EULESS FIRE DEPARTMENT
FIRE MARSHAL'S OFFICE

EFD-FMO 3-3

2015 International Fire & Building Code as Amended

NFPA Standards Adopted

INFORMATION LINE:
Fire Alarm Systems
Revised 6/16

Fire Chief Wes Rhodes *Fire Marshal Paul Smith*

BASIS FOR REQUIREMENTS

- Rules & Regulations adopted by the State Board of Insurance and the State Fire Marshal's Office.
- 2015 International Codes as amended
- Applicable NFPA Standards.

SCOPE

This document is designed to assist you in designing and testing a fire alarm system or component thereof in the City of Euless. It is not intended to supplement other available standards and codes related to this topic. **Call 817-685-1600** if you have any questions specific to your project or to schedule inspections.

FLOW:

The following is the typical flow for fire alarm installations in the City of Euless:

- Apply for permit, pay permit fee and submit plans for review.
- Plans are reviewed and a comment letter returned to applicant.
- Upon resolution of all items found during the plan review process, if any, a stamped set(s) of plans is released to the permit holder along with a permit to proceed.
- Work can commence. (Work beginning without an issued permit subjects the permit holder to double permit fees and other penalties.)
- A wiring and rough in inspection is required as appropriate. The fire alarm contractor is responsible for scheduling inspection(s) as needed.
- A final inspection is required which will include functional testing of each device by an appropriate means, as well as the monitoring and other functions and features of the system and monitoring components. The contractor shall complete a pre-test prior to scheduling the final acceptance test.
- All forms, letters or other documentation must be prepared and on site at the time of the acceptance test. This includes the documents referenced herein and the record of completion and other documents as required in Chapter 7 of the 2016 edition of NFPA 72 as appropriate.

Bold items are particular to the City of Euless

GENERAL REQUIREMENTS – ALL SYSTEMS

APPROVAL

The Fire Marshals office shall be notified prior to any installation or alteration of equipment on a fire alarm system. Complete information regarding the system or system alterations, including specifications, wiring diagrams, location of equipment and floor plans shall be submitted for approval. A permit is required for most fire alarm installations or alterations.

OBTAINING PERMIT/SUBMITTAL

Permits must be applied for and issued in the name of the licensed installing company. Any portion of the installation, which is not a part of the applicant's contract, must be clearly noted in the submittal

outline. Unless specifically exempted, the contractor of record will be held responsible for all aspects of the fire alarm system installation. Prior to issuance and commencement of any work, a minimum of two (2) copies of detailed plans, pertinent product cut sheets, battery calculations, voltage drop calculations and any other required information for review shall be submitted to Fire Administration at 201 N. Ector Drive. All permit fees must be included with your application at the time of submittal. Permit fees are based upon the value of the work to be performed. Permit fees for your job may be obtained by calling **817-685-1600**. **You will be required to submit documentation verifying the value of the job**.

PLANS AND SPECIFICATIONS

Plans shall be standard blueprint quality and have been prepared by a State of Texas registered engineer, planning superintendent or NICET qualified designer unless otherwise approved by the fire code official. Plans shall include all information listed in the current edition of NFPA 72 and have a title box with name and address of the installation location and the name, address, and phone number of installing company.

Plans shall be signed and sealed by the designer with an original signature on one set. When a third party engineer is utilized, he shall provide a submittal letter indicating that he is working as an agent of the licensed contractor and specify their field of expertise.

Plans shall be drawn to a minimum of 1/8th inch scale showing room dimensions, ceiling heights, room and area by use. Plan shall bear an equipment symbol legend and relevant North indicator. Plans shall indicate occupancy classification of installation and specify the type of system being installed as defined by NFPA 72.

NOTE: Plans drawn atop of building plans, electrical, mechanical, etc., will not be accepted for review.

NOTE: Permits issued AFTER THE WORK HAS BEGUN will be assessed at double the combined permit fee. Definition of work being done is the installation of any part of the fire alarm system, including conduit and back box, whether it is being done by the primary contractor or his subs, prior to this office issuing a permit for installation of the fire alarm system.

MINIMUM REVIEW TIME

The contractor submitting plans for review should allow a minimum of ten (10) working days for the review process. Upon completion of the plan review a comment review sheet from the Fire Marshal will be returned to the contractor. The comment sheet will detail the status of the review. A response to the comments is required. A stamped set(s) of plans will be returned to the contractor once the review process is completed and all issues identified in the plan review process have been resolved.

LOCAL AMENDMENTS RELATED TO GROUP A and E OCCUPANCIES:

Group A. Amendment added to 907.2.1 of the *International Fire Code* requires that a manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 in a Group A occupancies will cause illumination of the means of egress with light of not less than one (1) foot candle at the walking surface level and stop any conflicting or confusing sounds and visual distractions. In addition, the exception allowing no pull stations in a sprinkled building may only be used when approved by the fire marshal.

907.2.3 Group E. A manual fire alarm system that activates the occupant notification system utilizing an emergency voice/alarm communication system meeting the requirements of section 907.5.2.2 and installed in accordance with section 907.6 shall be installed in group E educational occupancies. When automatic sprinkler systems or smoke detectors are installed, such systems or detectors shall be connected to the building fire alarm system. An approved

smoke detection system shall be installed in group E day care occupancies. Unless separated by a minimum of 100 feet of open space all buildings, whether portable buildings or the main building, will be considered one building for alarm occupant load consideration and interconnection of alarm systems.

The provisions of group E occupancies shall extend to group E - day care facilities and group I-4 day care with the following modifications:

1. Smoke detection is required in each room that is or may be used for child or adult care purposes.

2. A manual pull station is required at a location where it is readily available to the staff.

3. Kitchen fire suppression systems shall be interconnected to and activate the fire alarm system.

4. An emergency voice evacuation component is not required as part of the fire alarm system in group E day care or group I-4 occupancies.

Exceptions:

1. {No change}

1.1 Residential in-home day care with not more than twelve (12) children may use single station smoke alarms in all habitable rooms. (For child care of more than five (5) children two and one-half (2-1/2) or less years of age, see section 907.2.6) {No change to remainder of exceptions}

In I-4 occupancies, fire alarm systems must be installed in accordance with 907.2.3 regardless of the age of the clients.

PULL STATIONS

Manual Pull stations shall be double action.

INSTALLATION

A. A set of as-built drawings showing details of system wiring and control panel terminal identification with function information shall be provided to the owner when installation is complete. Any subsequent modifications, additions or alterations shall be legibly noted on updated drawings. These drawings shall remain at the business location and shall bear the signature of a licensed fire alarm planning superintendent, his license number and date of installation. Complete instructions on the operation of the system shall be provided at the control panel.

B. The primary fire alarm contractor shall provide and install a framed or laminated VISUAL MAP in accordance with the following guidelines:

1. **Map shall show a black line footprint of building, minimum size shall be 10 x 14.**
2. **Map shall show location and type of each device. Addressable systems shall show device address numbers as well.**

EXCEPTION: Single device zones such as water flow, supervisory/tamper valve, fixed hood extinguishing systems, etc., may be identified by a numerical zone reference.

C. **Water flow alarms shall not be capable of being reset while a water flow condition is occurring.**

D. **External weatherproof a/v device(s) are required at an approved location. All a/v devices shall be of an approved type and must have the word "FIRE" or approved signage on the device.**

E. A smoke detector shall be provided at each fire alarm control unit, notification appliance circuit extender and supervisory station transmitting equipment.

F. All installations shall be in accordance with the State of Texas Fire Alarm Rules, the current adopted edition of the International Fire Code, appendixes and adopted amendments of the fire code, this document and the current editions of the following National Fire Protection Association (NFPA) Standards and References:
   1. NFPA 70 – National Electric Code
   2. NFPA 72 – National Fire Alarm Code
   3. NFPA 13 – Installation of Sprinkler Systems
   4. NFPA 90A – Installation of Venting Systems
   5. NFPA 90B – Installation of Heating & Air Conditioning
   6. NFPA 101 – Life Safety Code

POWER CIRCUIT SURGE PROTECTION

In addition to any built-in surge protection of the fire alarm panel, "Each fire alarm panel and power supply panel shall have an added surge protector installed in addition to the surge protector which is built into the panel. The secondary surge protection device must be installed in such a manner that it is isolated a minimum of two (2) feet from the panel as measured along the route of electrical travel. If data lines run between separate buildings data line surge/spike protection is required on each data line where the line enters and/or exits each building."

DUCT DETECTION

All duct detection devices shall be powered by the fire alarm control panel for primary and secondary power supply. In addition, each duct detector shall be CFM rated for its intended use.

The duct detectors shall be resettable from the fire alarm panel, and give a supervisory signal at the fire alarm panel.

WIRING METHODS

A. All runs of installation wiring (both notification and initiation) shall be continuous and shall not be spliced except in approved junction or splice boxes. These boxes shall remain accessible for inspection. Wiring shall be separated by a minimum of one foot vertically and six feet horizontally.

B. Fire alarm wiring for alarm initiating and notification appliance circuits shall be Class "A" arranged for operation with a single open or ground fault, or the removal of single device. Refer to NFPA 72 for appropriate wiring on Class "A" circuit.

C. Wiring shall be run in a workman like manner.

D. Multi building complexes shall have a main fire alarm panel at a location approved by the Fire Marshal. All other panels shall report back to the main panel unless an alternative design is approved by the fire code official.

UNDERGROUND WIRING

Underground wiring shall be used only for the purpose of signal transmittal. No power circuit wiring will be allowed. **Wiring shall be a listed waterproof underground fire alarm wire, and shall be placed in conduit.**

FIRE ALARM SYSTEM POWER SERVICE

Connections to light and power service shall be on a dedicated branch circuit. The circuit disconnecting means shall be accessible only to authorized personnel and shall be marked as FIRE ALARM CIRCUIT CONTROL in a red color with a material that will not easily peel off.

ALARM CONTROL PANEL

Alarm control panels shall be of a size and type capable of handling the full potential of the building, whether the building is fully built out or not. Alarm and communicator panels shall be located in an approved area. Fire alarm panels shall not need a tool, enable key, password, or other such knowledge or device to reset, or silence an alarm, with the exception of the fire alarm box panel key to open the door.

> ***EXCEPTION*: With approval of the Fire Marshal, panels may be located in other areas if a suitable remote annunciator is provided in its place.**

Alarm Systems with twenty or more initiating devices:

All alarm systems new or replacement shall be addressable. Alarm systems serving twenty (20) or more initiating devices shall be analog addressable fire detection systems. Exceptions apply for systems providing monitoring of fire sprinklers only or when minor work is conducted. See 907.1.4 as amended.

SIGNAL INITIATING CIRCUITS

All installation wiring for signals initiated by the operation of fire alarm boxes, fire detectors or other appliances or devices, which initiate or transmit signals either manually or automatically shall be a supervised Class A circuit.

AUDIBLE ALARM NOTIFICATION CIRCUITS

All installation wiring for operating audible alarm indicating appliances shall be electrically supervised as a Class A circuit.

AUDIBLE SIGNAL APPLIANCES

Audible signal appliances employed in fire alarm systems for alarm, supervisory, and trouble signals shall be of a suitable type for the particular application and location, so as to provide protection from the effects of vermin, temperature, humidity, corrosion and other physical damage.

External weatherproof audio/visual device(s) shall be installed at a location approved by the fire code official.

All visible and audible notification devices shall be of a type approved by the fire code official and shall have the word "Fire" on the device when received from the manufacturer unless an alternative design is approved by the fire code official."

DISTRIBUTION OF AUDIBLE SIGNALS

Fire alarm systems provided for evacuation of occupants shall be in compliance with the current edition of NFPA #72. **One or more signals shall be installed on the exterior of the building at an approved location.** All systems will be tested for compliance with NFPA sound level requirements by use of a sound decibel meter. **In buildings equipped with a sprinkler system, an audio visual device is required in each occupied space to alert occupants that the sprinkler system has activated.**

SMOKE DETECTORS

All new installations shall use only smoke detectors listed as capable of electronic sensitivity testing or those equipped with onboard sensitivity testing. **Smoke detectors installed in hotels, motels, and apartment buildings shall be dual sensor (ionization and photoelectric) in compliance with S.B. 1168.** Sensitivity testing shall be done as required per NFPA 72.

DISTINCTIVE SIGNALS

Audible signal appliances for a fire alarm system shall produce signals, which are distinctive from other similar appliances used for the purposes in the same area. The distinction among signals shall be as follows:

1. Fire alarm signals shall be distinctive in sound from other signals and this sound used for no other purpose (usually 15 dB's over ambient noise level).
2. Supervisory signals shall be distinctive in sound from other signals and this sound shall not be used for any other purpose except that it may be employed to indicate a trouble condition.
3. Fire alarm, supervisory and trouble signals shall take precedence over all other signals.
4. Authority having jurisdiction shall have final approval concerning signal identification. (Temporal)

VISUAL ZONE/ALARM INDICATION

A. Alarm zones shall be indicated by building, fire zone, devices, or other subdivisions as approved or required by this authority. The visual indication shall not be canceled by the operation of an audible alarm-silencing switch.

B. Where duct detection devices are concealed and alarm indication is not apparent, compliance shall be met as follows.

1. Remote LED indicators shall be installed in the ceiling directly below the air handling unit, and have the zone or address labeled on it.

C. Kitchens equipped with fixed hood fire protection shall be connected to the alarm panel and initiate an alarm by separate zone or addressable.

D. Alternative fire protection systems shall be connected to the alarm panel and initiate an alarm by separate zone or addressable.

E. Sprinkler system supervising switches shall be on a separate zone or addressable.

F. Water flow switches shall be on a separate zone or addressable.

MONITORING OF FIRE ALARM SYSTEM

When alarm systems are monitored, the provision for equipment, installation and monitoring service shall be addressed in the submittal package.

EXCEPTION: When the alarm control panel and monitoring equipment are installed by separate contractors, both shall be submitted and permitted separately. Permits will only be issued after a completed review of both systems.

In buildings with automatic sprinkler systems, communicators shall send four (4) basic signals:

1. General fire alarm
2. Water flow alarm
3. Supervisory/Tamper valve
4. **General trouble condition**

LOCAL FIRE ALARM SYSTEMS ONLY

Local protective signaling systems whose main purpose is to provide an evacuation alarm for the occupants of the building and the system is not required to be monitored by a monitoring service shall have, at the location of each pull station, wording on a red laminated plate with white letters, a minimum of one-fourth (1/4") inch stroke as follows:

"LOCAL ALARM ONLY
MUST DIAL 9-1-1 TO
REPORT FIRE EMERGENCY"

ACCEPTANCE TESTS

Upon completion of an installation or alterations, a satisfactory audit of the system shall be made by the licensed technician of record, in the presence of a representative of the Fire Marshal's office. The alarm contractor shall be responsible for providing all equipment necessary to perform a complete functional test (i.e., radios, ladder, testing tools, etc.). All functions of the system shall be tested including operation of the system in various alarm and trouble modes for which it was designed. (i.e., open circuit, grounded circuit, commercial power failure, etc.)

If the system is monitored, all equipment functions and signal responses will be tested as well. Duct detectors will be tested as approved by the manufacturer. Smoke detectors shall be tested in accordance with manufacturers' recommendations. The fire alarm contractor shall be responsible for arranging and contacting all parties involved in the acceptance test.

In occupied buildings the alarm contractor shall notify all building occupants of the fire alarm test prior to the scheduled arrival of the fire inspector.

REQUIRED DOCUMENTATION FOR ACCEPTANCE TEST

The following items of documentation shall be provided prior to the beginning of the acceptance test:

a. Fire alarm installation certificate, properly completed and signed.
b. Letter of installation, per City code.
c. Fire alarm system installation inspection form, required by State rules.
d. Fire alarm installation record label, required by State rules.

STATE INSTALLATION CERTIFICATE

Upon completion of an installation and prior to requesting an acceptance test by this office, the Fire Alarm Planning Superintendent or Alarm Technician shall properly post a completed State Certificate of installation form as prescribed in the State Fire Alarm Rules and provide a copy to the Euless Fire Department.

LETTER OF INSTALLATION CERTIFICATION

At the completion of the installation and prior to requesting an acceptance test, the permitted contractor of record shall provide this office with a letter of certification. The letter shall include the following information and may be required to be notarized:

1. **Letter shall be on company letterhead.**
2. **Letter shall indicate the business name and complete address of the installation location.**
3. **The letter shall include the following typed statements:**
   "This document is to certify that the Fire Alarm System at the above address has been designed and installed in accordance with all applicable NFPA standard(s) (identify applicable NFPA standard(s) you are following), City of Euless and State of Texas codes and requirements."
4. **Letter shall be signed by the signature of a company executive, alarm planner or engineer planner if applicable.**