FIRE ALARM STANDARD

SCOPE:
This standard is pursuant to City Municipal Code 15.14, Ordinance 16-5, California Fire Code Chapter 9, Section 907, for the design and installation of fire alarm systems. This standard shall be used in conjunction with NFPA 72, National Fire Alarm Code, 2016 California Fire and Building Code with local amendments, and all other applicable codes.

RESPONSIBILITY:
- All individuals and companies who intend to engage in the installation or alteration of fire alarm system(s) are subject to the requirements of this standard.
- Installer: The fire alarm system can be installed by an individual who holds a state of California C-10 (electrical) license.
- Designer: Plans shall be designed by a C-10 licensed contractor or be a Registered Professional Engineer (Electrical Engineer, Civil Engineer or Fire Protection Engineer), licensed by the State of California (Board of Professional Engineers). All copies of the plans shall be stamped and wet signed by the licensed individuals.
- C-10 contractors may only design systems that the firm has a contract to install.

PLANS SUBMITTAL PROCEDURE:
- Submit a minimum of four sets of plans, calculations; manufacture cuts sheets and listing information to the City of West Sacramento Building Department at 1110 West Capitol Avenue, 2nd Floor, West Sacramento CA 95691.
- All fire alarm plans and calculations shall bear the stamp of approval and signature by the fire protection engineer, electrical engineer, and civil engineer or C-10 contractor, licensed for said work in the State of California.
- A completed “fire alarm description worksheet” and alarm system certificate request” shall be provided for all fire alarm systems requiring UL certificate.
- Manufacturer’ specification sheets and current California State Fire Marshal (CSFM) listing sheet shall be provided.
- Secondary power supply and voltage drop calculations shall be provided.
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- Plans will be checked and if approved, will be approved and the applicant will be contacted to pick them up along with the permit. The Building Department will retain one set.

- One copy of the approved stamped plans shall be maintained on the job site.

- All modification/changes to existing systems require a plan check and inspection by the Building/Fire Department.

- Excessive field changes may require re-submittal of plans along with additional plan review fees.

SCHEDULING INSPECTIONS:

- It is the responsibility of the installing contractor/owner to be on the job site during the inspection with approved plans. Failure to do so will result in the cancellation of the inspections.

- Inspection requests shall be made directly with the Building Department on the inspection phone line.

- Inspection requests can only be taken from the installing contractor/owner.

- Inspection times are slated for AM or PM and may vary because of delays at previous inspections or unscheduled delays. Please allow time on either side of the inspection time for the inspectors’ arrival.

PLANS:

SUBMITTAL INFORMATION

1. To speed up the plan check process and to avoid the possibility of returning the plans for correction, please use the following checklist, prior to submittal to insure that the appropriate information is included on the working sprinkler drawings.
   a. Name of owner and/or occupant.
   b. Location of project, including street, number and city.
   c. Total number of square feet.
   d. Point of compass.
   e. All plans must be to scale and minimum size of 18” x 24”.
   f. The scale shall be no smaller that 1/8 inch=1 foot.
   g. Contractor or engineer’s name, address, telephone number, license number and signature.
   h. Type of system (protected premises, central station, etc.).
   i. Occupancy and use of each room or area.
   j. Point of compass
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k. Symbol list
l. Sequence of operation matrix
m. Equipment list showing quantity, make, model and CSFM listing number of each device
n. Full-height cross sectional diagram of building, including: ceiling construction, roof deck construction, beams, obstructions, or other barriers or finishes which will effect the design criteria described in NFPA 72.
o. Type and size of wire, cable, conduit and conduit fill ratio.
p. Single line riser diagram.
q. Point-to point wiring diagram.
r. Initiation device circuit class designations, style designation or both.
s. Location of each device.
t. Mounting height of manual fire alarm boxes, audible notification and visual notification appliances.
u. Voice message content and languages, if applicable.
v. Description of ancillary features and operations (e.g. smoke evacuation, smoke damper, HVAC shutdown, door release service, special extinguishing system, fire pump monitoring, etc.)
w. Description of any special features such as detector cross zoning or alarm verification.

MINIMUM REQUIREMENTS

• CALCULATIONS

1. Voltage drop calculations shall be provided for all indicating circuits. Calculations shall be based upon the size and length of conductors used and the maximum alarm current. The maximum voltage drop shall not exceed 10 percent.
2. Standby battery calculations shall be provided to verify standby batteries can provide power to the system in the event of primary power failure. A 20% de-rating factor shall be included.

• CIRCUITS

1. The fire alarm circuit shall be a dedicated branch electrical circuit and the breaker shall be painted red with a handle blocking device to lock the breaker in the “ON” position.
2. When providing a fire alarm circuit in a multiple tenant building (i.e. multiple metering), the circuit shall be energized from the emergency or house panel.
3. When the CBC requires a separate sources of power (i.e. emergency generator), the fire alarm circuit shall be energized from the emergency panel.
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• EXISTING SYSTEMS

1. Fire alarm equipment no longer CFSM listed shall not be modified or expanded.
2. Existing sprinklered buildings without fire alarm systems that undergo improvements or modification shall provide a minimum flow-tamper system including supervision of PIV or equal control valves.
3. Exiting flow-tamper systems that do not include electronic supervision of the PIV or equal system control valves shall be required to supervise the valve(s) with any changes to the fire alarm system or remodel/tenant improvement or addition to the building.
4. Existing flow-tamper systems within buildings that undergo improvements or modification shall re-locate the audio/visual device and manual pull station to a normally occupied location. In existing multi-tenant buildings, the audible/visual device and manual pull station shall be in the tenant space nearest the fire sprinkler riser.
5. Buildings with existing “total coverage” heat detection/smoke detection coverage systems that undergo improvements or modifications shall maintain total detection coverage throughout. An audio/visual device and manual pull station shall also be provided in a normally occupied location.

• VOLUNTARY SYSTEMS

1. Voluntary systems shall meet the requirements of this standards and be approved by the City.
2. Voluntary, specific area and/or specific hazard detection coverage shall be per NFPA 72. “Selective coverage, partial coverage and supplemental coverage detection system” are not permitted.

• GENERAL

1. Alarm systems shall report to an approved alarm service provider's Type A, UL Listed Central Station.
2. Alarms shall annunciate and transmit to the Central Station by building, zone, location and device in plain English.
3. Multi-tenant buildings with multiple fire alarm panels shall provide one main fire alarm panel to which all panels report and through which all signals are transmitted to the Central Station.
4. Fire alarm systems shall not be connected to a security system or any system other than that for the detection of fire and smoke.

EXCEPTION: Combinations Systems (burglar and fire) may be
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permitted if the system is UL certified and the building is single tenant use.

5. Buildings and/or occupancies requiring detection coverage shall have coverage per NFPA 72, “total coverage”.

6. All penetrations through rated assemblies requiring opening protection shall be provided with through penetration fire stop systems with F or T ratings equal to the assembly being protected.

7. All devices shall be UL listed for the environment in which it is installed.

8. Audible devices shall be at least 15dBA above the ambient noise levels.

9. Emergency voice alarm message content shall be in English and approved. If emergency voice alarm messages are desired in additional languages, the messages content and translation shall be provided. Any warning tones or alert tones preceding or following the message shall be described as well as the number of times the message will repeat.

10. Emergency voice alarm messages in R-1 occupancies shall annunciate on the floor in which the alarm is activated and the floors above and below the alarmed floor.

11. Fire alarm systems are required to have a serial numbered certificate issued and maintained for the life of the system.

12. Remote annunciator shall be provided and co-located with the manual pull and audible visual device at the main entrance. In addition a remote annunciator shall be provided with the FACP when the panel does not provide full function controls to operate by emergency personnel.

REQUIRED INSTALLATIONS

- FLOW-TAMPER

1. All commercial buildings protected by a fire sprinkler system shall provide a minimum flow-tamper alarm system.

2. Flow-tamper alarm systems shall include the following:
   - Smoke detector located above the panel, installed in accordance with NFPA 72
   - An exterior audible/visual device visible from the address side of the building and located at the fire riser room location. The device shall be a minimum of 75cd and 85dBA rated device.
   - A manual pull station in a normally occupied location. In multi-tenant buildings, the manual pull station shall be in the tenant space nearest the fire sprinkler riser.
   - An audible/visual device in a normally occupied location. In multi-tenant buildings, the audible/visual device shall be in
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the tenant space nearest the fire sprinkler riser and positioned at the main exit.
  o Smoke detector(s) for HVAC shutdown, fire smoke damper activation, elevator and/or door release service.
  o Heat detectors installed in lieu of above required smoke detectors.

3. Devices in addition to those listed above shall be installed to provide “selective” or “total coverage”. UL Certification shall be provided.

• R OCCUPANCIES
  1. R-1, 2 & 4 occupancies shall be provided with a manual fire alarm system (CFC 907.2.9):
    a. Fire alarm control panel. A zone and building map shall be provided at the fire alarm control panel location.
    b. Smoke detector above the fire alarm panel installed in accordance with the manufacture specifications.
    c. A manual pull station per building and manual pull stations located within 5-feet of the main exit at the clubhouse or manager unit.
    d. Provide audible devices in each dwelling unit per NFPA 72 and in the clubhouse or manager unit.
    e. Provide visual devices in each accessible unit.
    f. Smoke detectors located in accessible units shall cause the operation of a visual signal upon activation.
  2. R-3 occupancies with residential fire sprinkler system shall be provided with:
    a. Install the flow switch a minimum of 6-inches away from any 90 degree ell. The flow switch shall be connected to an audible/visual indicating device with a minimum of 75 candela rating and 85 dB audible horn.
    b. The system audible/visual device shall be located on the address side of the dwelling facing the roadway fronting the property.
    c. Provide interior alarm(s) to be clearly audible in all rooms over background noise with all intervening doors closed. A minimum of one alarm shall be located inside the structure that is not less than 85 dB rated.
    d. The water flow switch shall be connected to the service panel on an uninterruptible house circuit.

• RETAIL SALE OF DOGS OR CATS
  1. Occupancies that engage in the business of selling dogs and/or cats at retail trade, not from a single litter, shall be protected
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with a total coverage fire alarm system. Health and Safety Code, Section 122155.
  o Exception: Fully sprinkler buildings.

SYSTEM ACCEPTANCE

A. Maintenance and testing shall be per the requirements of NFPA 72. A copy of the monitoring and maintenance agreement, signed by the building owner, shall be provided.

B. Record of Completion shall be provided following successful testing witnessed by the AHJ.

C. Decibel meter shall be provided, by the contractor, to verify audible signals per NFPA 72.

D. Magnahelic gauge or manometer shall be provided by the contractor to verify airflow at duct smoke detectors.

E. A test of the standby power supply shall be conducted and witnessed by the inspector.

F. A functional test of all new devices shall be conducted and witnessed by the inspector. For existing system modifications, 10 percent of existing devices shall also be tested.

G. Signal initiation and central station retransmission shall be demonstrated. Signal initiation to central station shall not exceed 90 seconds. Retransmission to fire dispatch shall not exceed 60 seconds.

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Eric Edgar, Fire Marshal                  Date