

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

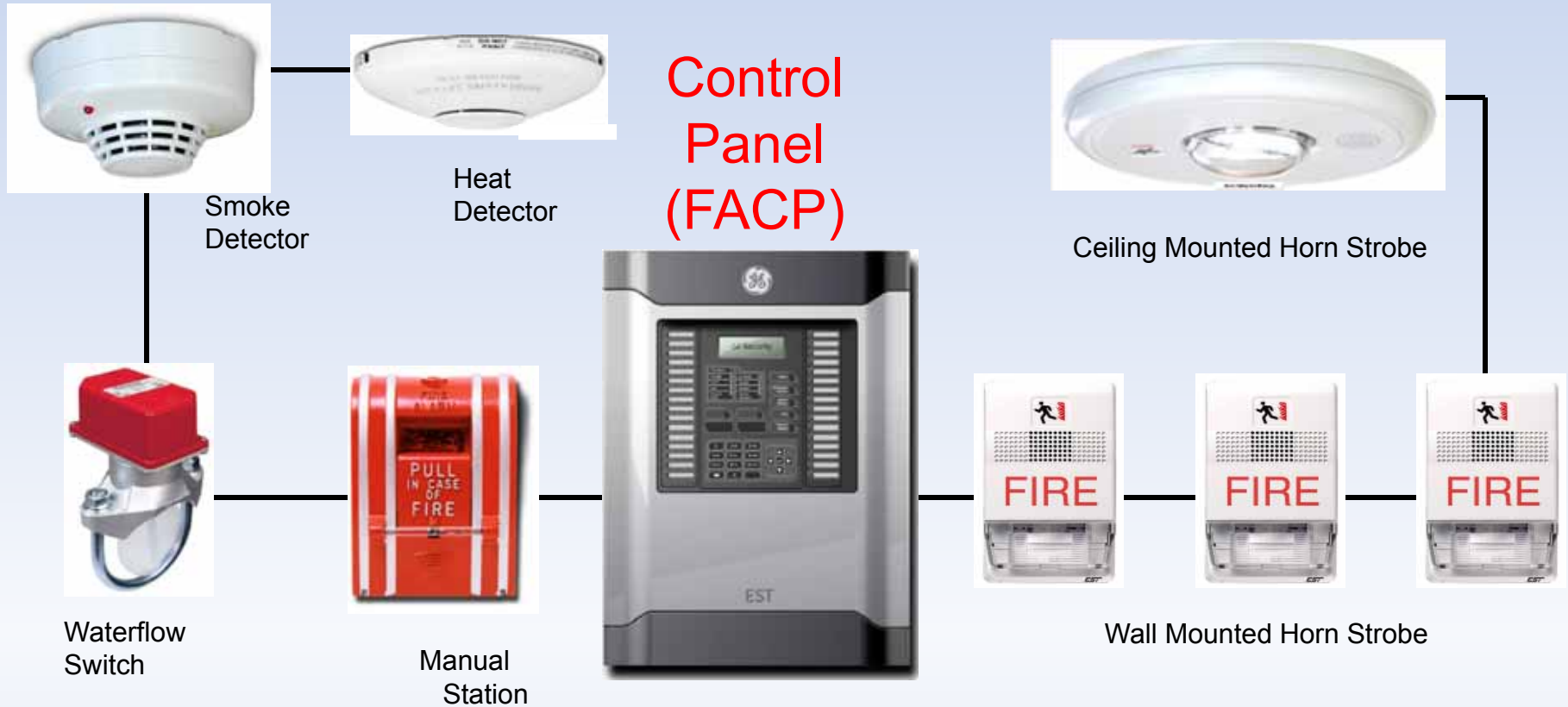
Detection → Control → Notification

Input → Process → Output

Typical Main Components

Initiating Devices

Notification Appliances



Detection → Control → Notification

Ancillary Devices

Control
Panel



Door Holder/Releases



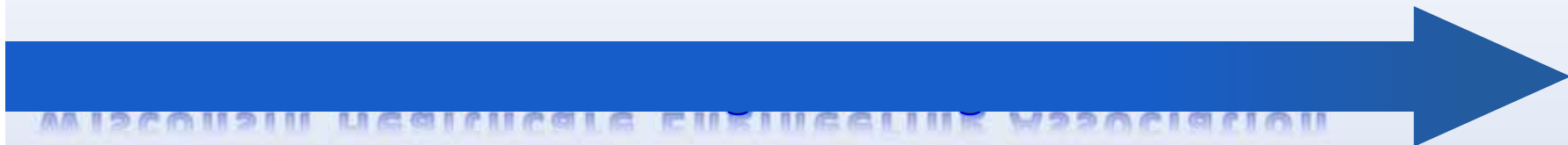
Remote
Annunciator



Control Relays



Printer



AMERICAN ASSOCIATION OF FIRE ALARM AND SIGNALING ENGINEERS

Off Premise Signaling

Digital Alarm Communicators



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

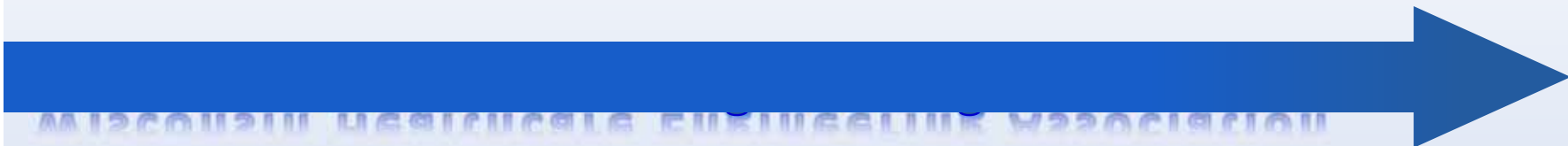
- Digital Alarm Communicator Receiver (DACR)

Central Station Monitoring



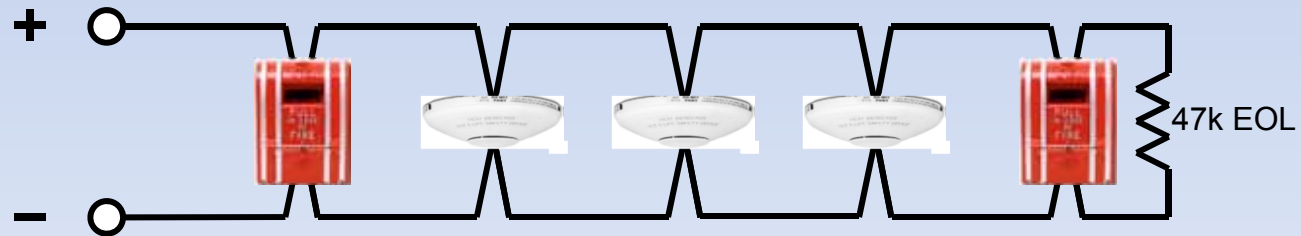
Telephone Line
Network Connection

- 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.

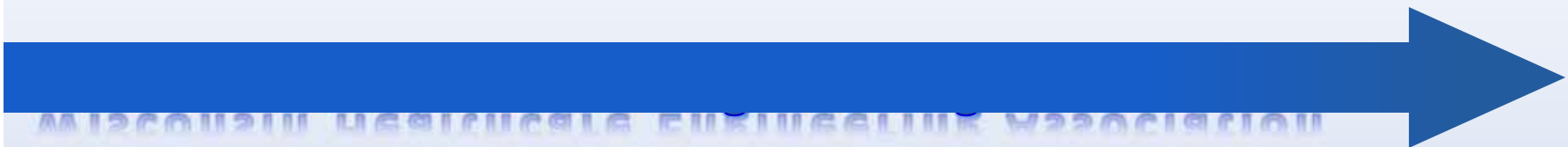
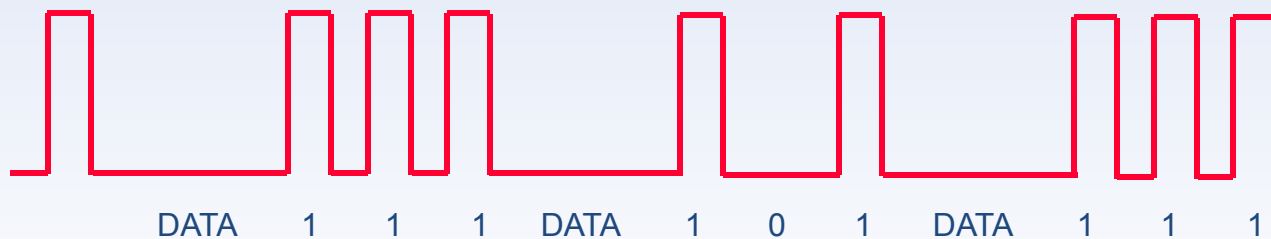
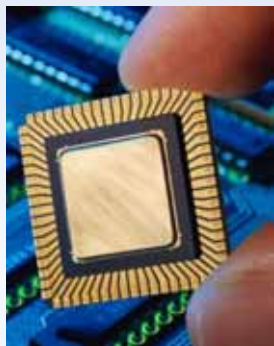
NAC - Notification Appliance Circuit

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



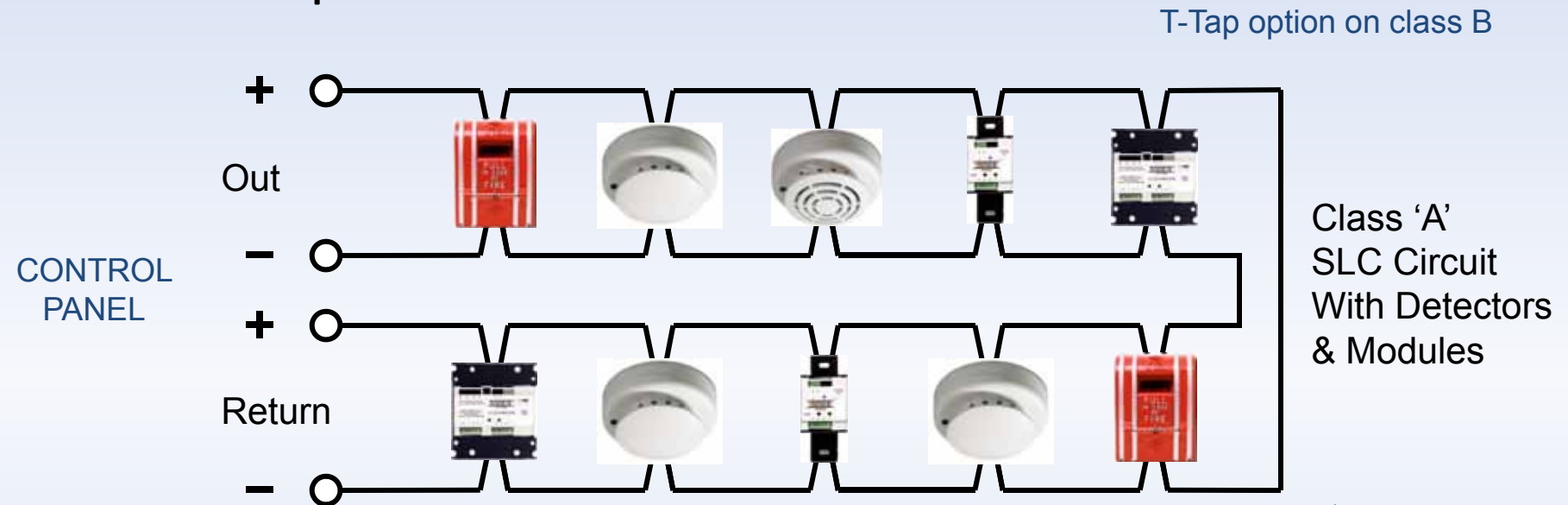
SLC Signaling Line Circuit

- 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.



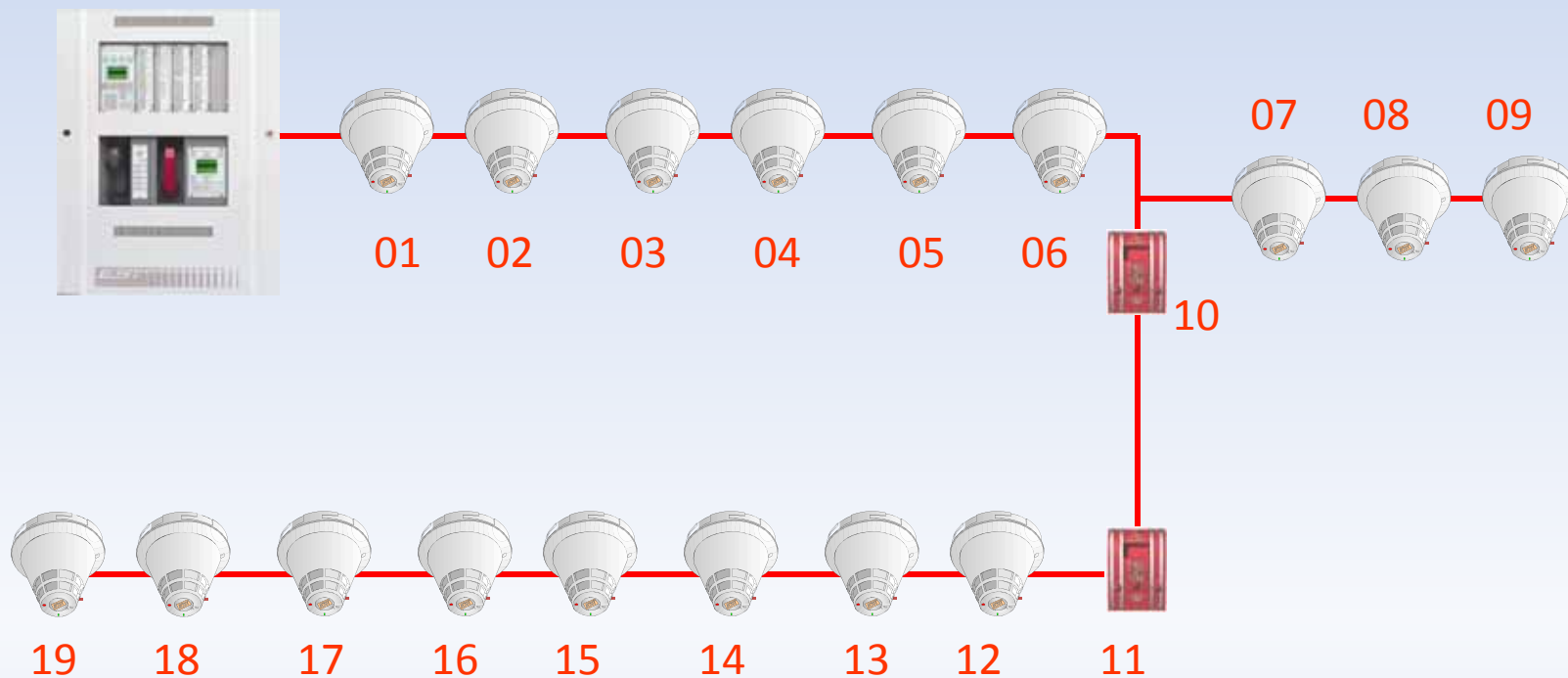
SLC Signaling Line Circuits

- 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

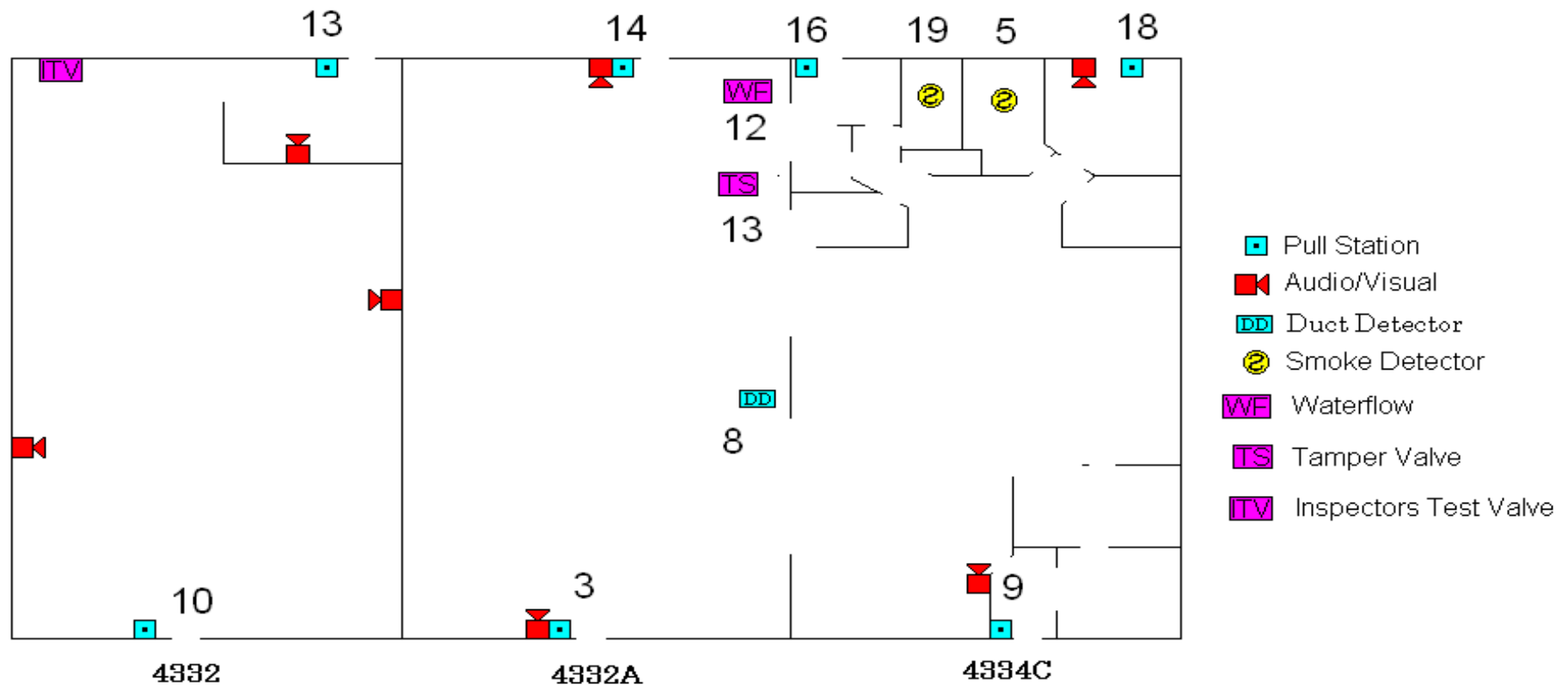


Addressable Fire Alarm Circuit

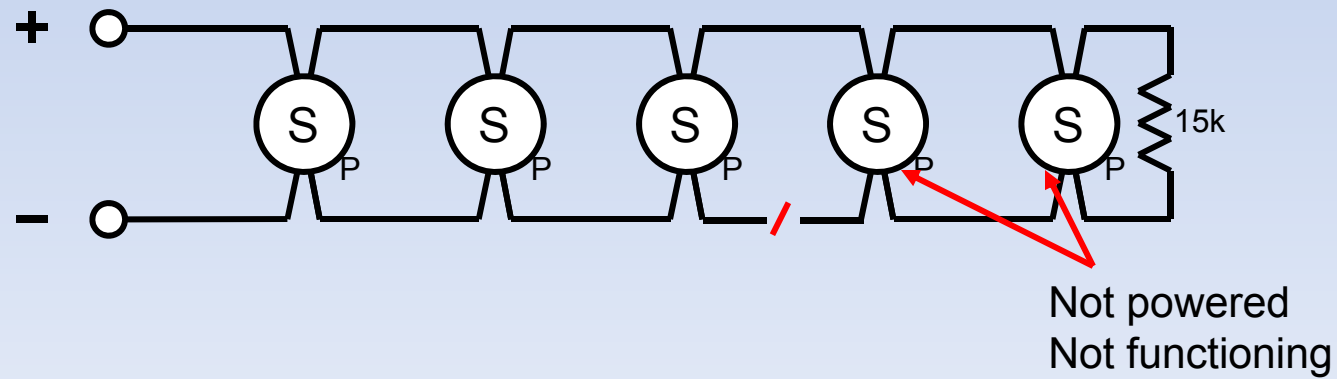
Each device has a unique identifier, or address, so that it is unique to the system.



Addressable Fire Alarm Circuit



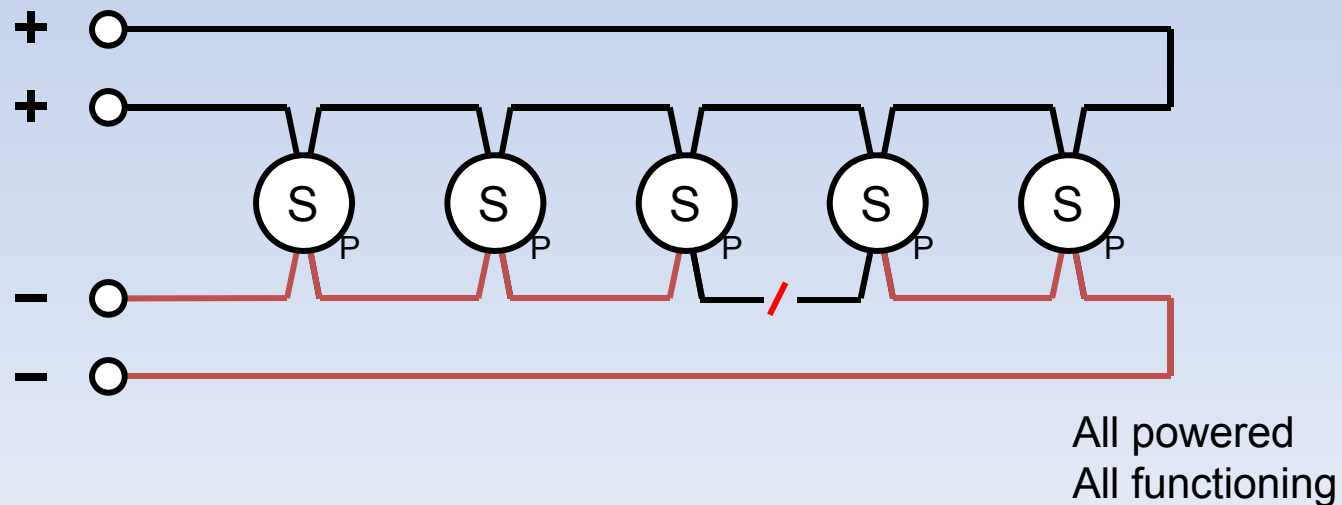
Class 'B' Circuit



- 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



Signal



LED = Light Emitting Diode



Initiating Devices are....

Manual

or

Automatic



Manual
Stations



Smoke



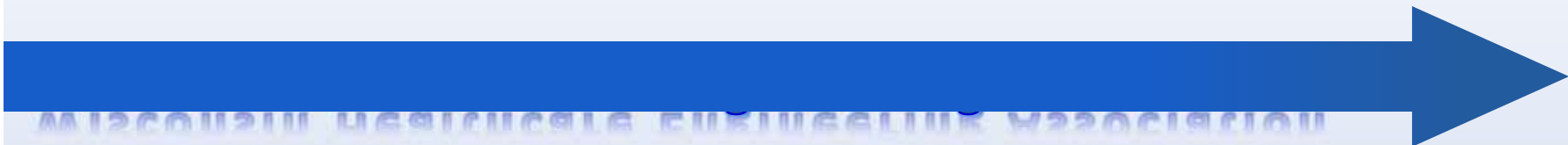
Heat



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



Heat



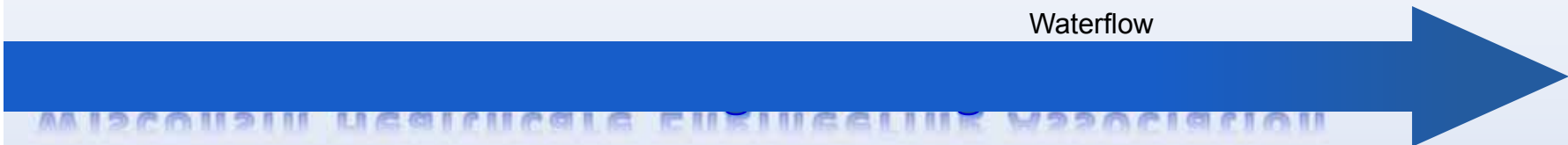
Waterflow



Manual
Stations



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



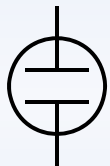
Waterflow



Typical N.O. Conventional Devices

Suggest 2-wire "Y" schematic connections

Suggest you show two wires out of each device

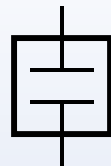


N.O.

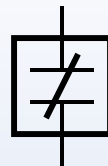


N.C.

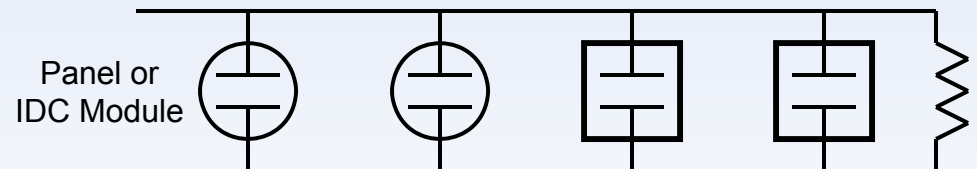
Device Schematics



N.O.



N.C.



A CIRCUIT or ZONE of conventional initiating devices

Use IDC type circuits

Intelligent or Analog/Addressable Devices

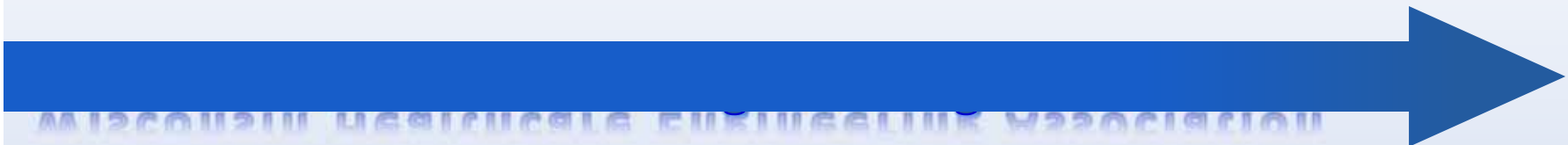
- Detectors and modules used on small to large FACPs, where each device has a unique address.
- If the device makes the alarm decision then it may be called Intelligent.



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



Intelligent
Multi-Sensor



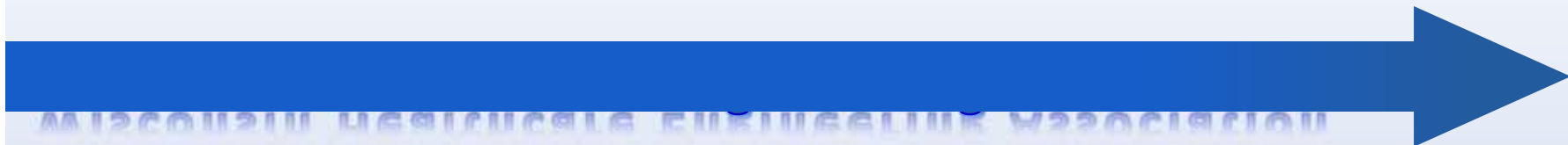
Conventional
Photo or Ion



Intelligent
Photo-Heat

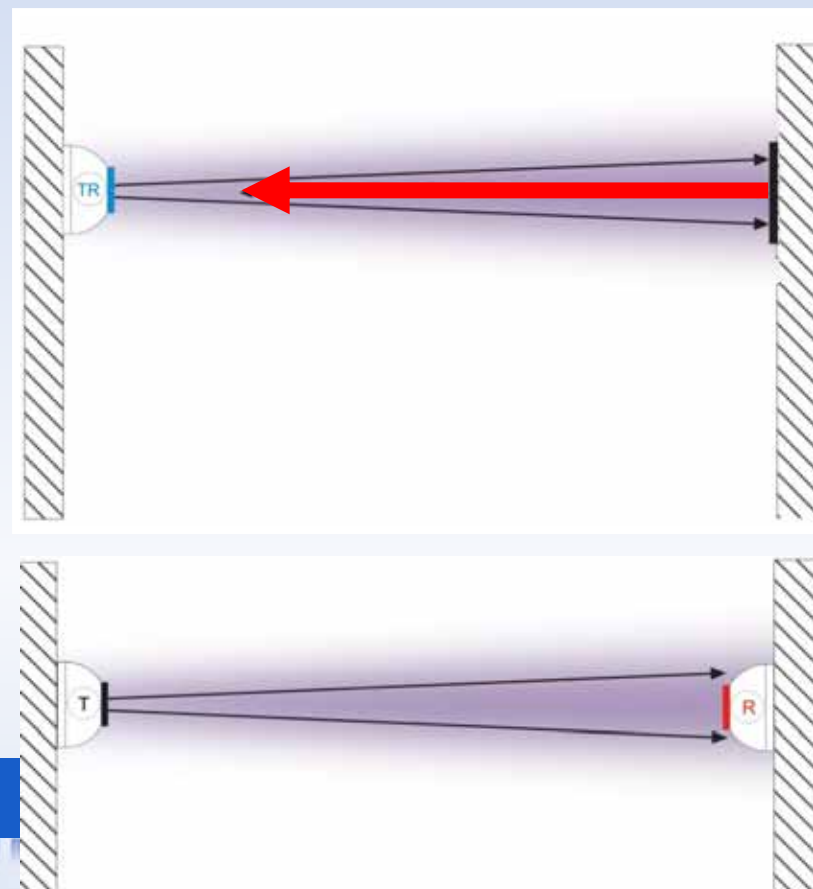


Intelligent
Photo



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

Glass Bulb

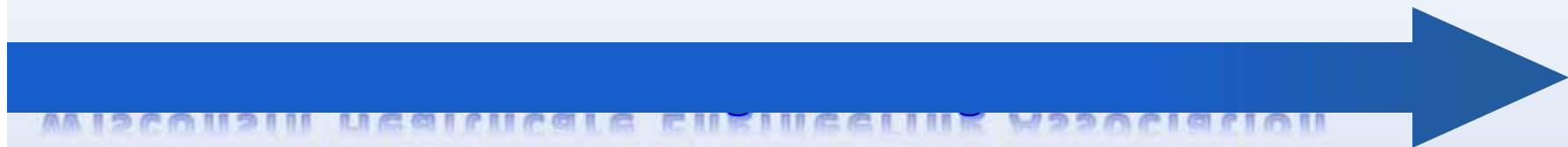


Fusible link



Combination

Air chamber



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

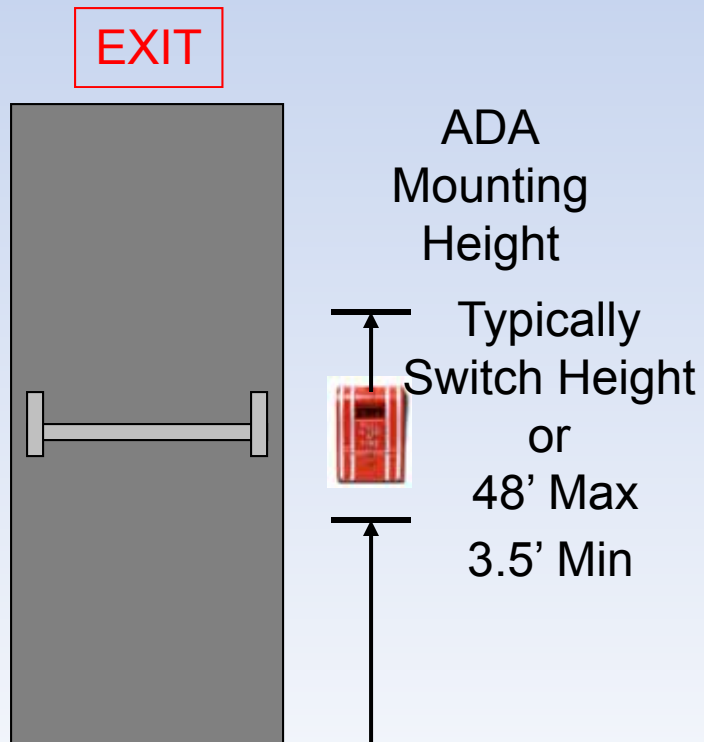


Single
Stage,
Dual
Action



Dual
Stage,
Single
Action

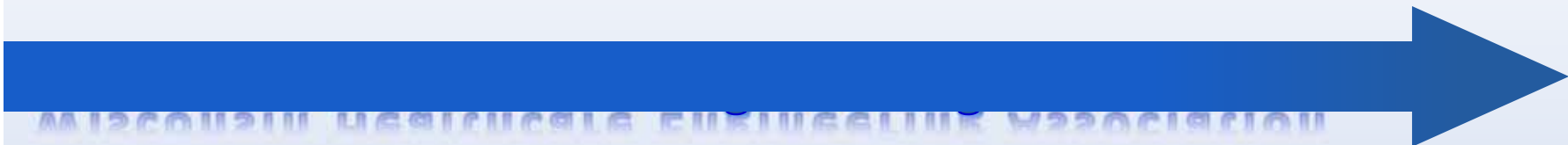
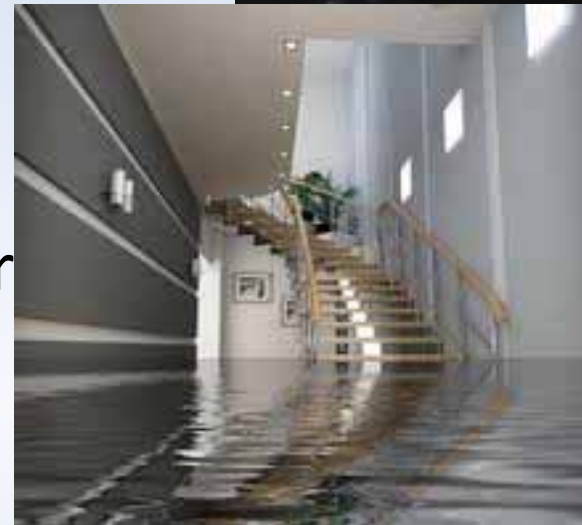
Manual Station Location



- 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**

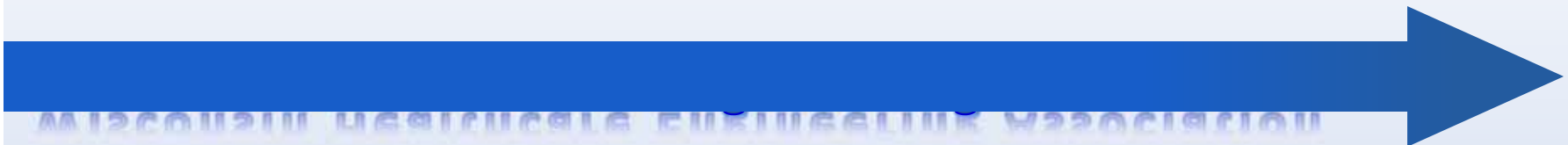
- Can be early by days, hours, minutes, or seconds before a sprinkler head would activate.
- Which means:
 - longer time for evacuation
 - extinguishment before sprinkler activation
 - reduced damages



Smoke Detector – nuisance events

A smoke detector is a particle detector so:

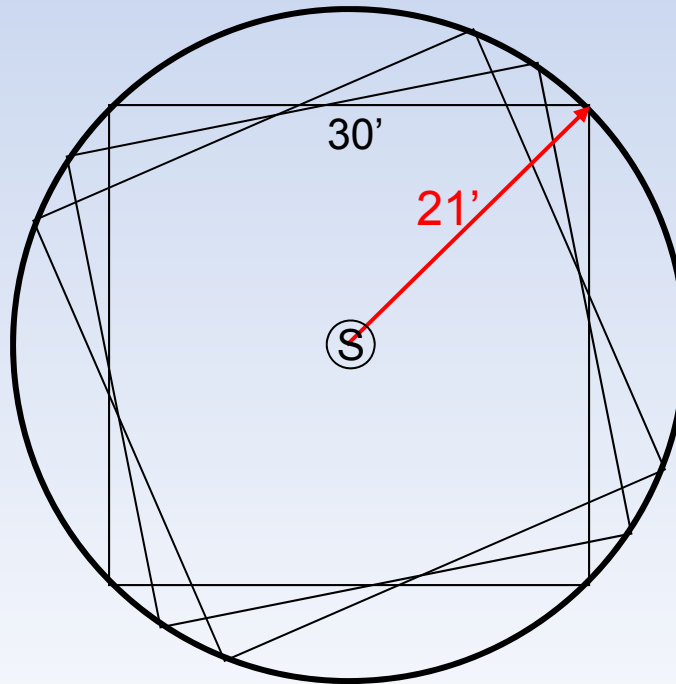
- Do not install in dusty/dirty environments
- Do not use outdoors
- Do not spray with aerosols.
- Work such as carpentry, welding, and grinding can cause nuisance events.



Square within a Circle

Square is coverage, radius = .7

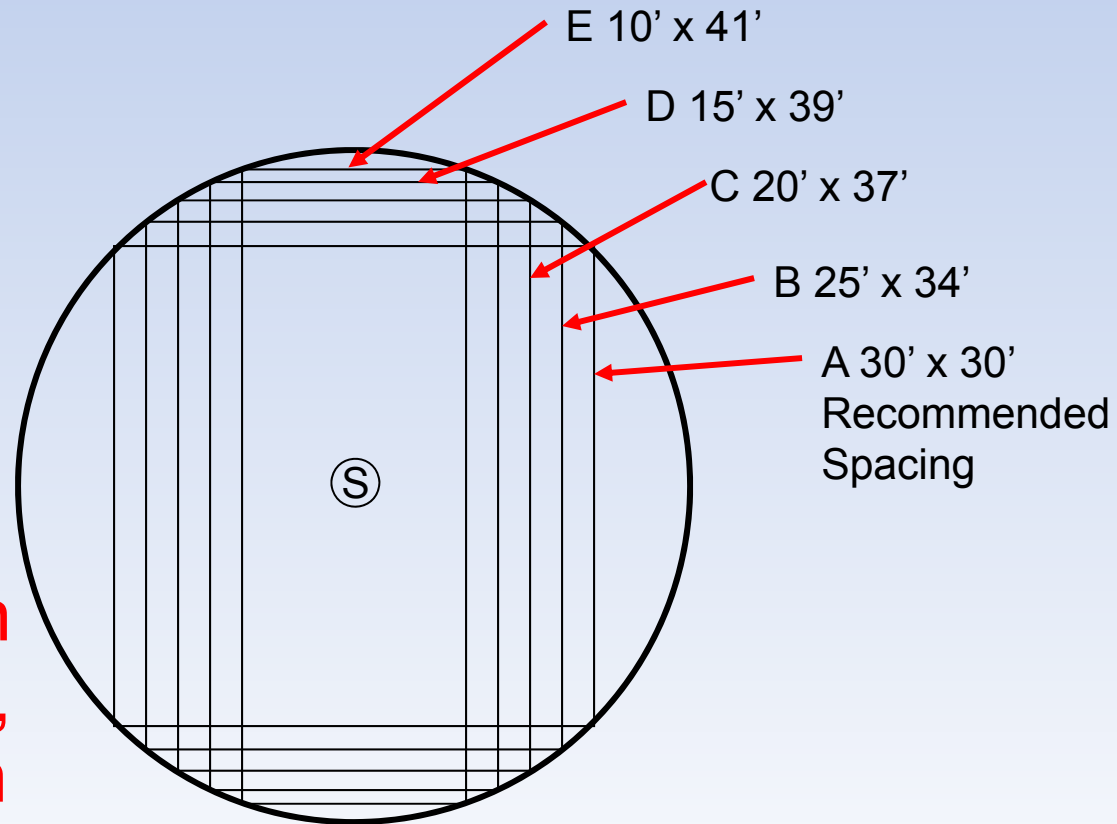
- The 30' x 30' square is the recommended spacing for a smoke detector.
- Circle radius is .7 x the spacing
- i.e.
 $30 \times .7 = 21'$

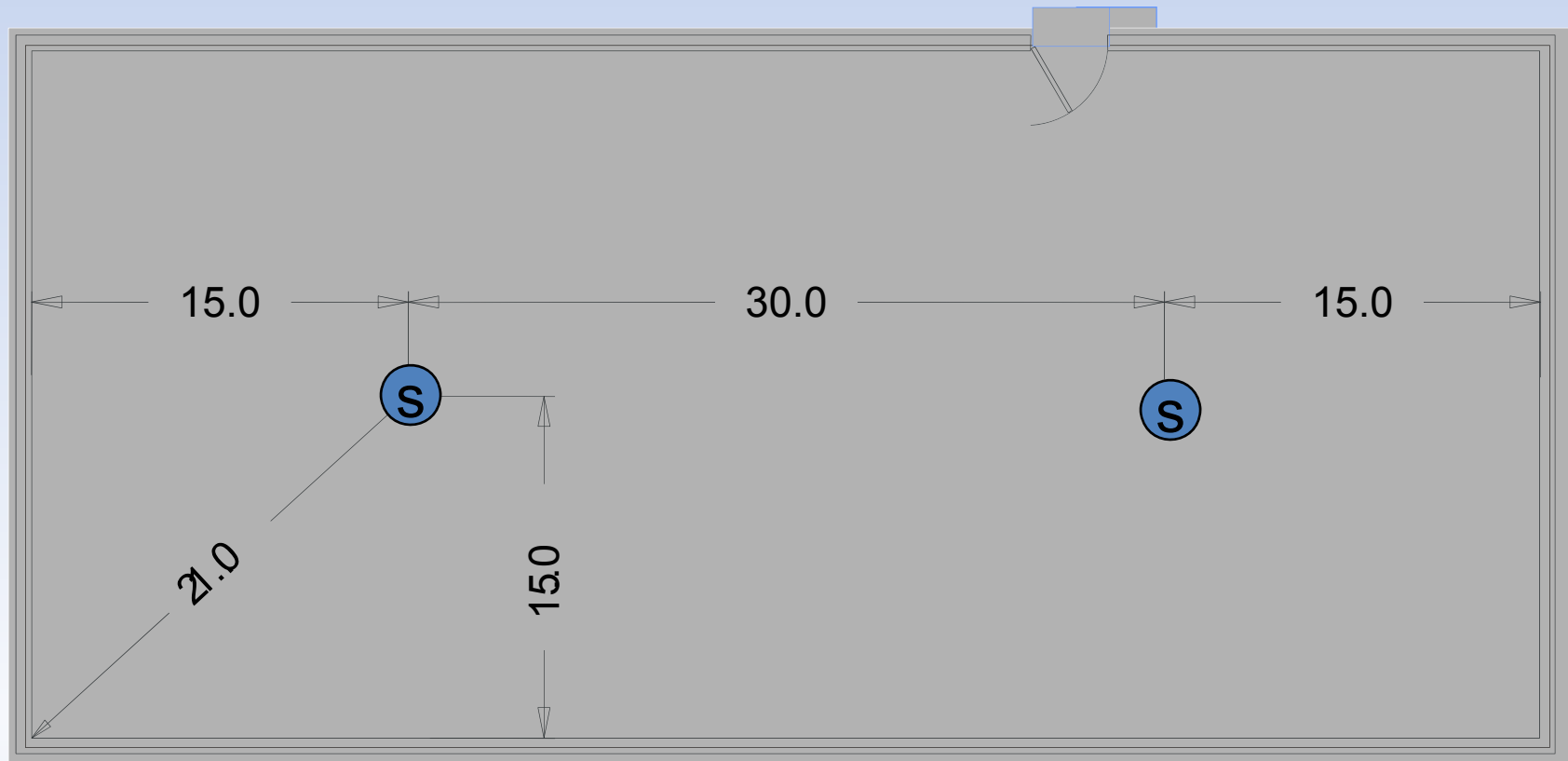


- Easier to layout building areas using squares & rectangles.
- Use circles for irregular areas

Area of Coverage – Smoke Detectors

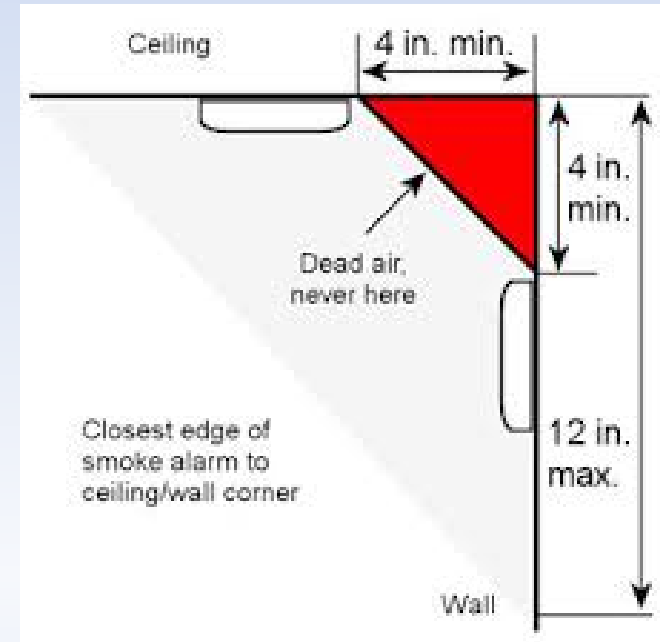
- Most applications occur as rectangles.
- When a side is shorter than listed spacing, other side can be greater.



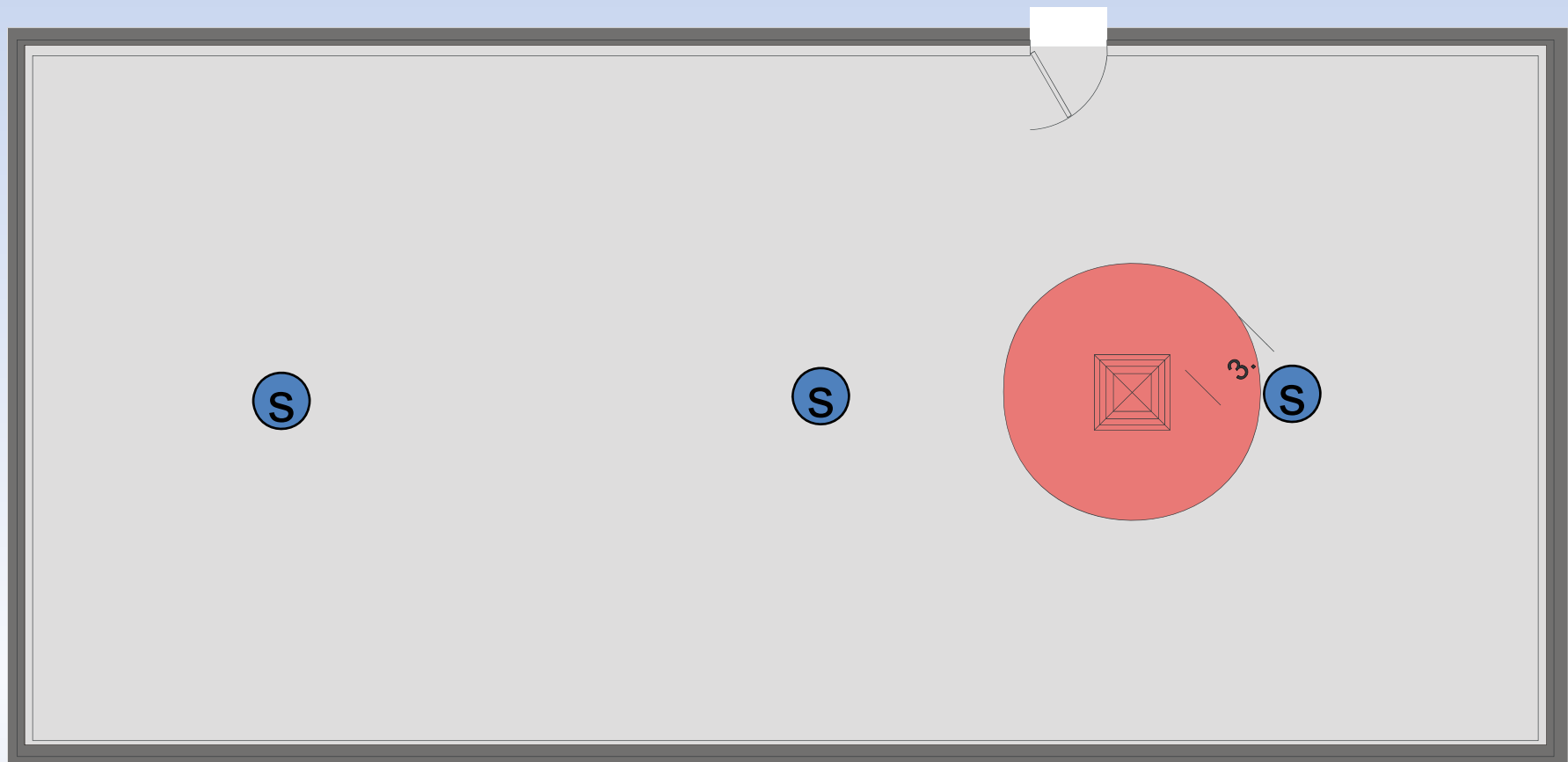


Some Basic Rules For Detection

- 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



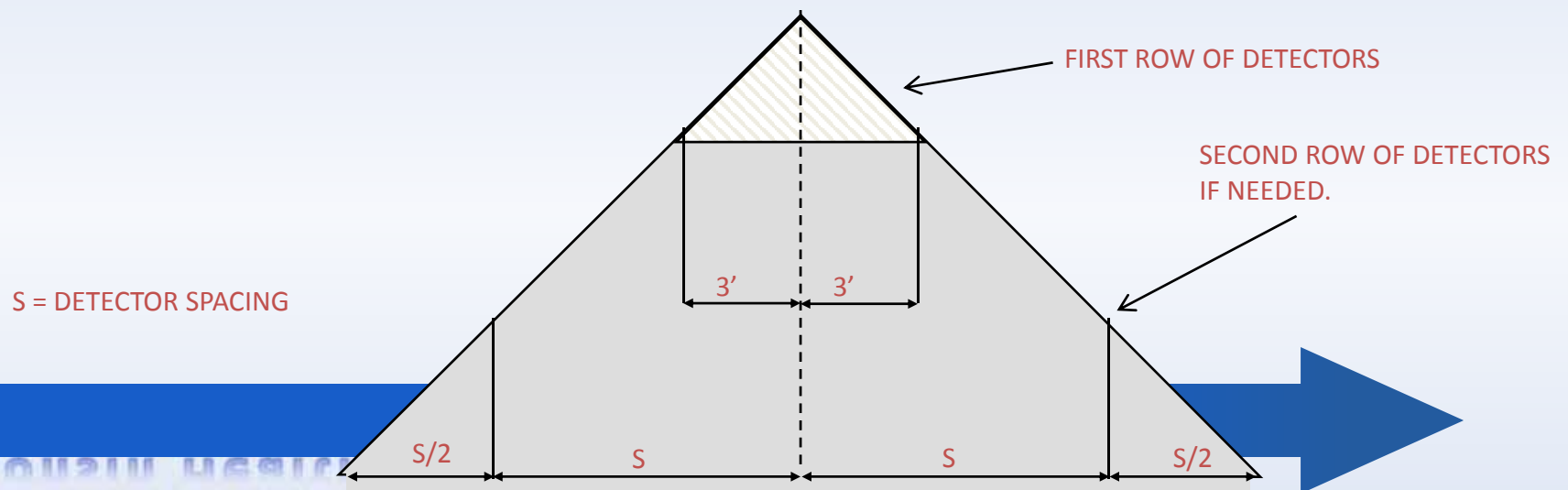
Air diffusers



Sloped Ceilings

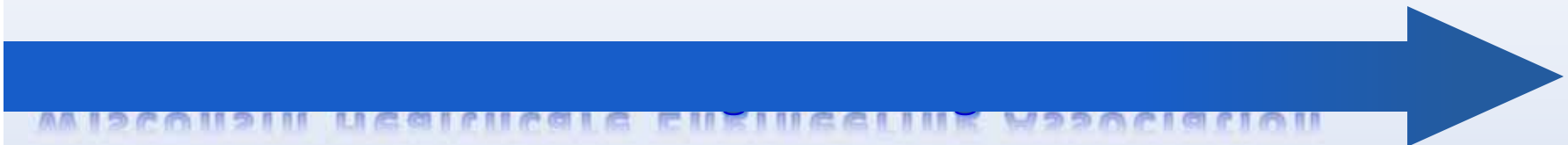
For sloped ceilings, start at peak within 3' of apex, measured horizontally.

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



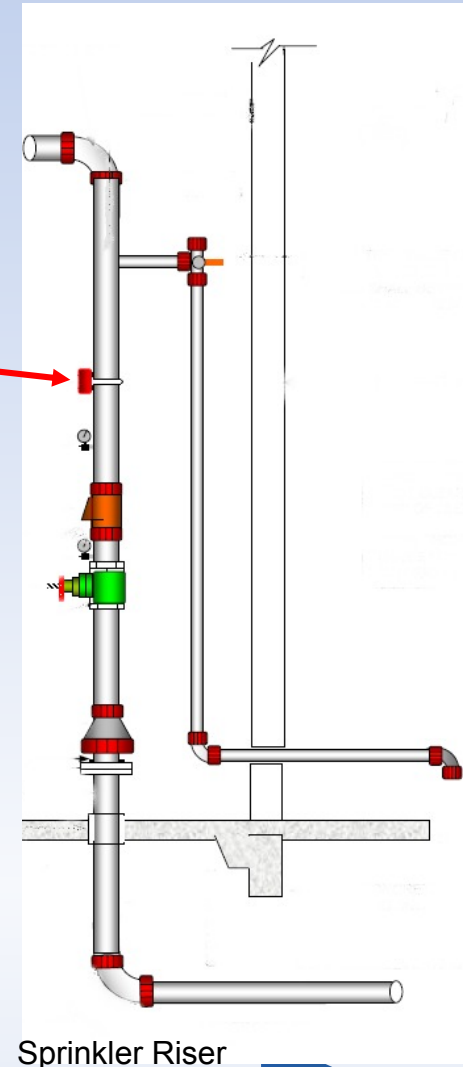
Detectors at Door Closers

- 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.



Sprinkler Riser

Supervisory Signal Initiating Device

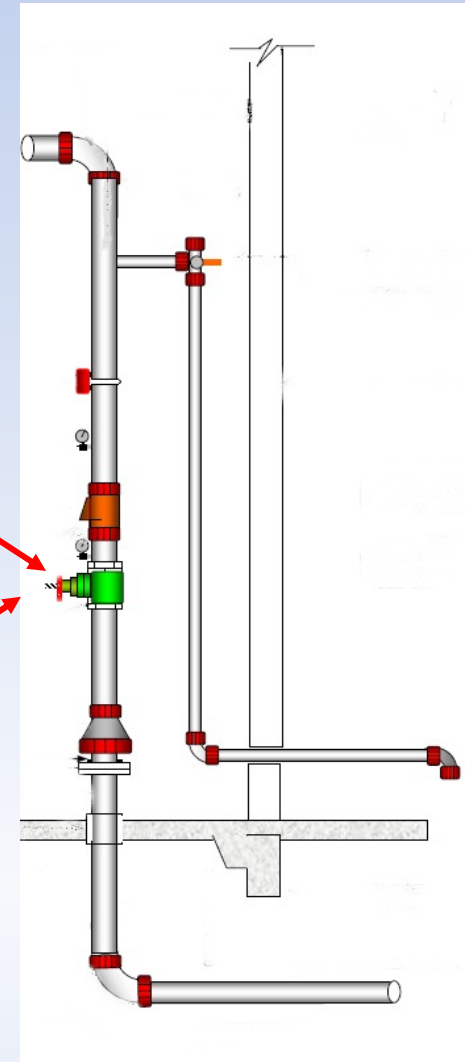
- Valve supervisory switch, water level indicator, or low-air pressure switch on a dry-pipe sprinkler system.
- A change of state signals an off-normal (**Supervisory**)

OS & Y valve /w
supervisory switch

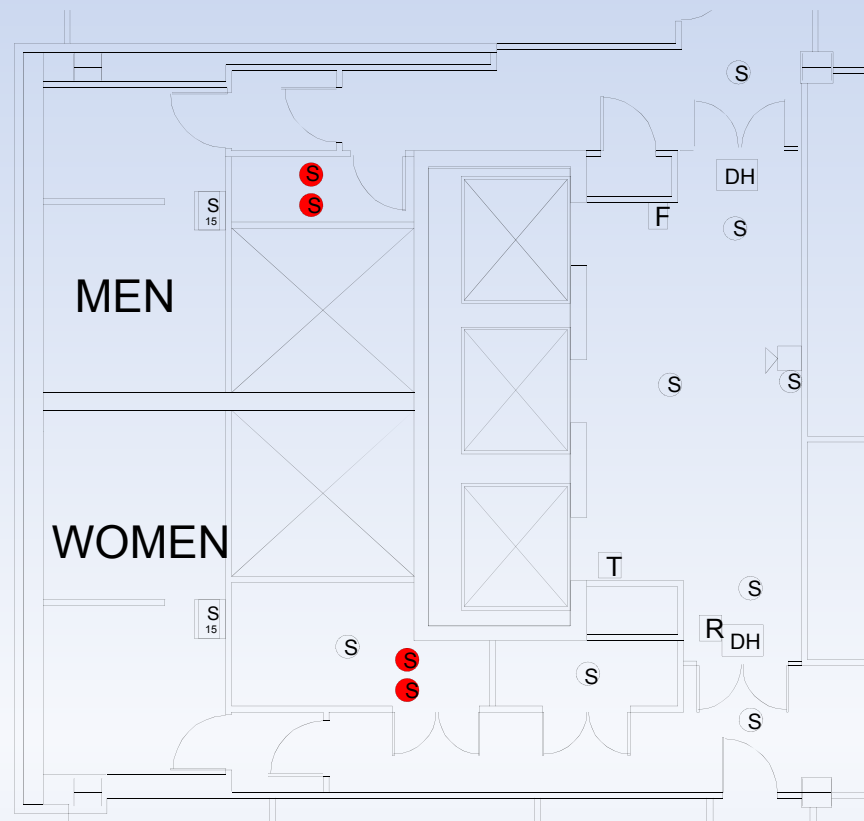
Low Air Supervisory Switch



Control valve
supervisory switch



Air Handling Smoke Detection



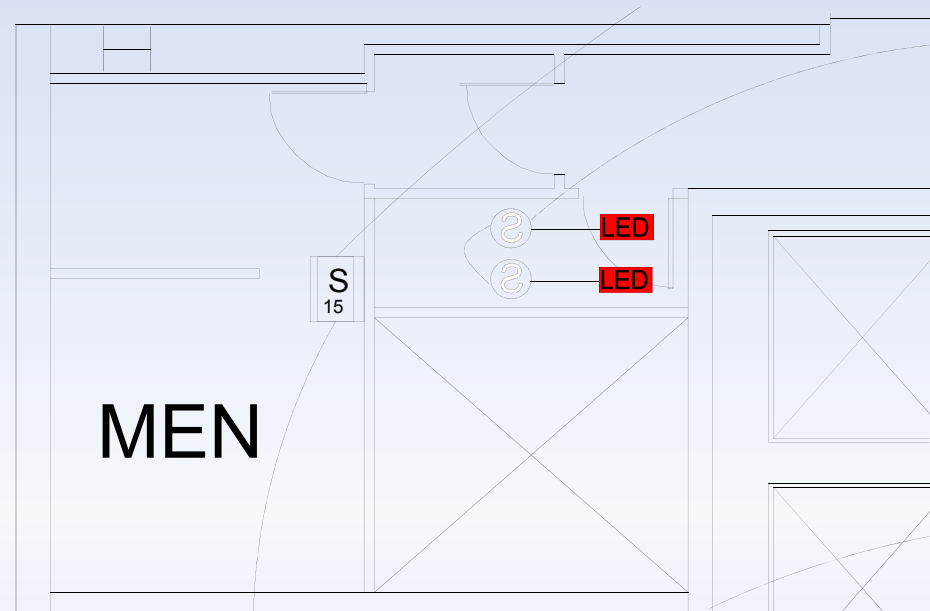
Where is Air Handling Smoke Detection Required?

- 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

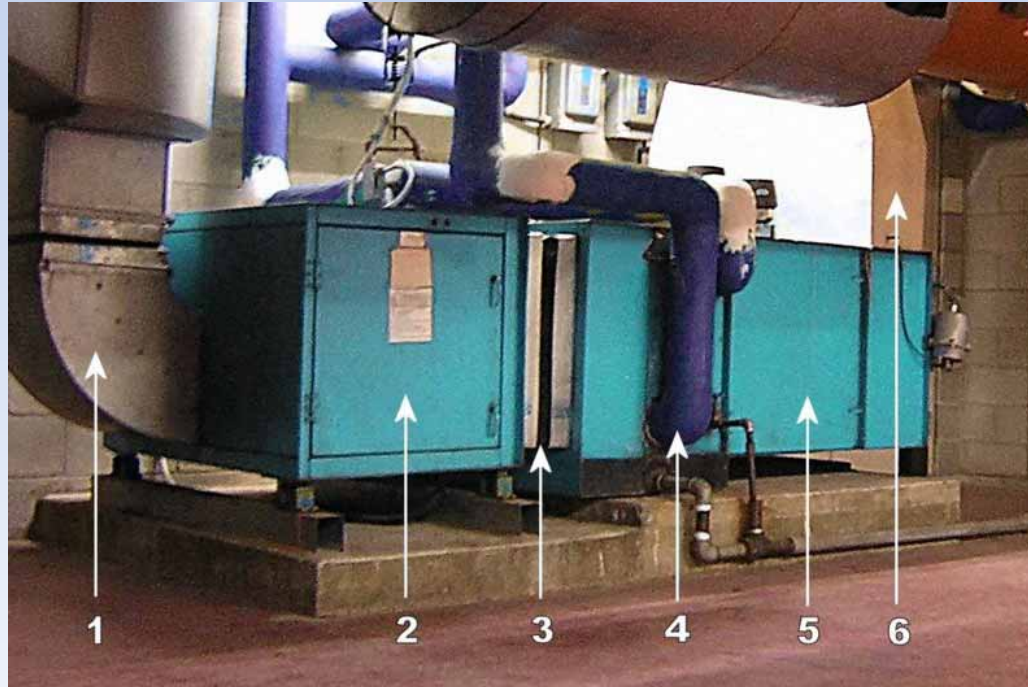


Air Handling Smoke Detection Remote Test Stations.

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



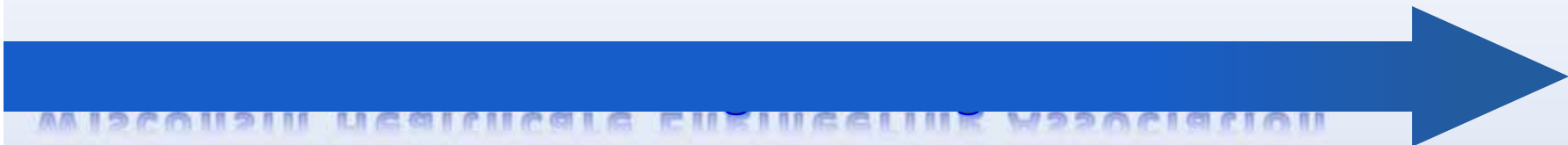
Air Handler Unit Shutdown



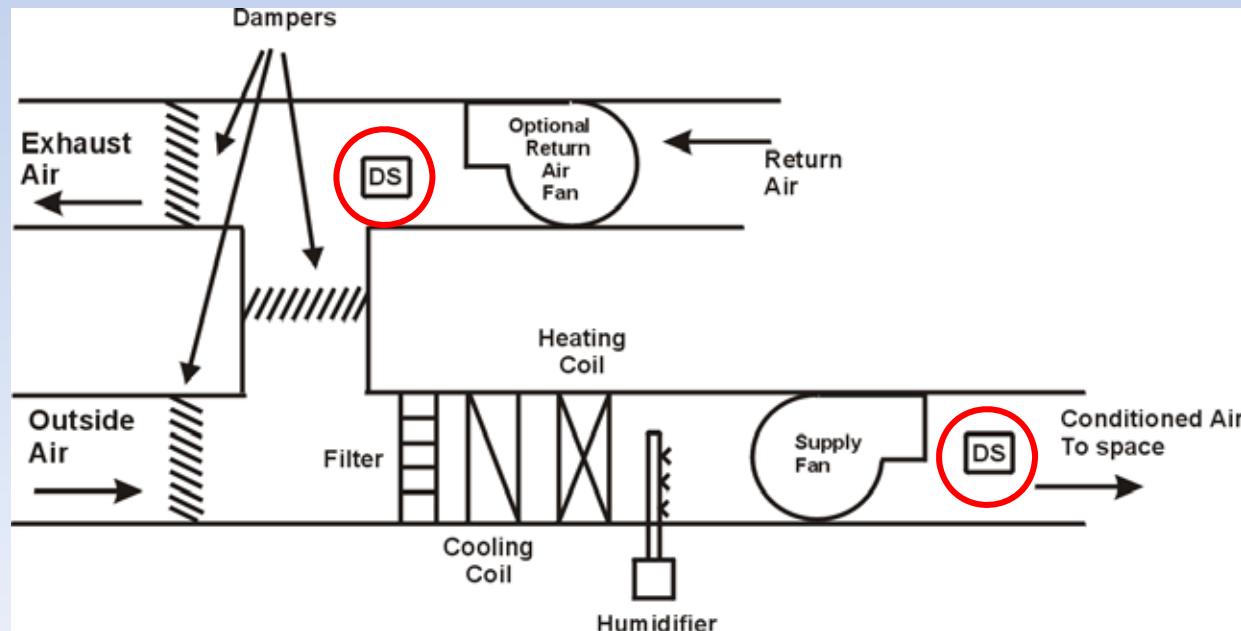
Typical AHU components

- | | |
|------------------------|--------------------------------|
| 1. Supply Duct | 4. Heating and/or cooling coil |
| 2. Fan Compartment | 5. Filter compartment |
| 3. Vibration Isolators | 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.



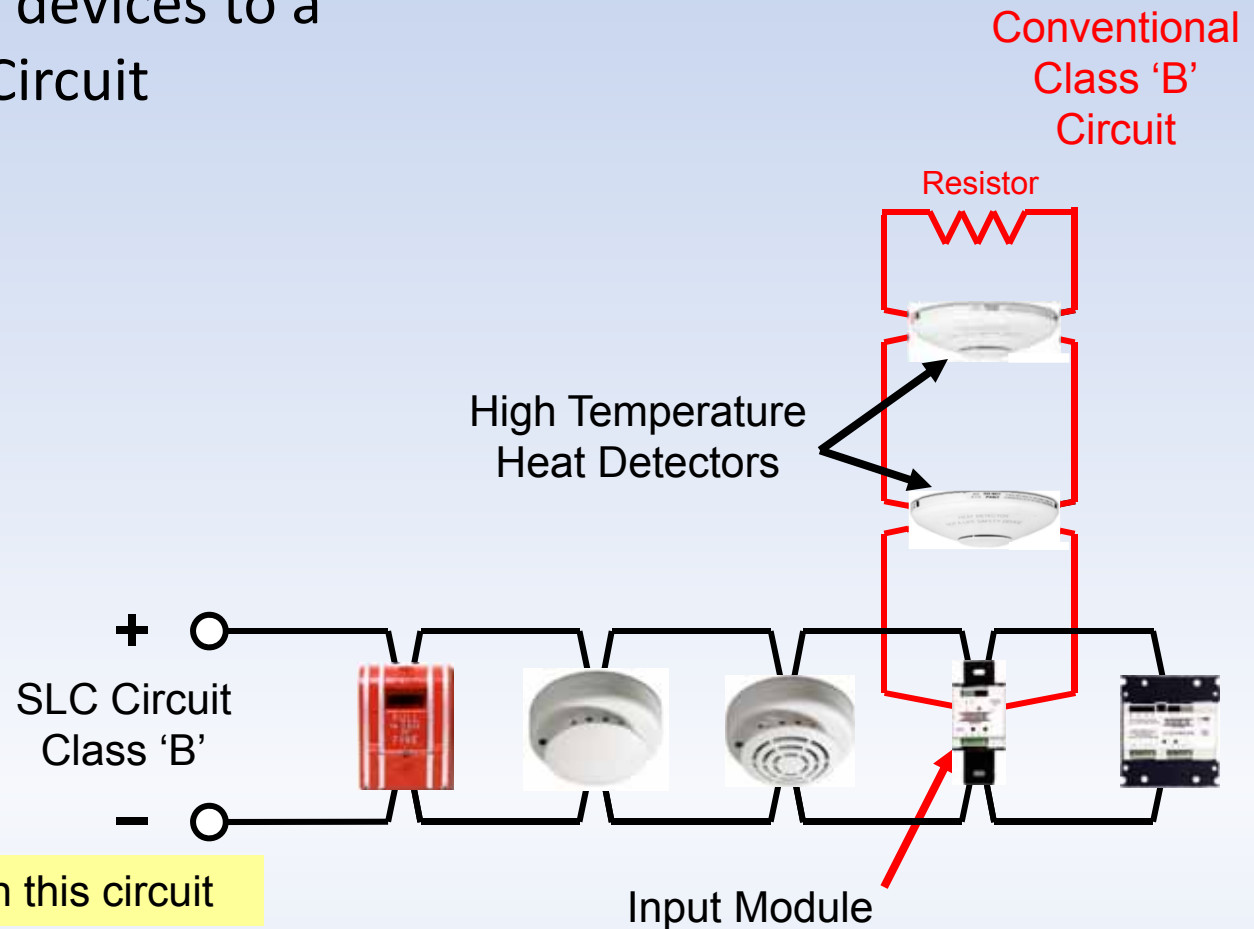
Typical duct detector locations



- 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

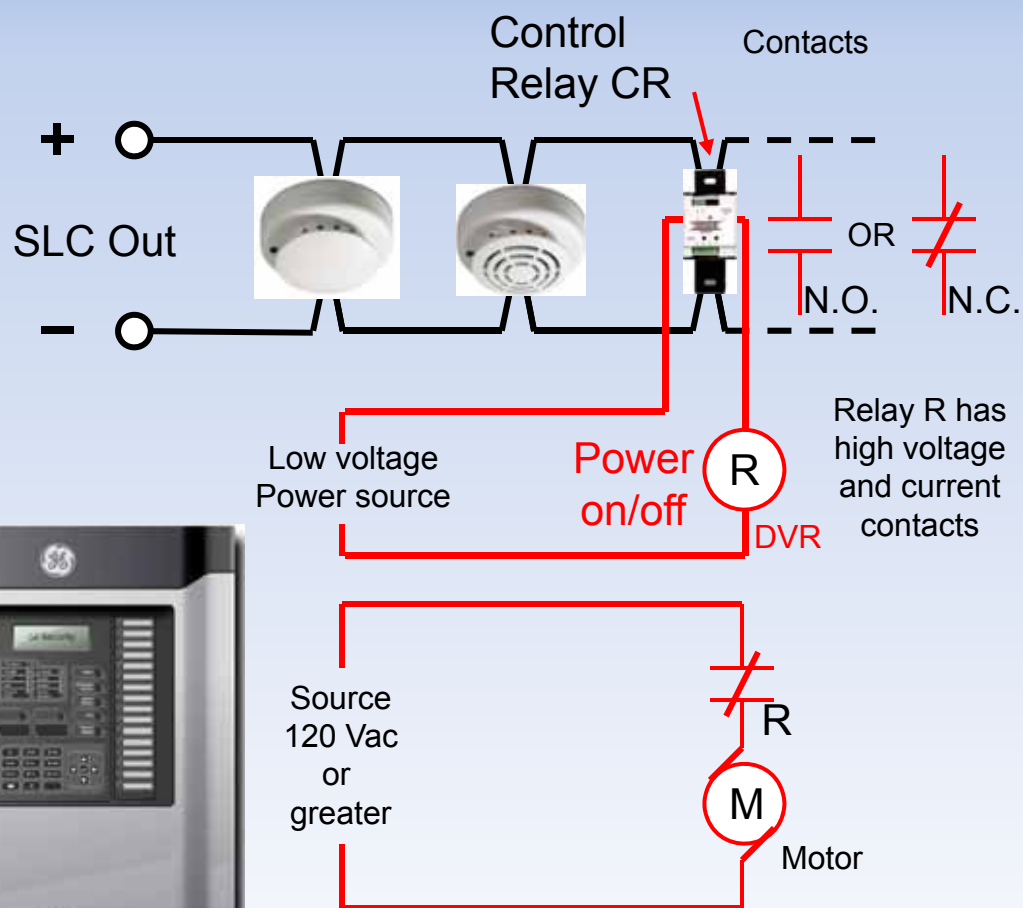
Input Modules

- 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.



Power on/off



DVR

SLC



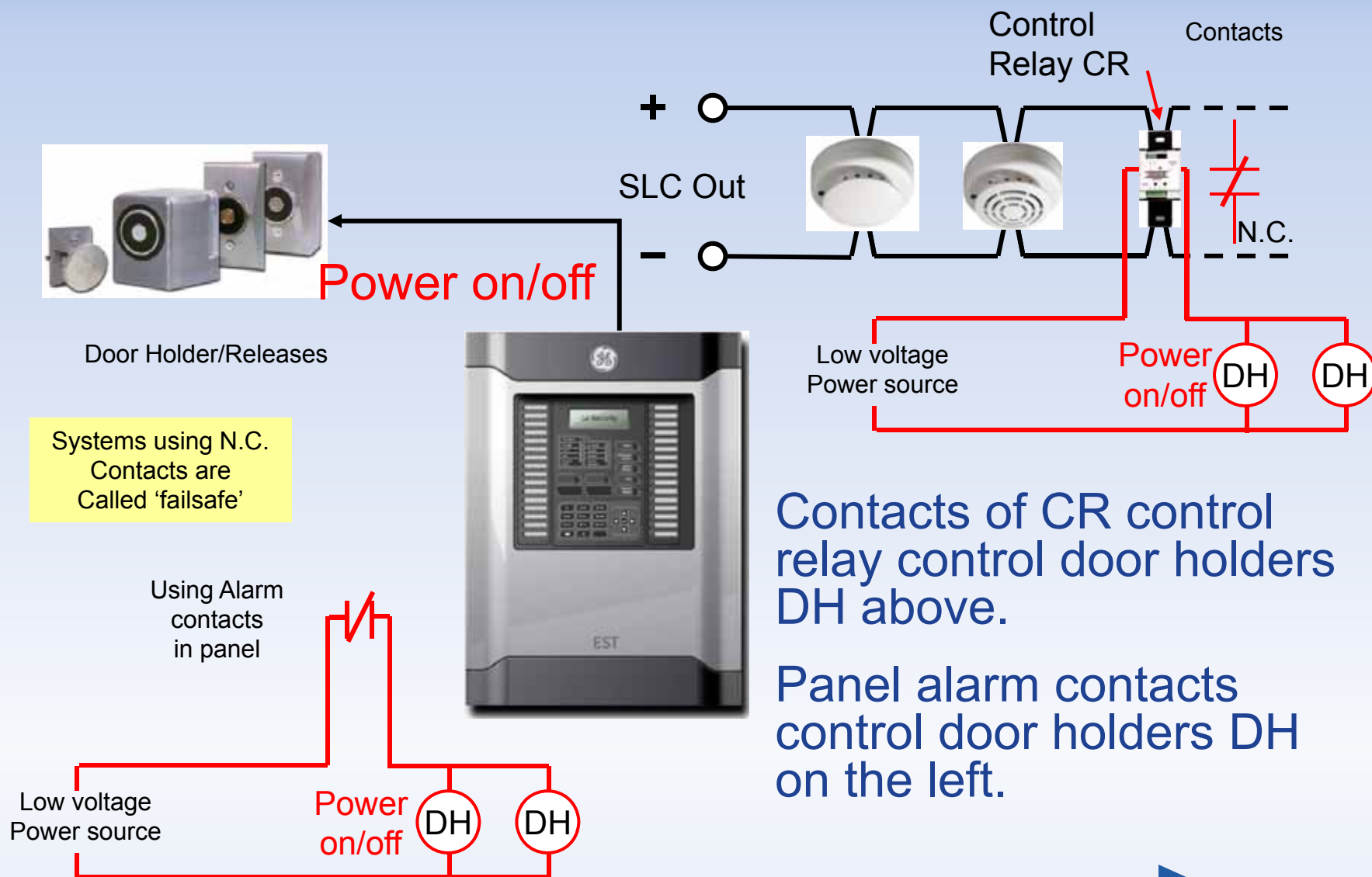
Control Relays



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



Notification Appliances

Initiating
Devices

Control
Panel

Notification
Appliances

Notification Appliances

Ceiling
Speaker / Strobe



Wall Horn / Strobe



Strobe



Wall Speaker / Strobe



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



5520D Horn/Siren



5530MD-24AW
Multiple Tone Signal

Genesis Wall
Speaker / Strobe

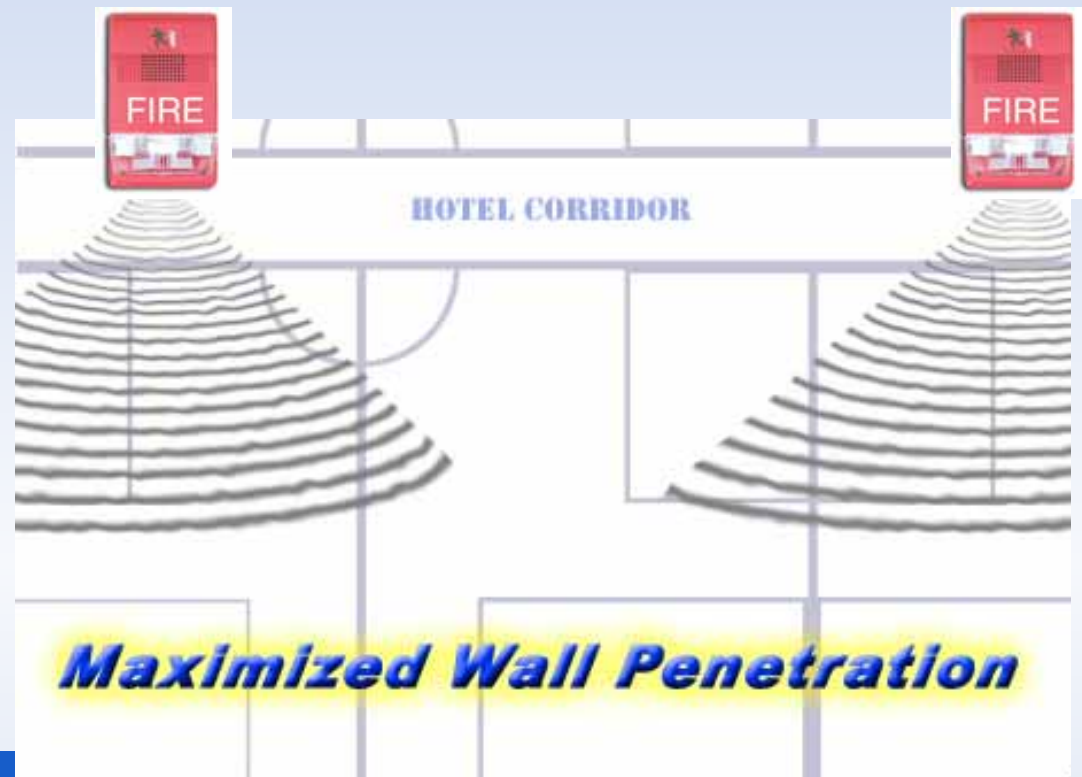
Genesis Wall Speaker / Strobe

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 ?

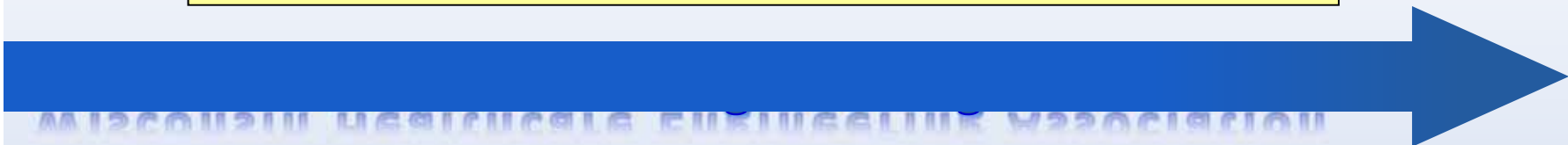
- Estimated one in 125 American suffer profound hearing loss (little or no sound).
- One in 11 Americans suffers some form of hearing impairment.
- We all lose a decibel of hearing each year past the age of 35.
- Occupancy types.
- And...



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.



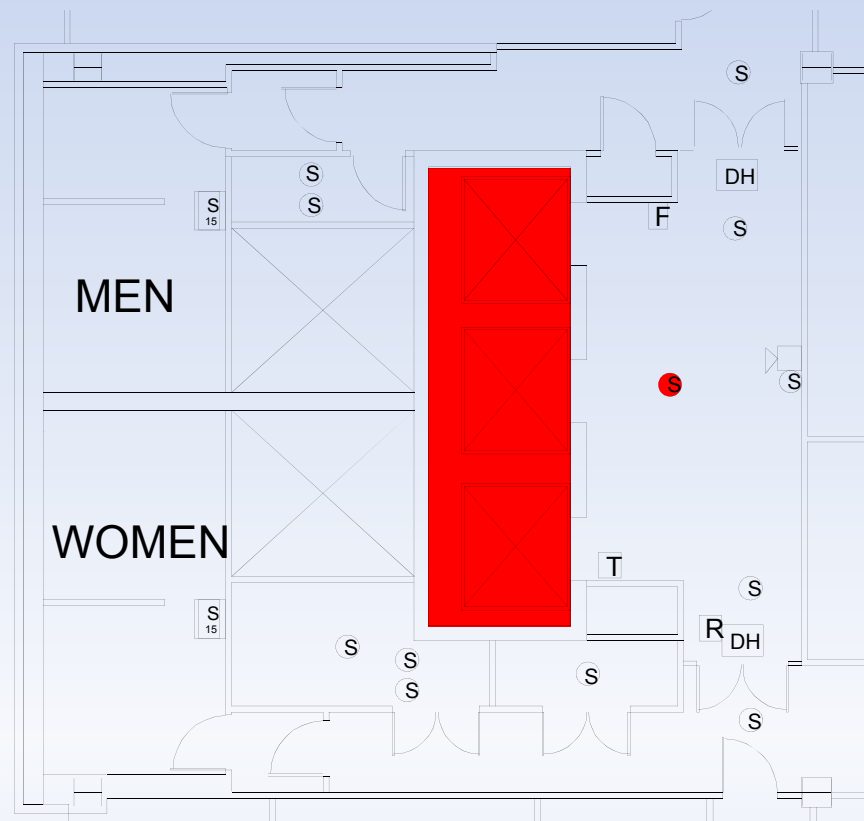
LOCATION OF VISUALS

- 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.

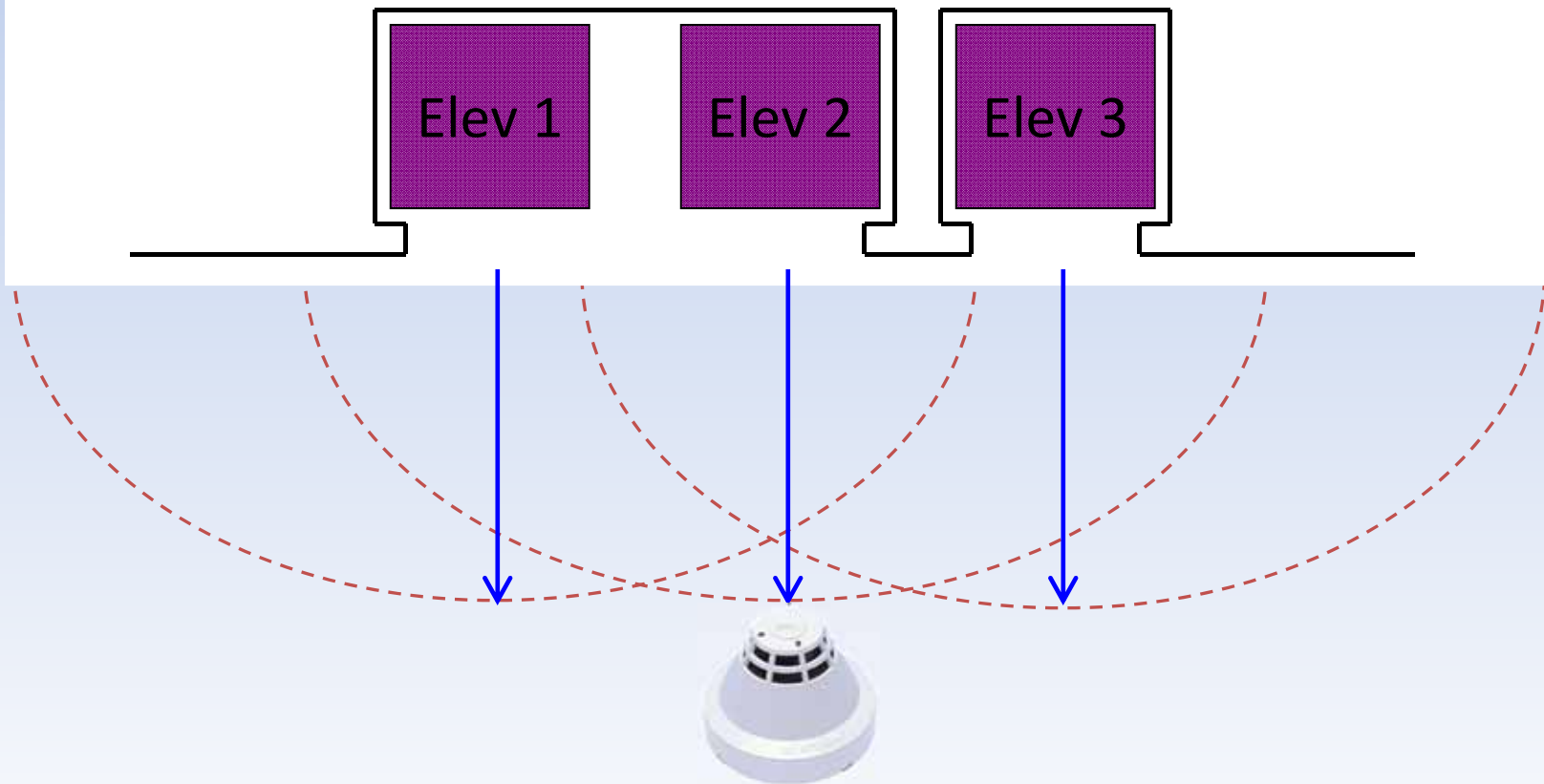


Elevator Lobby Detector Spacing

- 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.

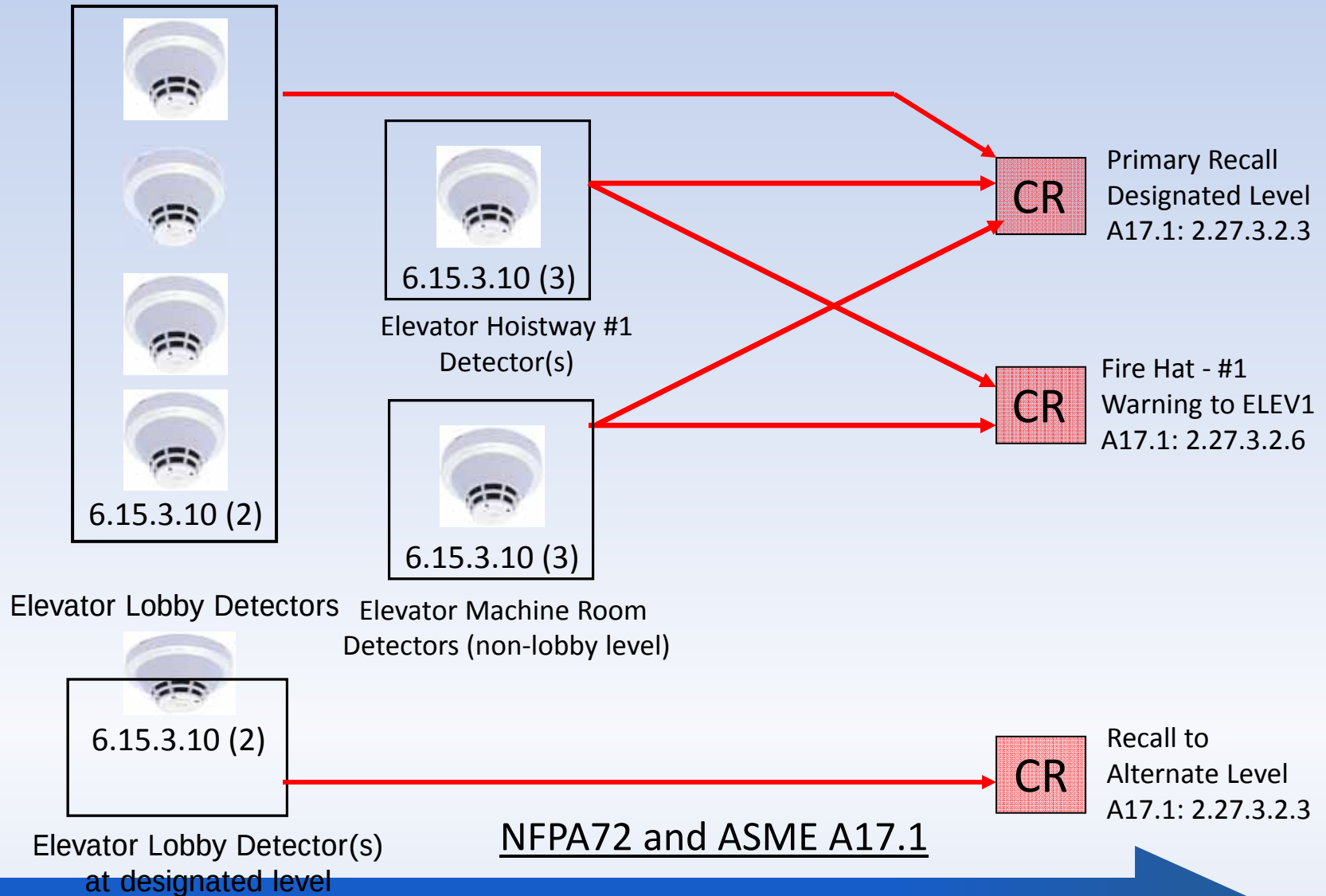
Signals to Elevator Controls

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



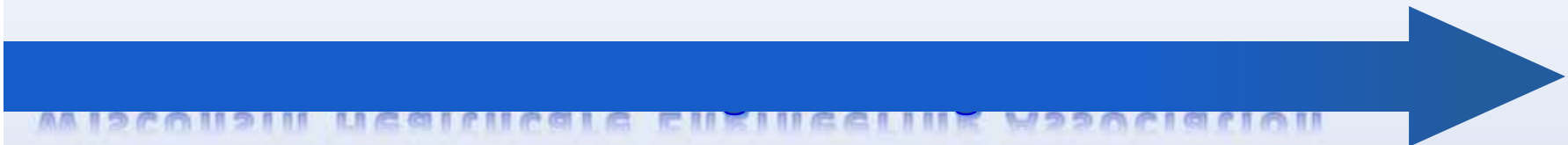
Fire Hat Indication

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

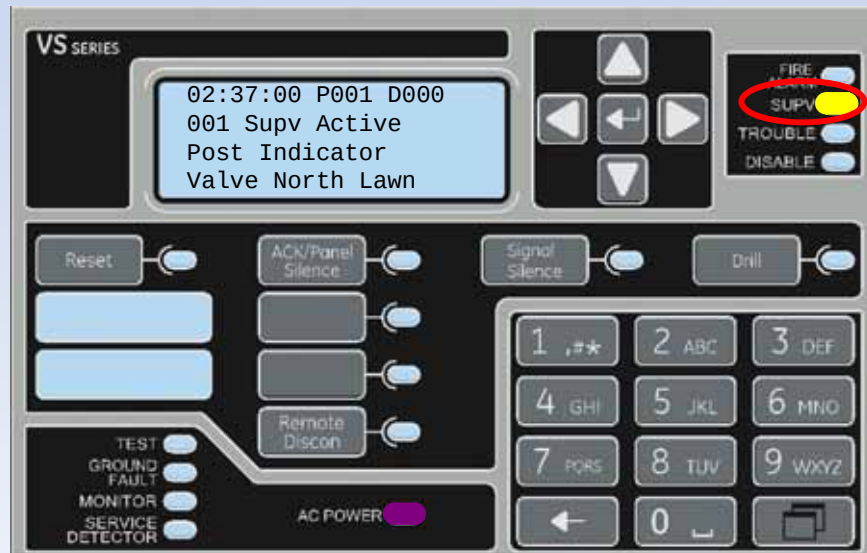
FIRE
ALARM 



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

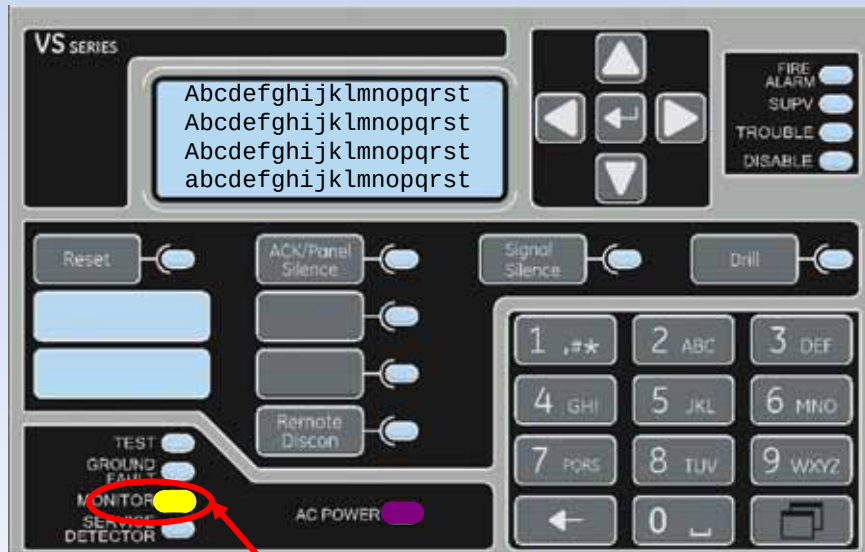


TROUBLE 

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



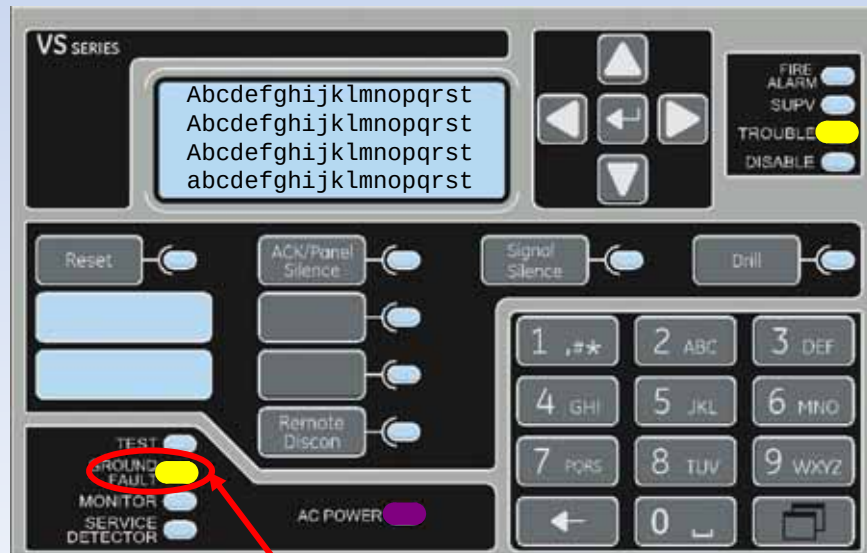
Monitor 

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

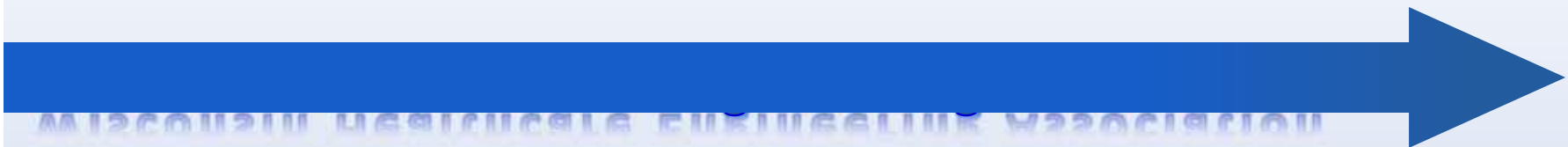
Ground fault event



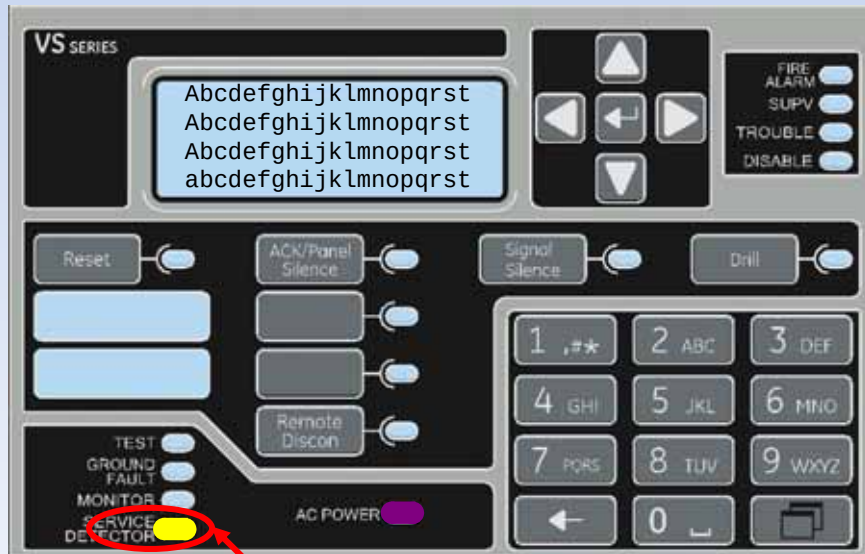
GROUND
FAULT

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



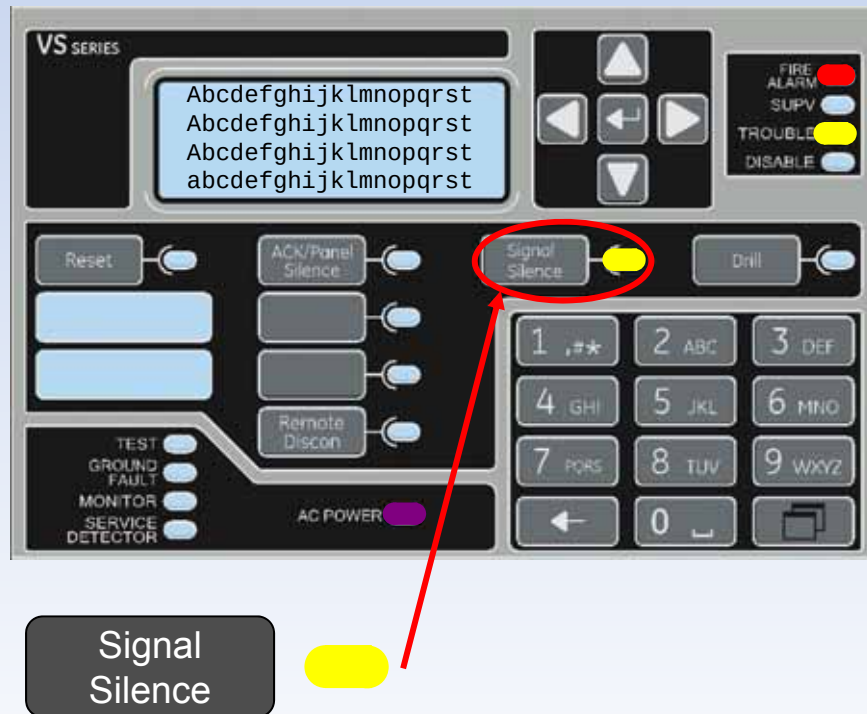
SERVICE
DETECTOR

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

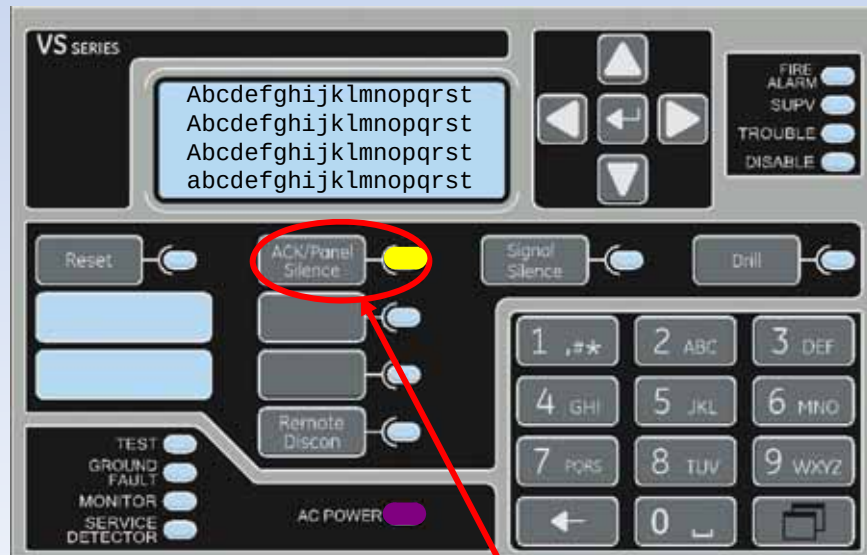


A user initiated action to silence all the alarm signals on the system.

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

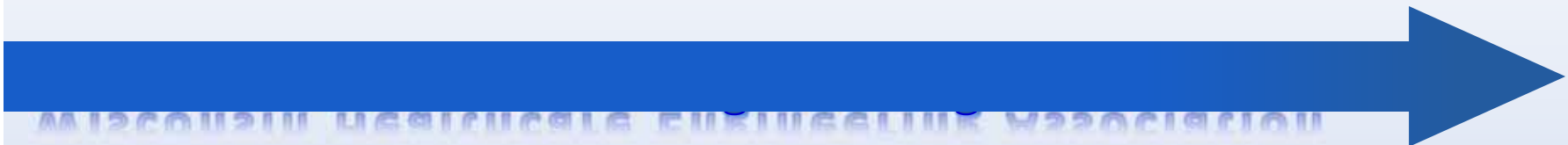
Acknowledge / Panel Silence

All active events are Acknowledged

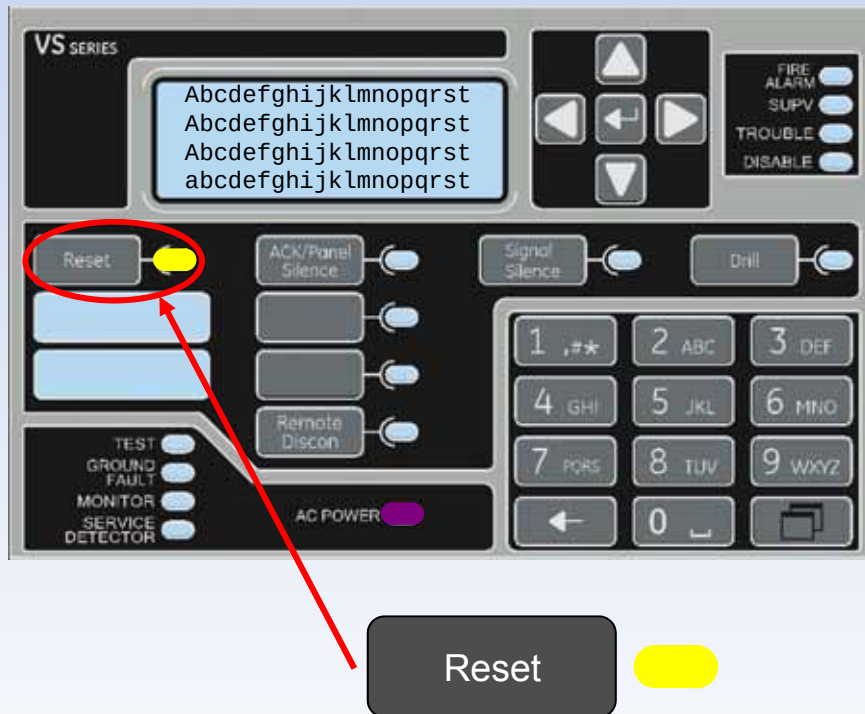


A user initiated action to silence the panel's internal signal.

ACK/Panel
Silence



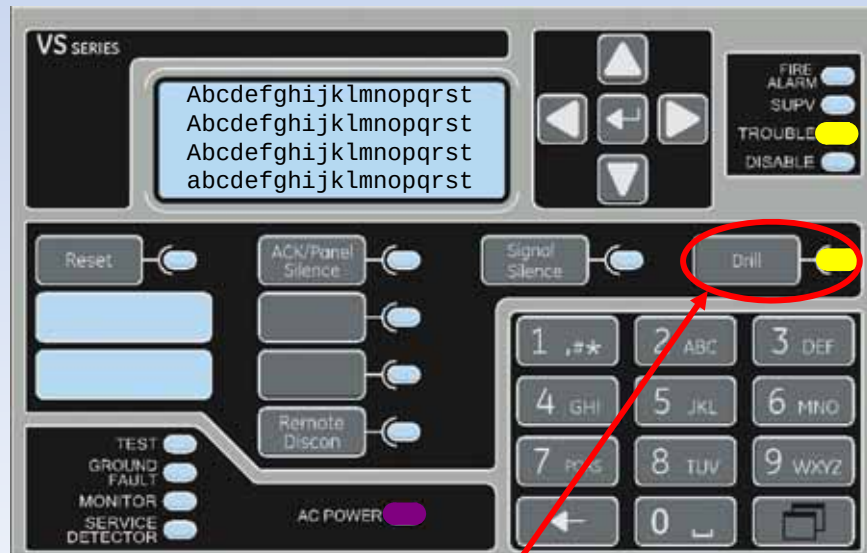
Reset



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



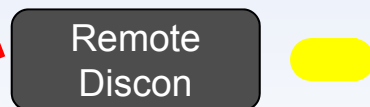
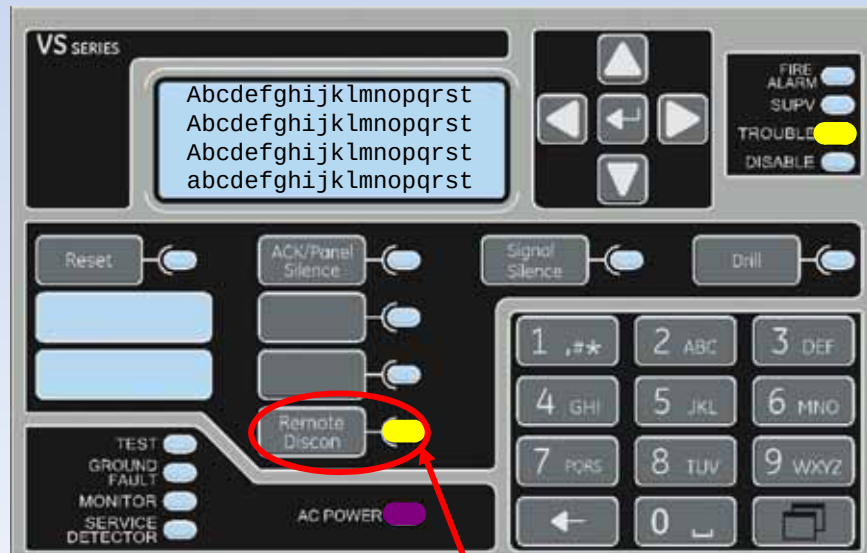
A user initiated action to sound a fire drill signal.

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

Drill



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...



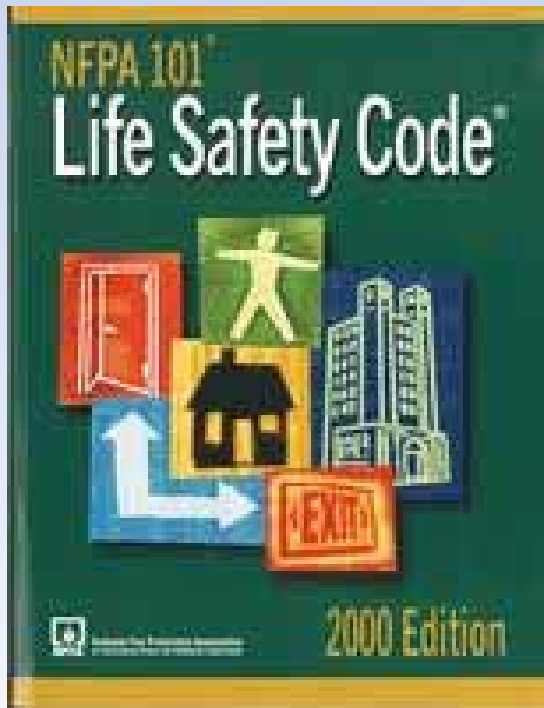
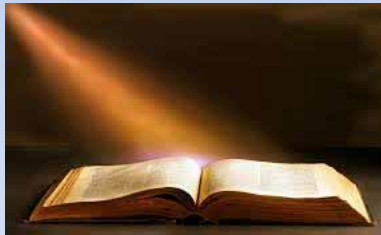
- St. Norbert College, 2008
 - Provide Fire Alarm, Sprinkler, Extinguisher, Suppression Inspections for CEC since 2008
- Past Chapter III President, Current Chapter III Secretary & Treasurer
 - NFPA Life Safety Courses
- WI & IA
 - Love the Green Bay Packers

Game Plan

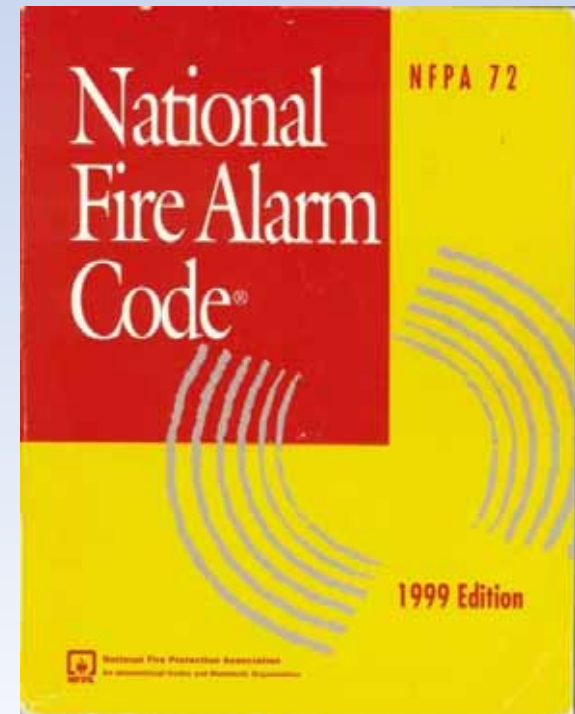


- Basics – What?
- Contracts – Top 6 Items To Request
- Inspection Report Criteria – Must Haves
- Hot Button Items
- Questions & Answers

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 by 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.

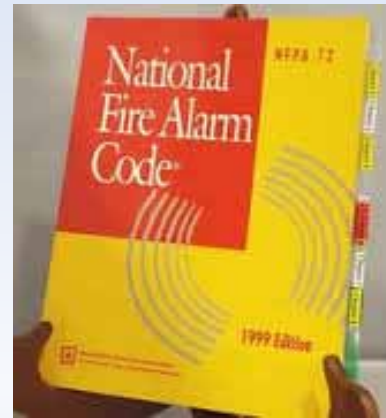
II. Duration

- 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.

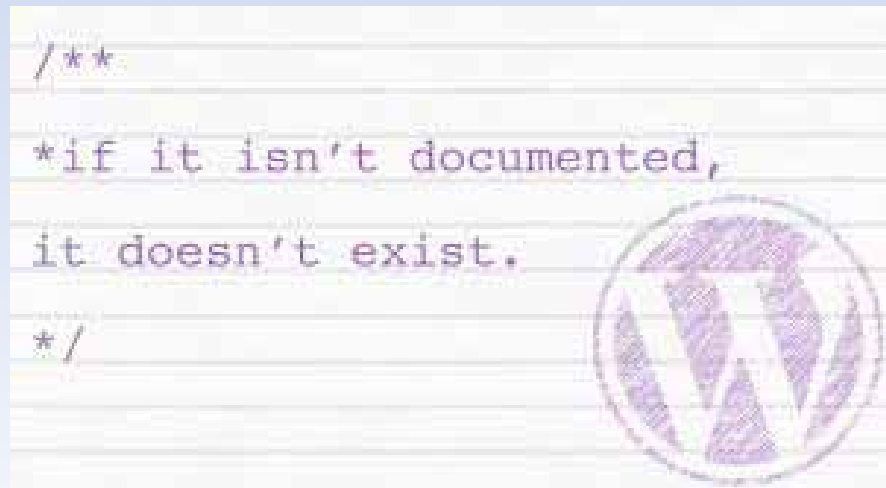
VI. Discrepancies

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

Quantities on Inventory must match #tested

**NFPA Edition &
Section**

INSPECTION AND TESTING FORM

Name: _____ Address: _____ Representative: _____ License No.: _____ Telephone: _____ MONITORING ENTITY Contact: _____ Telephone: _____ Monitoring Account Ref. No.: _____ TYPE TRANSMISSION ☐ McCulloch ☐ Multiplex ☐ Digital ☐ Reverse Priority ☐ RF ☐ Other (Specify) _____ _____ Control Unit Manufacturer: _____ Circuit Style: _____ Number of Circuits: _____ Software Rev.: _____ Last Date System Had Any Service Performed: _____ Last Date that Any Software or Configuration Was Revised: _____	DATE: _____ TIME: _____ PROPERTY NAME (USER) Name: _____ Address: _____ Owner Contact: _____ Telephone: _____ APPROVING AGENCY Contact: _____ Telephone: _____ SERVICE ☐ Weekly ☐ Monthly ☐ Quarterly ☐ Semiannually ☐ Annually ☐ Other (Specify) _____ _____ Model No.: _____
--	--

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)

**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: _____

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)

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

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's 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

☐ Micculloh ☐ 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) _____	_____

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- 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 WHY

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.