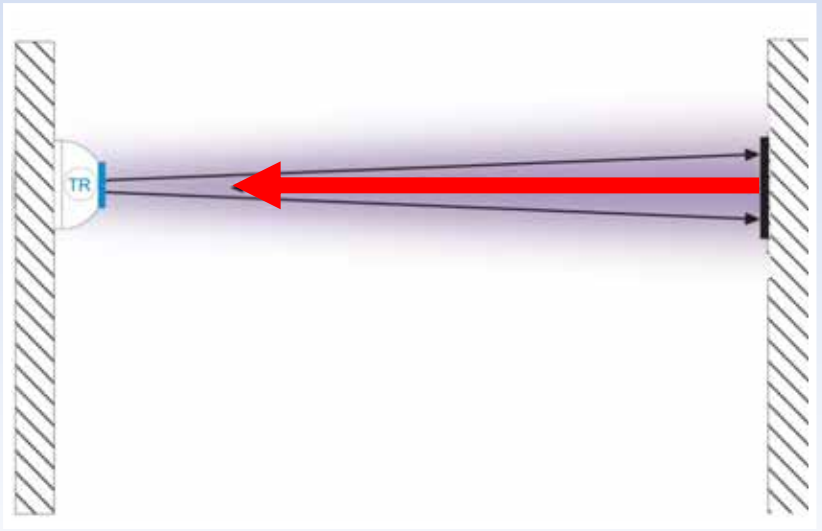
Intelligent
Multi-Sensor

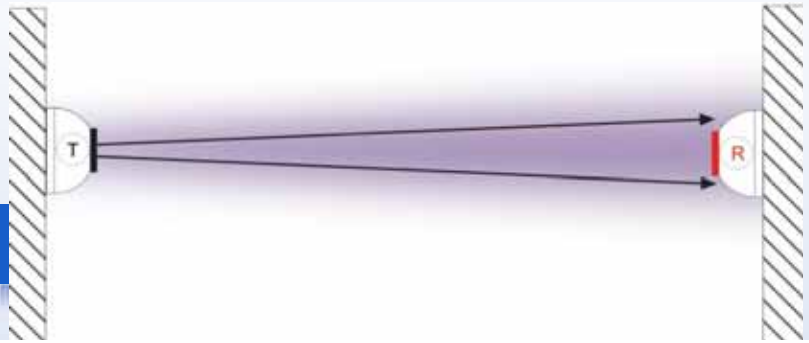
Intelligent
Photo-Heat

Intelligent
Photo

Beam Detector

- A type of photoelectric light obscuration smoke detector wherein the beam spans the protected area.





Heat Detectors

- Fixed Temperature
  - Fusible link (melts)
  - Bi-metal
  - Thermistor (electronic)
- Rate-of-Rise
  - Pneumatic (air chamber)
  - Thermistor (electronic)
- Combination
  - Fixed Temp. &
  - Rate-of-Rise

Manual Stations

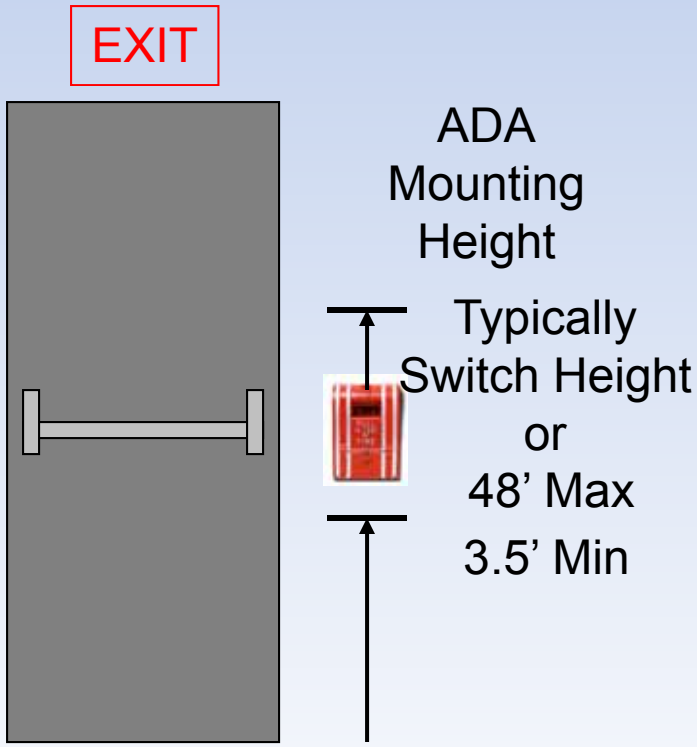
- Single or Double Action
- Pre-Signal (Two Stage)
- Features
  - Surface Box
  - Weatherproof
  - Explosion proof
  - Institutional
  - Typically include glass rod

Single Stage, Single Action

Single Stage, Dual Action

Dual Stage, Single Action

Manual Station Location

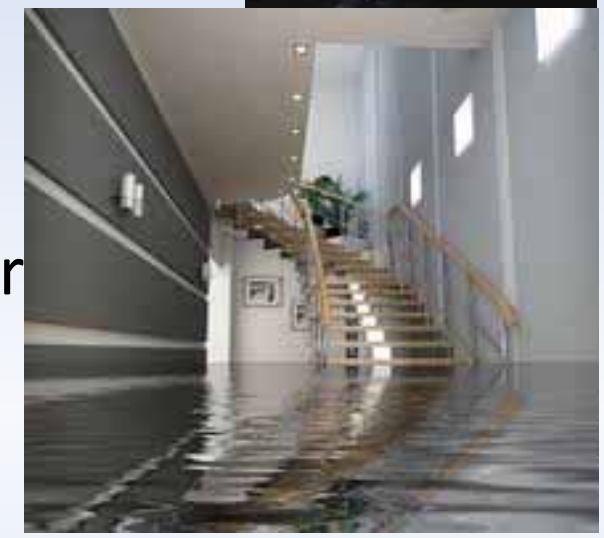


- Conspicuous, unobstructed, & accessible
- Within 5’ of an exit, at each exit on each floor
- On each side of grouped openings over 40’ in width
- Travel distance to station not over 200’

Smoke Detectors provide Early Warning

- Can be early by days, hours, minutes, or seconds before a sprinkler head would activate.
- Which means:

- longer time for evacuation
- extinguishment before sprinkler activation
- reduced damages



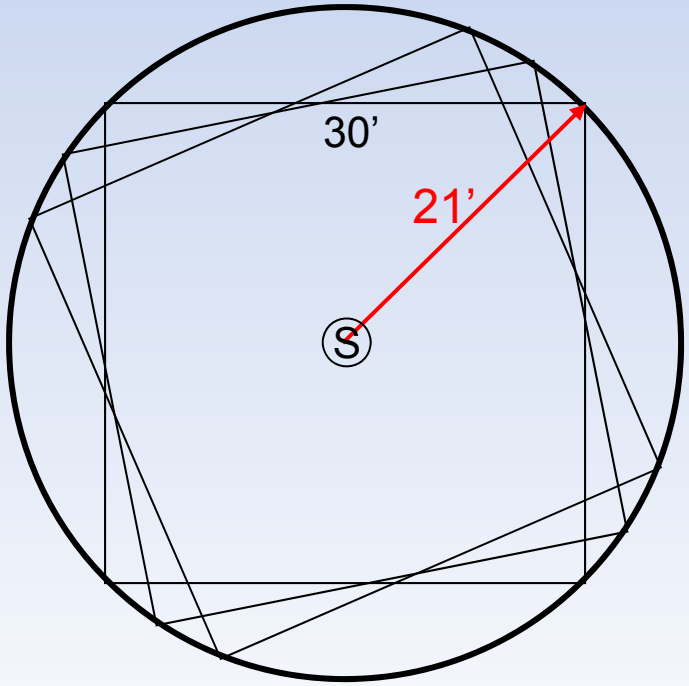
Smoke Detector – nuisance events

A smoke detector is a particle detector so:

- Do not install in dusty/dirty environments
- Do not use outdoors
- Do not spray with aerosols.
- Work such as carpentry, welding, and grinding can cause nuisance events.

Square within a Circle
Square is coverage, radius = .7

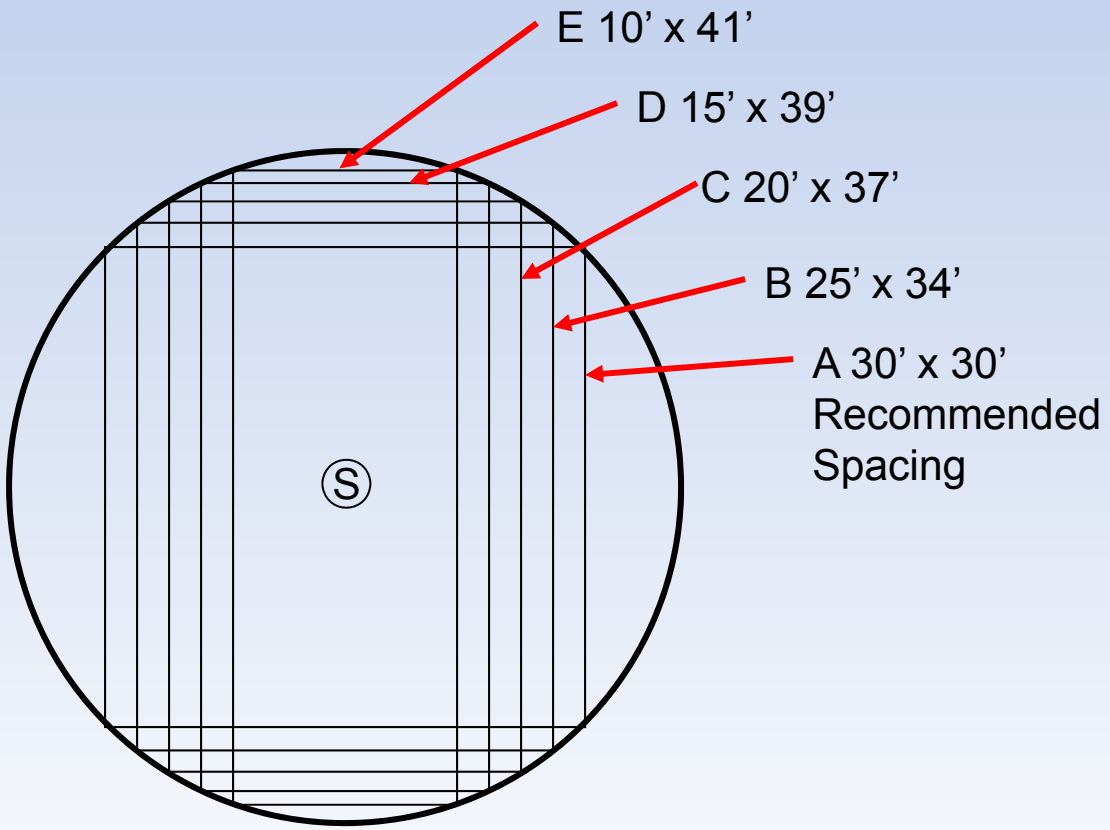
- The 30’ x 30’ square is the recommended spacing for a smoke detector.
- Circle radius is .7 x the spacing
- i.e.
  30 x .7 = **21’**



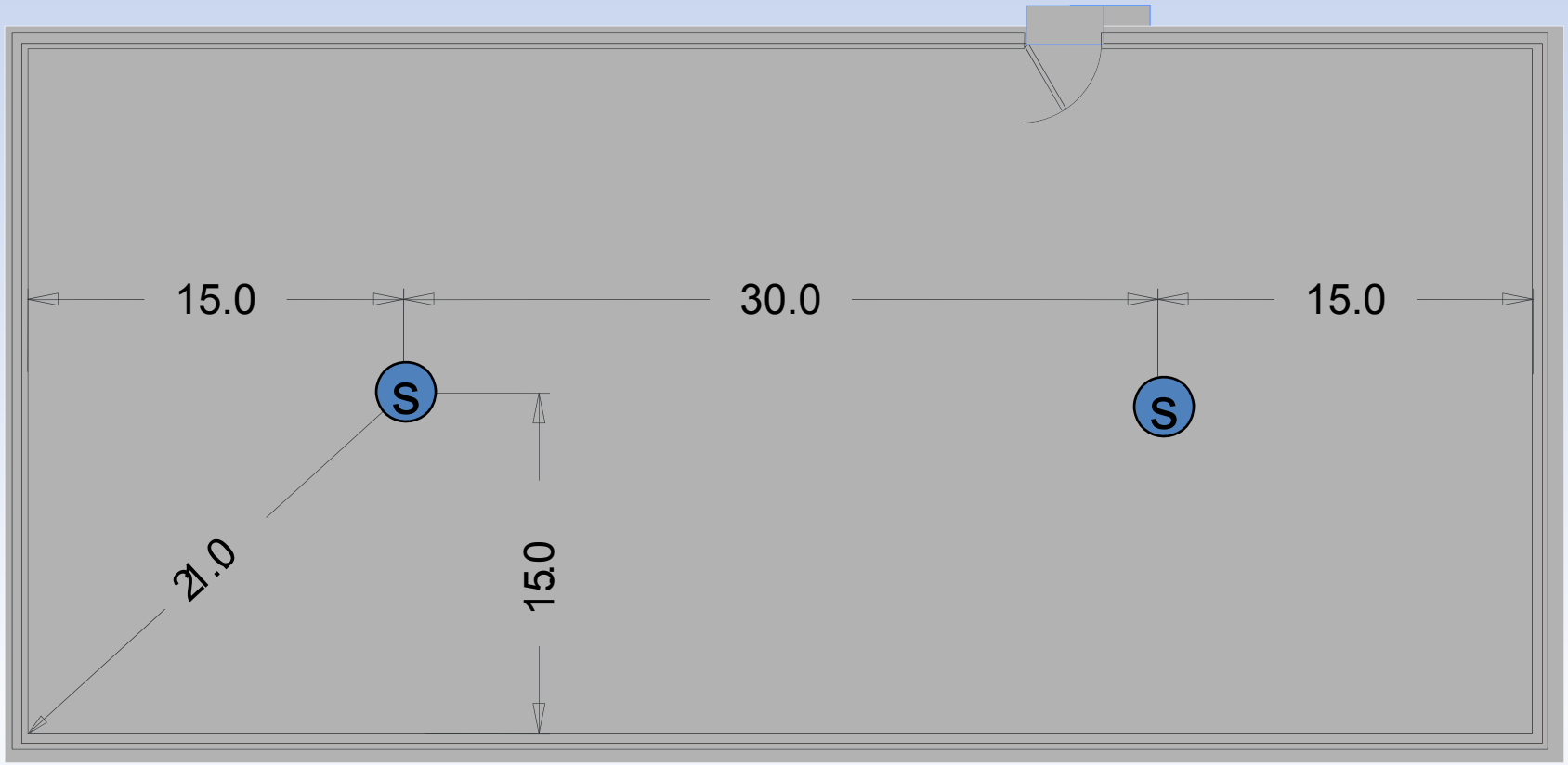
- Easier to layout building areas using squares & rectangles.
- Use circles for irregular areas

Area of Coverage – Smoke Detectors

- Most applications occur as rectangles.
- When a side is shorter than listed spacing, other side can be greater.

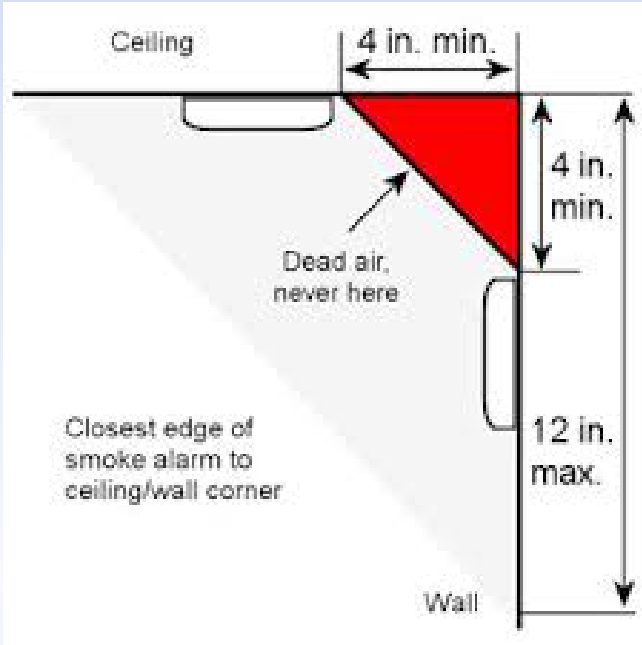


Area of Coverage – Smoke Detectors Practical Application

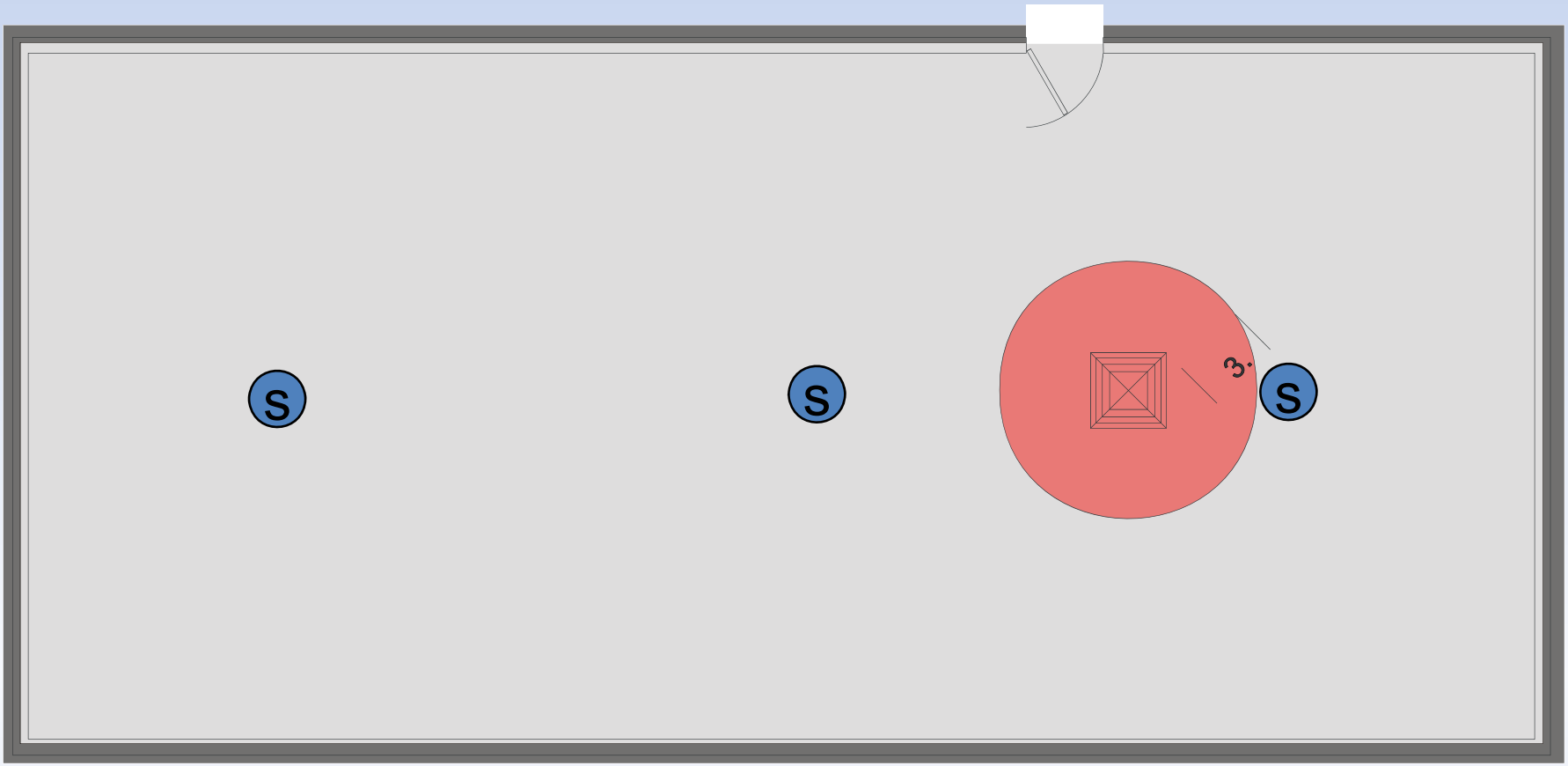


Some Basic Rules For Detection

- Keep detectors 3 ft. away from diffusers.
- High Ceilings 10-30 ft. (NFPA 72, Table 5-2.7.1.2)
- Place detectors on ceiling more than 4” from wall or on wall between 4”-12” from the ceiling. NFPA 72, 5-2.5



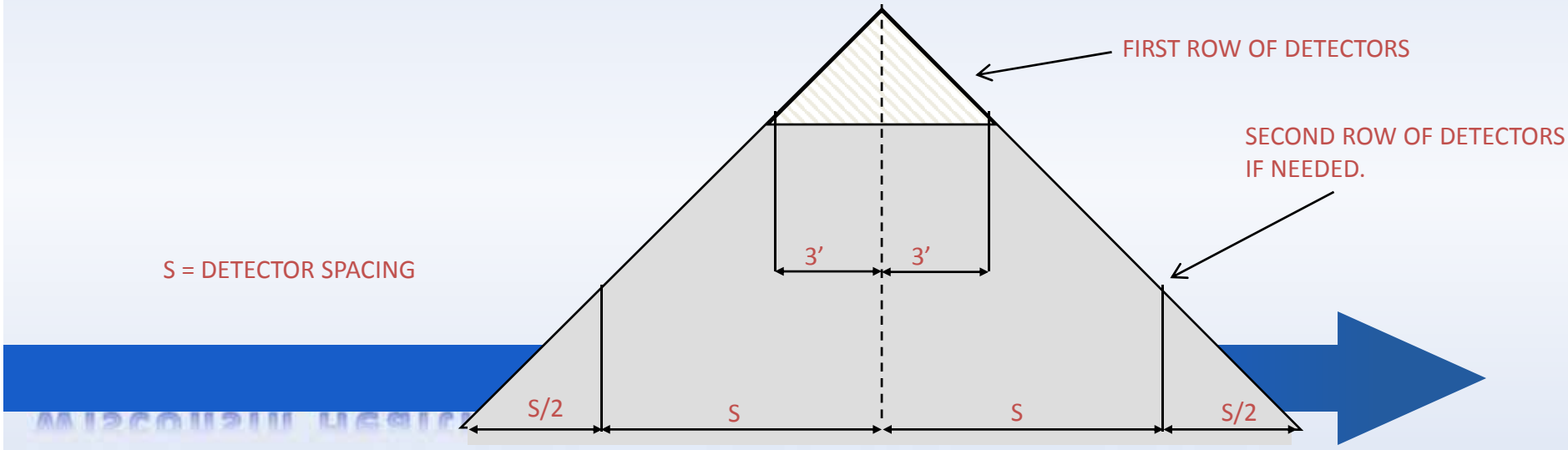
Air diffusers



Sloped Ceilings

For sloped ceilings, start at peak within 3’ of apex, measured horizontally.

For “A” frame, or shed, ceilings with rise greater than 1 in 8, place first row of detectors at top within 3’ measured horizontally.



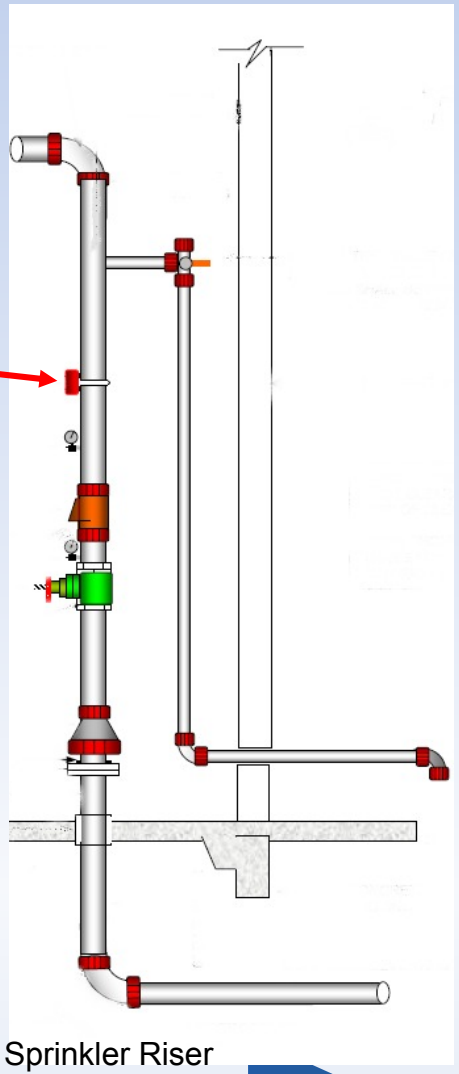
Detectors at Door Closers

- 0”-24” depth of wall above door, place detector on **one** side.
- Over 24” depth of wall above door on one side only, place one detector on **either** side.
- Over 24” depth of wall above door on both sides, place one detector on **each** side.
- *In all cases, the detector should be mounted within 5’ of the door.*
- *Closer-type detectors cannot be used for area detection.*

Sprinkler Waterflow Alarm Initiating Devices

- A device or switch that initiates an **Alarm** condition indicating the flow of water within a sprinkler system.
- Other common names are flow switch and riser flow switch.

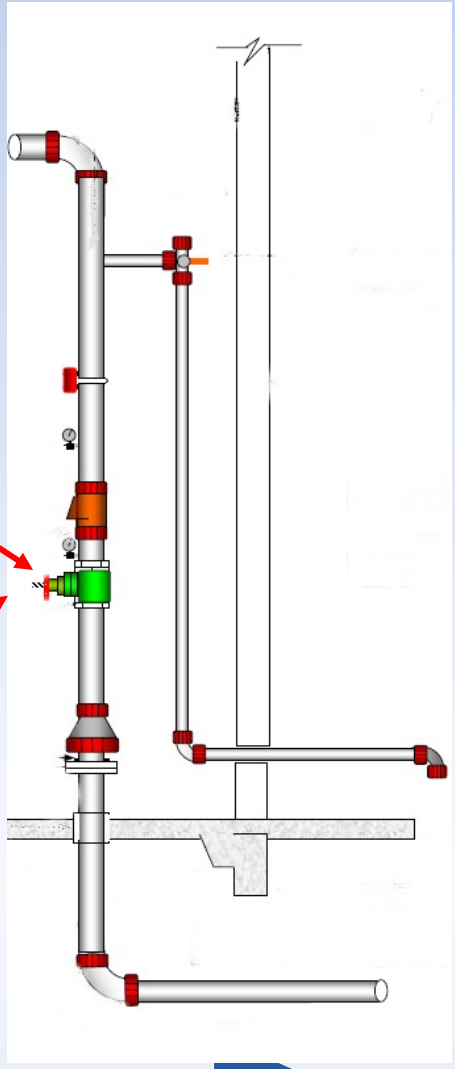
Waterflow Switch



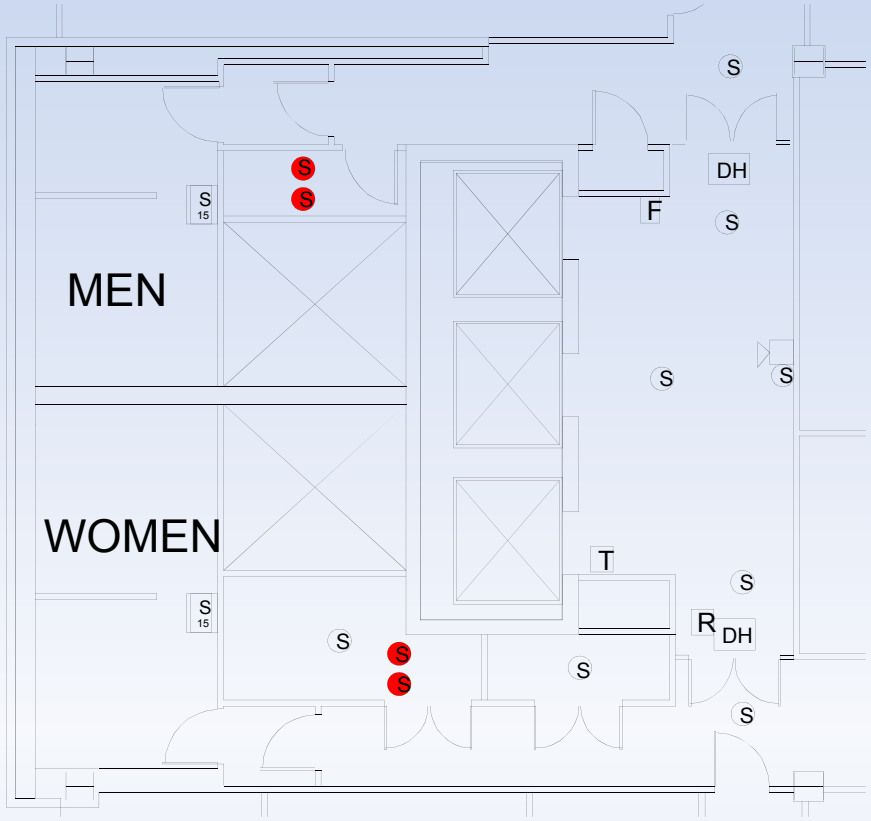
Sprinkler Riser

Supervisory Signal Initiating Device

- Valve supervisory switch, water level indicator, or low-air pressure switch on a dry-pipe sprinkler system.
- A change of state signals an off-normal (**Supervisory**)



Air Handling Smoke Detection

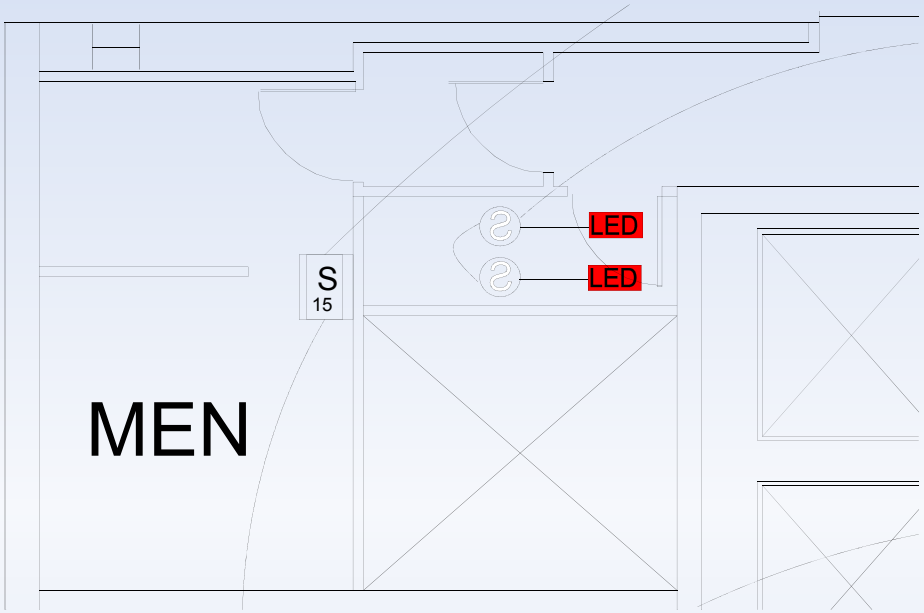


Where is Air Handling Smoke Detection Required?

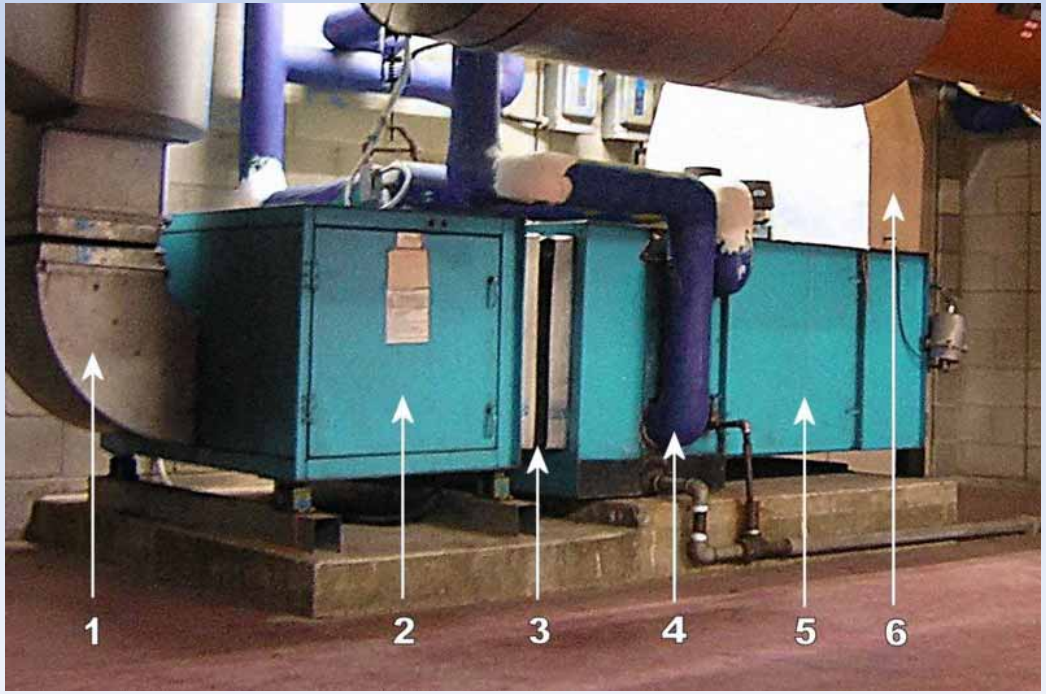
- NFPA 90A
  - **Supply** duct of AHU more than 2,000 cfm &
  - Return duct of AHU more than 15,000 cfm
- International Mechanical Code
  - **Return** duct of AHU more than 2,000 cfm
  - Supervisory signal
- NFPA 72
  - Duct smoke concealed, require remote indicator

Air Handling Smoke Detection Remote Test Stations.

- DSD that are concealed need remote indicator.
- Use remote test station with Indicator.
- Labeled with function and AHU



Air Handler Unit Shutdown

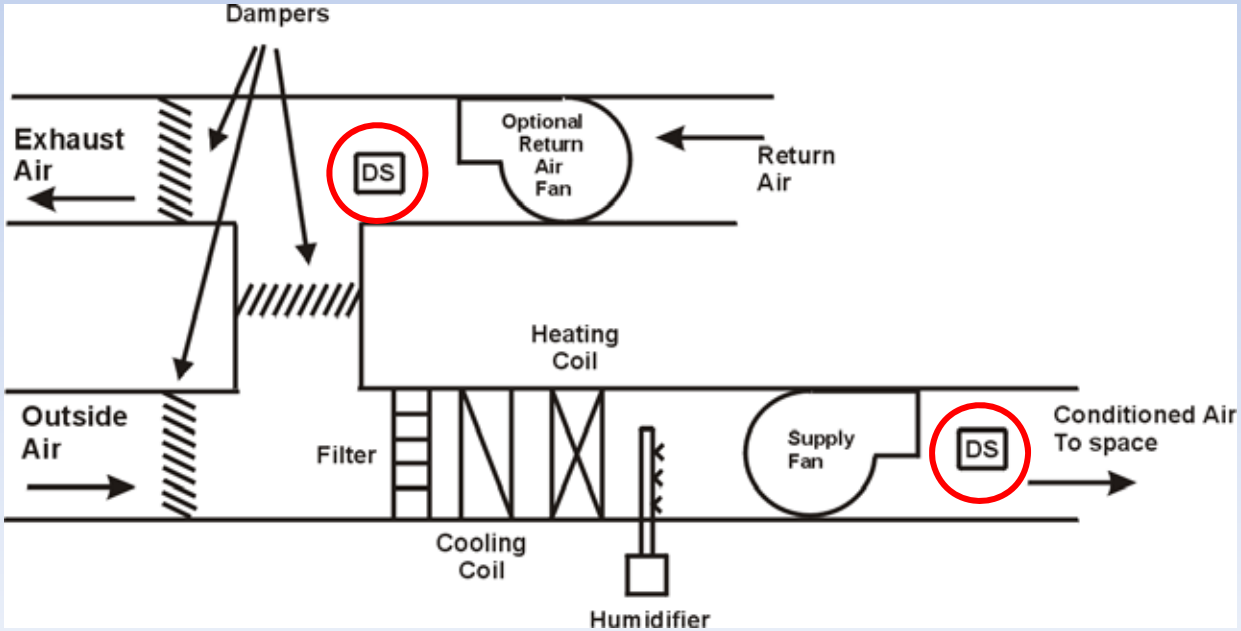


Typical AHU components

1. Supply Duct
2. Fan Compartment
3. Vibration Isolators
4. Heating and/or cooling coil
5. Filter compartment
6. Return and fresh air duct

- A control function provided by a fire detection system to shutdown air handler units in order to prevent further spread of smoke and or toxic chemicals as a result of a fire condition.

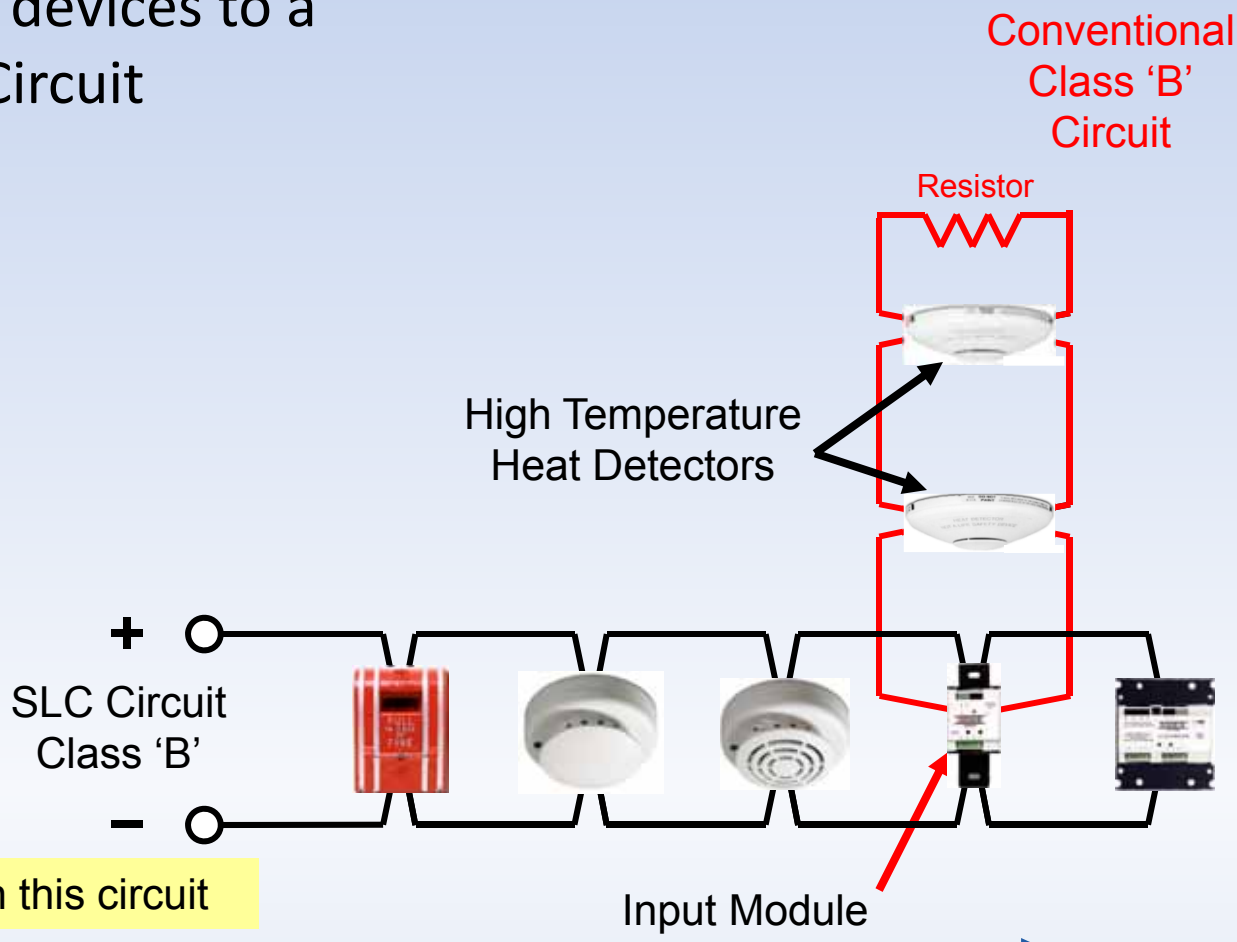
Typical duct detector locations



- Return air detector located downstream of fan & ahead of branch to supply
- Supply air detector located downstream of fan, humidifier, heating coil, cooling coil, and filters

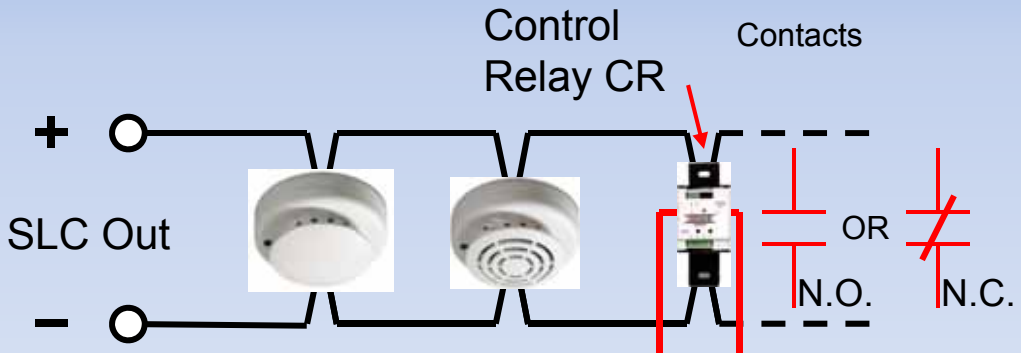
Input Modules

- Interfaces N.O. devices to a Signaling Line Circuit



Auxiliary Relay Circuits

- Contacts of CR control relay R.
- The contacts of R control higher voltage and current circuits, i.e. fan motor.



Low voltage
Power source

Power
on/off

R

DVR

Relay R has
high voltage
and current
contacts

Power on/off

SLC

DVR

Control Relays

Source
120 Vac
or
greater

R

M

Motor

Systems using N.C.
Contacts are
Called ‘failsafe’

Fans using a ‘controller’ can usually be controlled directly from a single CR relay

Door Release Circuit

Door Holder/Releases

Power on/off

SLC Out

+

−

Control Relay CR

Contacts

N.C.

Low voltage Power source

Power on/off

DH

DH

Systems using N.C. Contacts are Called 'failsafe'

Using Alarm contacts in panel

Low voltage Power source

Power on/off

DH

DH

Contacts of CR control relay control door holders DH above.

Panel alarm contacts control door holders DH on the left.

Notification Appliances

Initiating Devices

Control Panel

Notification Appliances

Notification Appliances

Ceiling
Speaker / Strobe

- Devices which produce *audible*, *visual*, or both, alarm signals in response to a fire emergency.

Wall Horn / Strobe

Strobe

Wall Speaker / Strobe

5520D Horn/Siren

5530MD-24AW
Multiple Tone Signal

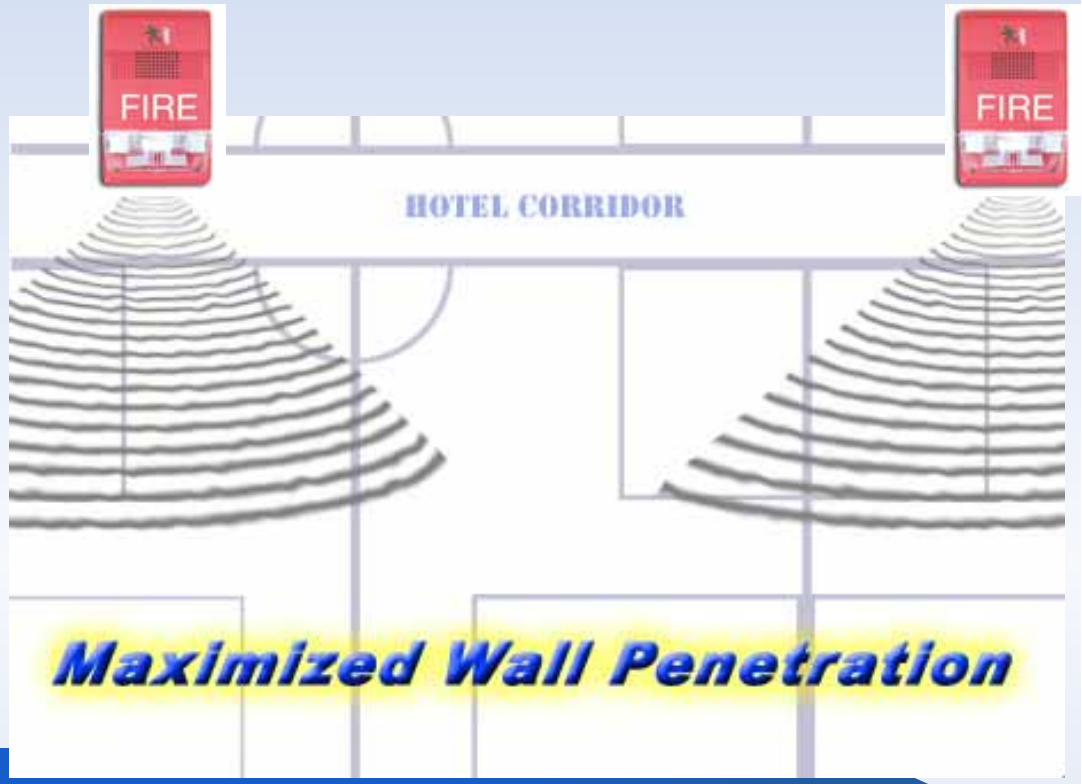
Genesis Wall
Speaker / Strobe

Rules for Audible Device Placement

Synchronized Audible !

NFPA 72

- Wall or Ceiling allowed
- 15 dBA over ambient, minimum 75 dBA @ 10’



Some Rules for Audible Device Placement

- Design when area is at maximum noise level.
- UL typically rates dB @ 10 ft. on axis.
- Lose about 6 dBA for distance doubled.
- Space approx. 40’ on center.
- Typically installed in all multi-person / common areas separated by a door from other audible devices.
- Closed doors and walls lose approximately. 20 dBA.

Why are Visual Notification Appliances needed ?

- Estimated one in 125 American suffer profound hearing loss (little or no sound).
- One in 11 Americans suffers some form of hearing impairment.
- We all lose a decibel of hearing each year past the age of 35.
- Occupancy types.
- And…

ADA

- **ADA** Americans with Disabilities Act
- United States Public Law 101-336
- ADA is a wide-ranging civil rights law that prohibits, under certain circumstances, discrimination based on disability.
- Adopted NFPA72 (1999 or 2002 Edition)
- ADA Standards for Accessible Design

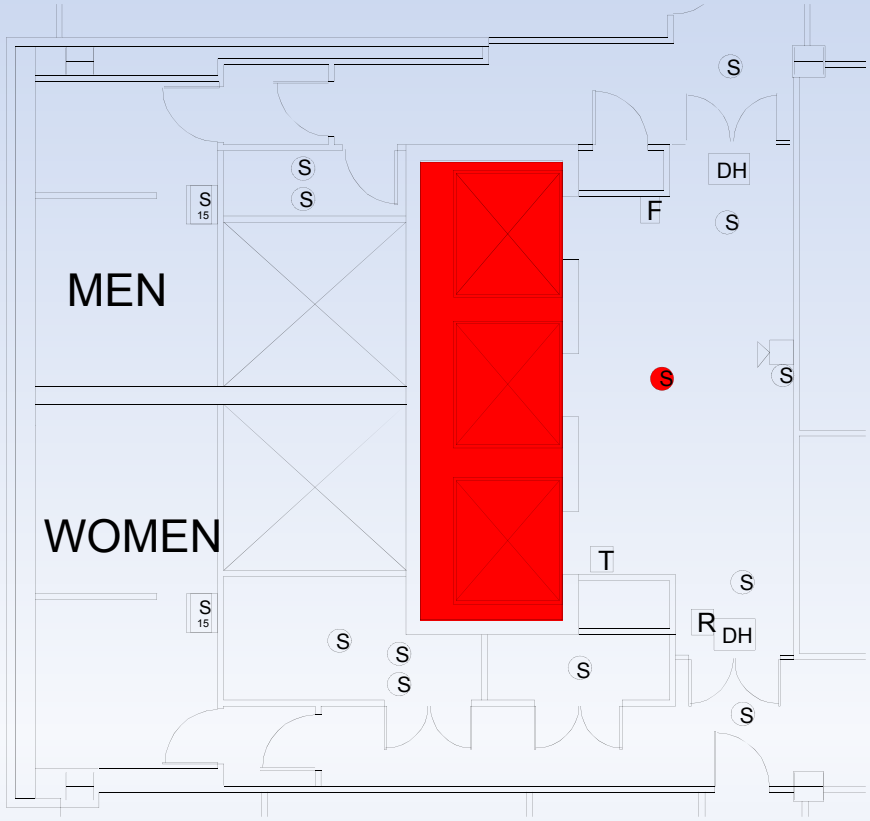
Main impact on fire systems is the application of strobe signals for the hearing impaired.

LOCATION OF VISUALS

- Restrooms
- Corridors (**within 15' of each end or corner**)
- Lobbies
- Common Use Areas:
  - Conference rooms, classrooms, cafeterias, examination/treatment rooms, filing/photocopy rooms, break rooms, dressing/fitting rooms, and similar spaces.
  - Typically not required in single offices used by one person.

Elevator Recall

Elevator lobby smoke detection



Elevator Lobby Smoke Detection

Purpose of this detector

- To prevent an elevator car from opening into a potential fire condition.

- Make the elevator car available for fire service use.

Phase 1 Elevator Service

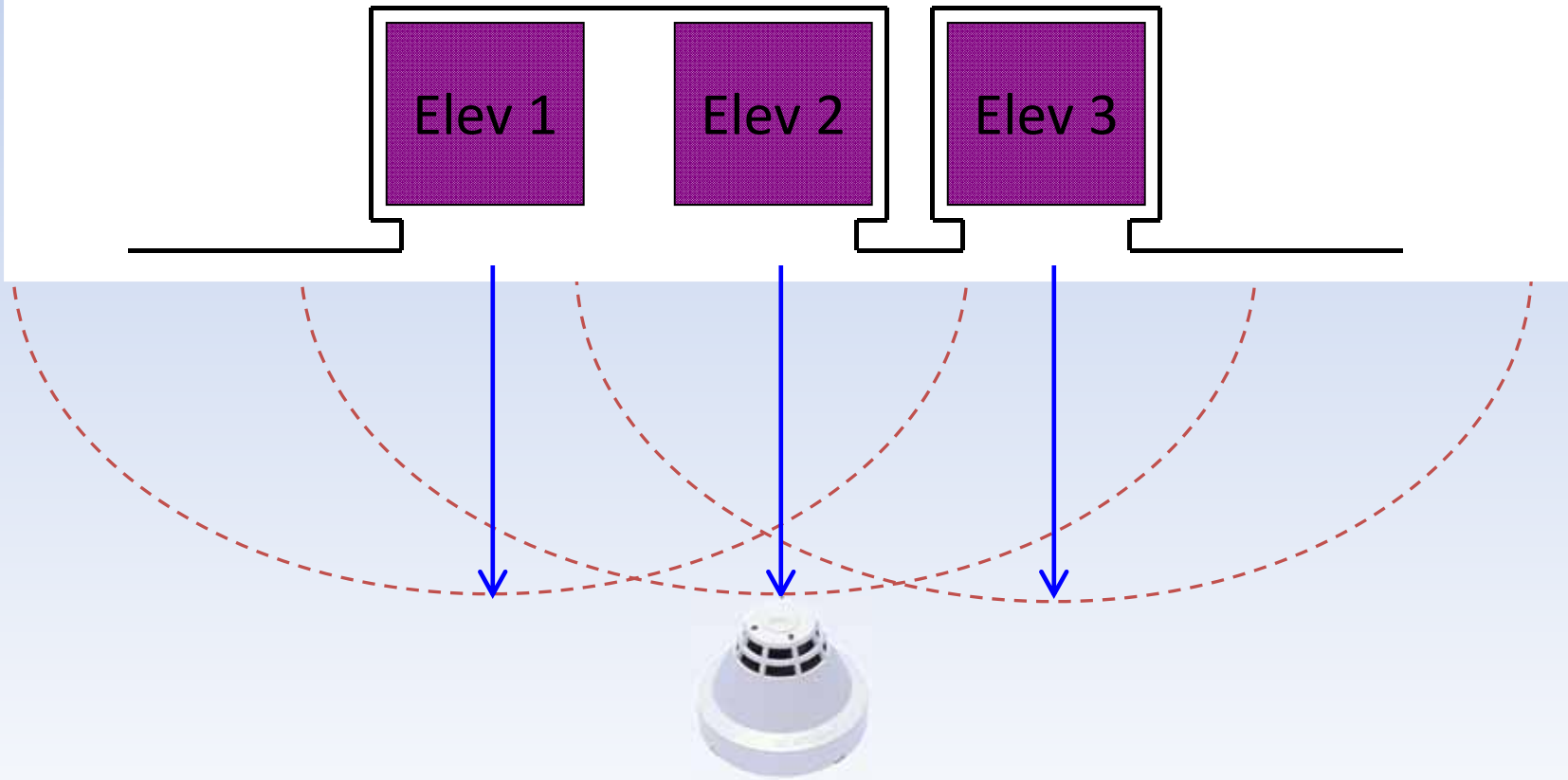
NFPA72

- Requires system smoke detectors located in:
  - Elevator lobbies.
  - Elevator machine rooms.
  - Hoist ways (**Sometimes**).
  - Connected to building fire alarm system.

Elevator Lobby Detector Spacing

- Spacing of the smoke detector(s) in the elevator lobbies to be within 21 feet of the centerline of each elevator door.
- Unenclosed lobbies, atriums, and architectural challenges, requires an engineering evaluation.
- In certain situations such as non-heated lobbies use of heat detectors is acceptable*.
- *Always verify with your AHJ

Smoke Detector Placement



21 ft Rule

Single system smoke detector placed within the intersecting area
Of the three semicircles will cover all three elevators.

Signals to Elevator Controls

NFPA72

Phase I

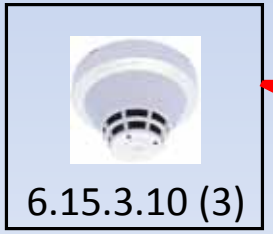
- Primary Recall to Designated Level
- Alternate Floor Recall
- Fire Hat
  - Activation of initiating devices in elevator machine room and hoist ways.

- Interface to Elevator Controller must be monitored for integrity, within 3 feet. (4.4.7.1)
  - Listed relays are required.
  - Relay bases are no longer acceptable.

Elevator Interface

6.15.3.10 (2)

Elevator Lobby Detectors



6.15.3.10 (3)

Elevator Hoistway #1 Detector(s)

6.15.3.10 (3)

Elevator Machine Room Detectors (non-lobby level)

CR

Primary Recall Designated Level A17.1: 2.27.3.2.3

CR

Fire Hat - #1 Warning to ELEV1 A17.1: 2.27.3.2.6

6.15.3.10 (2)

Elevator Lobby Detector(s) at designated level

CR

Recall to Alternate Level A17.1: 2.27.3.2.3

NFPA72 and ASME A17.1

Fire Hat Indication

NFPA72

- Activation of initiating device in the elevator machine room or hoistway shall annunciate at control unit and annunciators to alert fire fighters that the elevators are no longer safe.

ANSI A17.1 2.27.3.2.6

- Provide visual flashing indicator in the elevator car, marked as “firehat”.

Control Panel Basics

ALARM or FIRE ALARM event

FIRE ALARM

A warning of fire danger.

- A signal initiated by a fire alarm-initiating device such as a manual fire alarm box, automatic fire detector, waterflow switch, or other device in which activation is indicative of the presence of a fire or fire signature.

Supervisory event

SUPV

A warning of sprinkler or other fire system impairment.

- An initiating device such as a valve switch, water level indicator, or low air pressure switch on a dry pipe sprinkler system in which the change of state signals an off normal condition.

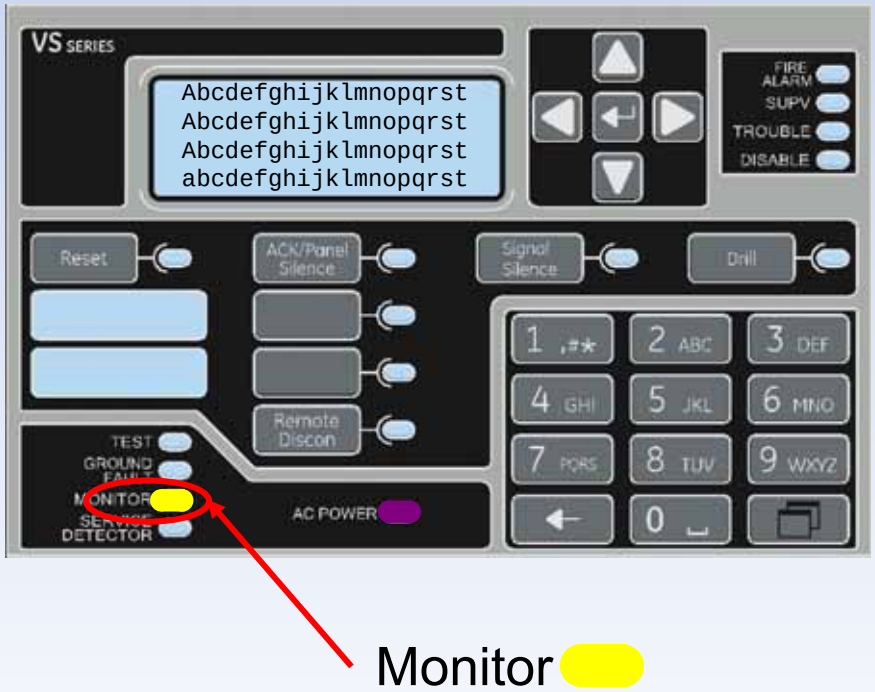
Trouble event

TROUBLE

A warning of fire alarm system impairment.

- A signal initiated by the fire alarm system or device indicative of a fault in a monitored circuit or component.

Monitor event

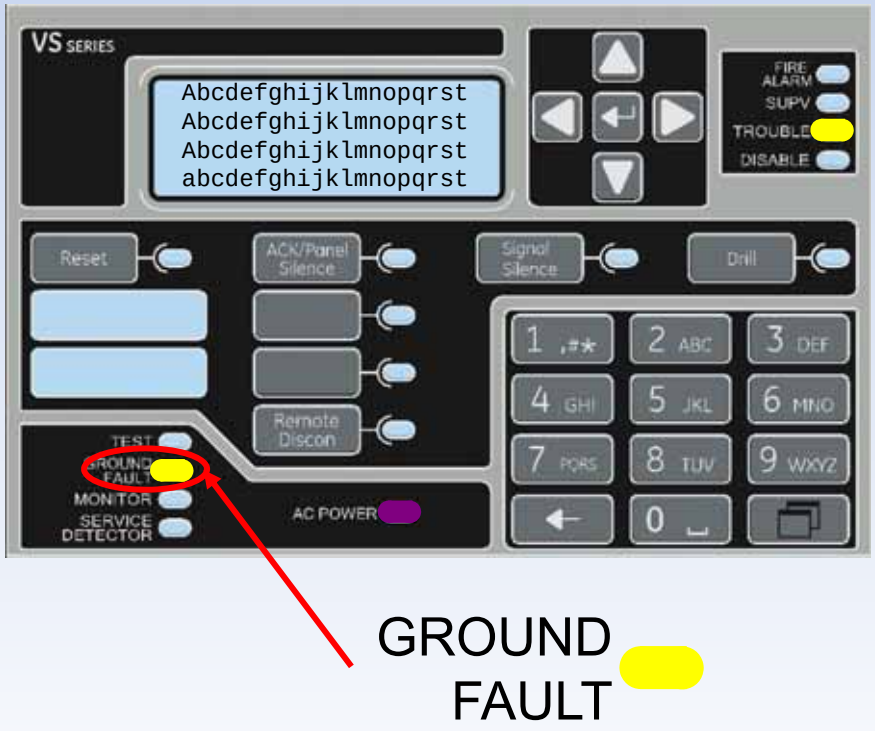


A indication the system has a monitor event active.

- A signal initiated by the fire alarm system when a device programmed for monitor is active. A monitor message exist in the display queue.

Use for status monitoring type events

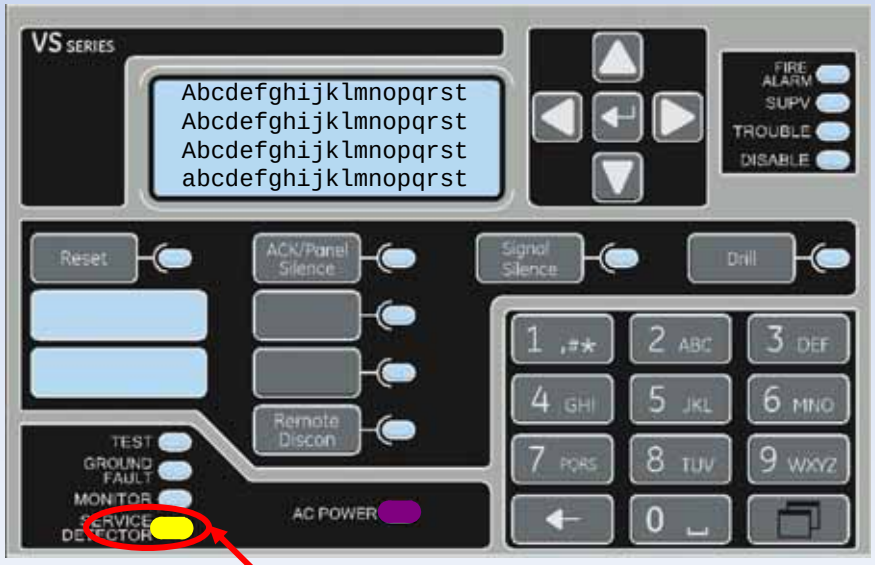
Ground fault event



A warning the system has a ground fault active.

- A signal initiated by the fire alarm system when a ‘live’ conductor has a low impedance connection to ground. Trouble is also active.

Service Detector event



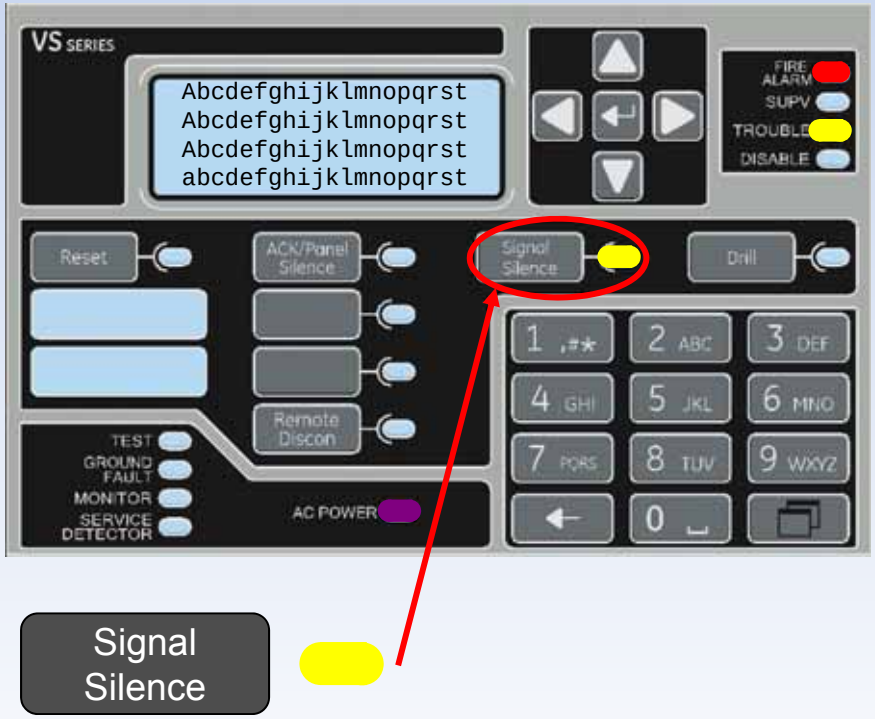
SERVICE DETECTOR

A warning the system has one or more detectors requiring service.

- A signal initiated by the fire alarm system when a detector needs service such as cleaning.

Is this a trouble?

Signal Silence

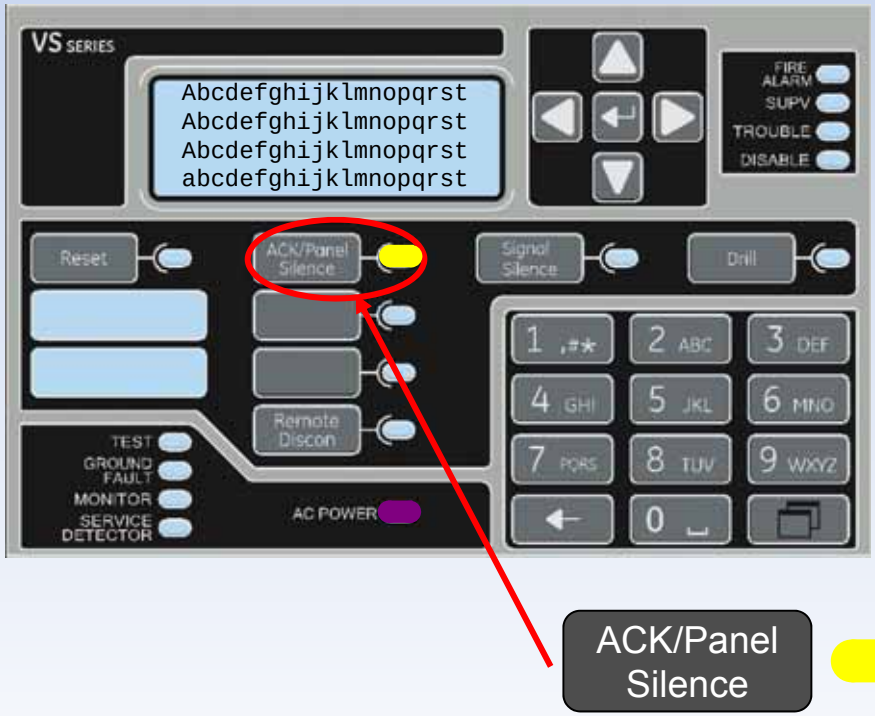


A user initiated action to silence all the alarm signals on the system.

- The signal silence LED turns on steady when the signals are silenced.
- Signal silence puts the system in trouble.

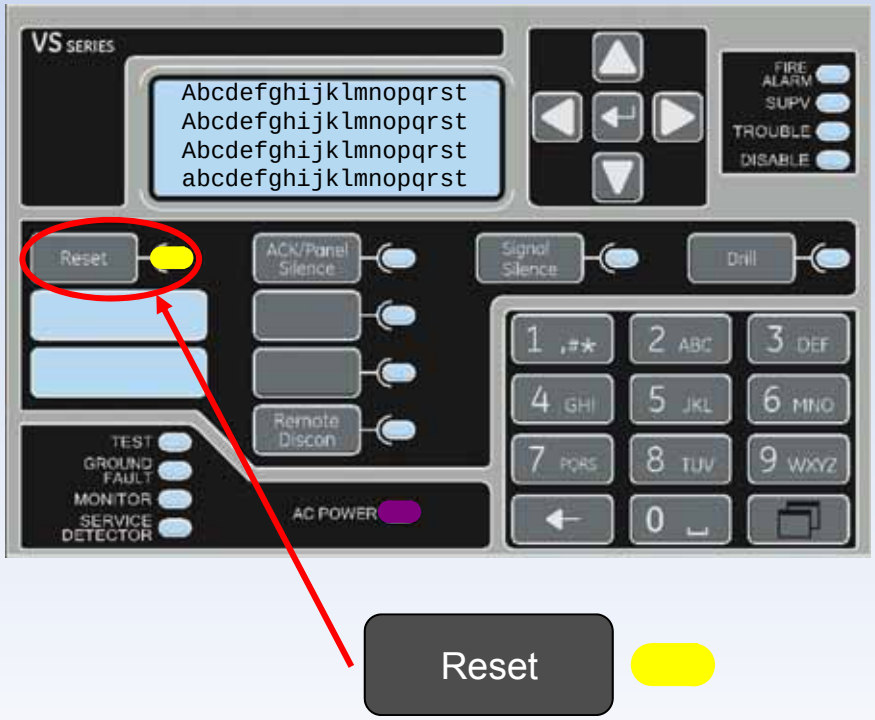
Acknowledge / Panel Silence

All active events are Acknowledged



A user initiated action to silence the panel's internal signal.

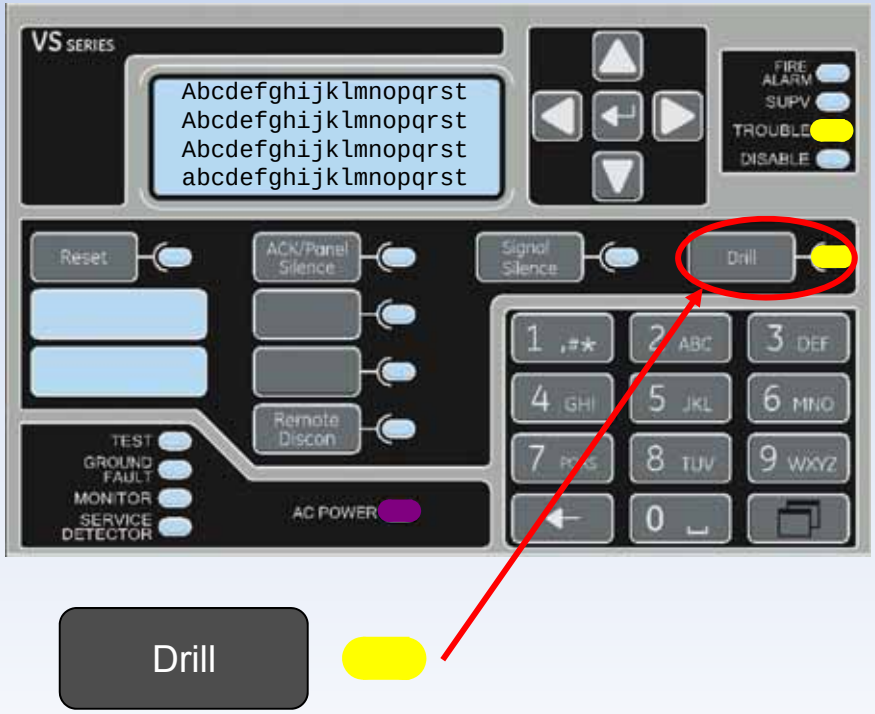
Reset



A user initiated action intended to restore the system to normal.

- Pressing RESET starts the reset sequence. During reset, the LED flashes. To complete successfully, all devices and circuits must be normal.

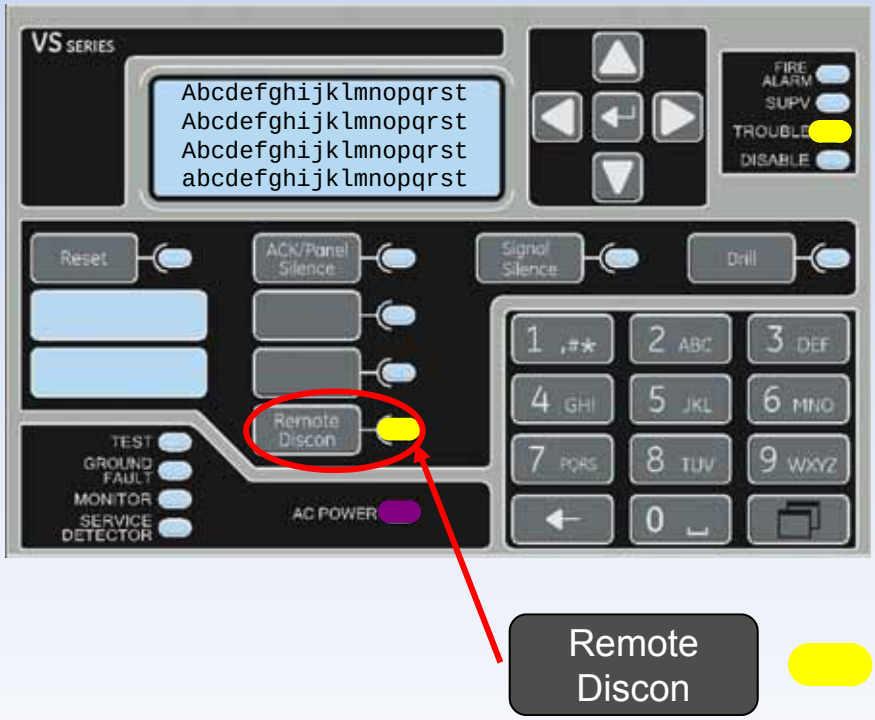
Drill



A user initiated action to sound a fire drill signal.

- The drill LED turns on when drill is active.
- Drill activates only the audible and visible signals.

Remote Disconnect



A user initiated action to turn off the connection to a central monitoring station.

- The remote disconnect LED turns on steady when the central station is turned off.
- Remote Disconnect puts the system in trouble.

Questions ?

Fire Alarm Testing & Inspecting

~~*Best*~~ *Practices*

Really Good

Amy Cote

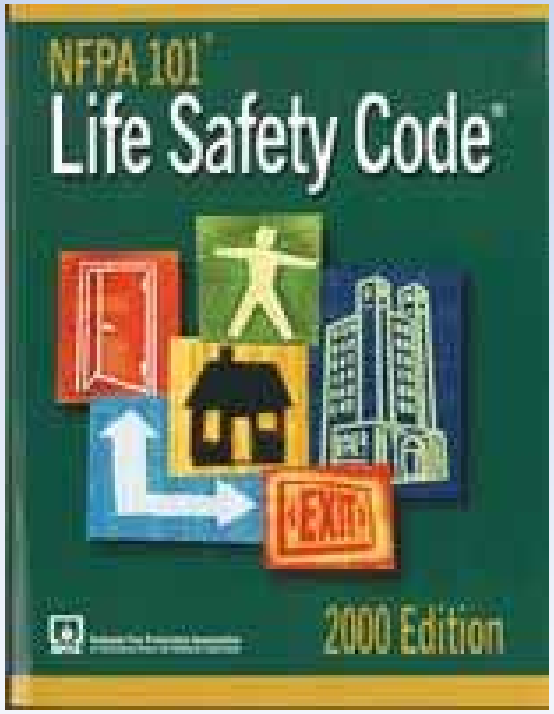
About me…

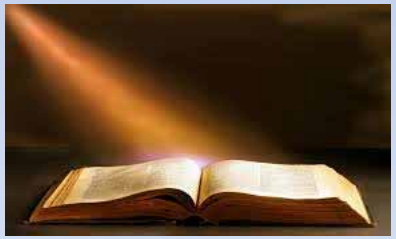
- St. Norbert College, 2008
  - Provide Fire Alarm, Sprinkler, Extinguisher, Suppression Inspections for CEC since 2008
- Past Chapter III President, Current Chapter III Secretary & Treasurer
  - NFPA Life Safety Courses
- WI & IA
  - Love the Green Bay Packers

Game Plan

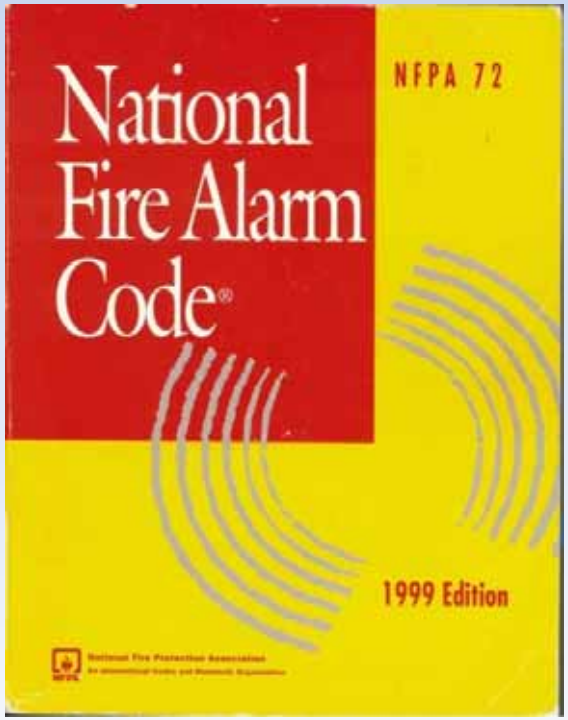
- Basics – What?
- Contracts – Top 6 Items To Request
- Inspection Report Criteria – Must Haves
- Hot Button Items
- Questions & Answers

References





NFPA 72, 1999 Edition
Chapter 7
Inspection, Testing and Maintenance



#6 Ranking in Findings in 2013

- Joint Commission Standard EC.02.03.05
  - EPs 1-20 Testing and Inspection of fire safety equipment
  - EP 25: Documentation
    - 2013: 44%
    - 2009: 38%

Source: 2014 HCPro Healthcare Life Safety Compliance/Volume 16 Issue No. 4/April 2014

Basics

- **Testing:** Performed Annually; functional testing.

- **Inspecting:** Performed Annually & Semiannually; visual test.

- Annual: Every 12 months
- Semiannual: Every 6 months

Annual Functional Testing

Fire Alarm Control Panel

- Control Panel (Alarm, Supervisory & Trouble Signals)
- Batteries (Load Voltage & Discharge Test)
- Remote Annunciators
- Emergency Voice/Alarm Communication Equipment
- Pull Stations
- Smoke Detectors
- Duct Detectors
- Heat Detectors
- Supervisory Signal Devices
- Tamper Switches
- Water Flow Switches

Interface Equipment (relays & control elements):

- Magnetic Hold-Open Devices
- Magnetic Locks
- Smoke Dampers
- Air Handler Shutdown
- Sprinkler Dry-Pipe and Pre-Action System
- Fire Pump
- Kitchen Hood Suppression System
- Clean Agent Suppression System
- Vertical Rolling or Horizontal Sliding Fire Door
- Elevator Firefighter's Service (recall)

Alarm Notification Appliances

- Audible Devices
- Visible Devices
- Off-Premises Transmission Equipment (Required Quarterly, performed and during the Fire Drill)

Semiannual Visual & Functional Testing

Functional Testing:

- Battery Load Voltage Test

Visual Inspection:

- Fire Alarm Control Panel
- Dact
- Batteries
- Pull Stations
- Smoke Detectors
- Duct Detectors
- Heat Detectors
- Electromechanical Releasing Devices

Written Contract

7-1.2.1: Inspection, testing, or maintenance shall be permitted to be done be a person or organization other than the owner if conducted under a **written contract.**

YOU Are the Boss

- Set the Expectations with your Contractor

I. Dates of Inspections & Testing
II. Duration
III. Correct Edition of the Code
IV. Inspection Report Completion Date
V. Credentials of Inspectors
VI. Discrepancies

I. Dates of Inspections & Testing

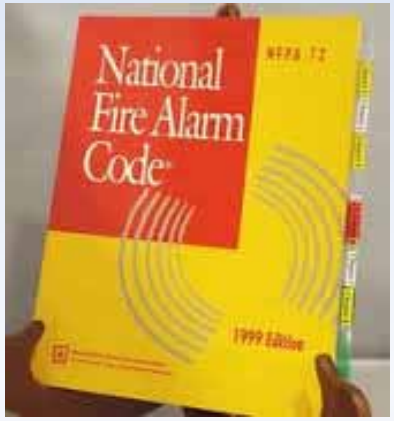
- Semiannually is six months after installation/record of completion (ROC) or previous testing and inspection.
- Annual is one year after installation/ROC.
- Inspection date should be the same time each year.

II. Duration

- Schedule time and ensure the inspector's are onsite on consecutive days.

III. Correct Edition of Code

- Methods of testing per **NFPA 72, 1999** Edition must be used to perform the inspection



- Table 7-2.2 Test Methods

IV. Inspection Report Completion Date

- Request that the completed report must be submitted within 24 hours of completion of the fire alarm inspection or testing.

V. Credentials of Inspectors

7-1.2.2 Service personnel shall be qualified and experienced in the inspection, testing and maintenance of fire alarm systems. Examples of qualified personnel shall be permitted to include, but shall not be limited to, individuals with the following qualifications:

(1) Factory trained and certified

(2) National Institute for Certification in Engineering Technologies

(3) International Municipal Signal Association fire alarm certified

(4) Certified by a state or local authority

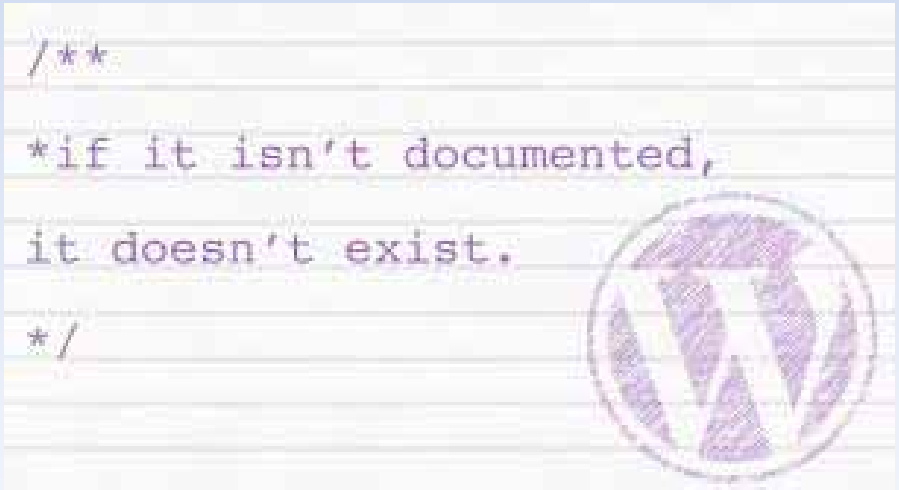
(5) Trained and qualified personnel employed by an organization listed by a national testing laboratory for the servicing of fire alarm systems.

VI. Discrepancies

7-1.1.2 System defects and malfunction shall be corrected. If a defect or malfunction is not corrected at the conclusion of system inspection, testing, or maintenance, the system owner or the owner's designated representative shall be informed of the impairment in writing **within 24 hours.**

- Ensure that your contractor notifies you immediately discrepancies and inaccessible devices.

Fire Alarm Inspection & Testing Documentation

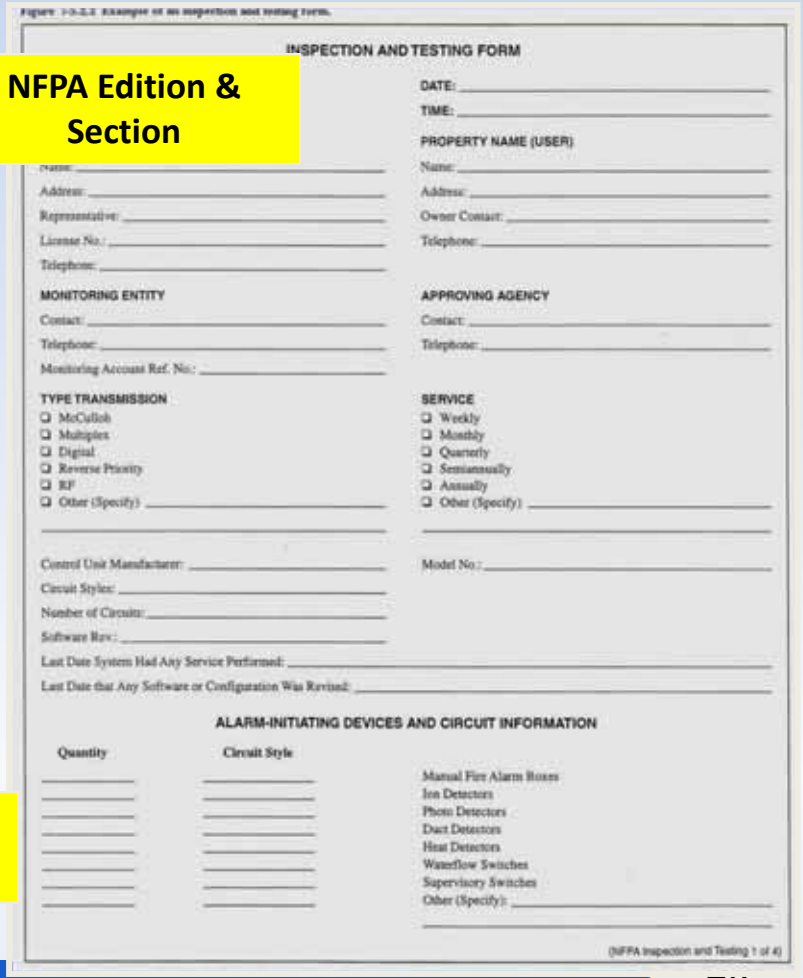


Inspection & Testing Documentation

- **Use is NOT Mandatory!**
- **But, It is the Standard by which all annual FA forms are compared**

1. **<u>ALL</u> info on this form must be on the form used by the firm that does the inspections/tests.**
2. **<u>ALL</u> the blanks must contain an entry.**

NFPA Edition & Section



INSPECTION AND TESTING FORM

DATE: _____

TIME: _____

PROPERTY NAME (USER)

Name: _____

Address: _____

Owner Contact: _____

Telephone: _____

Name: _____

Address: _____

Representative: _____

License No.: _____

Telephone: _____

MONITORING ENTITY

Contact: _____

Telephone: _____

Monitoring Account Ref. No.: _____

APPROVING AGENCY

Contact: _____

Telephone: _____

TYPE TRANSMISSION

- ❑ McCulloh
- ❑ Multiplex
- ❑ Digital
- ❑ Reverse Priority
- ❑ RF
- ❑ Other (Specify) _____

SERVICE

- ❑ Weekly
- ❑ Monthly
- ❑ Quarterly
- ❑ Semiannually
- ❑ Annually
- ❑ Other (Specify) _____

Control Unit Manufacturer: _____

Model No.: _____

Circuit Styles: _____

Number of Circuits: _____

Software Rev.: _____

Last Date System Had Any Service Performed: _____

Last Date that Any Software or Configuration Was Revised: _____

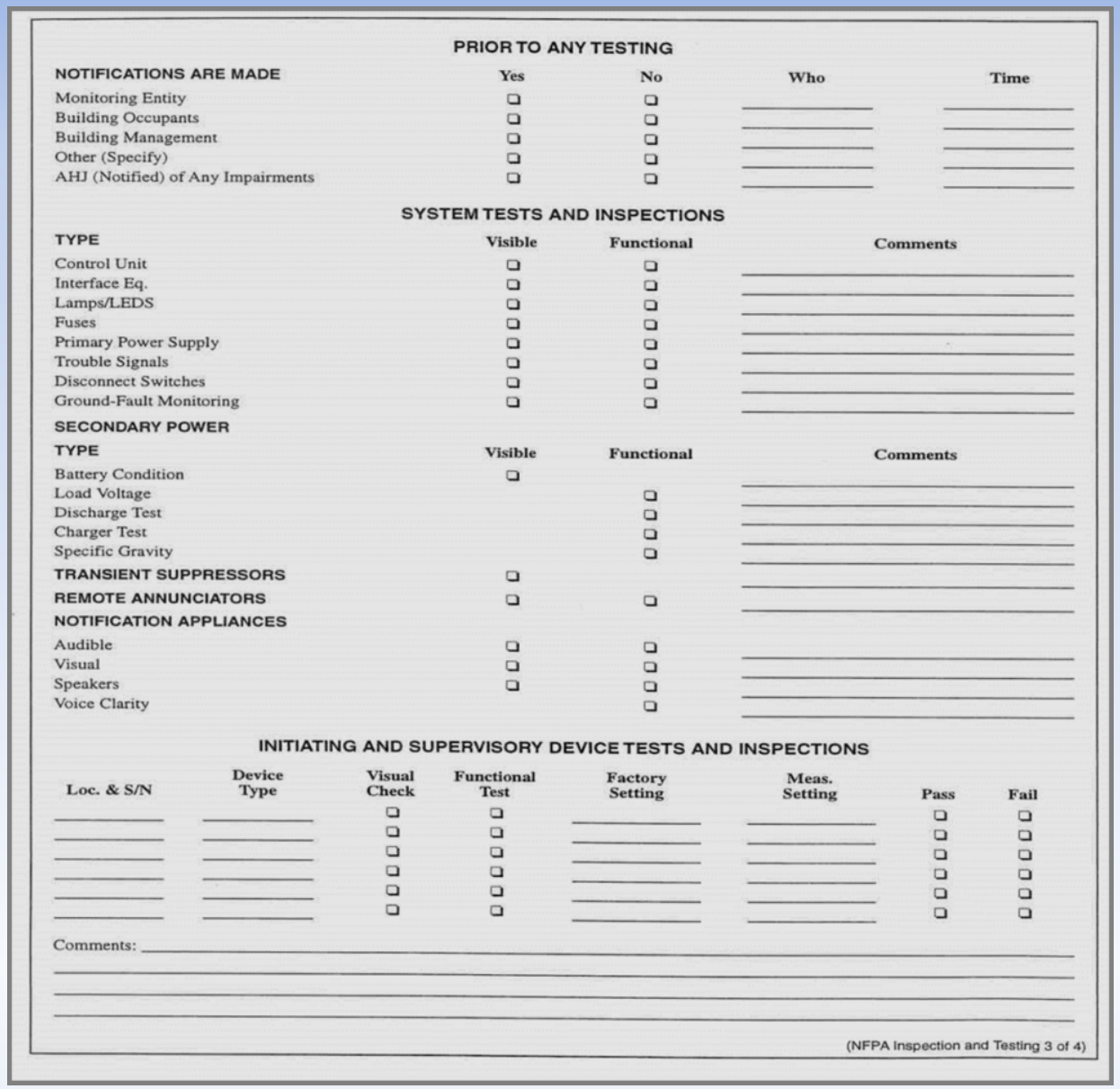
ALARM-INITIATING DEVICES AND CIRCUIT INFORMATION

Quantity	Circuit Style	
_____	_____	Manual Fire Alarm Boxes
_____	_____	Ion Detectors
_____	_____	Photo Detectors
_____	_____	Duct Detectors
_____	_____	Heat Detectors
_____	_____	Waterflow Switches
_____	_____	Supervisory Switches
_____	_____	Other (Specify): _____

(NFPA Inspection and Testing 1 of 4)

Quantities on Inventory must match #tested

Sensitivity Factory Setting & Measured Setting Testing MUST be documented



PRIOR TO ANY TESTING

NOTIFICATIONS ARE MADE	Yes	No	Who	Time
Monitoring Entity	☐	☐		
Building Occupants	☐	☐		
Building Management	☐	☐		
Other (Specify)	☐	☐		
AHJ (Notified) of Any Impairments	☐	☐		

SYSTEM TESTS AND INSPECTIONS

TYPE	Visible	Functional	Comments
Control Unit	☐	☐	
Interface Eq.	☐	☐	
Lamps/LEDS	☐	☐	
Fuses	☐	☐	
Primary Power Supply	☐	☐	
Trouble Signals	☐	☐	
Disconnect Switches	☐	☐	
Ground-Fault Monitoring	☐	☐	
SECONDARY POWER			
TYPE	**Visible**	**Functional**	**Comments**
Battery Condition	☐		
Load Voltage		☐	
Discharge Test		☐	
Charger Test		☐	
Specific Gravity		☐	
TRANSIENT SUPPRESSORS	☐		
REMOTE ANNUNCIATORS	☐	☐	
NOTIFICATION APPLIANCES			
Audible	☐	☐	
Visual	☐	☐	
Speakers	☐	☐	
Voice Clarity		☐	

INITIATING AND SUPERVISORY DEVICE TESTS AND INSPECTIONS

Loc. & S/N	Device Type	Visual Check	Functional Test	Factory Setting	Meas. Setting	Pass	Fail
		☐	☐			☐	☐
		☐	☐			☐	☐
		☐	☐			☐	☐
		☐	☐			☐	☐
		☐	☐			☐	☐
		☐	☐			☐	☐

Comments: _____

(NFPA Inspection and Testing 3 of 4)

Zero & N/A must be documented if not applicable

ALARM NOTIFICATION APPLIANCES AND CIRCUIT INFORMATION

Quantity	Circuit Style	
_____	_____	Bells
_____	_____	Horns
_____	_____	Chimes
_____	_____	Strobes
_____	_____	Speakers
_____	_____	Other (Specify): _____

No. of alarm notification appliance circuits: _____

Are circuits monitored for integrity? ❑ Yes ❑ No

SUPERVISORY SIGNAL-INITIATING DEVICES AND CIRCUIT INFORMATION

Quantity	Circuit Style	
_____	_____	Building Temp.
_____	_____	Site Water Temp.
_____	_____	Site Water Level
_____	_____	Fire Pump Power
_____	_____	Fire Pump Running
_____	_____	Fire Pump Auto Position
_____	_____	Fire Pump or Pump Controller Trouble
_____	_____	Fire Pump Running
_____	_____	Generator In Auto Position
_____	_____	Generator or Controller Trouble
_____	_____	Switch Transfer
_____	_____	Generator Engine Running
_____	_____	Other: _____

ALL batteries must have their voltage, amps, type and location indicated

SIGNALING LINE CIRCUITS

Quantity and style (See NFPA 72, Table 3-6) of signaling line circuits connected to system:

Quantity _____ Style(s) _____

SYSTEM POWER SUPPLIES

a. Primary (Main): Nominal Voltage _____, Amps _____

Overcurrent Protection: Type _____, Amps _____

Location (of Primary Supply Panelboard): _____

Disconnecting Means Location: _____

b. Secondary (Standby):

_____ Storage Battery: Amp-Hr. Rating _____

Calculated capacity to operate system, in hours: _____ 24 _____ 60 _____

_____ Engine-driven generator dedicated to fire alarm system:

Location of fuel storage: _____

TYPE BATTERY

❑ Dry Cell
❑ Nickel-Cadmium
❑ Sealed Lead-Acid
❑ Lead-Acid
❑ Other (Specify): _____

c. Emergency or standby system used as a backup to primary power supply, instead of using a secondary power supply:

_____ Emergency system described in NFPA 70, Article 700

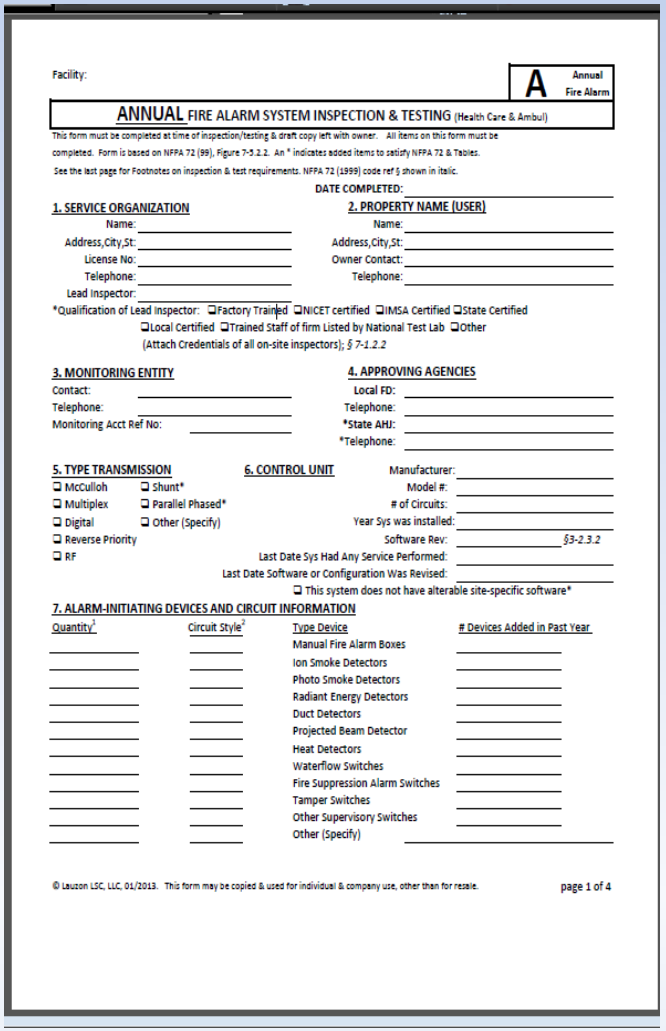
_____ Legally required standby described in NFPA 70, Article 701

_____ Optional standby system described in NFPA 70, Article 702, which also meets the performance requirements of Article 700 or 701.

(NFPA Inspection and Testing 2 of 4)

Documentation

- A lot of information
- Use the ‘Bill Lauzon Standardized Inspection Report’ as a Cross Reference



Facility:

A Annual Fire Alarm

ANNUAL FIRE ALARM SYSTEM INSPECTION & TESTING (Health Care & Ambul)

This form must be completed at time of inspection/testing & draft copy left with owner. All items on this form must be completed. Form is based on NFPA 72 (99), Figure 7-5.2.2. An * indicates added items to satisfy NFPA 72 & Tables.

See the last page for Footnotes on inspection & test requirements. NFPA 72 (1999) code ref § shown in italic.

DATE COMPLETED:

1. SERVICE ORGANIZATION
Name:
Address,City,St:
License No:
Telephone:
Lead Inspector:

2. PROPERTY NAME (USER)
Name:
Address,City,St:
Owner Contact:
Telephone:

*Qualification of Lead Inspector: ❑Factory Trained ❑NICET certified ❑IMSA Certified ❑State Certified ❑Local Certified ❑Trained Staff of firm Listed by National Test Lab ❑Other (Attach Credentials of all on-site inspectors); *§ 7-1.2.2*

3. MONITORING ENTITY
Contact:
Telephone:
Monitoring Acct Ref No:

4. APPROVING AGENCIES
Local FD:
Telephone:
*State AHJ:
*Telephone:

5. TYPE TRANSMISSION
❑ McCulloh ❑ Shunt*
❑ Multiplex ❑ Parallel Phased*
❑ Digital ❑ Other (Specify)
❑ Reverse Priority
❑ RF

6. CONTROL UNIT
Manufacturer:
Model #:
# of Circuits:
Year Sys was installed:
Software Rev: *§3-2.3.2*
Last Date Sys Had Any Service Performed:
Last Date Software or Configuration Was Revised:
❑ This system does not have alterable site-specific software*

7. ALARM-INITIATING DEVICES AND CIRCUIT INFORMATION

Quantity[1]	Circuit Style[2]	Type Device	# Devices Added in Past Year
		Manual Fire Alarm Boxes	
		Ion Smoke Detectors	
		Photo Smoke Detectors	
		Radiant Energy Detectors	
		Duct Detectors	
		Projected Beam Detector	
		Heat Detectors	
		Waterflow Switches	
		Fire Suppression Alarm Switches	
		Tamper Switches	
		Other Supervisory Switches	
		Other (Specify)	

© Lauzon LSC, LLC, 01/2013. This form may be copied & used for individual & company use, other than for resale. page 1 of 4

- Inventory Deviations
- Notification Device Testing
- Semiannual Testing
- Alarm, Trouble, & Supervisory Signal and restoral times

Inventory Deviation

Do the quantities on your 2013 fire alarm inspection report match the quantities on your 2014 fire alarm inspection report?

- ✓ Devices Missed
- ✓ Devices Added

- ✓ Document **<u>WHY</u>**

Notification Device Testing

- Audible information shall be verified to be distinguishable and understandable.

- Appliance locations shall be verified to be per approved layout and it shall be confirmed that no floor plan changes affect the approved layout.

- It shall be confirmed that each appliance flashes.

Semiannual Testing & Inspecting

- Check for building modifications, occupancy changes, environmental conditions, orientation, obstruction, damage, proper install) [7-1.1]

- Sealed lead acid batteries must measure load voltage with charger disconnected.

Central Station Signal Verification

On/Off Premises Monitoring – Transmission

- Alarm, Trouble, & Supervisory Signal and restoral times with central station

Per 5-2.3:

Alarm Signals – Received by central station within 90 seconds

Supervisory Signals – Received by central station within 4 minutes

Trouble Signals - Received by central station within 4 minutes

For example:

Type of Signal	Signal Confirmation
Type: Alarm	Confirmed Time:
Type: Alarm	Confirmed Time:
Type: Supervisory	Confirmed Time:
Type: Supervisory	Confirmed Time:
Type: Trouble	Confirmed Time:
Type: Trouble	Confirmed Time:


Confidence
doesn't come when
you have all the answers.
But it comes when
you are ready to face
all the questions.


Questions?

Questions

- Our facility has one fire alarm control panel but has two occupancies; a skilled nursing home and an RCAC. Should we have two fire alarm inspection reports for each occupancy?

  CEC Reply:

  We recommend it. No need to confuse a surveyor with additional information not relevant to the survey.

Questions

- I did not get cited by Joint Commission or CMS. We had an outside firm to review our documentation for Joint Commission readiness. They found fault in my annual fire alarm inspection documentation. The documentation showed the fan shutdown relays were tested. She found the documentation was not clear as to verifying the fans actually shut down on fire.

***CEC Reply*:**

The following should be documented:

- **Location of fan shut down**
- **Which device shut that fan down**
- **Type of test method: Visual, Device Operation, Simulated Operation**

Can the fire alarm inspection be performed on ‘walk – test’ mode?

- Not recommended, in the event of an actual alarm, notification devices will not function.
- System is down for a period greater than four hours.