

**INSTALLATION, MAINTENANCE, AND
TESTING REGULATIONS**

Fire Alarm Systems

Application Packet



Lake Villa Fire Prevention Bureau

910 East Grand Ave. Lake Villa, IL. 60046

Phone: (224)444-8222 Fax: (847)356-7530

**TO BE REFERRED TO WHEN NOT REQUIRED TO BE SUBMITTED
TO OUR 3RD PARTY-FIRE SAFETY CONSULTANTS.**

General Information:

The District has established, through Ordinance, requirements for the Installation, Maintenance and Testing of Fire alarm systems in the Fire Protection District. These requirements have been established to assist the Alarm Installer, Maintenance, and Testing Company as to what is required when installing/working on Fire Alarm Systems in the District. Please note, that Fire Alarm Installer shall be registered with the State of Illinois pursuant to the Illinois Private Detective, Private Alarm and Private Security Act of 1983. Additionally, all fire alarm systems in the District shall be inspected and tested annually. The results of these annual fire alarm testing reports shall be submitted to the Fire Prevention Bureau through our third-party provider, Brycer LLC, at www.thecomplianceengine.com.

Any questions regarding fire alarm systems should be directed to the attention of The Lake Villa Fire Protection District, Fire Prevention Bureau at 224/444-8222.

Codes

The following Codes have been adopted by the Lake Villa Fire Protection District.

- National Fire Alarm Code (NFPA 72) – 2010 Edition
- Automatic Sprinkler Systems (NFPA 13) – 2013 Edition
- 2012 International Building Code (With Village Amendments)
- 2012 International Fire Code (With Fire District Amendments)
- Life Safety Code (NFPA 101) – 2015 Edition

Plan Review Information (when conducted by Lake Villa Fire District)

The Lake Villa Fire Protection District is the authority having jurisdiction for the plan review and acceptance testing of Fire Alarm Systems. This includes new systems and/or modifications/alterations to existing systems. All required fire alarm systems must be approved by the Fire Bureau before the building department will issue an occupancy permit.

Plans for each fire alarm system must be submitted to the Lake Villa Fire Prevention Bureau, 910 East Grand Ave, Lake Villa, IL. 60046, for review. Electronic submittals are preferred and must meet the requirements. Plans are generally reviewed, and written comments provided within 10 business days. After the review is completed, the applicant will be furnished with at least one (1) set of stamped drawings, which are required to be on-site and available for the Fire Department inspector.

All submittals shall be 3 sets of plans to include 2 sets of cut sheets and 2 sets of calculations.

All submittals must come from the contractor installing the system.

The contractor must include their contact information on their **plan review submittal form**, including e-mail address.

The contractor must include the number of devices, being installed on their transmittal letter, to include: all Alarm Boxes, Alarm Devices, Appliances, Control Units, Detectors, Initiating Devices, Notification Devices, Panels, Power Supplies, Receivers, Sensors, Signal Tone Generators, and Transmitters.

Please supply installation instruction sheets for all Fire Alarm Equipment being installed.

The system designer is to be identified on the plans and evidence of qualifications provided. Per NFPA 72.

- A licensed Professional Engineer recognized by the Illinois Professional Engineer Practice Act of 1989.
- A licensed Professional Architect recognized by the Illinois Architecture Practice Act of 1989.
- Factory-trained and certified in fire alarm system design.
- National Institute of Certification in Engineering Technologies (NICET) fire alarm certified — minimum level III.

Provide evidence of qualifications for installation personnel.

- A licensed alarm contractor under the Illinois Private Detective, Private Alarm, Private Security, and Locksmith Act of 2004.
- A licensed Professional Engineer Per 225 ILCS 447/10-10, or
- A licensed electrical contractor Per 225 ILCS 447/10-10, or
- Underwriters Laboratories or another authoritative entity recognized by the Illinois Department of Financial and Professional Regulation. Per 225 ILCS 447/Art. 20

Approval and Acceptance

The authority having jurisdiction shall be notified prior to installation or alteration of equipment or wiring. At the authority having jurisdiction's request, complete information regarding the system or system alterations, including specifications, type of system or service, shop drawings, input/output matrix, battery calculations, and notification appliance circuit voltage drop calculations shall be submitted for approval.

No hand-drawn shop plans will be accepted for review.

Shop plans shall not show any items that are not required for the alarm system.

Deviation from approved plans shall require permission of the authority having jurisdiction.

Shop Drawings

Shop drawings for fire alarm systems are intended to provide basic information consistent with the objective of installing a fully operational, code-compliant fire alarm system and to provide the basis for the record drawings required elsewhere in this Code.

Approval of shop drawings is not intended to imply waiver or modification of any requirements of this Code or any other applicable criteria.

Shop drawings should include, to an extent commensurate with the extent of the work being performed, floor plan drawings, riser diagrams (except for systems in single-story buildings), control unit wiring diagrams, point-to-point wiring diagrams, and typical wiring diagrams as described herein.

All shop drawings should be drawn on sheets of uniform size and should include the following information:

- Name of owner and occupant
- Location, including street address
- Device legend
- Date
- Input/output programming matrix
- Describe the scope of work being performed.

Floor Plan Drawings

Floor plan drawings should be drawn to an indicated scale and should include the following information:

- Floor identification
- Point of compass
- Graphic scale
- All walls and doors
- All partitions extending to within 15 percent of the ceiling height

- Room descriptions
- Fire alarm device/component locations
- Locations of fire alarm primary power connection(s)
- Locations of monitor/control interfaces to other systems
- Riser locations
- Routing for Class A compliance, where applicable
- Ceiling height and ceiling construction details

Fire Alarm System Riser Diagrams

Fire alarm system riser diagrams should include the following information:

- General arrangement of the system, in building cross-section
- Number of risers
- Type and number of circuits in each riser
- Type and number of fire alarm system components/devices on each circuit, on each floor or level

Dedicated Branch Circuits

Dedicated Branch Circuit requirements. Per NFPA 72, 2010 Edition, 23.4.2

- The dedicated branch circuit(s) and connections shall be mechanically protected.
- Circuit disconnecting means shall have a red marking, shall be accessible only to authorized personnel, and shall be identified as “FIRE ALARM CIRCUIT.”
- The location of the circuit disconnecting means shall be permanently identified at the fire alarm control unit.

Before requesting final approval of the installation the installing contractor shall furnish a written statement (Record of Completion) stating that the system has been installed in accordance with approved plans and tested in accordance with the manufacturer’s published instructions and the appropriate NFPA requirements

Requirements

In accordance with Lake Villa Fire Protection District requirements, all permitted newly installed or modified automatic fire alarm systems shall conform to the current Code requirements, National Fire Protection Association (NFPA) applicable requirements, the International Building Code, International Fire Code, and the Illinois Accessibility Code.

Fire Alarm Control Panel (FACP): shall be U.L. or F.M. approved and shall be separate from any other non-fire protection system. Combination Burglar/Fire panels shall be prohibited. The control panel shall be addressable unless approved by the Fire Bureau. Location shall be approved by the Fire Bureau. The FACP shall not be located within a private garage or other room controlled by unauthorized persons. A FACP installed out-side shall be in a U.L. or F.M. approved, climate controlled, weatherproof box. The FACP shall only monitor fire protection systems. Any Control Panel requiring a code to silence or reset shall have the code permanently displayed on the Fire Alarm Control Panel door. The Fire Alarm Control Panel room shall be properly labeled (minimum of 4-inch lettering) with lettering of a contrasting color. A smoke detector is required to be installed at the FACP.

Fire Department Lock Box: The Fire Alarm Control Panel must be accessible to the Lake Villa Fire Department 24 hours a day, 365 days a year, via a KNOX BOX. KNOX BOX information/order forms can be obtained from the Lake Villa Fire Prevention Bureau. Location shall be approved by the fire bureau. The KNOX BOX should be installed no more than 6 feet above grade/floor.

Power Supply: The primary and secondary power supplies for the fire alarm system shall be provided in accordance with NFPA 72. Electric power to the FACP shall be approved and separated from unauthorized personnel.

A Remote Annunciator: (unless otherwise approved) is required if the FACP is not visible from the exterior of the building. The annunciator panel shall be permanently marked to show zones.

Zones: Addressable devices shall be used unless approved by the Fire Department. If not addressable. The length of any zone shall not exceed 300 feet in any direction (automatic sprinkler system zones shall not exceed the area permitted by NFPA 13). A zoning indicator panel and the associated controls shall be provided in an approved location. The visual zone indication shall lock in until the system is reset and shall not be cancelled by the operation of an audible alarm-silencing switch. The capability to disable each zone shall be provided. A separate zone by floor and device type shall be provided for the following types of alarm notification devices where provided:

1. Smoke detectors.
2. Sprinkler water-flow.
3. Manual fire alarm boxes.
4. Other approved types of automatic fire detection devices or systems (HVAC, Hood & Duct Suppression, FM-200, etc.).

A **ZONE MAP** encompassing a Floor Plan, shall be provided near each FACP and annunciator panel.

ZONE MAP REQUIREMENTS:

- A fire alarm/sprinkler zone map shall be provided next to the fire alarm control panel.
- These map(s) shall show what areas of the building are covered by the system(s) installed.
- Maps shall be accurate, legible, and easily understood.
- They shall be laminated and permanently attached to the wall in the FACP/Riser room. When a building or system is modified, it is the responsibility of the contractor who made modifications to the system(s) to update these maps.
- A sign and/or map shall be mounted at the front main entrance indicating the location of the fire alarm control panel and fire sprinkler riser/control room location (if in a sprinklered building).

This sign shall be protected from damage/vandalism and shall be securely mounted and protected (e.g.- inside a certificate holder).

A **4-inch RED lens weatherproof strobe light** shall be installed on the exterior of the building above the closest entrance to the annunciator/FACP.

Strobe Light

A strobe light shall be installed on the exterior of all occupancies protected by a fire sprinkler system. The strobe light shall be located directly over the fire department connection and next to the 10-inch exterior bell or in a location approved by the Code Official.

A **4-inch White lens weatherproof strobe light** (alarm annunciation) shall be installed on the exterior of each tenant space and multi-family unit located in the building. Exception: Addressable Fire Alarm Systems.

HVAC Duct Detection (where required) shall be provided with remote L.E.D. and test switches for all detectors that are obstructed or located above the ceiling. The L.E.D. test switches shall be located on the wall or ceiling directly below (or as close as possible) to the unit it serves

Manual Fire Alarm Boxes (MP) shall be located not more than 5 feet from the entrance to each exit. The height of the MP shall be a minimum of 42 inches and a maximum of 54 inches measured vertically from the floor level to the activating handle or lever of the box. Additional MP shall be located so that travel distance to the nearest box does not exceed 200 feet. Manual fire alarm boxes shall be RED in color.

Manual Fire Alarm Boxes - Protective covers: The Fire Department is authorized to require the installation of listed manual fire alarm box protective covers to prevent malicious false alarms and provide protection from physical damage. The protective cover shall be transparent or red in color with a transparent face to permit visibility of the manual fire alarm box. Each cover shall include proper operating instructions. A protective cover that emits a local alarm signal shall not be installed unless approved.

Fire Safety Functions: Automatic fire detectors utilized for the purpose of performing fire safety functions shall, upon actuation, perform the intended function and activate the alarm notification appliances.

Alarm notification appliances: Alarm notification appliances shall be provided and shall be listed for their purpose. Alarm notification appliances shall be both audio and visual unless approved by the Fire Department.

Audible/Visible alarm notification appliances shall be provided in public and common areas (lobbies, elevator, hallways, laundry rooms, swimming pools, storage rooms, recreation areas, parking garages, building offices, conference rooms, patios, restrooms, telephones, etc).

Audible alarm notification appliances shall sound a distinctive sound that is not to be used for any purpose other than that of a fire alarm. The audible alarm notification appliance shall provide a sound pressure level of 15 decibels (dBA) above the average ambient sound level or 5 dBA above the maximum sound level having a duration of at least 60 seconds, whichever is greater, in every occupied space within the building. The minimum sound pressure levels shall be 70 dBA in occupancies in Group R (at the pillow) and Group I-1; 90 dBA in mechanical equipment rooms; and 60 dBA in other occupancies. The maximum sound pressure level for audible alarm notification appliances shall be 120 dBA at the minimum hearing distance from the audible appliance. Where the average ambient noise is greater than 105 dBA, visible alarm notification appliances shall be provided in accordance with NFPA 72 and audible alarm notification appliances shall not be required. Visible alarm notification appliances shall be allowed in lieu of audible alarm notification appliances in critical care areas of Group I-2 occupancies.

Where required in accordance with Amendments, an approved automatic fire alarm system shall be provided as follows:

International Building Code/2012 (IBC) Class	Use:	Example:	Fire area exceeds Gross sq. ft. :
Assembly	A-1	Motion Picture Theatre	Required
	A-2	Restaurant	Required
	A-3	Churches	Required
	A-4	Indoor Arenas	Required
	A-5	Stadiums	Required
Business	B	Professional Services	Required
Education	E	Schools	Required
Factory	F-1	Moderate Hazard	Required
	F-2	Low Hazard	Required
Hazard	H	Chemical Manufacturing	Required
Institutional	I-1	Board & Care/Assisted living more than 16 residents, Rehab facilities	Required
	I-2	Hospitals/Nursing Homes	Required
	I-3	Detention Facilities	Required
Mercantile	M	Department Store	Required
Residential	R-1	Boarding Houses/Hotels	Required
	R-2	Apartments/Dorms	Required
	R-3	Adult and Child Day Care	Required
	R-4	Residential Care/Assisted living 16 or Fewer residents	Required
Storage	S-1	Furniture, Lumber yard	Required
	S-2	Non-Combustible Storage	Required
Utility	U	Greenhouses, barns	Required

Certificate of Completion: The Contractor shall provide to the Fire Department, prior to the Fire Department witnessing a performance test of the system, a Certificate of Completion (Per NFPA 72).

Annual Fire Alarm Testing: All fire alarm systems, fire suppression systems, cooking suppression systems, and any other fire safety system required to be tested, serviced, or inspected according to NFPA 25 shall be tested and cleaned at least annually, 6 months minimum for cooking suppression systems, and the results shall be sent to us through our third party administrator, Brycer LLC, at www.thecomplianceengine.com .