EULESS FIRE DEPARTMENT
FIRE MARSHAL'S OFFICE

EFD-FMO 3-1

2003 International Fire & Building Code as Amended

NFPA Standards Adopted

INFORMATION LINE:
Fire Alarm Systems
Revised 8/2004
Fire Chief Lee Koontz *Fire Marshal Paul Smith*

BASIS FOR REQUIREMENTS

- Rules & Regulations adopted by the State Board of Insurance and the State Fire Marshal's Office.
- 2003 International Codes
- Applicable NFPA Standards.
  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

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.

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

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, three (3) 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 Dr. 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**. Plans shall be standard blueprint quality and have been prepared by a State of Texas registered engineer, planning superintendent or NICET qualified designer. Plans shall include all information listed in the current edition of NFPA 72 and have a title box with name and address of 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.

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

LOCAL AMENDMENT RELATED TO GROUP E OCCUPANCIES:

Group E. A manual fire alarm system 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 fifty (50) feet 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.

Exceptions:

a) Group E educational and rooms in day care occupancies that are not used for sleeping purposes and with an occupant load of less than 50 when provided with an approved automatic sprinkler system.

b) Residential In-Home day care with not more than 12 children may use interconnected single station detectors in all habitable rooms. (For child care of more than five children 2 ½ or less years of age, see Section 907.2.6.)

SUBMITTAL OUTLINE

All plans must be accompanied with a submittal outline. The submittal format is included with this document.

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 seven (7) working days for the review process. Upon completion of the plan review a stamped "REVIEWED" set of plans and comment review sheet from the Fire Marshal will be returned to the contractor. The comment sheet will detail the status of the review.

PULL STATIONS

Manual Pull stations shall be double action.

ACCEPTANCE TESTS

Upon completion of an installation or alterations, a satisfactory audit of the system shall be made by the licensed technician of records, in the presence of a representative of the Fire Marshals 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.

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 ZONE 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. **Zones shall be both numerical and color-coded, using solid coloring or colored zone boundaries, if applicable.**
3. **Fire zones will be defined by common geographical boundaries, floor levels, or other subdivisions approved or required by this authority.**
4. **Zone 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. All installations shall be in accordance with the State of Texas, 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

STATE INSTALLATION CERTIFICATE

Upon completion of an installation and prior to requesting 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.**

NOTE: **This letter will become a permanent record on file as to the installation standard.**

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. Exception: unless otherwise approved by the Fire Marshal.

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 the main entry area. Fire alarm panels shall not need a tool, enable key, password, or other such knowledge or device to reset, or silence, 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 fifty or more initiating devices:
All alarm systems new or replacement serving fifty (50) or more initiating devices shall be addressable fire detection systems. Alarm systems serving more than seventy-five (75) smoke detectors or more than two hundred (200) total initiating devices shall be analog intelligent addressable fire detection systems.

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."

DISTRIBUTION OF AUDIBLE SIGNALS
Fire alarm systems provided for evacuation of occupants shall have one or more audible signaling appliances approved for the purpose on each floor of the building, so located that their operation will be heard clearly regardless of the maximum noise level from machinery or other equipment under normal conditions of occupancy and spaced as per NFPA 72. **One or more signals shall be installed on the exterior of the building.** 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 photoelectric only; ionization detectors are not acceptable.** 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.

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

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

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

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. Note that the 2003 IFC requires monitoring of most systems.

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"

SUBMITTAL FORM OUTLINE

DESCRIPTION OF SCHEDULED EQUIPMENT AND COMPONENTS

NOTE: A description of alarm system equipment, number of components and operation shall accompany the detailed plans in the following format. All items shall be UL or FM listed for their intended use and compatibility with other system components.

I. HEADING INFORMATION
   A. A name and address where installation is to take place.
   B. Provide copy of that portion of contract that defines full scope of work and materials.

II. APPLICABLE CODE STANDARD THE INSTALLATION IS TO FOLLOW;
   (I.E., CENTRAL STATION FIRE ALARM SYSTEM, NFPA 72, 1993 EDITION, SECTION 4-3.
   i.e. - Installation will be certified by Acme Alarm and Monitoring Service, Cross-Roads, Texas 1234, Main St., Ph. 817-555-5555.)

III. ALARM INITIATING DEVICES
   A. Indicate the type and amount of initiating devices to be installed, and location within building or complex.
   B. Duct detection and systems operation.

IV. ALARM INDICATION
   A. Location of all devices.
   B. Type of device – Make and model of devices, manufacturer's brochure or certification number is to accompany submittal forms.
   C. Design level of audibility-Sound level rating of device.
   D. Reporting provisions – How the alarm is to be reported.
   E. Visual indication – Features of visual alarm indicating devices.

V. ELEVATOR RECALL
   Outline provisions for code compliance.

VI. ALARM SUPERVISION
   A. Human – Specify responsible party.
   B. Monitoring Service – Company name, address, and phone number. Also, include name of company representative for account. Access code number to be provided at time of acceptance. If monitoring service is not known, or if it is to be installed by others, please indicate.

VII. POWER SUPPLY AND CIRCUITRY
   A. Primary Power – How received and marked.
   B. Secondary Power – Back up system specifications and operations, including auxiliary connections for elevators, special egress controls, etc.
   C. Zoning Provisions – Explain how system is to be zoned for easy recognition of alarm or trouble condition.
   D. Annunciation provisions.
   E. Control panel provisions.
   F. Schematic Drawings – Detail wiring of system and zones.

VIII. SYSTEM OPERATION SEQUENCE
   Provide system operation matrix.

IX. TESTING AND MAINTENANCE PROCEDURES

X. SYSTEMS ACCEPTANCE PROCEDURES

XI. HIGH RISE PROVISIONS

XII. DESIGNER/INSTALLER INFORMATION
   A. Company name
   B. Current copy of company state license
   C. Current copy of planning superintendent license
   D. Copies of brochures/pamphlets identifying major system components
   E. Wiring method and specific type of wire

PLANS AND SPECIFICATIONS

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.