

## HOUSTON FIRE DEPARTMENT STANDARDS AND CODES, REV. 7-18-2016

### Current Houston Construction Code Amendments

The 2012 Construction Code Package became effective on February 1, 2016. The Houston Amendments to the current adopted codes are listed below. The amendments, along with the model codes, constitute the City of Houston Codes. **Note:** The City of Houston does not have the model codes available; they can be purchased through the respective publisher.

For questions, please email [rmcacd@houstontx.gov](mailto:rmcacd@houstontx.gov).

### CONSTRUCTION CODE

#### Building

[2012 IBC Houston Amendments](#) 02/01/2016

#### Residential

[2012 IRC Houston Amendments](#) 02/01/2016

#### Electrical

[2014 NEC Houston Amendments](#) 09/24/2014

#### Mechanical

[2012 UMC Houston Amendments](#) 02/01/2016

#### Plumbing

[2012 UPC Houston Amendments](#) 02/01/2016

#### Fire

[2012 IFC Houston Amendments](#) 02/01/2016

#### Residential Energy

[Amendments to the 2009 IECC - Changes effective February 7, 2014](#) 01/06/2012

#### Commercial Energy

[2009 IECC Houston Amendments](#) 09/02/2011

[Errata 2009 IECC Houston Amendments](#)

[ASHRAE 90.1-2007 Houston Amendments](#) 09/02/2011

- **2012 Houston Fire Code Amendments (Effective 2/1/2016)\***
- **The COH Fire Code "Appendix J" - The retroactive high-rise building sprinkler ordinance**
- For the mid-rise atrium evacuation plan, please contact Inspector Adam Beltran by email to [adam.beltran@houstontx.gov](mailto:adam.beltran@houstontx.gov) or 832.394.6900
- **Stairwell identification requirements\***
- **Atrium Building Retrofit Ordinance\***
- **Haz-Mat plan submittal guideline\***
- **High-Piled Storage Plan Submittal Guideline\***
- **Additional Helpful Links Maybe Found on the HFD High Rise Triad Webpage >>>**

\*The link listed is a .pdf file and require the free **Adobe Acrobat Reader** for viewing

For additional information on Houston Fire Department Standards and Codes, contact the HFD Fire Marshal's Office at 832-394-6900 or by mail at 600 Jefferson, Ste. 600 Houston, TX 77002.

## **LSB Standards – Index**

**1 - Fire Extinguishers - Rev 05 effective 05/01/2012.pdf**

**2 - Inspection and Testing of Fire Protection and Life Safety Equipment, Effective Date 5/13/2011.pdf**

**3 - Fire Dept Access, Rev 05 Effective Date 05/01/2012.pdf**

**4 - Access Gates, Rev 03 Effective Date 05/01/2012.pdf**

**5 - Key Boxes, Rev 02 Effective Date 05/01/2012.pdf**

Electric Fence Registration Form (**Word .doc** or **.pdf**)

**6 - Fire Depsoitory Boxes, Rev 03 Effective Date 05/01/2012.pdf)**

**7 - High Rise Fire Safety Plans, Effective Date 05/01/2012.pdf**

**8 - Fire Drills, Rev 4 Effective Date 12/31/10.pdf**

**9 - Marking of Fire Hydrants, Rev 03 12/31/10.pdf**

**10 - LP Gas and Open Flame Use, Effective Date 05/01/2012.pdf**

**11 - Roofing Operations, Rev 04 Effective Date 05/01/2012.pdf**

**12 - Fireworks Displays, Rev 04 Effective Date 05/01/2012.pdf**

**13 - Outside Protected Aboveground Tanks for Generators and Fire Pumps, Rev 04 05/01/2012.pdf**

**14 - Unattended Service Stations, Rev. 03 Effective Date 05/01/2012.pdf**

**15 - Mobile Refueling and Wet Hosing, Rev.03 Effective Date 05/01/2012.pdf**

**16 - Open Burning and Recreational Fires, Rev 04 Effective Date 05/01/2012.pdf**

**17 - Tire Chipping, Rev 03 Effective Date 05/01/2012.pdf**

**18 - High-Rise Fire Safety Plan Approval, Rev 03 Effective Date 05/01/2012.pdf**

**19 - Raw Wood Waste Processing, Rev 03 Effective Date 05/01/2012.pdf**

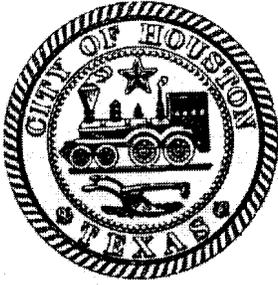
~~20 - Automatic Excess Gas Flow Shut-Off Devices - This standard has been rescinded by City Council and is no longer valid nor in use.~~

21 - Security Gates/Grilles use on Assembly Occupancy has been rescinded by the Fire Marshal, effective May, 15, 2007.

**22 - Tents and Other Membrane Structures, Rev 02 Effective Date 05/01/2012.pdf**

**23 - Mid-Rise Atrium Plan Approval, Rev 02 Effective Date 12/31/10.pdf**

**25 - Safety Inspections for Vehicles on Display Indoors effective 05/01/2012.pdf**



## HOUSTON FIRE DEPARTMENT LIFE SAFETY BUREAU (LSB)



### LSB STANDARD 01 REV. 05 INSTALLATION AND MAINTENANCE OF PORTABLE FIRE EXTINGUISHERS

**SUPERSEDES: LSB STANDARD 01 Rev. 04 (12/31/2010)**

**Note:** A vertical bar in the left-hand margin denoted revisions from the previous version.

**Effective Date: 5/01/2012**



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LSB Standards are established in accordance with provisions of the City of Houston Fire Code. They are subject to the administrative sections covering alternative materials and methods, modifications, and the Board of Appeals.

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**LSB STANDARD 01 REV 05  
INSTALLATION AND MAINTENANCE OF  
PORTABLE FIRE EXTINGUISHERS**

**SECTION 1.1 --- GENERAL**

**1.1.1 Scope.**

Listed portable fire extinguishers shall be installed in occupancies and locations as set forth in the City of Houston *Fire Code* and this standard.

When areas are not covered in this standard, listed portable fire extinguishers shall be in accordance with NFPA 10.

**1.1.2 Purpose.**

This standard is for the use and guidance of persons charged with selecting, purchasing, installing, approving, and maintaining listed portable fire extinguishing equipment.

**SECTION 1.2 --- DEFINITIONS.**

**1.2.1 Class A Rated Fire Extinguisher.**

Used for fires in ordinary combustible materials, such as wood, cloth, paper, rubber, and many plastics.

**1.2.2 Class B Rated Fire Extinguisher.**

Used for fires in flammable liquids, oils, greases, tars, oil-base paints, lacquers, and flammable gases.

**1.2.3 Class C Rated Fire Extinguisher.**

Used for fires that involve energized electrical equipment where the electrical non-conductivity of the extinguishing media is of importance. (When electrical equipment is de-energized, extinguishers for Class A or B fires may be used safely).

**1.2.4 Class D Rated Fire Extinguisher.**

Used for fires in combustible metals, such as magnesium, titanium, zirconium, sodium, lithium, and potassium.

**1.2.5 Type "K" Fire Extinguisher.**

Used for fires involving cooking media (grease, fats and oils) in commercial cooking appliances.

**1.2.6 Listed portable fire extinguishing equipment.**

All portable fire extinguishing equipment shall be listed for intended use.

**1.2.7 Occupancy.**

The purpose for which a building, or part thereof, is used or intended to be used. See current Fire Code.

## **SECTION 1.3 --- GENERAL REQUIREMENTS**

### **1.3.1 Annual Maintenance.**

All fire extinguishers shall have a current annual inspection tag by an approved licensed fire protection equipment company. All servicing, testing, maintenance and tagging of listed portable fire extinguishers shall be conducted annually by qualified personnel in accordance with LSB Standard 02, "Inspection and Testing of Fire Protection and Life-Safety Equipment".

**Exception:** Listed portable fire extinguishers that can not be serviced (disposable) or listed fire extinguishers that may be serviced only at the manufacturer.

### **1.3.2 Operable condition.**

Portable fire extinguishers shall be maintained in a fully charged and operable condition, and kept in their designated places at all times when they are not being used.

### **1.3.3 Conspicuously located.**

Portable fire extinguishers shall be conspicuously located where they will be readily accessible and immediately available in the event of fire. Preferably they shall be located along normal unobstructed paths of travel, including exits from areas.

### **1.3.4 Locked Cabinets.**

Cabinets housing portable fire extinguishers shall not be locked.

**Exception:** 1. Where extinguishers are subject to malicious use, locked cabinets may be used provided they include means of emergency access.

2. In Group I-3 occupancies and in mental health areas in Group I-2 occupancies, access to portable fire extinguishers shall be permitted to be locked or to be located in staff locations provided the staff has keys.

### **1.3.5 Obstructions.**

Portable fire extinguishers shall not be obstructed or obscured from view.

**Exception:** In large rooms, and in certain locations where visual obstruction cannot be completely avoided, means shall be provided to indicate the locations of the fire extinguishers.

### **1.3.6 Installation.**

Portable fire extinguishers shall be installed on the hangers or in the brackets supplied, mounted in cabinets, or set on shelves, unless the extinguisher is of the wheeled type.

### **1.3.7 Physical damage.**

Portable fire extinguishers installed under conditions where they are subject to physical damage shall be protected from impact.

### **1.3.8 Mounting.**

Portable fire extinguishers having a gross weight not exceeding 40 pounds shall be installed so that the top of the extinguisher is not more than 5 feet above the floor. Extinguishers having a gross weight greater than 40 pounds (except wheeled types)

shall be so installed that the top of the extinguisher is not more than 3 ½ feet above the floor. In no case shall the clearance between the bottom of the extinguisher and the floor be less than 4 inches.

### **1.3.9 Marking.**

Portable fire extinguishers mounted in cabinets or wall recesses or set on shelves shall be placed in a manner such that the extinguisher operating instructions face outward. The location of such extinguishers shall be marked conspicuously.

## **SECTION 1.4 --- SIZE AND PLACEMENT OF PORTABLE FIRE EXTINGUISHERS**

### **1.4.1 Minimum rating and placement.**

The minimum rating for a listed portable fire extinguisher for any type occupancy, area or location shall be one 2-A, 10-B:C portable fire extinguisher for every 6000 square feet or fraction thereof. (Example – 6500 square feet – two portable fire extinguishers will be required).

The maximum travel distance to a Class A rated portable fire extinguisher shall be 75 feet by an unobstructed path of travel. The maximum travel distance to a Class B rated portable fire extinguisher shall be 50 feet by an unobstructed path of travel.

Upon inspection of certain occupancies, hazardous operations, or locations, the rating of a portable fire extinguisher and the travel distance may be increased or decreased by the code official per Appendix A, B and C. Where requirements of this standard are found to be in conflict with state and federal requirements, the more restrictive shall apply.

### **1.4.2 Substituting portable fire extinguishers.**

One 2½-gallon water listed portable fire extinguisher may replace the requirement of one Class 2-A rated listed portable fire extinguisher for existing extinguishers. When 2½-gallon water portable fire extinguishers are in need of replacement, they shall be replaced with one 2-A, 10-B:C portable fire extinguisher only.

Exception: In areas where water is needed for deep penetration such as woodworking and sawdust areas.

Two 2-A rated portable fire extinguishers may replace the requirement of one 4-A rated portable fire extinguisher provided the minimum required travel distance is maintained and the minimum required floor area is covered as per Appendix B and C.

One 4-A rated portable fire extinguisher may replace the requirement of two 2-A rated portable fire extinguishers provided the minimum required travel distance to a fire extinguisher is maintained and the minimum required floor area is covered as per Appendix B and C.

One 40-B rated portable fire extinguisher may replace the requirement of two 20-B rated portable fire extinguishers provided the minimum required travel distance to a fire

extinguisher is maintained and the minimum required floor area is covered as per Appendix B and C.

**Exceptions:**

Two 1-A rated portable fire extinguishers shall not substitute for a 2-A rated portable fire extinguisher.

Two portable fire extinguishers of lower B ratings shall not be used to fulfill the protection requirements when a higher B rated portable fire extinguisher is required. (Example - two 20-B rated portable fire extinguishers shall not replace the requirement of a 40-B rated portable fire extinguisher).

In sensitive areas such as telephone rooms, electrical rooms and computer rooms, fire extinguishers such as Clean Agents and CO<sub>2</sub> of the same required rating may substitute for a dry chemical fire extinguisher.

**1.4.3 Occupancy Group requirements.**

Portable fire extinguishers shall be installed in all occupancies. See the current Fire Code for Occupancy Group Classifications.

**1.4.3.1 Assemblies –Group A Occupancies (with an occupant load of 50 or more).**

Assemblies shall be classified as **ordinary hazards**. At least one portable fire extinguisher with a minimum rating of 2-A, 10-B:C shall be provided for each 3000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located that no point in the building is located more than 75 feet, by an unobstructed path of travel, from a portable fire extinguisher.

Assemblies with stages shall have a minimum rated 2-A, 10-B:C fire extinguisher mounted on each side of the stage.

**1.4.3.2 Businesses – Group B Occupancies.**

Business offices and professional services shall be classified as **light hazards**. At least one portable fire extinguisher with a minimum rating of 2-A, 10-B:C shall be provided for each 6000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located that no point in the building is located more than 75 feet, by an unobstructed path of travel, from a portable fire extinguisher.

Business with eating and dining (occupant load less than 50), small businesses not classified as H Occupancies, shall be classified as **ordinary hazards**. At least one portable fire extinguisher with a minimum rating of 2-A, 10-B:C shall be provided for each 3000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located that no point in the building is located more than 75 feet, by an unobstructed path of travel, from a portable fire extinguisher.

Business labs, print shops, using flammable and combustible liquids (not classified as Group H occupancies as per the current Fire Code) shall be classified as **ordinary hazards**. At least one portable fire extinguisher with a minimum rating of 2-A, 20-B:C shall be provided for each 3000 square feet of floor space, or fraction thereof. Portable

fire extinguishers shall be so located that no point in the building is located more than 50 feet, by an unobstructed path of travel, from a portable fire extinguisher.

#### **1.4.3.3 Educational – Group E Occupancies.**

Educational offices and classrooms shall be classified as **light hazards**. At least one portable fire extinguisher with a minimum rating of 2-A, 10-B:C shall be provided for each 6000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located that no point in the building is located more than 75 feet, by an unobstructed path of travel, from a portable fire extinguisher.

Educational labs and shops shall be classified as **high hazard**. At least one portable fire extinguisher with a minimum rating of 2-A, 40-B:C shall be provided for each 3000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located that no point in the building is located more than 30 feet, by an unobstructed path of travel, from a portable fire extinguisher

Day Cares facilities shall be classified as **ordinary hazards**. At least one portable fire extinguisher with a minimum rating of 2-A, 10-B:C shall be provided for each 3000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located that no point in the building is located more than 75 feet, by an unobstructed path of travel, from a portable fire extinguisher.

#### **1.4.3.4 Factory and Industrial – Group F Occupancies.**

Factory and industrial occupancies with the use and manufacturing of combustible commodities shall be classified as **ordinary hazards**. At least one portable fire extinguisher with a minimum rating of 2-A, 10-B:C shall be provided for each 3000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located that no point in the building is located more than 75 feet, by an unobstructed path of travel, from a portable fire extinguisher.

Factory and industrial occupancies with the use and manufacturing of noncombustible commodities shall be classified as **light hazards**. At least one portable fire extinguisher with a minimum rating of 2-A:10-B:C shall be provided for each 6000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located that no point in the building is located more than 75 feet, by an unobstructed path of travel, from a portable fire extinguisher.

Factory and industrial occupancies with the use of flammable and combustible liquids (not classified as Group H occupancies as per the current Fire Code) shall be classified as **ordinary hazards**. At least one portable fire extinguisher with a minimum rating of 2-A, 20-B:C shall be provided for each 3000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located that no point in the building is located more than 50 feet, by an unobstructed path of travel, from an extinguisher.

#### **1.4.3.5 Hazardous – Group H Occupancies.**

Group H Occupancies shall be classified as **high hazard**. At least one portable fire extinguisher with a minimum rating of 4-A, 40-B:C shall be provided for each 4000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so

located so that no point in the building is located more than 30 feet, by an unobstructed path of travel, from a portable fire extinguisher.

Repair garages classified as Group H Occupancies shall have at least one portable fire extinguisher with a minimum rating of 2A, 40-B:C provided for each 3000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located that no point in the building is located more than 30 feet, by an unobstructed path of travel, from a portable fire extinguisher.

Woodworking classified as Group H Occupancies shall have at least one portable fire extinguisher with a minimum rating of 4-A, provided for each 1000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located so that no point in the building is located more than 75 feet, by an unobstructed path of travel, from a portable fire extinguisher.

Wood working classified as a hazardous occupancy involving flammable and combustible liquids shall have at least one portable fire extinguisher with a minimum rating of 4-A, 40-B:C provided for each 3000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located that no point in the building is located more than 30 feet, by an unobstructed path of travel, from a portable fire extinguisher.

#### **1.4.3.6 Institutional – Group I Occupancies.**

Institutional occupancies shall be classified as **ordinary hazards**. At least one portable fire extinguisher with a minimum rating of 2-A, 10-B:C shall be provided for each 3000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located that no point in the building is located more than 75 feet, by an unobstructed path of travel, from a portable fire extinguisher.

Institutional maintenance shops and labs using flammable and combustible liquids (not classified as Group H occupancies as per the current Fire Code) shall be classified as **ordinary hazard**. At least one portable fire extinguisher with a minimum rating of 2-A, 20-B:C shall be provided for each 3000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located that no point in the building is located more than 50 feet, by an unobstructed path of travel, from a portable fire extinguisher.

#### **1.4.3.7 Mercantile – Group M Occupancies.**

Mercantile shall be classified as **ordinary hazards**. At least one portable fire extinguisher with a minimum rating of 2-A, 10-B:C shall be provided for each 3000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located that no point in the building is located more than 75 feet, by an unobstructed path of travel, from a portable fire extinguisher.

Group M motor vehicle service stations dispensing fuel shall be classified as **ordinary hazards**. At least two portable fire extinguishers with a minimum rating of 2-A, 10-B:C shall be provided for each 3000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located that no point in the building is located more than 50 feet, by an unobstructed path of travel, from a portable fire extinguisher.

#### 1.4.3.8 Residential – Group R Occupancies.

Group R - Residential occupancies shall be classified as **ordinary hazards**. At least one portable fire extinguisher with a minimum rating of 2-A, 10-B:C shall be provided for each 3000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located that no point in the building is located more than 75 feet, by an unobstructed path of travel, from a portable fire extinguisher.

#### EXCEPTION:

1) R-2 Apartment occupancies shall be provided with at least one portable fire extinguisher. Such extinguisher shall have a gauge showing the charge and a minimum rating of 1-A, 10-B:C. A fire extinguisher shall be provided for and properly placed within each occupied apartment unit. Location and placement of the fire extinguisher shall be placed in accordance with the manufactures guidelines or Section 1.3.8, near the kitchen entryway, accessible and no closer than 5 feet from the cooking appliance. The extinguisher shall be placed so that the top of the extinguisher is not more than five feet above floor and the clearance between the bottom of the extinguisher and the floor is not less than 4 inches. The fire extinguisher may be placed within an unlocked pantry or cabinet. Fire extinguishers shall comply with Section 1.3.1 for annual maintenance and tagging. Fire extinguishers that are not serviceable, such as an extinguisher with a 1A, 10B:C rating, should be visually inspected at least monthly for loss of pressure (as indicated on the extinguisher's gauge) or for other damage to the fire extinguisher that might affect its performance.

2) R-2 Apartment (Garden-Type) properties equipped with automatic fire protection sprinkler systems may also exclude the portable extinguishers with a minimum rating of 2A, 10BC, required above and the extinguisher with a minimum rating of 1A, 10BC, referenced in Exception 1 above.

R-2 Residential occupancy offices, game rooms, physical fitness areas, storage rooms, maintenance shops, boiler rooms, laundry facilities, mail rooms, club houses, commons, and public assembly areas shall be classified as ordinary hazards. At least one portable fire extinguisher with a minimum rating of 2-A, 10-B:C shall be provided for each 3000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located that no point in the room or area is located more than 75 feet, by an unobstructed path of travel, from a portable fire extinguisher.

#### 1.4.3.9 Storage – Group S Occupancies.

High-hazard storage, Group S-1 occupancies considered **extra hazard** occupancies shall have at least one portable fire extinguisher with a minimum rating of 4-A, 40-B:C provided for each 4000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located so that no point in the building is located more than 30 feet, by an unobstructed path of travel, from a portable fire extinguisher. (Includes warehousing of or in-process storage of Class III, IV and high-hazard commodities)

Moderate-hazard storage, Group S-1 occupancies with combustible storage not classified as H occupancy, shall be classified as **ordinary hazards**. At least one portable fire extinguisher with a minimum rating of 2-A, 10-B:C shall be provided for each 3000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located that no point in the building is located more than 75 feet, by an unobstructed path of travel, from a portable fire extinguisher. (Includes warehousing of or in-process storage of Class I and II commodities)

Low-hazard storage, Group S-2 occupancies with noncombustible storage shall be classified as **light hazard**. At least one portable fire extinguisher with a minimum rating of 2-A, 10-B:C shall be provided for each 6000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located that no point in the building is located more than 75 feet, by an unobstructed path of travel, from a portable fire extinguisher. (Includes warehousing of or in-process storage of Class I commodities only when located in Group S-2)

Group S-1 Repair garages (limited to the exchange of parts) shall be classified as **ordinary occupancies**. At least one portable fire extinguisher with a minimum rating of 2-A, 10-B:C shall be provided for each 3000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located that no point in the building is located more than 75 feet, by an unobstructed path of travel, from a portable fire extinguisher.

Group S-2 open parking garages shall be classified as **ordinary hazards**. At least one portable fire extinguisher with a minimum rating of 2-A, 10-B:C shall be provided for each 3000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located that no point in the building is located more than 75 feet, by an unobstructed path of travel, from a portable fire extinguisher.

Group S-1 aircraft hangars (limited to exchange of parts) shall be classified as **ordinary hazards**. At least one portable fire extinguisher with a minimum rating of 2-A, 20-B:C shall be provided for each 3000 square feet of floor space, or fraction thereof. Portable fire extinguishers shall be so located that no point in the building is located more than 50 feet, by an unobstructed path of travel, from a portable fire extinguisher.

## **Section 1.5 --- General area requirements.**

### **1.5.1 Commercial cooking operations.**

A listed Type "K" portable fire extinguisher shall be provided where cooking equipment involves the use of vegetable or animal oils and fats for deep frying. The fire extinguisher shall be installed within 30 feet of commercial food heat-processing equipment, as measured along an unobstructed path of travel.

### **1.5.2 Parade Floats.**

Motorized parade floats and towing apparatus shall be provided with a minimum 2-A, 10-B:C portable fire extinguisher readily accessible to the operator.

### **1.5.3 Asphalt Kettles.**

A minimum 40-B:C-rated portable fire extinguisher shall be located within 25 feet of each asphalt kettle when the heat source is operating. A minimum 40-B:C-rated portable fire extinguisher shall also be located on roofs during asphalt coating operations. Also see Houston Fire Department LSB Standard 11, "Roofing Operations".

### **1.5.4 Powered Industrial Trucks.**

Vehicle fire extinguishers shall be provided for each liquid-fuel or LP-gas powered industrial truck and be of a minimum rating of 10-B:C.

### **1.5.5 Battery Charging.**

Battery-charging areas shall be provided with a fire extinguisher having a minimum rating of 4-A, 20-B:C within 20 feet of the battery charger.

### **1.5.6 Airport-towing vehicles.**

Vehicles used for towing aircraft shall be equipped with at least one listed fire extinguisher having a minimum rating of 20-B:C.

### **1.5.7 Airport-welding apparatus.**

Welding apparatus shall be equipped with at least one listed fire extinguisher having a minimum rating of 2-A, 10-B:C.

### **1.5.8 Airport-aircraft fuel-servicing vehicles ( Aircraft Refuelers).**

Aircraft fuel-servicing vehicles shall be equipped with at least two listed fire extinguishers, each having a minimum rating of 20-B:C. A fire extinguisher shall be readily accessible from either side of the vehicle.

**1.5.9 On hydrant fuel-servicing vehicles. Hydrant fuel-servicing vehicles shall be** equipped with a minimum of one listed portable fire extinguisher complying with Section 906, and having a minimum rating of 20-B:C.

### **1.5.10 Aircraft motor vehicle fuel dispensing stations.**

Portable fire extinguishers at fuel-dispensing stations shall be located such that pumps and dispensers are not more than 75 feet from one such extinguisher. Fire extinguishers shall be provide as followed

When the open-hose discharge capacity of the fueling system is no more than 200 gallons per minute, at least two listed portable fire extinguishers having a minimum rating of 20-B:C shall be provided.

When the open-hose discharge capacity of the fueling system is more than 200 gallons per minute but not over 350 gallons per minute, at least one listed wheeled extinguisher having a minimum rating of 80-B:C and having a capacity of 125 pounds of agent, shall be provided.

When the open-hose discharge capacity of the fueling system is more than 350 gallons per minute, at least two listed wheeled extinguishers, having a minimum rating of 80-B:C each and having a capacity of 125 pounds of agent of each, shall be provided.

### **1.5.11 Heliports.**

At least one fire extinguisher having a minimum 80-B:C rating shall be provided for each permanent take-off and landing area and for aircraft parking areas.

### **1.5.12 Tents.**

Portable fire extinguishers and other fire-protection appliances shall be provided in every tent, canopy, and temporary membrane structure as follows:

200-500 square feet of floor area: One 2-A:10-B:C rated portable fire extinguisher.

501-1000 square feet of floor area: Two 2-A:10-B:C rated portable fire extinguishers.

Each additional 2000 square feet of floor area or fraction thereof: One 2-A:10-B:C rated portable fire extinguisher.

At least one 40-B:C rated portable fire extinguisher shall be provided for each kitchen, mess hall, power generator or transformer and at locations where flammable and combustible liquids are used, stored or dispensed, and as required by the code official.

### **1.5.13 Automobile wrecking yards.**

Offices, storage buildings and vehicles used for site operations shall each be provided with at least one portable fire extinguisher with a rating of not less than 4-A, 40-B:C. When required by the code official, additional portable fire extinguishers shall be required in specific use areas.

### **1.5.14 Magnesium.**

A supply of approved extinguishing materials in a substantial container with a hand scoop or shovel for applying material on magnesium fires or an approved portable fire extinguisher designed for use with such material shall be kept within easy reach of every operator performing a machining, grinding, or other processing operation on magnesium.

### **1.5.15 Cutting and Welding-torch and flame producing devices.**

A minimum 2-A, 20-B:C-rated fire extinguisher or a charged water hose equipped with a nozzle shall be located within 30 feet of the location where hot works is in progress and shall be accessible without climbing stairs or ladders.

### **1.5.16 LP-Gas and Open Flame Cooking.**

For compliance see Houston Fire Department LSB Standard 10, "LP-Gas Storage and Use".

## APPENDIX – A

### CLASSIFICATION OF HAZARDS

#### **Light Hazard.**

Light hazard occupancies are locations where the total amounts of Class A combustible materials, including furnishings, decorations, and contents, is of minor quantity. This classification anticipates that the majority of content items are either noncombustible or so arranged that a fire is not likely to spread rapidly. Small amounts of Class B flammables used for duplicating machines, art departments, etc., are included provided that they are kept in closed containers and safely stored.

#### **Ordinary Hazard.**

Ordinary hazard occupancies are locations where the total amount of Class A combustibles and Class B flammables are present in greater amounts than expected under light hazard occupancies. These occupancies could consist of dining areas, mercantile shops and allied storage, light manufacturing, research operations, auto showrooms, parking garages, workshop or support service areas of light hazard occupancies, and warehouses containing Class I or Class II commodities as defined by NFPA 231, "Standard for General Storage".

#### **High hazard.**

High hazard occupancies are locations where the total amount of Class A combustible and Class B flammables present, in storage, production use, and/or finished product is over and above those expected and classed as ordinary hazards. These occupancies could consist of woodworking, vehicle repair, aircraft repair and boat servicing, cooking areas, individual product display showrooms, product convention center displays, and storage and manufacturing processes such as painting, dipping, coating, including flammable liquid handling. Also included is warehousing of or in-process storage of other Class I and Class II commodities.

## APPENDIX – B

### Class A Rated Fire Hazards

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<b>Light Hazard Occupancy</b>	<b>Ordinary Hazard Occupancy</b>	<b>High Occupancy</b>	<b>Hazard</b>
Minimum rated Single Extinguisher	2-A <sup>c</sup>	2-A	4-A <sup>a</sup>
Maximum floor Area per Unit of A	3000 sq. ft.	1500 sq. ft.	1000 sq. ft.
Maximum floor Area for Extinguisher <sup>b</sup>	11,250 sq. ft.	11,250 sq. ft.	11,250 sq. ft.
Maximum travel Distance to Extinguisher	75 ft.	75 ft.	75 ft.

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a. Two 2 ½ gallon (9.46-L) water-type extinguishers can be used to fulfill the requirements of one 4-A rated extinguisher.

b. Refer to NFPA 10, Appendix E-3-3 for more details concerning maximum floor area criteria.

c. Two water-type extinguishers each with a 1-A rating shall be deemed the equivalent of one 2-A extinguisher for Light (Low) Hazard Occupancies, only where there are ordinary combustible materials and no electrical hazards exist.

## APPENDIX - C

### Class B Rated ( Flammable and Combustible Liquids) Fire Hazards

Type of Hazard	Basic Minimum Extinguisher Rating	Maximum Travel Distance to Extinguishers (feet)
Light (Low)	5-B	30
	10-B	50
Ordinary (Moderate)	10-B	30
	20-B	50
Extra (High)	40-B	30
	80-B	50

NOTE 1: The specified ratings do not imply that fires of magnitudes indicated by these ratings will occur, but rather to give the operators more time and agent to handle difficult spill fires that occur.

NOTE 2: For requirements on water-soluble flammable liquid and alternative sizing criteria, refer to NFPA 10, Sections 3-3 and 3-4.

## References

1. City of Houston *Fire Code*, International Fire Code, 2006 edition, as amended.
2. City of Houston *Building Code*, International Building Code, 2006 edition, as amended.
3. National Fire Protection Association (NFPA) Standard 10, "Portable Fire Extinguishers".
4. HFD LSB Standard 02, "Inspection and Testing of Fire Protection and Life-safety Equipment".
5. HFD LSB Standard 10, "LP-Gas Storage and Use".
6. HFD LSB Standard 11, "Roofing Operations".

**HOUSTON FIRE DEPARTMENT  
LIFE SAFETY BUREAU (LSB)**

**LSB STANDARD 02, REV 03**

**INSPECTION AND TESTING OF FIRE PROTECTION AND LIFE-SAFETY EQUIPMENT**

**SUPERSEDES: LSB Standard 02, Rev 02, dated 12/31/2010**

**Note: A vertical line in the left-hand margin delineates changes from the previous version.**

**Effective: May 13, 2011**



**Approved:**

Richard W. Galvan, Fire Marshal

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**LIFE SAFETY BUREAU (LSB) STANDARDS ARE ESTABLISHED IN ACCORDANCE WITH PROVISIONS OF THE CITY OF HOUSTON FIRE CODE. THEY ARE SUBJECT TO THE ADMINISTRATIVE SECTIONS COVERING – ALTERNATIVE MATERIALS AND METHODS, MODIFICATIONS, AND BOARD OF APPEALS.**

**LSB STANDARD 02, Rev 03  
INSPECTION AND TESTING OF FIRE PROTECTION  
AND LIFE-SAFETY EQUIPMENT**

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**LSB STANDARD 02, Rev 03**  
**INSPECTION AND TESTING OF FIRE PROTECTION**  
**AND LIFE-SAFETY EQUIPMENT**

**SECTION 2.1 --- GENERAL**

**2.1.1 Scope**

Fire protection and life-safety equipment and systems shall be inspected, tested and maintained in all occupancies and locations where required or installed, as set forth in the City of Houston *Fire Code*, and as may be required by the Fire Marshal.

The provisions of this standard apply to the inspection, maintenance, and testing of both fire protection and life-safety systems and equipment. The requirements presented in this standard are to be considered as a **minimum**.

**2.1.2 Purpose**

This standard is for the use and guidance of persons charged with installing, servicing, and maintaining fire protection and life safety equipment in a state of operational readiness and reliability. The fire protection and life-safety requirements of this standard are general in nature and are not intended to override the specific requirements of manufacturers, other City of Houston, state or federal regulatory agencies standards for specific occupancies. Where there is a conflict between a general requirement of this standard and a specific requirement of a nationally recognized standard that has been adopted in the *Fire Code*, the adopted standard shall apply.

This standard is subject to periodic review and updates, to accommodate changes in local need or requirement, or change in nationally recognized standards, in related technology, or where required by state or federal regulation.

**2.1.3 Responsibility**

It shall be the responsibility of the owner or owner's agent of occupancies that contain fire protection and life-safety equipment and systems, to have such inspected, tested and maintained. It shall be the owner or occupant's responsibility to provide ready accessibility to components of the fire protection and life-safety equipment and systems that require inspection, testing and maintenance in accordance with this Standard.

**SECTION 2.2 --- DEFINITIONS**

**2.2.1 Fire Protection equipment and systems.**

Specially designed equipment, which either alone or as a system, provided to assist in the extinguishment of fire, and to limit the spread of fire and smoke, either by automatic, semi-automatic or manual means. This includes, but is not limited to: portable fire extinguishers; fire hoses; fire pumps; wet and dry standpipe systems; automatic sprinkler systems; clean agent fire extinguishing systems and other special extinguishing systems; fire doors and dampers; and other fire-protection systems and appurtenances.

Specially designed equipment that either alone or as a system, provided to assist in the preservation of human life in exiting from an emergency event, or to assist in the location, confinement and successful conclusion of an event, either through automatic, semi-automatic or manual means. This includes, but is not limited to: fire alarm systems; stairway pressurization and smoke-removal systems; smoke and heat ventilators; and emergency power supply and lighting systems.

### **2.2.3 Inspection**

A “quick check” that a fire protection or life-safety system is available and will operate. It is intended to give reasonable assurance that the equipment will be operable in the proper manner that it was designed or installed for. This is done by seeing that it is in its designated place, that it has not been removed or tampered with, and that there is no obvious physical damage or condition to prevent its operation.

### **2.2.4 Maintenance**

A thorough examination of the fire protection or life-safety system’s equipment. It is intended to give maximum assurance that the equipment will operate effectively and safely. It includes a thorough examination and any necessary repair or replacement. It will normally reveal if other testing, repair or modification is required.

### **2.2.5 Servicing**

Includes one or more of the following: (1) maintenance, (2) repair, and (3) routine on-site testing.

### **2.2.6 Service Tags**

Tags, either hang-type tags or adhesive stickers, approved for such use by State of Texas Fire Marshal’s Office, shall be affixed to fire protection and life-safety equipment or systems in such a position as to permit convenient inspection and not hamper its actuation or operation. The tag/sticker shall provide date service performed; name & State issued Certificate of registration number of the service/inspection company; the name, license number and signature of the person who performed the service/inspection,; if not in proper operational condition, list the emergency impairment or impairments NOT IN COMPLIANCE with NFPA Standards.

## **SECTION 2.3 ----- GENERAL REQUIREMENTS**

### **2.3.1 Servicing, testing, and maintenance**

Qualified personnel approved by the Fire Marshal shall conduct all servicing, testing, repair, maintenance and tagging of fire protection and life-safety equipment. Approved automatic fire sprinkler, fire alarm and fire extinguisher service companies are those licensed by the State of Texas. Personnel not licensed, certified, or approved by City of Houston or State of Texas, may be required to provide documentation of licensing or certification by similar approved agencies or authorities, or identification as manufacturer's representative or authorized service personnel. All reference to the servicing, testing or maintenance of equipment that involves live electrical circuits, currents or equipment, shall be done in compliance with the City of Houston *Electrical Code*.

### **2.3.2 Tags and labels**

After any service, a service tag must be completed in detail, indicating all work that has been done, and then attached to the portable or fixed system in such a position as to permit convenient inspection and not hamper its actuation or operation. The signature of the licensee on the service tag certifies that the service performed complies with requirements of law. A new service tag, yellow tag or red tag, as applicable, must be attached each time service is performed.

#### **2.3.2.1 Red Tags**

If impairments are found which make a portable extinguisher or fixed system unsafe or inoperable, the owner or his representative must be notified in writing of all impairments. The registered firm shall notify the owner or his representative immediately and must also notify the Fire Marshal's Office within 24 hours by phone, fax, or e-mail describing the impairments or deficiencies. A copy of the written notice to the owner shall be submitted to the Fire Marshal's Office within 3 business days.

A completed red tag must be attached to indicate that corrective action or replacement is necessary. The signature of the licensee on the tag certifies that the impairments listed indicate that the equipment is unsafe or inoperable. A service tag must not be attached until the impairments have been corrected or the portable extinguisher or fixed system replaced and the extinguisher or fire extinguisher system reinspected and found to be in good operating condition.

Red tags must be the same size as service tags. A red tag may be removed only by an authorized employee of a registered firm who has corrected the impairments and certified the service, an employee of the state fire marshal's office, or the Houston Fire Marshal's Office.

#### **2.3.2.2 Yellow Tags**

After any service of a pre-engineered fixed fire extinguishing system installed in accordance with NFPA 17, NFPA 17A or NFPA 96 of the adopted standards for the protection of commercial cooking areas, if it is determined that the system is not in compliance with the minimum requirements of Underwriters Laboratories, Inc., Standard 300, "Fire Testing of Fire Extinguishing Systems for Protection of Restaurant Cooking Area" (UL 300), a yellow tag must be completed in detail indicating all work that has been done, and then attached to the system in such a position as to permit convenient inspection and to not hamper its actuation or operation. The owner or the owner's representative must be notified in writing that the system does not comply with UL Standard 300 and that the system may not extinguish a typical fire, that a red tag shall be attached to the system after January 1, 2008, and that the owner should consider replacing or upgrading the system before that time. A copy of the written notice to the owner shall be postmarked, e-mailed, faxed, or hand delivered to the Fire Marshal's Office within 5 business days.

The signature of the licensee on the tag certifies that the service performed complies with requirements of law.

The yellow tag shall be attached instead of a service tag. Yellow tags must be yellow in color. A yellow tag may be removed only by an authorized employee of a registered firm who has corrected the impairments and certified the service, an employee of the state fire marshal's office, or the Houston Fire Marshal's Office.

### **2.3.3 New Installation**

After an installation has been completed, an installation label must be affixed to the control head or panel of the fixed fire extinguisher system and an installation certificate form shall be sent to the state fire marshal's office. The signature of the licensee on the label certifies that the system has been installed according to law. Labels shall be five inches in height and four inches in width and shall be of the gum label type. They shall not be red in color.

### **2.3.4 Upgrade of equipment**

All fire protection and life-safety equipment shall be maintained in accordance with requirements of the manufacturer, and local, state, federal or nationally recognized standards in effect at the time of original installation and acceptance, unless otherwise required by the *Fire Code*, *Construction Codes* or *City Ordinance*, or by the Fire Marshal or other regulatory agencies.

### **2.3.5 Inspection and maintenance records**

All logs or records of inspection, testing, maintenance and major repairs of fire protection and life-safety equipment and systems shall be maintained on file for not less than **3 years**, and made available to fire department upon request.

Logs or records of inspection and testing for equipment or systems that are allowed to be completed on cycles longer than every 3 years, shall be maintained on file until completion of the next inspection and testing cycle and the appropriate tags or documentation provided. It is recommended that these logs or records be maintained for several cycles to establish a history of equipment or systems maintenance and repairs.

### **2.3.6 Notification of systems out of service**

Houston Fire Department Office of Emergency Communications shall be immediately notified by telephone, at **713-884-3143**, whenever a required fire protection or life-safety system is placed out of service for emergency or non-scheduled repairs, replacement, or service. The Fire Department shall again be notified when the system is restored to normal operational status.

The Fire Marshal's Office shall be notified, in writing, by e-mail or fax, not less than **7 business days** prior to any lengthy routine or scheduled repairs, or replacement time period. Notification shall be prior to, when possible, placing the system out of service. Certification and documentation of repairs and operational readiness of the system shall be provided to the Fire Marshal upon request. No fire protection or life-safety equipment or system prescribed by the *Fire Code* or *Construction Codes* shall be placed permanently out of service unless prior written approval is obtained from the Fire Marshal.

## SECTION 2.4 ----- LIFE-SAFETY SYSTEMS

### 2.4.1 Fire Alarm Systems

#### 2.4.1.1 General

Fire alarm systems shall be tested, and service tagged at the main alarm panel, not less than **annually**. Testing shall include all smoke detectors, manual pull devices, annunciators, visual indicators and strobes, control units, voice/alarm communications systems and other devices that may be part of the fire alarm system.

**Exceptions:** 1. Heat and flame detection devices shall be tested in accordance with manufacturer's guidelines.

2. Hazardous vapors release detection alarm systems shall be tested in accordance with manufacturer's guidelines.

3. Where an approved electronic exit egress locking device is installed on an exit egress door, in accordance with the *Construction Codes*, the fire alarm system, relay devices to locking device and at the door shall be tested at least **semi-annually** to ensure fail-safe operation of the relay and locking device.

#### 2.4.1.2 Test of systems

A licensed fire alarm service company shall test the fire alarm system. Testing and maintenance shall be in accordance with NFPA 72. Test of the system shall include operation of all auxiliary functions of the alarm system including, but not limited to: electronic exit egress control devices, automatic fire and smoke door closing, fire and smoke damper function, elevator recall, stair pressurization operation and HVAC shutdown. Written documentation shall be provided that all equipment functioned in accordance with NFPA 72 or in an approved fail-safe mode.

#### 2.4.1.3 Audibility testing

A licensed fire alarm service company shall do test of all of the fire alarm system annunciator devices not less than **every 3 years**. Written documentation shall be provided that audibility meets requirements as set forth in NFPA 72.

### 2.4.2 Emergency Lighting Systems

#### 2.4.2.1 General

Provide for the testing of emergency lighting systems that are part of an approved exit system and shall include, but is not limited to: lighted exit signs, stairway lighting, and egress lighting, where required both inside and outside of a building or structure.

#### 2.4.2.2 Generator systems

'Run Check' of the generator unit shall be performed at least **monthly**, for a period of at least **30 minutes**, under load conditions. System shall be checked for proper fuel, oil and coolant levels prior to starting test. Authorized building or contract personnel may perform 'Run Checks' and maintenance. All testing should be done in accordance with

manufacturer's recommendations and instruction manuals and NFPA 110. A written record of monthly test shall be maintained.

#### **2.4.2.3 Battery systems.**

Battery units shall be inspected **quarterly**. Authorized building or contract personnel may perform inspections, using procedures in accordance with manufacturer's guidelines, *Electrical Code* and NFPA 110. A written record of inspections shall be maintained.

#### **2.4.2.4 Test of systems**

An approved licensed master electrician or licensed electrical service company shall test all emergency lighting systems annually. The battery units, whether of the acid or alkali type, shall be tested continuously for a minimum of **90 minutes**. Generator units shall be tested in accordance with Section 2.4.3.2 of this standard. Any failures shall be repaired or replaced as soon as possible. Written documentation of testing and results, and repairs/replacements, shall be provided on all equipment.

### **2.4.3 Emergency Power Supply Systems (EPSS)**

#### **2.4.3.1 General**

Provide for the testing of required emergency power supply systems. EPSS shall be maintained to ensue to a reasonable degree that the system is capable of supplying service within the time specified for the type and for the time duration specified for its class. These systems provide emergency power for continuous operation of, but are not limited to: exit egress lighting systems, fire detection and alarm systems, public safety communications systems, fire pumps, stair pressurization and smoke removal systems, designated elevators, and associated electrical transfer switch gear.

#### **2.4.3.2 Engine driven generator systems**

An authorized generator service company shall conduct an **annual 'Load Test'** with the available EPSS load and supplemental loads at **25 percent** of nameplate rating for **30 minutes**, followed by **50 percent** of nameplate rating for **30 minutes**, followed by **75 percent** of nameplate rating for **60 minutes** for a **total of 2 continuous hours**. Load test shall include complete "cold starts".

Elevator recall and firefighter control operations shall be checked, but need not be continuous for the test period. Fire pump starting loads shall be checked, but pumps need not run continuously for the test period.

Where the EPSS is a paralleled multi-unit system, each unit shall be permitted to be tested individually at its rating.

Routine monthly testing and maintenance shall be performed in accordance with manufacturer's guidelines and NFPA 110.

#### **2.4.3.3 Automatic Transfer Switch test.**

A test shall be provided on each automatic transfer switch that simulates failure of the primary electrical power source and the transfer of the load to the EPSS. An approved independent licensed master electrician or licensed electrical service company shall check proper operation of all automatic transfer switches and required devices on

emergency circuit(s). Written documentation of test results shall be provided, including any repairs required and not completed.

#### **2.4.3.4 Manual operation of Transfer Switch**

Instruction and equipment shall be provided for safe manual non-electric transfer in event of automatic transfer switch malfunction. Manual transfer shall be exercised only by properly instructed personnel and in accordance with the *Electrical Code* and NFPA 110.

#### **2.4.3.5 Lead-acid battery systems**

An approved independent licensed master electrician or licensed electrical service company qualified to test lead-acid battery systems shall perform an **annual 'Load Test'** of the complete EPSS. Load test shall be performed for a continuous period of not less than **90 minutes** or the documented time period recommended by the system's manufacturer. All required switches and equipment on the emergency circuit(s) should be operational for the duration of the test.

### **2.4.4 Smoke Control Systems**

#### **2.4.4.1 Test of systems**

Smoke control systems (Stair pressurization and smoke removal systems) shall be inspected, and tested not less than **every 5 years**, in accordance with City of Houston *Construction Codes* specifications in effect at time of system's installation and acceptance. Operational testing shall include all equipment such as initiating devices, fans, controls, doors and windows. System shall also be tested under standby power conditions. An approved licensed mechanical or HVAC contractor shall perform and document the test. (See Appendix B, Table 4-1)

#### **2.4.4.2 Test of automatic fans and dampers**

Operational test of all automatic fans and dampers connected to building fire alarm system shall be tested **annually**, in conjunction with fire alarm system tests. Results shall be included with the fire alarm system inspection and test reports.

## **SECTION 2.5 ---- WATER BASED FIRE PROTECTION SYSTEMS**

### **2.5.1 Automatic Wet-Pipe Sprinkler Systems**

#### **2.5.1.1 Routine inspection**

Approved contract personnel or building personnel, fully trained to perform such inspections or checks, may perform routine **monthly** and **quarterly** visual inspections and equipment checks in accordance with NFPA 25. A written record of **monthly** and **quarterly** inspections of system components shall be maintained.

#### **2.5.1.2 Test of systems**

All automatic wet-pipe sprinkler systems shall be inspected and tested **annually** in accordance with NFPA 25 and state requirements, and service tagged by a licensed automatic fire sprinkler service company.

Special attention shall be given to the complete exercising of each control valve through its full range, and return to its normal position, to check for valve seizure, broken stems, leakage or other conditions that might impair proper operation of the valves. Reset and relocked as appropriate. Documentation of annual testing results and repairs of control valves shall be maintained and provided to the Fire Marshal upon request.

## **2.5.2 Automatic Dry-Pipe Sprinkler Systems**

### **2.5.2.1 Routine inspection**

Contract personnel or approved building personnel, fully trained to perform such inspections or checks, may perform routine visual inspections and equipment checks in accordance with NFPA 25. A written record of **quarterly** inspections of system components shall be maintained.

### **2.5.2.2 Test of systems**

All automatic dry-pipe sprinkler systems shall be inspected and tested **annually** in accordance with NFPA 25 and state requirements, and service tagged by a licensed automatic fire sprinkler service company.

Special attention shall be given to the complete exercising of each control valve through its full range, and return to its normal position, to check for valve seizure, broken stems, leakage or other conditions that might impair proper operation of the valves. Reset and relocked as appropriate. Documentation of annual testing results and repairs of control valves shall be maintained and provided to the Fire Marshal upon request.

### **2.5.2.3 Trip Tests**

'Trip Test' of all dry-pipe valves shall be performed in accordance with NFPA 25.

1. **Partial 'Trip Test'** - shall be performed **annually**.
2. **Full 'Trip Test'** - shall be conducted at least **every 3 years**.

## **2.5.3 Standpipe Systems**

### **2.5.3.1 General**

Provide for the inspection, testing, and service tagging of wet and dry standpipe systems, hose connections pressure reducing valves and hose connection pressure reducing devices.

### **2.5.3.2 Wet Standpipe system**

Standpipe systems that contain water in the piping at all times. A flow test shall be conducted for each zone of the standpipe system **every 5 years**. An approved service company shall conduct flow tests with required volume of water at the system's design pressure and provide required service tagging of the system at the main control valves and risers. Testing shall be conducted in accordance with NFPA 25.

### **2.5.3.3 Dry Standpipe system**

Standpipe systems that do not normally contain water in the piping and have to be supplied with water from an outside source. An approved service company performing such testing shall conduct hydrostatic test on the standpipe system **every 5 years**. System shall be tested with a pressure of not less than 200 psig for 2 hours or at 50

psig over the maximum designed working pressure of the system. Required service tagging of the system at the main control valves and risers shall be provided. Testing shall be conducted in accordance with NFPA 25. The 5-year system test requirement shall include wet standpipes system drained to prevent freeze damage in buildings or structures that are not being occupied.

#### **2.5.3.4 Hose Connection Valves**

Each hose connection valve completely exercised through its full range and return to its normal position at least **every 5 years**, to check for valve seizure, broken stems, leakage or other conditions that might impair proper operation of the valves. Valves that are not pressure regulated and have water pressure at greater than 150 psig, shall have approved signs on or adjacent to the valves identifying them as **HIGH PRESSURE** valves. Testing shall be conducted in accordance with NFPA 25. Documentation of testing results and repairs of hose valves shall be maintained and provided to the Fire Marshal upon request.

**Exception:** Pressure Reducing Devices and Pressure Regulating Valves in accordance with this Standard.

#### **2.5.3.5 Hose Connection Pressure Regulating Valves**

Flow tests and service tagging shall be conducted by an approved service company on all hose connection pressure regulating valves (PRV) **every 5 years**, and shall be in accordance with the manufacturer's guidelines and NFPA 25. Flow pressures should be maintained according to the Building Code in affect during construction.

**Exception:** In buildings that are 100 percent sprinkled, test **10 percent** of all valves on the system **annually**; if any failures, all remaining untested valves on system shall be tested. A written record shall be maintained on which devices have been tested and approved.

Special attention shall be given to the complete exercising of each PRV through its full range, and return to its normal position, to check for valve seizure, broken stems, leakage or other conditions that might impair proper operation of the valves. Reset and relocked as appropriate.

#### **2.5.3.6 Hose Connection Pressure Reducing Devices**

Hose connections valves and hose rack assembly pressure valves having pressure reducing devices (PRD), such as washer-type flow restrictors, shall be inspected **annually** by an approved service company to verify that the devices are in place. This inspection may be in conjunction with annual fire hose servicing and tagging. Flow tests shall be conducted **every 5 years** to verify correct flow and pressures are provided **at each valve**. Testing shall be conducted in accordance with NFPA 25.

#### **2.5.3.7 Hose Rack Assembly Pressure Regulating Valves**

Flow tests and service tagging shall be conducted by an approved service company on all hose rack assembly pressure-regulating valves (PRV) **every 5 years**, and shall be in accordance with the manufacturer's guidelines and NFPA. 25.

Special attention shall be given to the complete exercising of each hose rack PRV through its full range, and return to its normal position, to check for valve seizure, broken steams, leakage or other conditions that might impair proper operation of the valves. Reset and relocked as appropriate.

## 2.5.4 Fire Department Connections

### 2.5.4.1 Inspection

Fire department connections (FDC) shall be inspected **quarterly** by building personnel in accordance with this standard and NFPA 25. Inspections should check for: missing protective caps or covers, damaged hose couplings, couplings not operating freely, missing or deteriorated coupling thread gaskets, the presence of foreign material that might interfere with operation of system, water in the piping that could indicate possible check valve leaks, and missing standpipe or sprinkler connection identification signs. A written record of all quarterly inspections should be maintained.

### 2.5.4.2 Tests

A licensed service company shall conduct hydrostatic and flow tests of all fire department connections, piping and check valve assemblies, not less than **every 5 years** (Testing shall be conducted in conjunction with the standpipe system 5-year test). In accordance with this standard, private fire main piping system from the FDC up to the sprinkler system riser control valves, shall be hydrostatically tested with a pressure of not less than 200 psig for two hours, or at 50 psig over maximum designed working pressure of the system. Where FDC's serve a standpipe system **ONLY**, testing shall be conducted in accordance with the requirements for standpipe systems as set forth in Section 2.5.3 of this standard.

### 2.5.4.3 Signs

Approved signs of weather-resistant materials, with not less than one inch high legible block lettering on a highly contrasting background, shall be placed on or immediately adjacent to all fire department connections and provide the following information:

1. Type of system – STANDPIPE, SPRINKLER, STANDPIPE / SPRINKLER, DRY PIPE SPRINKLER, etc.
2. Which building or structure, or what portion, zone, and floors of the building or structure the FDC serve.
  - i. Ex: Floors B1 – 12; Levels 1 – 8; High Zone Flr 21 – 40; etc.
3. On standpipe and combination standpipe/sprinkler systems - whether there are pressure regulating valves (PRV) or pressure reducing devices (PRD) on the system. System pressures shall also be indicated on all wet standpipe and combination standpipe/sprinkler systems.

Examples: NO PRV/PRD (System Pres. 100 PSI)  
PRD Levels 1 – 7 (System Pres. 150 PSI)  
PRV Floors 1 – 10 (System Pres. 175 PSI)

## 2.5.5 Fire Pumps

### 2.5.5.1 Diesel engine driven pumps

Operating test of diesel engine driven fire pumps shall be conducted **weekly** without water flowing. This test shall be conducted by allowing automatic starting of the pump to occur, and the pump shall be run a minimum of **30 minutes**. Run test may be performed by authorized building or contract personnel and shall be in accordance with the manufacturer's guidelines and NFPA 25. A written record of all weekly tests shall be maintained.

### 2.5.5.2 Electrically driven pumps

Operating test of electrical motor driven fire pumps shall be conducted **weekly** without water flowing. This test shall be conducted by allowing automatic starting of the pump to occur, and the pump shall run a minimum of **10 minutes**. This test may be performed by authorized building or contract personnel and shall be in accordance with the manufacturer's guidelines and NFPA 25. A written record of all weekly tests shall be maintained.

### 2.5.5.3 Fire Pump tests

A flow test at pressure shall be conducted on fire pumps **annually**, recording churn, pump rated flow and 150 percent rated flow. Flow tests shall be performed by an approved service company in accordance with manufacturer's guidelines and NFPA 25, and service tags shall be provided in accordance with this standard. Fire pumps not meeting pump nameplate data shall be reported to the property management and facility owner.

## 2.5.6 Water Supplies

### 2.5.6.1 Gravity tanks

Periodic inspections by approved building personnel should be conducted in accordance with NFPA 25. A written record of inspections should be maintained.

An approved service company shall flow test gravity tank and piping systems, and perform an interior inspection at least **every 5 years**, in accordance with NFPA 25, and provide a written report of the inspection findings.

### 2.5.6.2 Water storage tanks

Periodic inspections by approved building personnel should be conducted in accordance with NFPA 25. The tank shall be maintained full or at the designed water level. Sediment shall be drained or flushed from the tank **semiannually**.

An approved service company shall flow test water tanks and piping systems, and perform an interior inspection at least **every 5 years**, in accordance with NFPA 25, and provide a written report of the inspection findings.

**Exception:** Pressure tanks shall have interior inspection performed at least **every 3 years**.

Suction inlets and piping supplied from surface or subsurface sources, other than approved gravity and water supply tanks, should be inspected periodically by authorized

building or contract personnel, to insure that inlet screens and piping are not obstructed or restricted so as to reduce required fire flows.

### **2.5.6.3 Private Fire Hydrants**

Private dry barrel and wet barrel fire hydrants, and wall hydrants, installed for fire department use shall be inspected and flow tested by an approved service company **annually**. Testing shall be conducted in accordance with NFPA 25, and a written report of the test findings and deficiencies shall be provided.

## **SECTION 2.6 ---- STANDPIPE FIRE HOSE**

### **2.6.1 Hose inspection**

Standpipe hose shall be inspected and service tagged **annually** by a licensed service company. Hoses shall be removed from their racks or reels, hose gaskets inspected - for presence, tight fit and lack of deterioration, hose connection valves checked – for thread damage, operating handle presence or damage, and the hoses re-racked, in accordance with NFPA 1962.

### **2.6.2 Pressure testing**

A licensed service company shall pressure test standpipe hose not less than **every 3 years**, in accordance with manufacturer's guidelines and NFPA Standard No. 1962.

**Exceptions:** 1. New hose shall be pressure tested after the 5<sup>th</sup> year of installation, then every 3 years thereafter.

2. Unlined fire hose shall be replaced with an approved lined fire hose when pressure testing is required.

## **SECTION 2.7 ---- FIRE/SMOKE DOORS AND DAMPERS**

### **2.7.1 Inspection of listed fire doors, smoke partition doors, fire shutters, fire windows and horizontal sliding fire/smoke doors**

Fire doors, smoke partition doors, fire shutters, fire windows, and horizontal sliding fire/smoke doors shall be inspected at least **quarterly**. Inspections should include the following:

1. Guides and bearing should be well lubricated.
2. Doors normally held open by automatic closing devices shall be operated to assure their proper operation. Closing devices and coordinators shall be adjusted to assure that the doors close and latch properly. (Smoke control doors are generally not required to latch). All power operated horizontal sliding fire/smoke doors shall be cycled fully with all door devices tested to ensure proper operation.
3. Tinclad and Kalamein doors should be inspected for dry rot.
4. Chains and cables shall be regularly inspected for excessive wear and stretching. Track guides shall be checked for obstruction, distortion or damage. Ropes, other non-approved chain, or cable replacements shall not be installed or used on fire doors.

5. Fusible links shall be checked for paint or other non-approved coating materials. Replace any painted or coated links.
6. Door rollers shall be checked for paint, dirt or grime buildup. Remove paint or buildup as necessary to assure that rollers will not bind.
7. Doors shall be checked for holes, modifications or other damage that would violate their listing or fire rating.
8. Doors, windows or shutters shall be checked to see that they are free of any obstruction that could interfere with proper operations.

Inspections may be performed by authorized building or contract personnel and shall be in accordance with the manufacturer's guidelines and NFPA 80. A written record of all inspections shall be maintained.

### **2.7.2 Fire door testing**

At least **annually** all sliding and rolling fire doors, shutters and windows shall be allowed to close completely to check operations of the guides and rollers, and to make sure the doors have adequate clearance to close completely. Chains and cables should be adjusted as needed. An approved service company shall perform any required repairs of fire doors or assemblies. A written record of all inspections and repairs shall be maintained. Horizontal sliding doors that are power operated and permitted as components of means of egress, shall have their integral standby supply inspected and tested at least **annually** using manufacturer's guidelines.

### **2.7.3 Fire and smoke damper inspections**

Each fire and smoke damper assembly in mechanical, electrical or air handler rooms and spaces, in firewalls or rated occupancy separation walls, or in floors, or part of a smoke evacuation system, shall be visually inspected at least **annually** to verify that their operations are not obstructed or impaired. Authorized building or contract personnel may perform visual inspections. A written record of inspections shall be maintained. Any dampers that are not accessible for inspection shall be noted in the inspection report.

### **2.7.4 Damper testing**

An approved HVAC company shall conduct a full-function test and maintenance on all fire dampers at least **every 4 years**. All testing and maintenance shall be conducted in accordance with this standard, manufacture's guidelines and NFPA 90A and 92A. Testing shall include removal of fusible links (where applicable) to check that damper vanes, blades or shutters fully close and that latch mechanism (if provided) operate properly. Dampers should (where possible) be operated with normal system airflow to ensure that they close and are not held open by the airstreams.

**Exceptions:** 1. Electrical and/or pneumatic operated fire smoke dampers shall be maintained, cycled and tested not less than **every 6 months**.

2. Ceiling (Radiation) dampers. (See Section 2.7.5)

### **2.7.5 Ceiling (Radiation) dampers**

Where large numbers of ceiling (radiation) dampers have been installed as integral part of a fire rated ceiling assembly, a minimum of **10 percent** of the total number of

dampers per floor in multi-story, or per fire zone in single story occupancies, shall be performed **annually**. If any of the dampers tested fail, then all remaining dampers on that floor or fire area shall be tested that cycle. Testing shall be performed by approved HVAC company. Documentation of test results shall be maintained, including identification of which dampers have been tested in each cycle.

## **SECTION 2.8 ---- PORTABLE FIRE EXTINGUISHERS**

### **2.8.1 Installation**

Portable fire extinguishers shall be provided and installed in accordance with LSB Standard 01, 'Installation and Maintenance of Portable Fire Extinguishers', and NFPA 10, 'Portable Fire Extinguishers'.

### **2.8.2 Fire Extinguisher Inspections**

Fire extinguishers shall be inspected and service tagged **annually** by a licensed fire protection equipment service company, or by facility personnel where approved by the Fire Marshal. Inspection and tagging of fire extinguishers shall be in accordance with the manufacturer's guidelines and NFPA 10, 'Portable Fire Extinguishers'.

**Exception:** Where Occupancy Group-R 'Garden-style' apartment units are provided with a 1-A, 10-B:C fire extinguisher in accordance with LSB Standard 01, the fire extinguishers in each unit need not be inspected nor tagged by a service company. These fire extinguishers should be periodically checked by the tenant to see that the gauge on the fire extinguisher shows it to be charged. Any tenant unit fire extinguisher that shows a loss of pressure should be returned to property management and exchanged for one that indicates proper pressures.

### **2.8.3 Hydrostatic Testing**

Fire extinguishers shall have hydrostatic tests in accordance with the manufacturer's guidelines and NFPA 10, 'Portable Fire Extinguishers'. (See Appendix B, Table 8-1)

## **SECTION 2.9 ---- SPECIAL FIRE SUPPRESSION SYSTEMS**

### **2.9.1 Commercial kitchen hood systems**

All vent hood fire suppression systems installed in commercial kitchens shall be inspected and service tagged not less than **every 6 months**, and after any activation of the system, by an approved fire protection equipment company. Inspections shall be in accordance with manufacturer's guidelines and NFPA 17 and 17A. Effective January 01, 2008, per State regulation, all commercial kitchen hood fire protection systems must meet UL 300 standards.

Additionally, all commercial kitchen vent hoods, exhaust ducts, exhaust fans and appurtenances shall be cleaned and inspected by approved personnel and in accordance with manufacturer's guideline, as often as necessary to insure against excess grease accumulations.

### **2.9.2 Class 'K' portable fire extinguishers**

**Class 'K'** portable fire extinguishers, installed for use in the protection of cooking areas

within commercial kitchens, shall be inspected, tested, service tagged **annually** and maintained in accordance with manufacturer's guidelines and NFPA 10 and 17.

### **2.9.3 Fixed Dry Chemical extinguishing systems**

Fixed dry chemical extinguishing systems where installed for protection of, but not limited to, the following: dip tanks or process hazards as spray booths, chemical hood systems or laboratory hood systems; shall have an actuating test of the system performed (discharge of the agent is not required) and service tags affixed **every 6 months** by an licensed fire protection equipment service company. Inspections and testing shall be in accordance with manufacturer's guidelines and NFPA 17.

### **2.9.4 Fixed Wet Chemical extinguishing systems**

Fixed wet chemical extinguishing systems where installed for protection of, but not limited to, the following: dip tanks or process hazards as spray booths, chemical hood systems or laboratory hood systems; shall have an actuating test of the system performed (discharge of the agent is not required) and service tags affixed **every 6 months** by a licensed fire protection equipment company. Inspections and testing shall be in accordance with manufacturer's guidelines and NFPA 17A.

### **2.9.5 Water Mist extinguishing systems**

Water Mist extinguishing systems should be inspected and tested and service tags affixed **annually** by an licensed fire protection equipment company, in accordance with manufacturer's guidelines and NFPA 750.

### **2.9.6 Total flooding systems**

Enclosure integrity for total flooding systems shall be verified **annually** by a licensed fire protection equipment company, using approved blower fan pressurization units, to locate and seal any significant air leaks that could cause failure to hold specific agent concentrations levels. Documentation of enclosure integrity testing and results shall be maintained.

#### **2.9.6.1 Carbon Dioxide (CO<sub>2</sub>) extinguishing systems**

Carbon Dioxide (CO<sub>2</sub>) extinguishing systems shall be inspected and tested, and service tags affixed **annually** by an licensed fire protection equipment company, in accordance with manufacturer's guidelines and NFPA 12.

#### **2.9.6.2 Halon 1301 extinguishing systems**

Halon 1301 extinguishing systems shall be inspected and tested, and service tags affixed **semi annually** by a licensed fire protection equipment company, in accordance with manufacturer's guidelines and NFPA 12 A.

#### **2.9.6.3 Clean Agent extinguishing systems**

Clean Agent extinguishing systems shall be inspected and tested, and service tags affixed at least **every 6 months** by an licensed fire protection equipment company, in accordance with manufacturer's guidelines and NFPA 2001.

## APPENDIX A - ADDITIONAL REQUIREMENTS

### SECTION 2.1 ---- NATURAL GAS PIPING LEAKAGE TEST

#### 2.1.1 Where required

All Assembly, Educational, Institutional and Residential R-1, R-2 and R-4, occupancies (as defined in the *Building Code*, current edition, International Building Code as amended) shall have a test of the building's natural gas system(s), to check for leakage, at least **every 5 years**.

**Exceptions:** 1. Facilities where **annual** tests are required by state or other regulatory agencies.

2. Gas tests may be required by the Fire Marshal in **any** occupancy where it is suspected or believed that a gas leak or related hazard exists.

#### 2.1.2 Permits

All gas pressure tests require permitting by the City of Houston *Construction Codes*. 'Gas Test' permits shall be obtained, and gas pressure tests conducted, by a licensed plumber or approved gas equipment Service Company. Copies of the City of Houston 'Gas Test' Permit and final approval form shall be obtained from the plumber or Service Company and maintained on the premises. Permitting and testing information may be obtained from the City of Houston Building Inspection Division, Plumbing Section.

### SECTION 2.2 ---- BOILER INSPECTIONS

#### 2.2.1 Inspections

Inspection of building's boiler systems shall be in accordance with City of Houston and state regulatory agencies as to requirements and frequencies. Approved boiler permits shall be maintained on premises.

#### 2.2.2 Gas system leakage test

Gas supply systems for boilers within any occupancy shall be subject to periodic inspections and tests in accordance with Section 2.1 of this appendix.

### SECTION 2.3 ---- ELEVATOR INSPECTION, PERMITS, KEYS

#### 2.3.1 Inspection and permits

All elevators, man-lifts and hoistway lifts shall be inspected at least **annually**, and maintained in safe operating condition, by approved elevator maintenance companies in accordance with requirements set forth by the City of Houston Public Works & Engineering Department and State regulatory agencies. All elevators equipped with Emergency Fire Service and/or Independent Service shall have such functions tested **monthly**. The monthly elevator inspection reports should certify the proper operation of automatic recall, firefighter control, and elevator car emergency phone or address system. Care should be given to insuring the legibility of lettering on or around the required **RED** bevel ring around each car's firefighter key switch. Firefighter key operation positions for the firefighter key switch shall be correctly indicated on or around

the bevel ring, and verified by operation of elevator in fire service using the firefighter keys provided, in the positions indicated.

Special attention shall be paid to the Elevator Operating Permits, which are required, by City of Houston *Construction Codes*, to be posted in each car or within 10 feet of the elevator Call Buttons. Where an elevator operating permit is not posted or available, then an “elevator upgrade” compliance extension granted by the City of Houston must be provided. A copy of the extension permission letters issued by the City of Houston, and the most current elevator inspection reports shall be made available to the Fire Marshal upon request. Documentation of the monthly elevator testing and the verification of firefighter keys and firefighters key switch operation shall be made available to the Fire Marshal.

Elevator Inspection permit information may be obtained from the City of Houston Public Works & Engineering Department, Building Inspection Division, Elevator Section.

### **2.3.2 Elevator Fire Service Keys/Tools**

Elevator keys and tools for Fire Department emergency use shall be provided, labeled, and maintained at all times in accordance with HFD LSB #6, “Fire Depository Boxes”.

**Exception: “Independent Service”** keys shall not be placed in the Fire Depository Box, but shall be made available for Fire Department use during Medical Emergencies and/or Elevator Entrapment Rescues.

### **2.3.3 “Independent Service” Elevator keys**

“Independent Service” keys shall not be placed in the Fire Depository Box,. In buildings where 24-hour on-site building engineering / security is provided, “Independent Service” keys may be kept readily available for Fire Department use upon request. Buildings without 24-hour on-site building engineering / security shall provide a separate key box near the Fire Depository Box location, with the key box labeled “EMS Elevator Keys”, and secured in an approved manner.

At least 2 “Independent Service” keys shall be available to the Fire Department for elevator entrapment and /or EMS events:

1. Each key will have a 7/8-inch (13 mm) split key ring through it attaching the key to the appropriate Black colored plastic laminate identification tag.
2. If the Independent Service function is located behind a locked elevator car panel, Panel Access keys, with Orange colored plastic laminate identification tags, shall be provided along with the “Independent Service” keys.

### **2.3.4 Elevator Car Numbers posted**

The elevator car number shall be posted conspicuously at the designated recall floor, on the outside wall or upper lobby door jam of each car, no more than two inches below the top of the door frame (header), and in block font not less than **2** inches (50 mm) in height, to facilitate elevator rescue.

### **2.3.5 Elevator Car Motor Mainline Disconnect Switches accessible and labeled**

Each car motor mainline disconnect switch in all building elevator equipment rooms shall be readily accessible and clearly labeled with the corresponding elevator car number.

### **2.3.6 Elevator Motor “Lock-out and Tag-out” equipment**

Lock-out/Tag-out equipment appropriate to all building elevator mainline disconnect switches shall be provided in all building elevator mechanical rooms to lock-out elevator car motor mainline disconnect switches in the event of emergency elevator entrapment rescue operations. The lock-out/tag-out sets shall be readily recognizable, accessible and properly labeled.

- For 1 to 3 elevators provide at least one (1) lock-out/tag-out set;
- For 4 to 6 elevators, a minimum of two (2) lock-out/tag-out sets;
- For 7 or more elevators, at least three (3) lock-out/tag-out sets:

### **2.3.7 Emergency Fire Service Car Door Open/Close features**

Special attention shall be paid where “Emergency Fire service Car Door Open/Close” features are found in a building, the building management should contact the building’s authorized elevator service company to request a copy of the law, A.S.M.E 17.3, as adopted by the State of Texas, documenting that this function is no longer legal, and shall have the “Emergency Fire service Car Door Open/Close” features disconnected, and the switches either removed or covered over.

## **SECTION 2.4 ---- FIRE ESCAPE STAIRWAYS AND LADDERS**

### **2.4.1 Inspection**

Fire escape stairway systems and ladders installed in accordance with the *Construction Codes*, shall be inspected **quarterly** by approved building or contract personnel, for signs of: severe rust damage; damaged or missing parts; loose anchorage; inoperative or damaged counterbalanced stairs; balcony, railing or step damage; obstructed access to and exiting from the escape stairway or ladder; and any hazardous conditions that would effect safe usage of the escape stairway or ladder.

### **2.4.2 Service and maintenance**

When more thorough inspection, servicing or repairs are required for fire escapes, an approved mechanical engineering company shall perform it or company authorized to install and service fire escape systems. The Fire Marshal is authorized to require inspection and repair of, and/or a technical report on, any fire escape stairway or ladder that presents, or appears to present a hazard, as a component of a building’s or structure’s required exiting system. A written record of all quarterly inspections and repairs to the system shall be maintained.

In accordance with the *Construction Codes*, fire escape stairways and balconies shall support the dead load plus a live load of not less than 100 pounds per square foot. All stair and balcony railing shall support a horizontal force of not less than 50 pounds per linear foot of railing.

Fire escape ladders shall be designed and connected to the building to withstand a horizontal force of 100 pounds per linear foot and each rung shall support a concentrated weight load of 500 pounds placed anywhere on the rung.

## APPENDIX B - TABLES

**Table 4-1 - Stairwell pressurization requirements:**

**NOTE: Beginning with the Building Code, 2006 edition, stairwell pressurization shall meet stated requirements.**

<b>Stairwell Pressurization Codes for the City of Houston</b>				
		<b>Prior to 12/23/81</b>	<b>12/23/81 to 3/23/83</b>	<b>3/23/83 And after</b>
1.	Number of Doors Open	1	3	4
2.	Static Pressure Across Doors	0.05	0.05	----
3.	Ave. Velocity Across Doors (ft/min)	----	----	300
4.	Stair Pressure – Doors closed	----	----	0.15
5.	Maximum Force to Open Doors	25 lb.	25 lb.	35 lb.
6.	Maximum Door Closure Pressure	----	----	10 lb.
7.	Number Fans per Stairwell	1	1 or 2	2
8.	Fan Capacity	100%	50 or 100%	50%
9.	Fan Drive	----	Direct	Direct
10.	Fans on Emergency Power	Yes	Yes	Yes
11.	Supply Air Source	Outside Air	Outside Air	Outside Air
12.	Supply Air Inlets	1	2	2
13.	Supply Air Distribution	Stairwell	Chase	Chase
14.	Supply Air Outlet Spacing	----	3 Floors	3 Floors
15.	Supply Air Inlet Separation	----	50 ft Vertical	50 ft Vertical
16.	Fire Floor Exhaust	No	No	Yes
17.	Separation - Intake & Exhaust	----	----	20 ft
18.	Number of Exhaust Air Changes	---	---	6
19.	Stairwell leakage Rate	----	----	300 CFM/Floor at 0.3" S. P.
20.	Smoke Trap	No	No	Yes
21.	Doors Fully Open During Test	No	Yes	Yes

**Table 8-1 - Fire extinguisher testing:**

**Fire Extinguisher Inspection, Test and Maintenance Summary**

<b>Extinguisher Type</b>	<b>Visual Inspection</b>	<b>Hydrostatic Test Interval - Years</b>	<b>Maintenance</b>
Stored Pressure	Monthly	5	Annual
Wetting Agent	Monthly	5	Annual
Foam	Monthly	5	Annual
AFFF (aqueous film-forming foam)	Monthly	5	Annual
Dry Chemical	Monthly	5	Annual *
Carbon Dioxide	Monthly	5	Annual
Dry Chemical (stored pressure)	Monthly	12	Annual *
Dry Chemical (cartridge operated)	Monthly	12	Annual
Clean Agent	Monthly	12	Annual
Halon 1211	Monthly	12	Annual

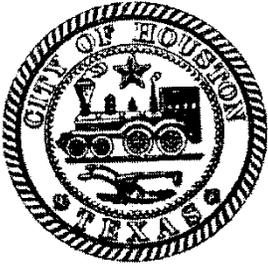
\* - Internal examinations not required for stored pressure dry chemical fire extinguishers

## REFERENCES

1. Life Safety Bureau (LSB) Standard 01, "Installation and Maintenance of Fire Extinguishers", current version.
2. Life Safety Bureau (LSB) Standard 06, "Fire Depository Boxes", current version.
3. City of Houston *Codes*, all editions.
4. Texas Insurance Code Chapter 6001(formerly Article 5.43-1) Fire Extinguisher Service and Installation & 28 TAC §§ 34.500 the Fire Extinguisher Rules Published by State Fire Marshal's Office, Fall 2009
5. National Fire Protection Association (NFPA) Publication, "Fire Protection Systems – Inspection, Test & Maintenance Manual".
6. National Fire Protection Association (NFPA) Standard No. 10, "Portable Fire Extinguishers".
7. National Fire Protection Association (NFPA) Standard No. 12, "Carbon Dioxide Extinguishing Systems".
8. National Fire Protection Association (NFPA) Standard No. 12A, "Halon 1301 Fire Extinguishing Systems".
9. National Fire Protection Association (NFPA) Standard No. 17, "Dry Chemical Extinguishing Systems".
10. National Fire Protection Association (NFPA) Standard No. 17A, "Wet Chemical Extinguishing Systems".
11. National Fire Protection Association (NFPA) Standard No. 25, "Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems."
12. National Fire Protection Association (NFPA) Standard No. 70, "National Electrical Code".
13. National Fire Protection Association (NFPA) Standard No. 72, "National Fire Alarm Code".
14. National Fire Protection Association (NFPA) Standard No. 80, "Fire Doors and Windows".
15. National Fire Protection Association (NFPA) Standard No. 90A, "Installation of Air-Conditioning and Ventilating Systems".

16. National Fire Protection Association (NFPA) Standard No. 92A, "Smoke-Control Systems".
17. National Fire Protection Association (NFPA) Standard No. 110, "Emergency Power Supply Systems".
18. National Fire Protection Association (NFPA) Standard No. 750, "Water Mist Fire Protections Systems".
19. National Fire Protection Association (NFPA) Standard No. 1962, "Care, Use and Service Testing of Fire Hose, Including Couplings and Nozzles".
20. National Fire Protection Association (NFPA) Standard No. 2001, "Standard on Clean Agent Fire Extinguishing Systems".
21. American Society of Mechanical Engineers (ASME) Standard No. A17.3, "Safety Code for Elevators and Escalators"

All reference materials shall be the most current published editions, unless otherwise indicated.



## HOUSTON FIRE DEPARTMENT LIFE SAFETY BUREAU (LSB)



### LSB STANDARD 03, REV 05 FIRE DEPARTMENT ACCESS

**Note:** A vertical bar in the left-hand margin denotes revisions to the previous version.

**SUPERSEDES:** LSB Standard 03, rev 04, dated 12/31/2010

**Effective Date: 5/01/2012**



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LSB Standards are established in accordance with provisions of the City of Houston Fire Code. They are subject to the administrative sections covering alternative materials and methods, modifications and the Appeals Board.

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## LSB STANDARD 03, Rev 05

### FIRE DEPARTMENT ACCESS

#### SECTION 3.1 --- GENERAL

##### 3.1.1 Scope.

This standard provides a method of providing for and maintaining adequate and unobstructed emergency access for fire department apparatus and personnel to buildings, structures, hazardous occupancies or other premises, as may be required by the Fire Marshal, the Chief of the Houston Fire Department and the City of Houston *Fire Code*.

##### 3.1.2 Purpose.

The purpose shall be to provide clarification of requirements and guidance to person(s) charged with providing and maintaining required fire department access to premises in compliance with the *Fire Code*. The provisions of this standard are general in nature and are not intended to override the specific requirements of City of Houston *Code of Ordinances* or the *Fire Code*.

This standard is subject to periodic review and updates, to accommodate changes in local need or requirements, changes in nationally recognized standards, in related technology, or where required by state or federal regulations.

#### SECTION 3.2 --- DEFINITIONS

##### 3.2.1 Access Control Gate or Barrier.

Any gate or barrier placed across a fire apparatus access road to restrict other vehicles or use. Access control gates and barriers shall be installed in accordance with LSB Standard 04, "Access Control Gates".

##### 3.2.2 Cul-de-sac.

Street with only one outlet that terminates in a vehicular turnaround appropriate for the safe and convenient reversal of traffic movement.

##### 3.2.3 Dead Ends.

Street with only one outlet that terminates without a vehicular turnaround provided.

##### 3.2.4 Fire Apparatus Access Road.

A road that provides fire apparatus access from a fire station to a facility, building or portion thereof. This is a general term inclusive of all other terms such as fire lane, public street, private street, parking lot lane and access roadway.

##### 3.2.5 Fire Lane.

A road or other passageway developed to allow for passage of fire apparatus. A fire lane is not necessarily intended for vehicular traffic other than a fire apparatus.

##### 3.2.6 Private Drive.

A private drive is a privately owned way used for vehicular travel that is not a street or private street and that provides an unobstructed connection between one or more streets or private streets or to any portion of a parking lot, shopping center, institution, commercial area or industrial development.

A private drive may provide for access by the general public, but the owner of the private drive maintains the right to restrict public access to the private drive.

### **3.2.7 Private Roadway**

A privately owned and maintained vehicular access way that provides access to a tract of land.

### **3.2.8 Private Street or Road.**

A privately maintained and owned vehicular accessway that provides access from a public street to one or more multi-family residential buildings.

### **3.2.9 Public Street.**

A public right-of-way, however designated, dedicated or acquired, that provides access to adjacent property.

## **SECTION 3.3 --- GENERAL REQUIREMENTS**

### **3.3.1 Where Required.**

Fire Lane applications shall be submitted when it is required by the Code Official that the owner or manager of a commercial building or buildings provide approved Fire Lanes due to vehicular parking or other obstructions that may restrict access to building entrances or exits, and where the following conditions and occupancies are found:

- 1) Any private drive or private street along side of or leading to a commercial structure that is over 300 feet long on one side or if the nearest entrance to the structure is over 150 feet of travel distance from a public street.
- 2) Any private drive or private street along side of or leading to a hospital, convalescent center, or nursing home.
- 3) Any private drive or private street along side of or leading to public assembly occupancy that has an occupancy load of 50 or more and has its nearest entrance located over 150 feet of travel distance from a public street.
- 4) Any private drive or private street along side of or leading to an educational building with an occupancy load of 50 or more persons.
- 5) Any building with a private drive or private street along side of it, where there is an area that must be kept free of parked cars or other obstruction to provide fire department access.

### **3.3.2 Permits required.**

A 'Code Official Approval' permit is required to install a fire department access road or fire lane. A permit is required to install and maintain a fire apparatus access-control gate on a fire apparatus access road, or a private drive or private street utilized for fire apparatus access. A permit is also required to install or maintain a Key Box or Fire Depository Box.

### **3.3.3 Plans.**

#### **3.3.3.1 Plans for access roads and control gates.**

Plans for fire apparatus access roads and access control gates shall be submitted to the fire department for review and approval prior to construction.

#### **3.3.3.2 Plans for private fire hydrant systems.**

Plans and specifications for private fire hydrant systems shall be submitted to the fire department for review and approval prior to construction.

#### **3.3.3.3 Timing of installation.**

When fire protection, including fire apparatus access roads and water systems for fire protection, is required, such protection shall be installed and made serviceable prior to and during construction.

#### **3.3.3.4 Access to building openings.**

Required access to building openings shall be in accordance with the *Fire Code* and the *Construction Code*.

For Key Boxes refer to the *Fire Code* and LSB Standard 05, "Key Boxes". For Fire Depository Boxes refer to LSB Standard 06, "Fire Depository Boxes".

#### **3.3.3.5 High Piled Storage Facilities.**

Access to high-piled combustible storage facilities shall be in accordance with high-piled storage provisions of the *Fire Code*.

### **3.3.4 Required Marking of Fire Apparatus Access Roads, Fire Lanes, Addresses and Fire-Protection Equipment.**

#### **3.3.4.1 General.**

Marking of building or facility addresses and fire-protection equipment shall be in accordance with *Fire Code*. Marking of Fire Lanes shall be in accordance with the *Fire Code* and this standard.

#### **3.3.4.2 Signs and Notices.**

When required by the Code Official approved signs or other approved notices shall be provided by the property owner(s) or owner's agent and maintained for fire apparatus access roads and lanes to identify such roads and prohibit obstruction thereof or both, in accordance with this standard.

#### **3.3.4.3 Marking of fire-protection equipment and fire hydrants.**

Fire protection equipment and fire hydrants shall be clearly identified in an approved manner to prevent obstruction by parking and other obstructions.

Fire hydrant locations shall be identified by installation of reflective markers in accordance with LSB Standard 09, "Marking of Fire Hydrant Locations".

#### **3.3.4.4 Removal of required signs, gates or barriers.**

Locks, gates, doors, barricades, chains, signs, tags or seals which have been installed by the fire department or by its order or under its control shall not be removed, unlocked destroyed, tampered with or otherwise molested in any manner.

## **SECTION 3.4 --- FIRE APPARATUS ACCESS ROADS AND FIRE LANES**

### **3.4.1 New facilities.**

Fire apparatus access roads shall be provided by the owner or property manager for every facility, building or portion of a building hereafter constructed or moved into or within the jurisdiction of the City of Houston, when any portion of an exterior wall of the first story of the building is located more than 150 feet from fire apparatus access as measured by an approved route around the exterior of the building or facility or where required by Section 3.1 of this standard.

#### **EXCEPTIONS:**

1. In buildings that are completely protected with an approved automatic fire sprinkler system, requirements may be modified by the Code Official, not to exceed 300 feet

2. When access roads cannot be installed due to location on property, topography, waterways, nonnegotiable grades or other similar conditions, the Code Official is authorized to require additional fire protection measures.
3. Group R-2 Occupancies when in accordance with Chap 42, *Code of Ordinances*.
4. When there are not more than two Group R-3 (Residential), or Group U (Utility) Occupancies, the requirements may be modified by the Code Official.

### **3.4.2 Existing Facilities.**

In existing buildings and facilities, the Code Official may require the establishment of fire apparatus access roads or fire lanes in accordance with this standard.

### **3.4.3 Additional access.**

The fire code official is authored to require more than one fire apparatus access road based on the potential for impairment of a single road by vehicle congestion, condition of terrain, climatic conditions or other factors that could limit access.

### **3.4.4 Access to Fire Department Connections and Fire Hydrants.**

Fire department connections and fire hydrants shall be accessible to fire department apparatus by roads or lanes meeting the requirements of Section 3.6.

### **3.4.5 Access during construction, alteration or demolition of a building.**

Fire department access roads shall be established and maintained in accordance with the Fire Code and this Standard during construction, alterations or demolition to a building.

### **3.4.6 General Specifications.**

#### **3.4.6.1 Dimensions.**

Fire apparatus access roads and Fire Lanes shall have an unobstructed width of not less than 20 feet and an unobstructed vertical clearance of not less than 13 feet 6 inches.

#### **EXCEPTIONS:**

1. Vertical clearance may be reduced; provided such reduction does not impair access by fire apparatus and approved signs are installed and maintained indicating the established vertical clearance when approved.
2. For buildings in existence on or before June 15, 1976, access roads may have an unobstructed width of not less than 15 feet, when the designation of a greater width would necessitate structural changes to the building.
3. Vertical clearances or widths shall be increased when, in the opinion of the Code Official, vertical clearances or widths are not adequate to provide fire apparatus access.

#### **3.4.6.2 Surface.**

Fire apparatus access roads shall be designed and constructed to support the minimum imposed load by fire apparatus and shall be provided with a surface so as to permit all-weather driving capabilities.

#### **3.4.6.3 Turning radius**

The turning radius of a fire apparatus access road shall be as approved.

#### **3.4.6.4 Dead-ends.**

Dead-end fire apparatus access roads in excess of 150 feet in length shall be provided with approved provisions for the turning around of fire apparatus.

#### **3.4.6.5 Bridges and below-grade structures.**

Where fire apparatus transit must cross over a bridge or below-grade structure as part of a fire apparatus access road or fire lane, the bridge or below-grade structure shall be designed and constructed in accordance with nationally recognized standards. The bridge or below-grade structure shall be designed for a live load sufficient to carry the imposed loads of fire apparatus.

#### **3.4.6.6 Posting of Load Limit Signs.**

Vehicle load limit signs shall be posted by the property owner at both entrances to bridges or road accesses over a below-grade structure as required by the Code Official. Load limit signs shall be posted in conspicuous locations and shall be readily readable

#### **3.4.6.7 Grade.**

The slope or grade for a fire apparatus access road shall not exceed the maximum approved.

### **3.4.7 Obstruction of access roads.**

#### **3.4.7.1 Maintain access roads unobstructed.**

The required width of a fire apparatus access road, private drive, private street or private access easement utilized for fire apparatus access, shall not be obstructed in any manner, including parking of vehicles. Minimum required widths and clearances established under Section 3.6 shall be maintained at all times.

**EXCEPTION:** Access control gates/barriers installed in accordance with LSB Standard 04, "Access Control Gates".

Entrances to roads, trails or other access ways which have been closed with gates/ barriers in accordance with this standard, or LSB Standard 04, shall not be obstructed by parked vehicles or other obstructions.

#### **3.4.7.2 Removal of Vehicles and Obstructions.**

Fire department access roads and Fire Lanes are tow-away zones, thereby vehicles parked and obstructions placed in violation of the *Fire Code* may be issued citations and may be removed, at the vehicle owner's expense, by or at the direction of the Code Official, fire department incident commander, any peace officer or the property owner in accordance with applicable provisions of the city code and state law.

Entrances to roads, trails or other access ways, which have been closed with gates/barriers in accordance with this standard or LSB Standard 04, shall not be obstructed by parked vehicles.

#### **3.4.7.3 Closure of access ways.**

The closure of access ways where required by the Code Official, shall be in accordance with *Fire Code*.

#### **3.4.7.4 Removal of Fire Department Access Road.**

A fire department access road or fire lane shall not be altered, modified, removed or placed out of service without prior written approval from the Code Official.

### **3.4.8 Marking of Fire Lanes.**

#### **3.4.8.1 General.**

Marking of Fire Lanes shall be in accordance with this standard.

#### **3.4.8.2 When required.**

When required by the Code Official, approved signs or other approved notices shall be provided and maintained so as to identify such roads as Fire Lanes and tow-away zones and prohibit the obstruction thereof or both.

#### **3.4.8.3 Removal, Alteration, Defacing of Signs Unlawful.**

A person commits an offense, if the person intentionally alters, defaces, injures, knocks down, removes or attempts to do so, any sign required under terms of this standard or the *Fire Code*.

#### **3.4.8.4 Signs.**

Fire Lane signs and accompanying Tow-Away Zone signs shall be in accordance with the guidelines set forth in Appendix B.

Premises with an existing approved Fire Lane marked with approved signs may retain these signs until such time as the signs need to be replaced due to weathering, fading, damage or missing. All new or replacement signs shall be in accordance with this standard.

### **SECTION 3.5 --- APPROVAL OF FIRE LANES**

#### **3.5.1 Permit required.**

A permit is required to install and maintain an approved Fire Lane.

#### **Permit Office contact information for Fire Lane Approvals is as follows:**

The Houston Permitting Center

1002 Washington Avenue

Houston, Texas 77007

Hours of operation: 8:00 a.m. to 3:30 p.m. Central Time

Monday through Friday

Office phone (832)394-8811

To Email Customer Service Questions: [hfd.permitoffice@houstontx.gov](mailto:hfd.permitoffice@houstontx.gov)

Link to City Wide Fee Schedule: [www.houstoncityfees.org](http://www.houstoncityfees.org)

#### **3.5.2 Procedures for obtaining approvals.**

Fire Lane approvals shall be obtained in accordance with procedures set forth in Appendix A of this standard. Approvals shall be obtained prior to any actual installation or marking of a Fire Lane. A 'Code Official Approval' shall be issued at the successful completion of all requirements for an approved Fire Lane as set forth in this standard.

## APPENDICES

### SECTION 3.6---APPENDIX A --- GUIDE FOR FIRE LANE APPROVAL

#### 3.6.1 Code Official Approval Permit.

An application for a 'Fire Marshal's Approval' permit for a Fire Lane shall be made as required in Section 3.3.2 of this standard.

#### 3.6.2. Property Plot Plans Required.

##### 3.6.2.1 Submit Plot Plans.

The "Fire Lane" applicant shall submit a "Fire Prevention Permit Application" for approval of a fire lane to the Houston Fire Department Permit Section (See Section 3.5.2) and three (3) copies of a Plot Plan for the premises. The Plot Plans shall be large enough to provide readily readable detail (preferably of 'Blue Print' size), and shall indicate on the plans the following items:

1. Location of building or buildings
2. Building exits and entrances
3. Street locations
4. Private drives and any gates or barriers to traffic
5. Sidewalks and parking rows
6. Fire Department Connections and fire hydrants on private property
7. Existing fire department access roads, fire lanes and sign locations
8. Any overhead structural extensions or obstructions that could affect Fire Lane placement.
9. All of the above should show size and relative distances from one another.

When plot plans are "designed" by an Architect or Engineer, or when required by the *Construction Code*, the plans shall have appropriate "Seal" affixed.

##### 3.6.2.2 Marking of Plot Plans.

Do not mark any Fire Lane or sign locations on the Plot Plans (with exception of existing lanes and signs). The inspecting fire prevention officer will mark all three sets of plans with **red** ink to indicate where the lanes and signs are required.

The Fire Lane signs and accompanying tow-away zone signs shall be placed on the property, by the owner or owner's agent, as indicated on the Plot Plans by the inspector.

#### 3.6.3 Fire Lane Specifications.

1. The minimum width of any Fire Lane shall not be less than 20 feet (unless it is physically impossible) and minimum unobstructed overhead clearance of not less than 13 feet 6 inches. See Section 3.4.6.1 of this standard for exceptions. The access road should lead from a public street to at least one side of the building where an entrance to the building is located.
2. Any access drive or private street leading to a Fire Lane shall be maintained as to allow for fire department apparatus access and may be designated as a Fire Lane.

3. Where there is a Fire Lane along at least one side of an access road and parking of vehicle reduces the width of the road to less than the required 20 feet, then both sides of the road shall be included in a fire lane.
4. Fire apparatus access roads 20 feet to 26 feet wide shall be posted on both sides as a Fire Lane.
5. Fire apparatus access roads more than 26 feet wide to 32 feet wide shall be posted on one side of the road as a Fire Lane.
6. Where a Fire Lane is required along side of a building that is bordered by a continuous sidewalk connecting the exit doors, no less than one Fire Lane shall be provided for each 300 feet of building frontage or fraction thereof. Such Fire Lane where possible, shall be positioned in front of the building's main entrance. In no case should the Fire Lane be less than 30 feet long or extend less than 20 feet perpendicular from the curb or road edge. If the building's side is less than 30 feet in length, then the entire side shall be designated as a Fire Lane.
7. Where the building does not have a continuous sidewalk connecting the exit doors, a Fire Lane may be required around the building linking all the entrances. In no case shall the Fire Lane be less than 20 feet wide, measured perpendicular from the edge of the pavement alongside the building where vehicular traffic is allowed.
8. Where there is a danger that a required exit door of any building may be blocked by vehicles parking on a private drive or private street or lot, a Fire Lane extending not less than 5 feet on either side of the exit and 20 feet out from the building may be required to allow egress from the building in an emergency.
9. In the occupancies where Fire Lanes are required and the building(s) face more than one private street or private drive, at least one Fire Lane 30 feet long shall be provided on each side and as near as possible to the building entrance.

#### **3.6.4 Fire Lane - Tow-Away Zone signs.**

An approved Tow-Away Zone sign shall accompany all Fire Lane signs. Specifications for both signs shall be as set forth in Appendix B of this Standard. Signs may be combined as one sign provided each of the requirements of the individual signs are met.

#### **3.6.5 Placement of Fire Lane signs.**

##### **3.6.5.1 Placement Height.**

Fire Lane signs shall be placed no lower than 6 feet and no higher than 7 feet above the ground, as measured from the bottom edge of the access road sign.

##### **3.6.5.2 Angle of Attachment.**

Fire Lane -Tow-Away Zone signs shall be placed on a post or column at a 20-degree angle from the parallel to the driveway area so that they face oncoming traffic.

##### **3.6.5.3 Placement location.**

###### **3.6.5.3.1 Maximum distance.**

Fire Lane -Tow-Away Zone signs shall not be located more than 100 feet apart.

###### **3.6.5.3.2 Minimum number of signs.**

No less than two Fire Lane -Tow-Away Zone signs, with arrows pointing toward each other, shall be used to indicate the limits of any Fire Lanes on any one side of a building or access road.

#### **3.6.5.3.3 Intermediate signs.**

Intermediate Fire Lane - Tow-Away Zone signs shall be provided for fire department access roads over 100 feet long and for every 100 feet or fraction thereof. These signs shall have arrows pointing in both directions. (See Enclosure No. 3)

#### **3.6.5.3.4 Parking rows.**

Fire Lane - Tow-Away Zone signs, pavement striping or painted wheel stops shall also be placed at the end of any parking rows that extend into the or within 5 feet of an approved access road.

#### **3.6.5.3.5 Fire hydrants and Fire Department Connections.**

Where required by the Code Official, fire hydrants and fire department connections, not within a Fire Lane shall be provided with Fire Lane - Tow-Away Zone signs. Such signs shall be not less than 30 feet apart.

#### **3.6.5.3.6 Marking of curbs.**

Curbs located between approved Fire Lane - Tow-Away Zone signs shall be painted RED or a RED stripe shall be placed along the pavement where there is no curb. These curbs shall also be conspicuously and legibly marked with the warning “**FIRE LANE - TOW AWAY ZONE**” in WHITE letters at least three (3) inches in height, at intervals not exceeding fifty (50) feet.

Any color other than red may be used in “**NO PARKING**” areas that are not approved Fire Lanes. RED colored curbs, pavement striping or wheel stops shall be used only to designated approved Fire Lanes except where authorized by the Code Official.

#### **3.6.5.3.7 Excluded areas.**

“Loading Zones”, “Package Pick-up”, “Patient Drop-off” or other such areas that invite illegal parking in Fire Lanes shall not be included in the fire lane boundaries. Such areas shall be excluded from the Fire Lane with Fire Lane - Tow-Away Zone signs pointing away from that area.

Any “No Parking” or other signs erected that are not approved Fire Lane - Tow-Away Zone signs may be in any color but RED.

#### **3.6.5.3.8 Removal of unapproved signs.**

Any unapproved fire lane signs or markings shall be removed.

#### **3.6.5.4 On Site Review of Fire Lanes.**

The inspecting fire prevention officer should meet on site with property representative to deliver and review a copy of marked Plot Plans. The inspector should provide the property representative with a properly marked copy of the Plot plans. The inspector shall review the site with the property representative and indicate to the property representative the actual limits and locations for the Fire Lane - Tow-Away Zone, and access road signs according to inspector's pre-marked copies of the Plot Plans.

The inspector then will establish a re-inspection time frame or date to check the completed work prior to giving final approval to property's Fire Lanes.

#### **3.6.5.5 Approved Plot Plans.**

After the inspecting officer completes an on-site final approval of the Fire Lanes and access road signs, the property representative shall be provided with a copy of the final approved Plot Plans, indicating the approved access roads, signs and markings, and be issued the 'Code Official Approval' permit for the site.

A copy of the final approved Plot Plans should be forwarded by the inspector to the Code Official's office, to be added to an approved up-dated "Code Official's Official Fire Lane List". The Code Official's office shall forward an updated copy of the approved fire lane list to the City of Houston Municipal Courts. The remaining copy of the approved Plot plans should be kept on file with the inspector's inspection files.

## **SECTION 3.7--- APPENDIX B**

### **Fire Lane and Tow-Away Zone Sign Requirements**

#### **3.7.1 Fire Department Access Road (Fire Lane) Signs.**

Fire Lane signs shall be in accordance with Enclosure No.1 of this appendix.

#### **3.7.2 Tow-Away Zone Signs.**

Tow-Away Zone signs shall be provided along with all approved Fire Lane signs, and shall in accordance with Enclosure No. 2 of this appendix.

#### **3.7.3 Combining of signs.**

Signs may be combined as one sign provided the requirements for the individual signs are meet.

#### **3.7.4 Construction of signs.**

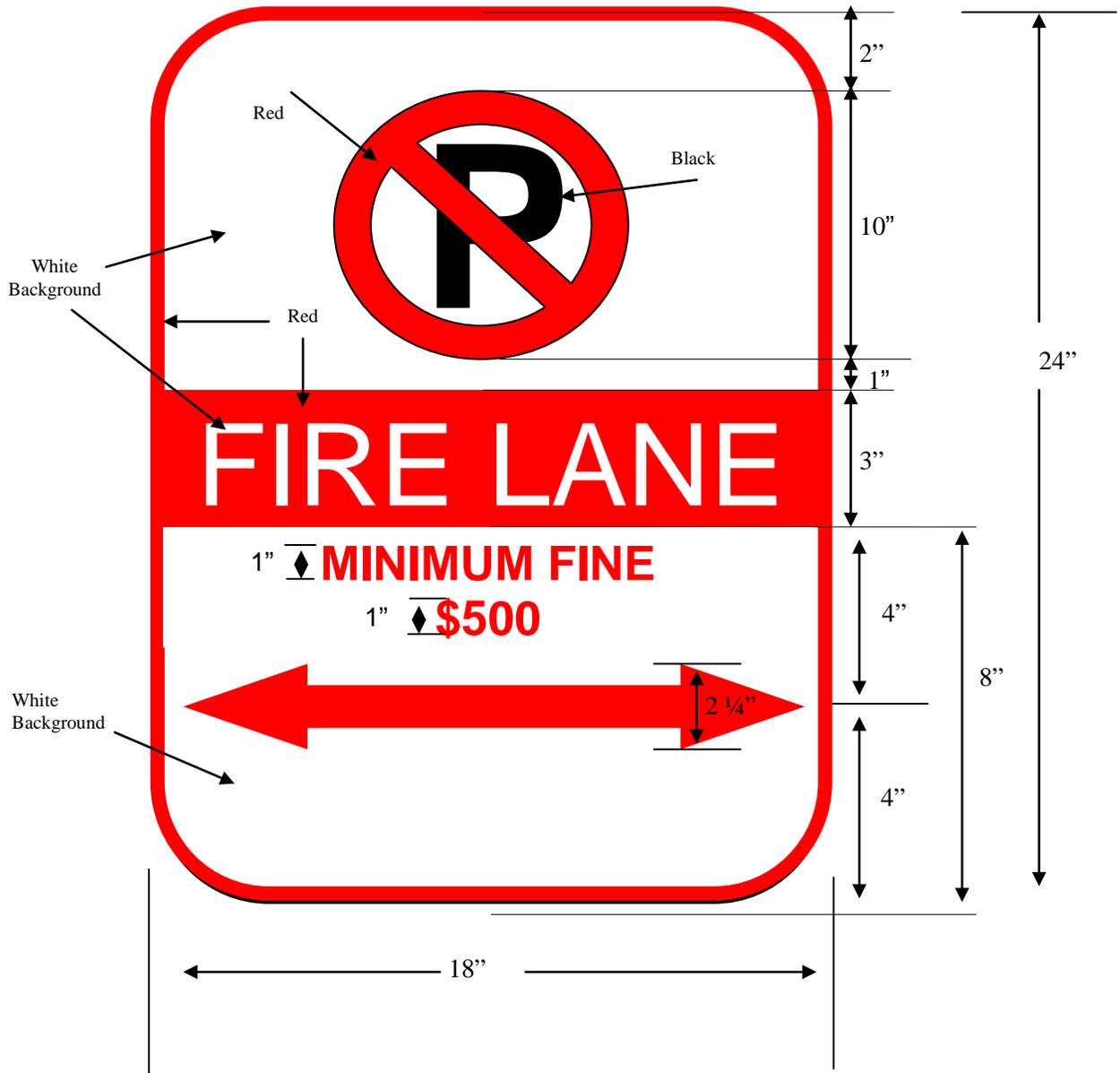
Signs shall be constructed of durable, weather resistive materials and paints.

#### **3.7.5 Positioning of signs.**

Where Fire Lane signs are required, an approved Tow-Away Zone sign shall be attached to the same pole or column, immediately below and at the same angle of attachment as the Fire Lane sign.

Height of the signs shall be not less than 6 feet or more than 7 feet above the ground, as measured from the bottom edge of the lower sign.

# Enclosure 1 - FIRE LANE SIGN

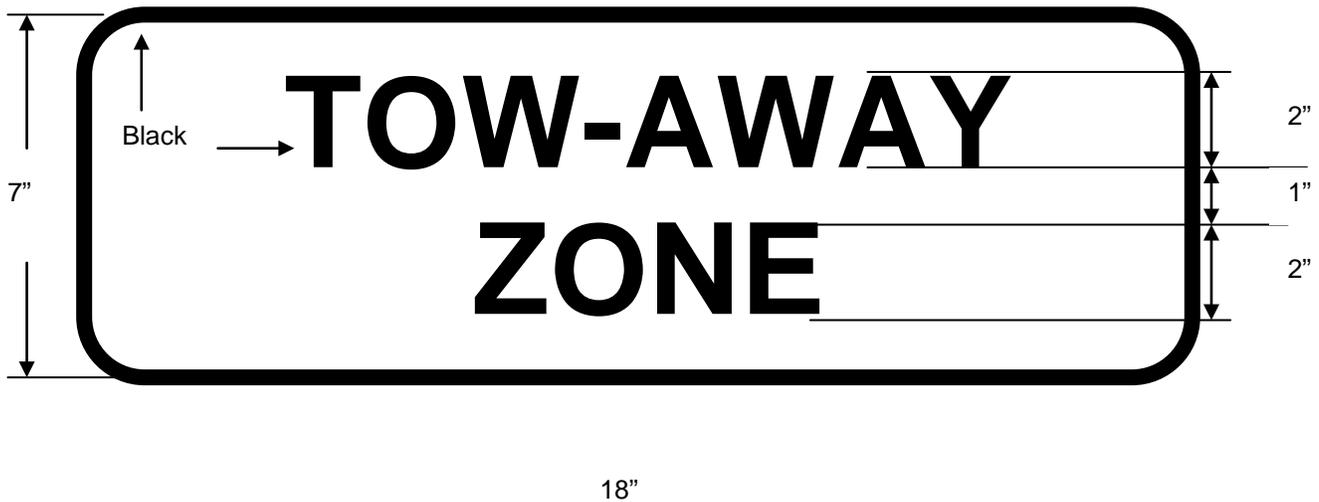


**Note: Drawing NOT to scale. All graphics and lettering shall be center justified. Use "Arial" font.**

## **SPECIFICATIONS:**

1. Size of sign: Standard - 18 inches in width, 24 inches in height
2. Colors: White - Outer border, background and **FIRE LANE** letters  
Red - Inner border, Prohibitive Symbol, and Arrow  
Black - Letter 'P'
3. Letter sizes: 'P' - 6 inches  
**FIRE LANE** - 2 inches
4. Prohibitive symbol: 10-inch o.d.
5. Background for FIRE LANE: 3 inches in height
6. Arrow: Head: 2¼ inches in height  
Shaft: 1 inch in width, 14 inches in length

## Enclosure 2 – TOW-AWAY SIGNS



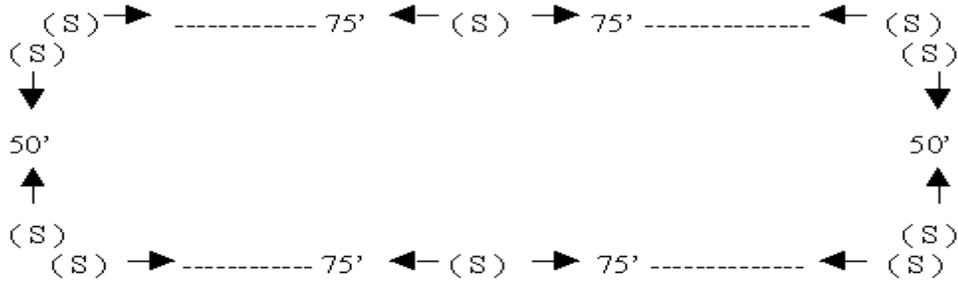
### SPECIFICATIONS:

1. Size: 18 inches in width  
7 inches in height
2. Colors: White - Outer border and background  
Black - Inner border and **TOW-AWAY ZONE**
3. Letters: 2 inches in height

**Note: Drawing NOT to scale. All graphics and lettering shall be center justified. Use "Arial" font.**

### Enclosure 3 - Plotting Fire Lane Signs

The direction the fire lane signs are to point and the distance apart shall be shown on the Plot plan in the following manner:



**(Examples are not drawn to scale)**

**SECTION 3.8--- APPENDIX C**

**REQUIREMENTS FOR DEAD-END FIRE APPARATUS ACCESS ROADS**

**3.8.1 Dead-Ends.**

Dead-end fire apparatus access roads in excess of 150 feet shall be provided with width and turnaround provisions in accordance with Table C-1 of this appendix.

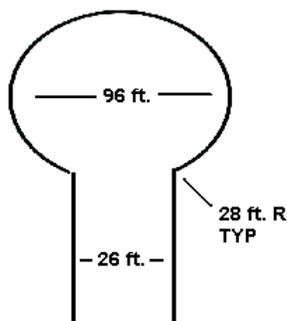
**Table C-1 Requirements for dead-end fire apparatus access roads**

<b>Length (feet)</b>	<b>Minimum Width (feet)</b>	<b>Turnarounds required</b>
<b>0 -- 150</b>	<b>20</b>	<b>None required</b>
<b>150 -- 500</b>	<b>20</b>	<b>120 ft Hammerhead, 60 ft "Y", or 96 ft diameter cul-de-sac</b>
<b>500 -- 750</b>	<b>26</b>	<b>120 ft Hammerhead, 60 ft "Y", or 96 ft diameter cul-de-sac</b>
<b>Over 750</b>	<b>Special approval required</b>	

**3.8.2 Approved turnarounds.**

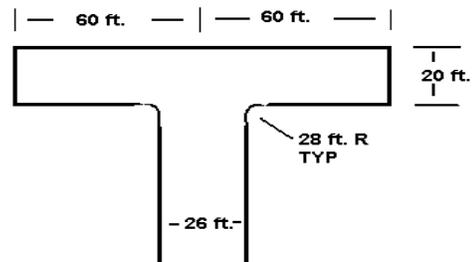
The following figures show approved methods of providing required turnarounds:

**Figure No. 1**



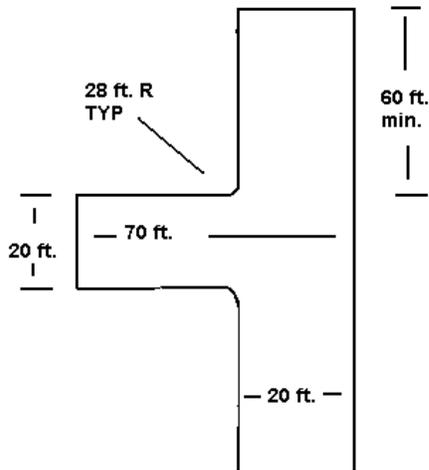
**96 ft. DIAMETER  
CUL-DE-SAC**

**Figure No. 2**



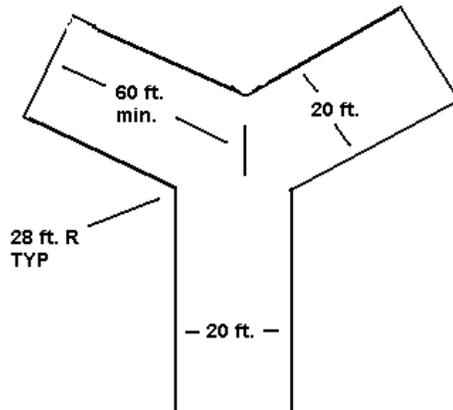
**120 ft. HAMMERHEAD**

**Figure No. 3**



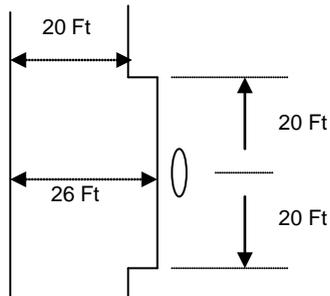
**ACCEPTABLE  
ALTERNATIVE TO  
120 ft. HAMMERHEAD**

**Figure No. 4**



**ACCEPTABLE  
ALTERNATIVE TO  
120 ft. HAMMERHEAD**

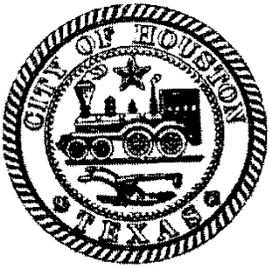
**3.8.3 Clearance around a fire hydrant or fire department connections.**



**MINIMUM CLEARANCE  
AROUND A FIRE HYDRANT OR FIRE  
DEPARTMENT CONNECTIONS (FDC)**

## REFERENCES

1. City of Houston *Fire Code*, International Fire Code, 2006 edition, as amended.
2. City of Houston *Building Codes*, all editions.
3. City of Houston *Code of Ordinances*, Section 42.
4. Texas Manual on Uniform Traffic Control Devices (State Department of Highways and Public Transportation).
5. Texas Traffic Laws - Transportation Code, Subchapter B. UNAUTHORIZED VEHICLES §684.011 and §684.012.



# HOUSTON FIRE DEPARTMENT LIFE SAFETY BUREAU (LSB)

## LSB STANDARD 04, REV. 04 ACCESS CONTROL GATES



**Note:** A vertical bar in the left-hand margin denotes revisions to the previous version.

SUPERSEDES: LSB Standard 04, Rev 03 Effective 12/31/2010

**Effective Date: 5/01/2012**



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LSB Standards are established in accordance with provisions of the City of Houston Fire Code. They are subject to the administrative sections covering alternative materials and methods, modifications, and the Board of Appeals.

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# LSB STANDARD 04, REV 04

## ACCESS CONTROL GATES

### SECTION 4.1 --- GENERAL

#### 4.1.1 Scope.

This standard provides a method of providing and maintaining adequate and unobstructed emergency access for fire department apparatus and personnel to buildings, structures, hazardous occupancies or other premises, as may be required by the Fire Marshal, Chief of the Houston Fire Department and the *Fire Code*, within the City of Houston.

#### 4.1.2 Purpose.

The purpose shall be to provide clarification of requirements and guidance to the person charged with providing and maintaining required fire department access to premises in compliance with the *Fire Code*. The provisions of this Standard are general in nature and are not intended to override the specific requirements of City of Houston *Code of Ordinances* or the *Fire Code*.

This standard is subject to periodic review and updates, to accommodate changes in local need or requirements, changes in nationally recognized standards, in related technology, or where required by state or federal regulations.

**Notice:** Where references in this Standard are made to products manufactured by “Falcon Locks” and related 9-1-1 boxes, certain products manufactured by the “Knox Company” have been approved for voluntary use in lieu of “Falcon Lock” products and the 9-1-1 boxes.

Approved items manufactured by the “Knox Company” may be referenced online at [www.knoxbox.com](http://www.knoxbox.com).

The following is a list of acceptable “Knox Company” products that are allowed to be used inside the City of Houston City Limits.

- Elevator Box
- Electrical Shutdown Box
- Keyswitch
- Padlock
- FDC 2 ½” Locking Cap
- SecureCap
- Cabinets (1300 Series)
- 3200 Series Box, Single-Key Style, ONLY with the hinged lid.
- 4100 Series Box

The Fire Marshal’s final approval and a permit are required for the installation and use of any “Knox Company” or “Falcon Lock” product.

## **SECTION 4.2 --- DEFINITIONS**

### **4.2.1 Access Control Gate or Barrier.**

Any gate or barrier placed across a fire apparatus access road to restrict other vehicles or use. Access control barriers may include, but are not limited to: chains, bars, barricades, or similar devices or construction. Tire spikes shall not be used to restrict a fire apparatus access road. Where a swing gate or swing barrier is provided it shall swing in the direction towards the property.

### **4.2.2 Fire Apparatus Access Road.**

A designated road or lane provided so that fire department apparatus can approach or obtain entrance to a building, structure or other property in event of a fire or other emergency situation.

### **4.2.3 “Fail-safe” Operation.**

A manual operation of electronic slide or swing gates that can be used in the event of power failure or equipment malfunction.

### **4.2.4 Falcon Padlock.**

An approved “9-1-1” padlock applied to “9-1-1” gate operations and attainable only from certain gate companies or contractors.

### **4.2.5 Falcon Lock Mortise Cylinder.**

A type of Falcon lock used with the operation of electronically controlled gates. This is a keyed device that causes a gate to open when a “9-1-1” key is inserted in the mortise cylinder keyhole and turned.

### **4.2.6 Gate Operation.**

A gate operation or function such as manual, electronic, swing arm, chain drive; entry devices such as a card reader, key pad, telephone; direction of gate swing, fail safe methods.

### **4.2.7 Private drives.**

A private drive is a privately owned and maintained access way used for vehicular travel that is not a street or private street and that provides an unobstructed connection between one or more streets or private streets or to any portion of a parking lot, shopping center, institution, commercial area or industrial development.

A private drive may provide for access by the general public, but the owner of the private drive maintains the right to restrict public access to the private drive. Private drives are drives that require a width of 24 feet or less.

### **4.2.8 Private street or road.**

A private street or road is a privately owned and maintained vehicular access way that provides access to a property from a public street.

Dedicated private streets, as defined in Chapter No. 42 of the City of Houston *Code of Ordinances* require a width of 28 feet. All openings or access points from the public streets to the private streets in a residential development project are considered to be “entrances” by definition.

#### **4.2.9 Public street.**

A public right-of-way, however designated, dedicated or acquired, that provides access to adjacent property.

#### **4.2.10 Reader / Reader appliance.**

Readers can be devices such as a card reader, swipe card reader, key punch, telephone, or similar devices that when activated will provide for the unlatching, unlocking or opening of an access control gate or barrier.

#### **4.2.11 “ 9-1-1” Box.**

Where required, an approved box that contains: emergency keys; access door lock, gate or barrier release or deactivation devices; and may in addition contain such information as required by the fire department to affect safe and ready access to a property, building or structure in event of an emergency.

### **SECTION 4.3 --- GENERAL REQUIREMENTS**

#### **4.3.1 Approval required.**

A ‘Fire Marshal Approval’ permit is required to install and maintain access control gates and barriers on private drive, street, or road into such properties as residential development projects, nursing homes, hospitals, schools, industrial plants and facilities, hazardous materials storage or disposal sites, Group H occupancy sites, high pile combustible storage sites, large storage sites, or other sites as the Fire Marshal may require. Approval by the Fire Marshal shall be obtained *prior to* installation of an access control gate or barrier.

#### **4.3.2 Gate Width Operations.**

##### **4.3.2.1 Gates on dedicated Private Streets, at the entrance to Residential Development Projects.**

1. Two 14-foot gates that open to provide access to the full 28-foot street width at a project entrance.

*Note:* The 28 feet of access is also required when the gate is operated using a “Fail-safe” method.

2. One 28-foot gate that opens to provide access to the full 28-foot street width at a project entrance.
3. Two gates of a minimum of 13-foot width each, with a maximum of 2 feet allowed in the middle of a private street for readers or similar devices and/or center post at a project entrance. (13 feet + 2 feet for a reader + 13 feet = 28 total feet minimum)
4. Where any private street is less than 28 feet in width, for example, where there are 20-foot streets divided by esplanades, then the entire width of the street shall be accessible without any obstruction in the street when the gates are open. The width of the gates may

vary to accommodate the width of the street.

*Note:* All openings or access points from public streets to the private streets in a residential development project are considered to be “entrances” by definition.

#### **4.3.2.2 Gates on Private Drives at entrances to Residential Development projects.**

1. One 14-foot gate that opens to provide at least 14 feet of access width where the drive is less than 28 feet.
2. Two gates of a minimum of 13-foot width each where the drive is 28 feet wide.
3. One 28-foot gate that opens to give full access where the drive is 28 feet wide.

#### **4.3.2.3 Access Control Gate/Barrier on Fire Apparatus Access Roads, at hazardous material sites, Group H occupancies and high pile combustible storage sites.**

**4.3.2.3.1 Dimensions.** Access control gate/barriers shall have an unobstructed width of not less than 20 feet and an unobstructed vertical clearance of not less than 13 feet- 6 inches

Exceptions:

1. When approved by the code official, vertical clearance may be reduced, provided the reduction does not impair access by fire apparatus and approved signs are installed and maintained indicating the established vertical clearance.
2. When approved by the code official, existing access control gate/barriers may have an unobstructed width of not less than 15 feet (4572 mm), when the reduction in width will not impair access by the fire department equipment. (2000 IFC 503.2.1)

The code official shall have the authority to require an increase in the minimum access widths where they are inadequate for fire or rescue operations. (2000 IFC 503.2.2)

#### **4.3.2.3.2 Construction documents for Access Control Gate/Barriers**

Construction documents for proposed fire apparatus access and access control gate/barriers shall be submitted to the Hazardous Material/ High Pile Combustible Storage Inspection Team, 1205 Dart St., Houston, Texas 77007, for review and approval prior to construction. (2000 IFC 501.3)

The following must be included:

- Width of the gate/barrier openings.
- Type of gate or barrier operation: (slide, swing, etc.)
- Distance from the access roads to the gates/barriers.
- Distance from the gate to the reader.
- Location of the reader (card reader, key pad, telephone entry, etc.)

- Location of the “9-1-1” Box, with numbers (9) (1) (1) on the box and using numbers contrasting to the Red “9-1-1” Box.
- Location and type of the hold open devices.
- Location and type of the automatic opening device(s).
- Any vertical clearance obstructions.
- Gates are to automatically open and remain open until closed manually.
- Gates/barriers must remain open at all times until a fire prevention inspector has made a final “on-site” inspection and approval.

#### **4.3.2.3.3 Automatic Swing or Slide Gates**

The gate shall be twenty (20) feet in width. A “9-1-1” Box and a “Fail-safe” Box shall be installed on the gatepost at a height not to exceed five (5) feet. When approved by the code official, the “9-1-1” Box and the “Fail-safe” Box may be combined. For “9-1-1” Box specifications and details, see Appendix P.

##### **4.3.2.3.3.1 Electrically Powered Gates**

The “9-1-1” Box is provided with an electrical switch (toggle or micro switch with button). Moving the toggle switch to the “Up” position will cause the gate to swing open towards the project or roll to a fully open position. The micro-switch will automatically activate once the hinged lid on the “9-1-1” Box is opened (see Appendix G). The gate shall remain open until the toggle switch is returned to its original position.

##### **4.3.2.3.3.2 Falcon Mortise Cylinder “9-1-1” System**

Shall be in accordance with Appendix E

##### **4.3.2.3.3.3 Fold- Down Hinge Gates**

The key located in the “9-1-1” Box opens the lock located on a fold-down hinge (see Appendix K). When the lock is removed, the hinge falls down flat towards the project property on the access road, and the gate opens automatically by springs or counter weight. “Duckbill” catches behind the gate will hold the gate open until manually closed.

##### **4.3.2.3.3.4 Hydraulic Gates**

Hydraulic gate operations are under review for consideration, and are currently not allowed.

##### **4.3.2.3.4 Automatic Swing Gates (Fail-safe System)**

If power is interrupted, or due to mechanical malfunction, the access gate is not operable, a key shall be provided in the “9-1-1” Box that will unlock the lock(s) attached to a pin in the arm of the operator causing the pin to fall towards the ground (see Appendix A/ Enclosure Nos. 2 & 3). The gate now manually operable can be opened to its full width (20 feet). “Duckbill” catches behind the gate will hold the gate open until manually closed or repairs can be made to return the gate to normal operation.

#### **4.3.3 Gate opening devices and approvals.**

Gate opening devices and approvals shall be the same as those required for gates installed on private streets as specified above.

#### 4.3.4 Existing gates and barriers.

1. “*Approved*” gates/barriers shall mean those gates/barriers with written approval from the Fire Marshal. Gates/barriers approved prior to this policy may remain as is, unless the gates/barriers prove to be inadequate during an emergency situation. Such gates/barriers will require that plans be resubmitted to the Fire Marshal for approval. Also, any remodeling or rebuilding of approved gates/barriers that will change the gate/barrier opening or opening device(s) must be resubmitted to the Fire Marshal for approval.

*Note:* Approved gates/barriers are gates/barriers that met the requirements, which had been in effect from the first day of submitting 3 sets of plans, the plans being approved, and then receiving a written approval by the Fire Marshal.

2. “*Unapproved*” gates/barriers shall mean those gates/barriers that **do not** have written approval from the Fire Marshal, prove to be inadequate during emergency situations or that have been altered or modified after receiving a Fire Marshal’s Approval.

#### 4.3.5 Gates on High Voltage Fence

Gates used in conjunction with a High Voltage Electric Fence as allowed by City Ordinance 2008-81 shall not be electrically charged and shall be designed so that when the gate makes contact with any part of a charged fence the fence and gate will ground. Signs shall be placed on gates (other than the main entrance as approved by the code official) stating “9-1-1 High Voltage Key Box Located at Main Entrance”. Signs shall be Yellow in color with letters in contrasting color and shall be of a size that is readily visible at all times. Gates used with a High Voltage Fence shall comply with all other applicable regulations found in this standard and the Houston Fire Code.

#### 4.3.6 Vertical Clearance.

Unobstructed vertical clearance of not less than 13 feet-6 inches shall be maintained over the full width of all fire department access roads, drives and gates.

- EXCEPTION:**
1. Vertical clearance may be reduced, provided such reduction does not impair access by fire apparatus and approved signs are installed and maintained indicating the established vertical clearance when approved.
  2. Over-height warning indicators when approved.

Vertical clearances or widths shall be increased when, in the opinion of the Fire Marshal, vertical clearances or widths are not adequate to provide fire apparatus access.

#### 4.3.7 Approval Requirement.

##### 4.3.7.1 Letter of Explanation.

A letter of explanation is required to fully explain what is being submitted for approval.

- What type of operation (function) is applicable to the “9-1-1” Box?  
(Mortise cylinder, toggle switch, key, etc.)

- How the “Fail-safe” system works. (The “Fail-safe” must be able to be activated on the *same side of the gate* as the “9-1-1” Box. Firefighters *shall not* be required to insert their arm through a gate to use a “Fail-safe” key or other device.)
- Manual override operations are required on electrically operated gates.
- Gates must open without delay.
- Other necessary information.

#### 4.3.7.2 Requirements for Drawings (Plans) of Gates/barriers.

The following must be included:

- Width of the gate/barrier openings.
- Type of gate or barrier operation: (slide, swing, etc.)
- Distance from the access roads to the gates/barriers.
- Distance from the gate to the reader.
- Location of the reader (card reader, key pad, telephone entry, etc.)
- Location of the “9-1-1” Box, with **White** numbers (9) (1) (1) on the box contrasting to the **Red** “9-1-1” Box.
- Location and type of the hold open devices.
- Location and type of the automatic opening device(s).
- Any vertical clearance obstructions.
- Gates are to automatically open and remain open until closed manually.
- Gates/barriers must remain open at all times until a fire prevention inspector has made a final “on-site” inspection and approval.

#### 4.3.7.3 Additional information as may be required.

1. It is recommended by the Fire Marshal that the “9-1-1” system be equipped with access capability (such as a reset button or similar device) on the project side of the property so that the property management can close the gate after emergency responders leave the property.
2. Gate width openings during *NORMAL* or *FAIL-SAFE* operations shall be the same as required for the width of the private street, private drive or access road. The full-required width of the private street, private drive or access road shall be available for use.
3. Gates/barriers shall open towards the project property, opening away from the emergency responders that may be entering the property.
4. When a pin is used in a “Fail-safe” assembly and the lock is removed, the pin shall be installed such that it will fall toward the ground (automatic swing arm gates.)
5. The holes in “9-1-1” systems such as the lock hole in the “9-1-1” Box, the pinhole in some “Fail-safe” systems that use a lock, pin, or similar device shall be large enough that the lock, pin, or similar device can be easily removed.

6. Readers, telephone entry devices or other entry devices installed within the width of a private street, private drive or access road shall be made readily visible by means of reflective material. At least 50 percent (50%) of the height of the mounting device, pole, column, etc., shall have the reflective material provided.

#### **4.3.8 Permits required.**

A permit is required to install and maintain a fire apparatus access-control gate or barrier on a fire apparatus access road, or a private drive or private street utilized for fire apparatus access. A permit is also required to install and maintain a "9-1-1" Key Box; this permit shall be renewed annually.

#### **Permit Office contact information is as follows:**

The Houston Permitting Center

1002 Washington Avenue

Houston, Texas 77007

Hours of operation: 8:00 a.m. to 3:30 p.m. Central Time

Monday through Friday

Office phone (832)394-8811

To Email Customer Service Questions: [hfd.permitoffice@houstontx.gov](mailto:hfd.permitoffice@houstontx.gov)

Link to City Wide Fee Schedule: [www.houstoncityfees.org](http://www.houstoncityfees.org)

## **APPENDIX A AUTOMATIC AND MANUAL SWING COMBINATION GATE**

The following is an example of automatic entry with one automatic gate and one manual operated gate. Both gates will be 14 feet in width. A "9-1-1" Box and a "Fail-safe" Box will be installed on the gate post at a height not to exceed 5 feet. For details and specifications of a "9-1-1" Box, see Appendix F, "9-1-1" BOX AND RE-SET BOX". This box can be fabricated or purchased. The "9-1-1" Box is provided with an electrical switch (toggle or micro-switch with button). Moving the toggle switch to the "Up" position will cause the gate to swing open toward the project. The micro-switch will automatically activate once the hinged lid on the "9-1-1" Box is opened (see included drawings). The gate shall remain open until the toggle switch or hinged opening is returned to its original position.

**Note:** When approved, the "9-1-1" Box and the "Fail-safe" Box may be combined.

### **Fail-safe:**

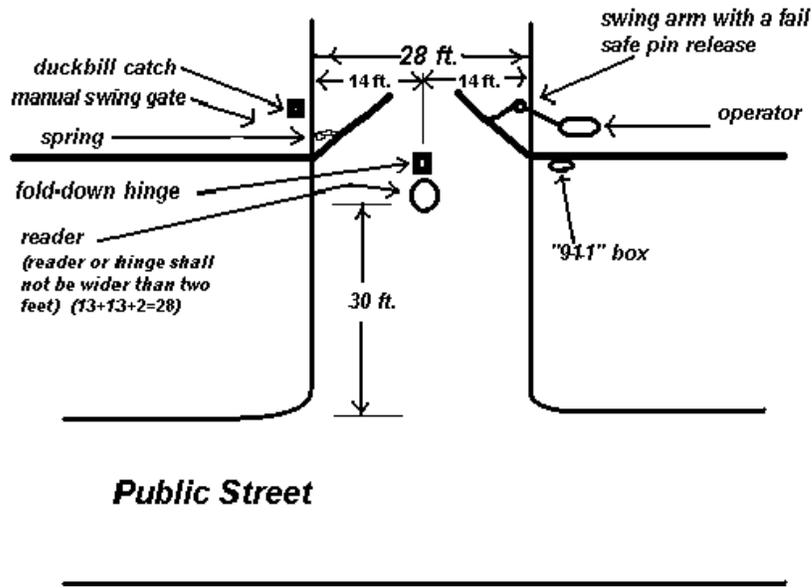
If the power is off, a key provided from the "9-1-1" Box will unlock the lock attached to a pin in the arm of the operator causing the pin to fall out, thereby making the gate manually operable. In the manually operated mode, the gate shall open to the full width of the street, drive or access road. 'Duckbill' catches behind the gate will hold the gate open until manually closed or repairs are made to return the gate to normal operation, as approved. See Enclosures No. 2 & 3.

### **Fold-Down Hinge, Duckbill, and Similar Approved Devices:**

The other gate is a manual 14-foot "9-1-1" Access Gate. The key located in the "9-1-1" Box is the same key used to unlock the lock on the automatic gate. The key opens the lock located on a fold-down hinge (see Appendix K). When the lock is removed, the hinge falls down flat towards the project property on the street, drive or access road and the gate opens automatically by springs or a counter weight. 'Duckbill' catches behind the gate will hold the gate open until manually closed.

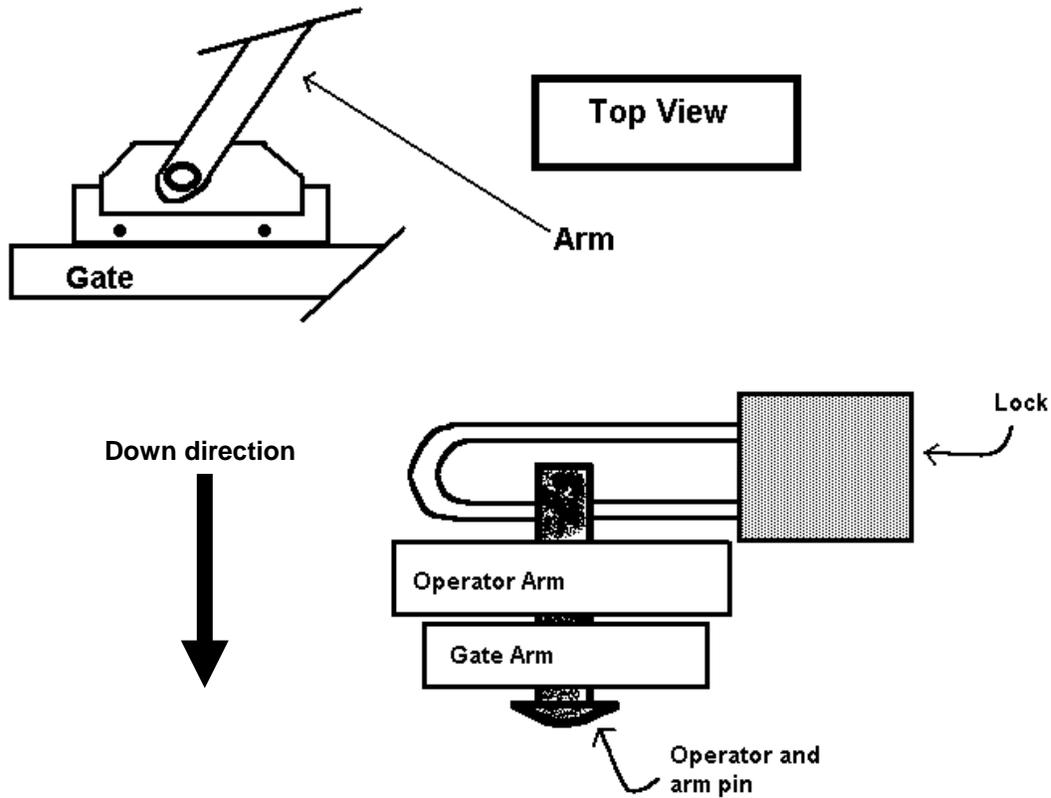
**Note:** Hydraulic swing operated gates are not allowed at this time. (Hydraulic operated swing gate operations are under review for consideration at this time.)

# ENCLOSURE NO. 1 AUTOMATIC AND MANUAL SWING GATE COMBINATION



**Note:** The gate width opening is at least the same as required for the width of the private street, private drive or access road.

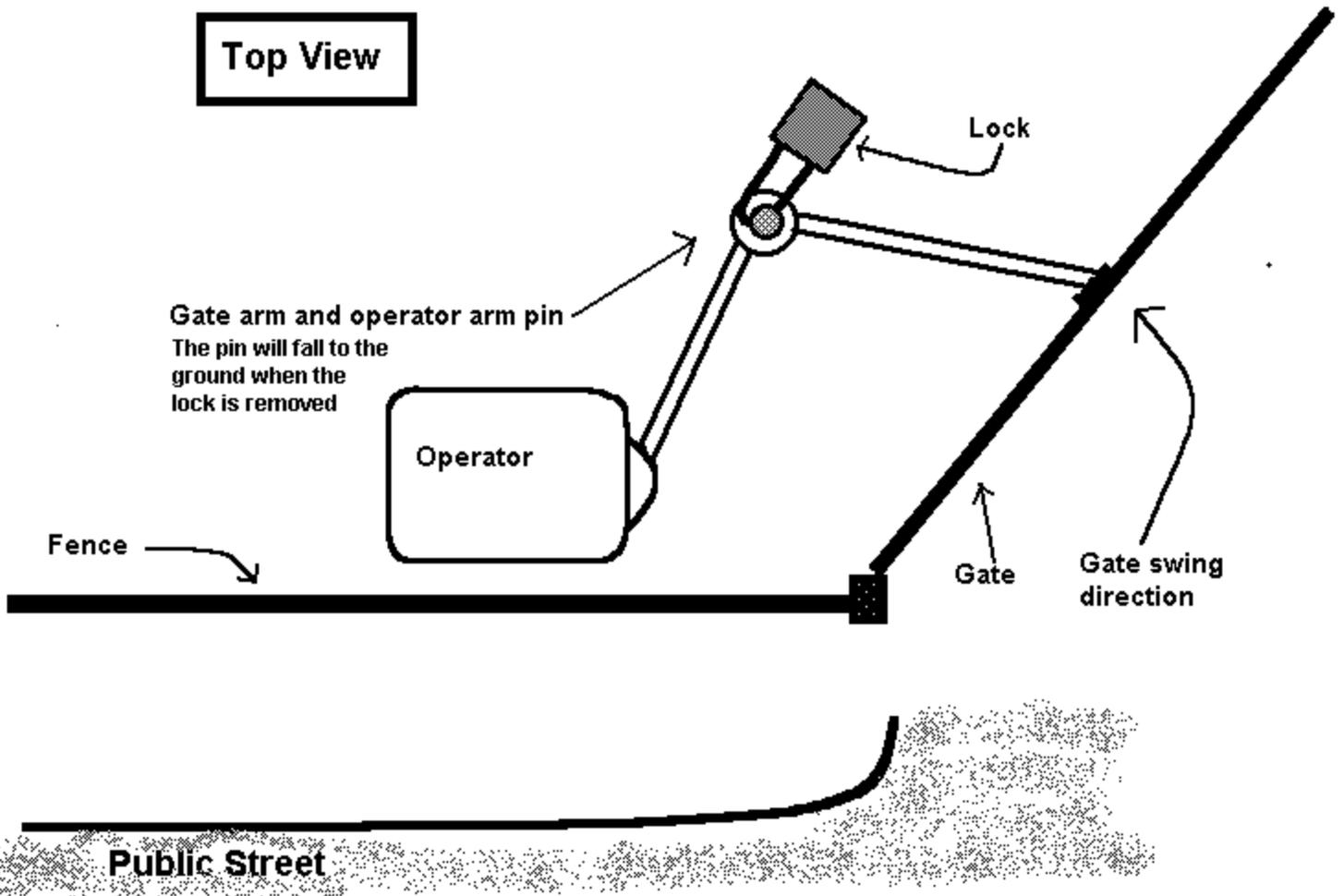
## ENCLOSURE NO. 2 "FAIL-SAFE" ON A SWING GATE ARM



*When a pin is used in a "Fail-safe" assembly and the lock is removed, the pin shall be installed such that it will readily fall toward the ground.*

### ENCLOSURE NO. 3 "FAIL-SAFE" ON SWING GATE

**Top View**



**Note:** When the operator and the gate arms are activated in the normal mode or in the "Fail-safe" mode, the gate shall open such that the full required width of the street, drive or access road will be maintained and the full required width available for emergency use.

## **APPENDIX B**

### **MANUAL SWING AND AN AUTOMATIC SLIDE GATE**

This is an automatic entry with one automatic slide gate and one manual gate. Both gates will be 14 feet in width. Describe the “9-1-1” Box and the “Fail-safe” Box in detail as described in Appendix A.

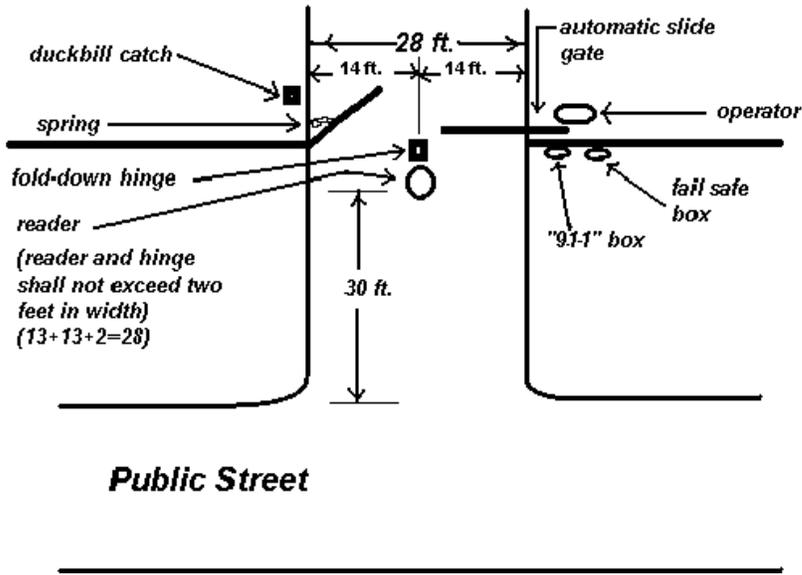
#### **Fail-safe:**

The manual disconnect on the automatic slide gate will comprise of a pull cable connected from a lock box (“Fail-safe” Box) located on the outside edge of the gate near the “9-1-1” Box.

The adjustment bolt and a “pull pin” will pull apart at the chain so that when the cable is pulled, the chain will drop at the rear of the gate. The padlock key for the gate “Fail-safe” Box will be located in the “9-1-1” Box. The key shall be labeled for use with the “Fail-safe” Box (drawing included).

The other gate is a manual 14-foot gate. The key located in the “9-1-1” Box is the same key used on the automatic gate “Fail-safe”. The key opens a lock on the fold-down hinge. When the lock is removed, the hinge will fall down flat on the street, drive or access road and the gate opens automatically by springs or a counter weight. ‘Duckbill’ catches behind the gate will hold it open until manually closed. When open, the full-required width of the street, drive or access road will be available.

ENCLOSURE NO. 1    MANUAL SWING AND AN AUTOMATIC SLIDE GATE



**Note:** The gate width opening is at least the same as required for the width of the private street, private drive or access road.

## APPENDIX C

### 13-FOOT AUTOMATIC SLIDE GATES

#### Two 13-Foot Automatic Slide Gates on a 28-Foot Access with a 2-Foot Appliance Allowance

(Appliance meaning: Card reader, keypad, telephone, etc.)

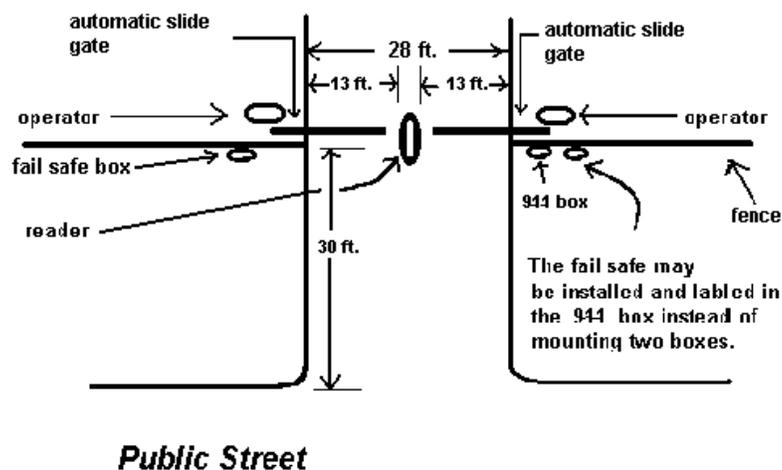
Gate drawing shows an automated entry with two 13-foot automatic slide gates on a 28-foot access road. The “9-1-1” Box will be mounted on the public street side of the gate as would be viewed by an emergency vehicle.

#### Fail-safe:

Describe the “9-1-1” Box and the “Fail-safe” feature in detail (as described in Appendix A)

The “9-1-1” Box (or an extra box if desired) will provide a manual “Fail-safe” release (pull cable) that allows the gate to be rolled out into a full open position by manually pushing the gate. This release is functional with or without power. The gate will remain open until closed manually.

Two gates at 13 feet each are allowed if a reader is installed in the center of the access road. The reader assembly shall not exceed 2 feet in width on a 28-foot access and 13 feet of access shall be maintained free and clear on each side of the reader.



## APPENDIX D

### 14-FOOT AUTOMATIC SLIDE GATES

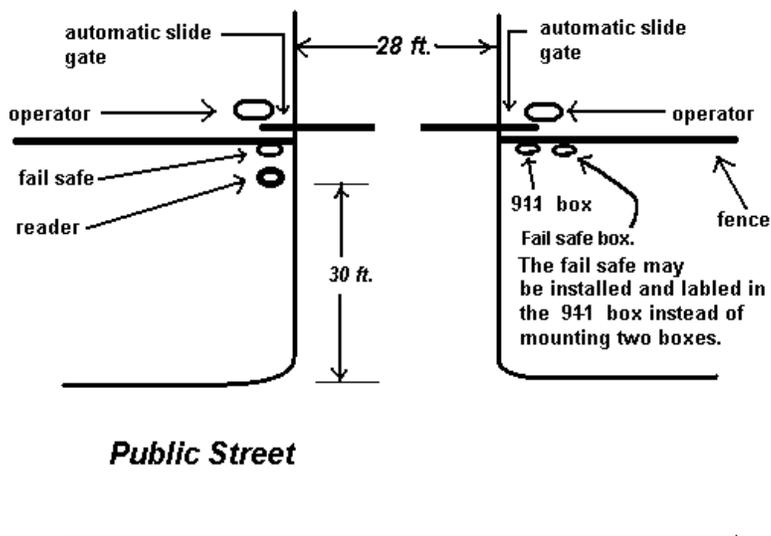
#### Two 14-Foot Automatic Slide Gates with no Appliances within the 28-Foot Access

The drawing below shows an automated entry with two 14-foot automatic slide gates on a 28-foot access road. The “9-1-1” Box will be mounted on the public street side of the gate as would be viewed by an emergency vehicle. This design is referred to as a “*European Entry*” which allows a free and clear 28-foot width. This is the preferred and recommended method for private streets because appliances such as readers are to the side of the access and there are no obstructions within the 28-foot street width.

#### Fail-safe:

Describe the “9-1-1” Box and the “Fail-safe” feature in detail. (Refer to Appendix A)

The “9-1-1” Box (or an extra box if desired) will provide a manual “Fail-safe” release (pull cable) that allows the gates to be rolled out into a full open position by manually pushing the gates. This release is functional with or without power. The gate will remain open until closed manually.



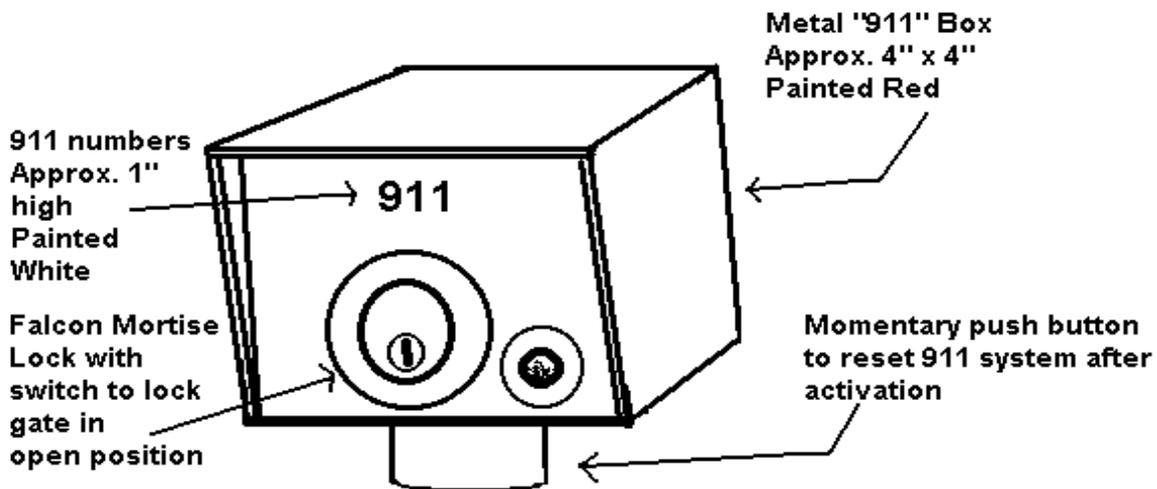
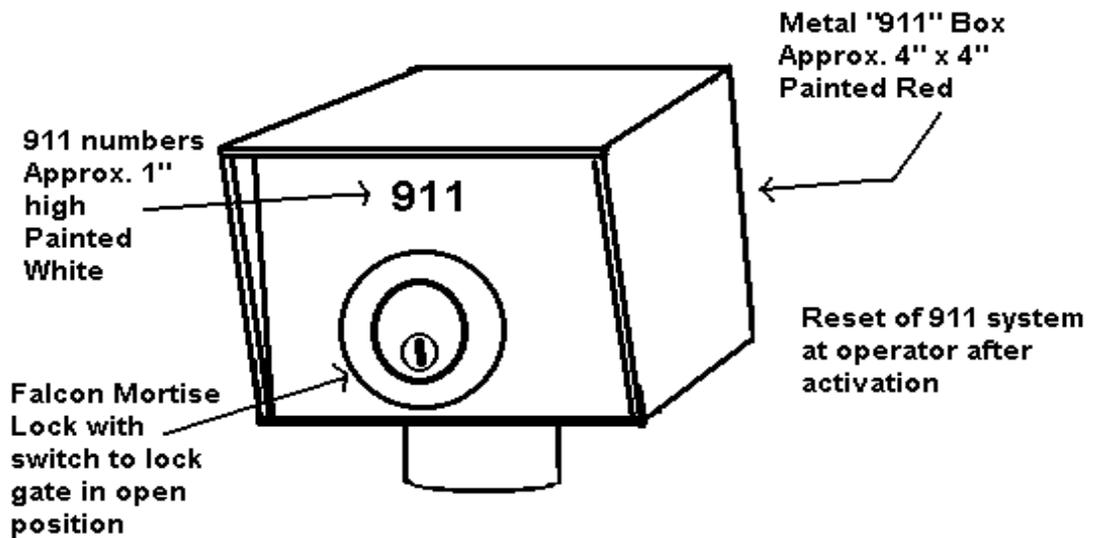
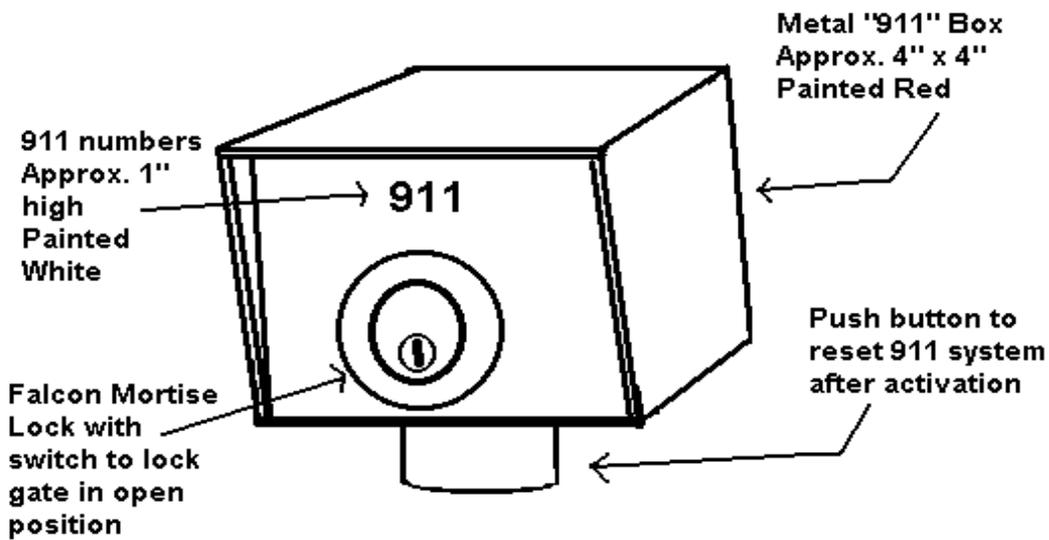
## **APPENDIX E**

### **OPTIONAL - APPROVED FALCON MORTISE CYLINDER "9-1-1" SYSTEM**

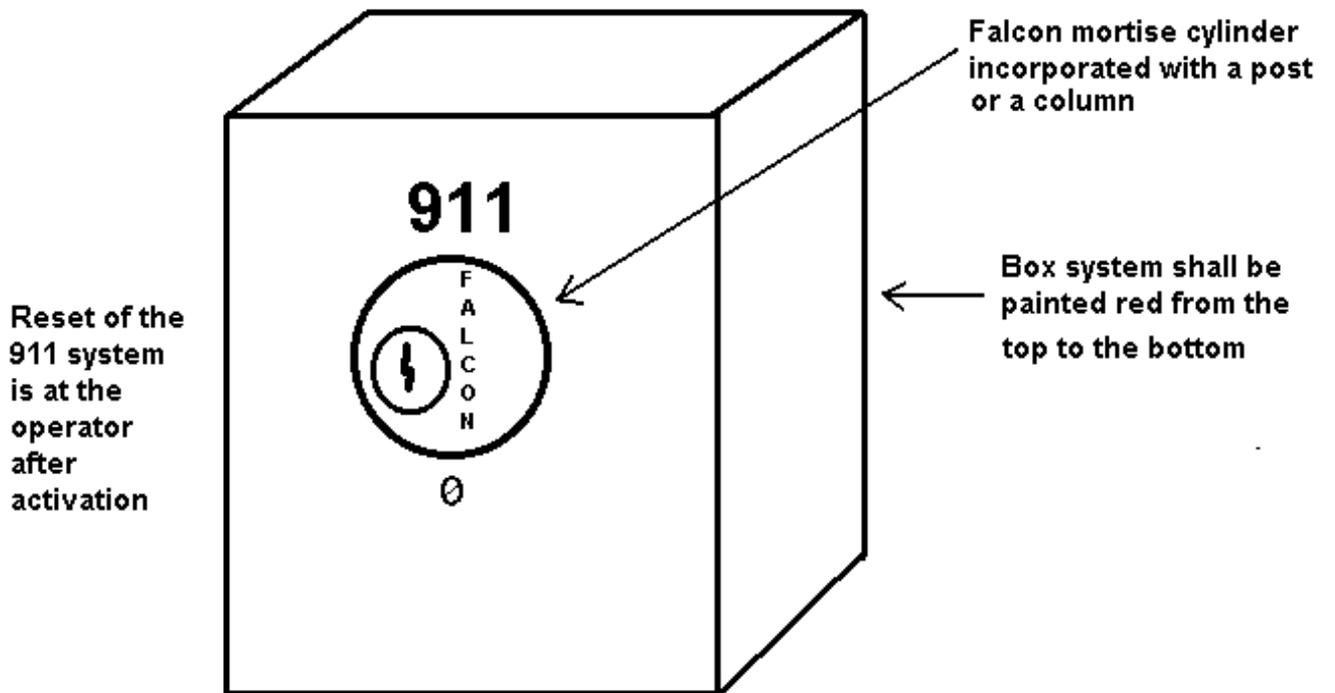
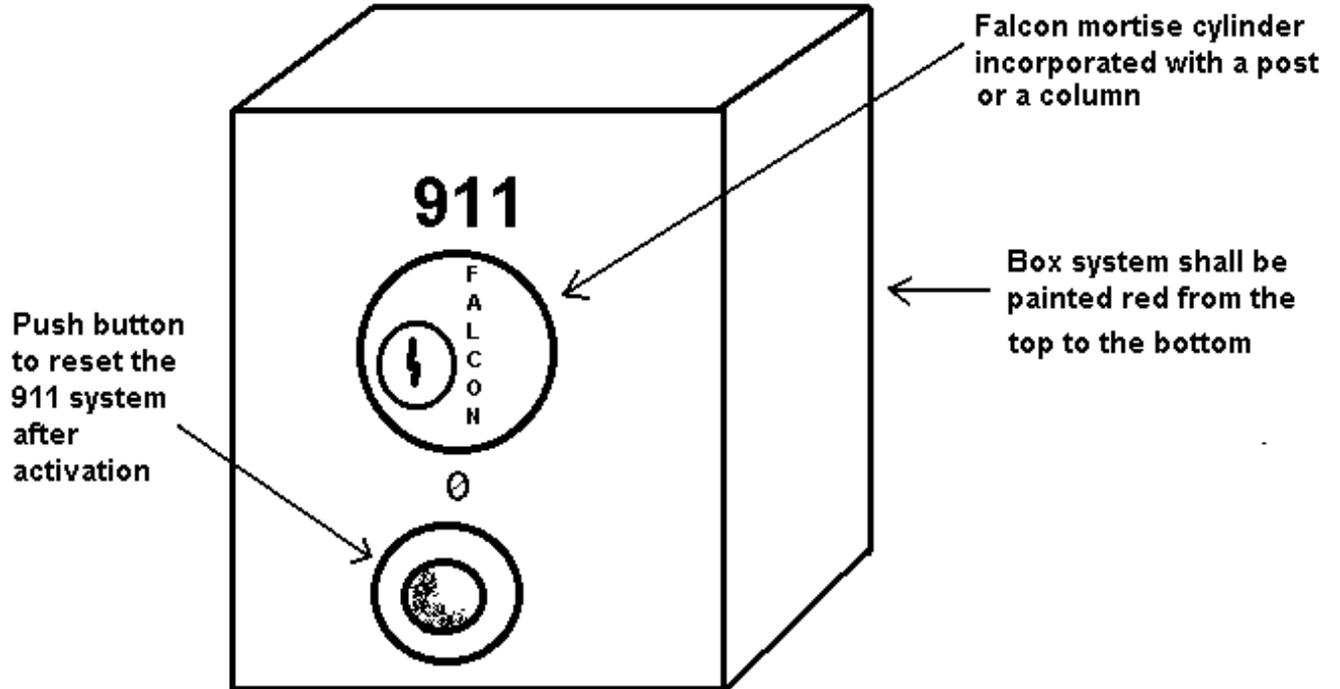
- 1) "9-1-1" Mortise Box shall be totally enclosed with a mortise cylinder facing the drive (as an emergency vehicle would view on approach.)
- 2) System shall be incorporated with the entry system and mounted not less than 5 feet in height from the road surface. The road surface is the private street, private drive or access road.
- 3) Operators with no entry systems shall be placed on the gatepost or the column and mounted 42 inches in height.

For examples of "9-1-1" Mortise Boxes see Enclosure No. 1.

**Enclosure No. 1 "9-1-1" Mortise Cylinder Boxes**

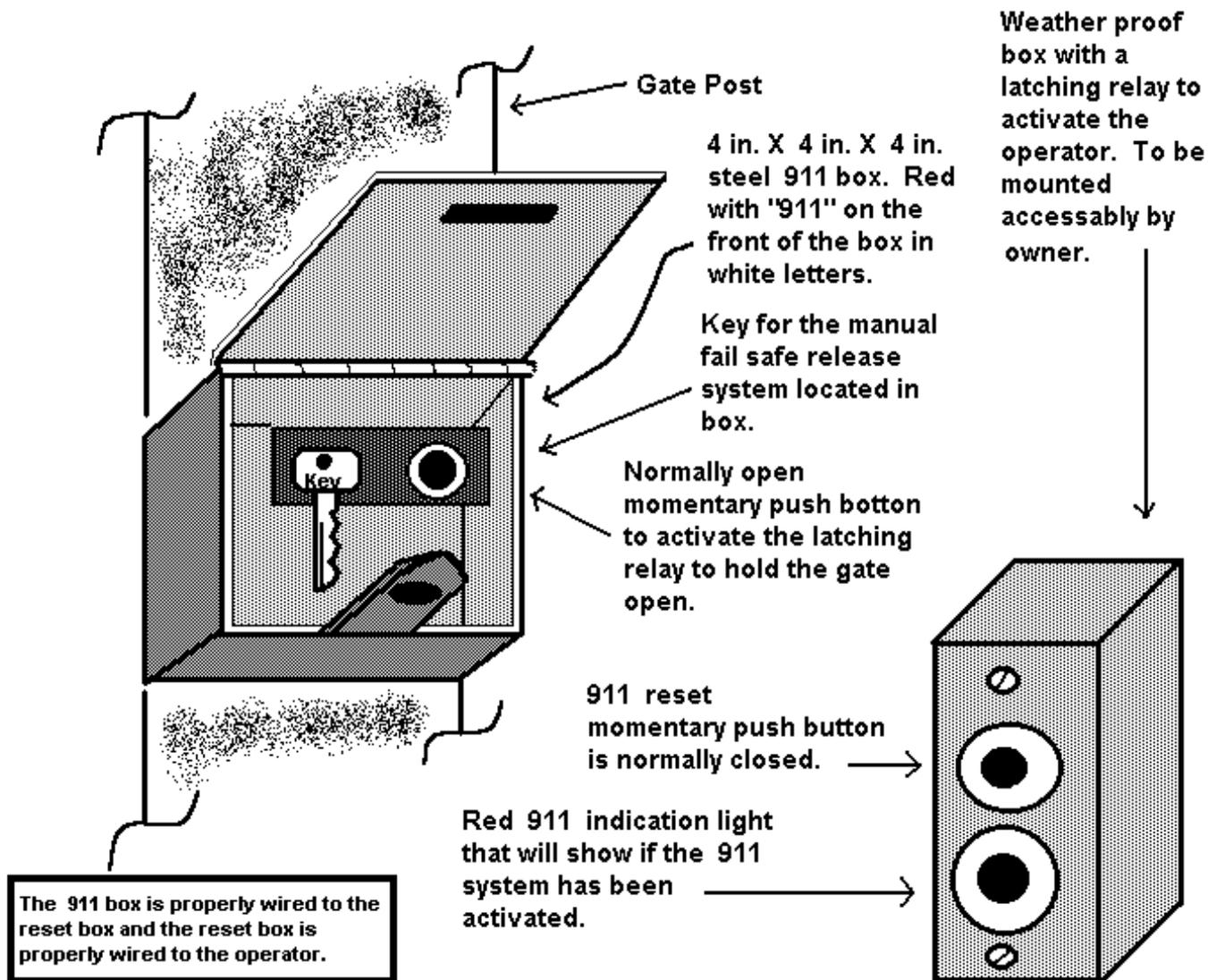


**Enclosure No. 1 "9-1-1" Mortise Cylinder Boxes (Cont.)**



# APPENDIX F

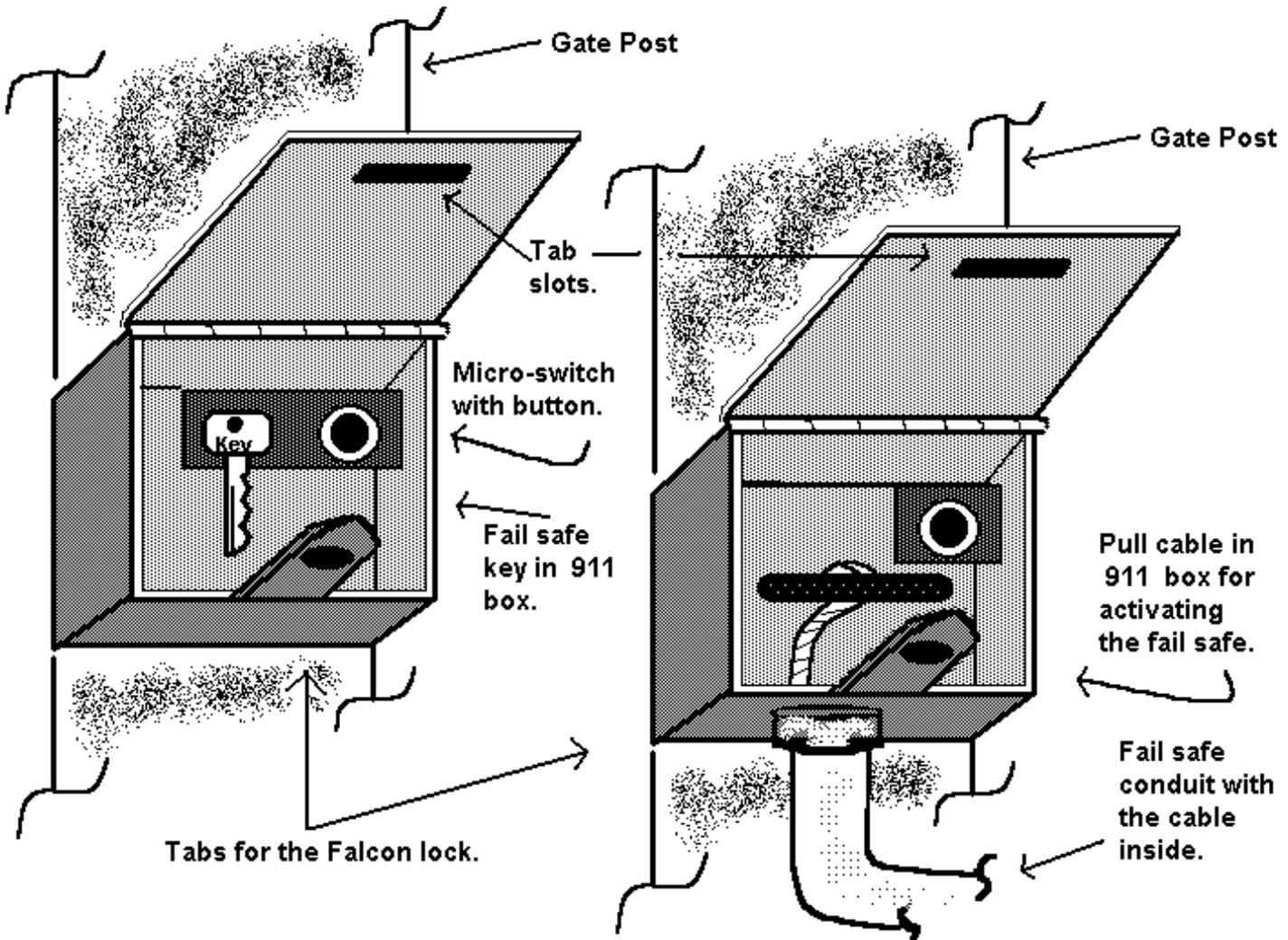
## "9-1-1" BOX AND "RE-SET" BOX



# APPENDIX G

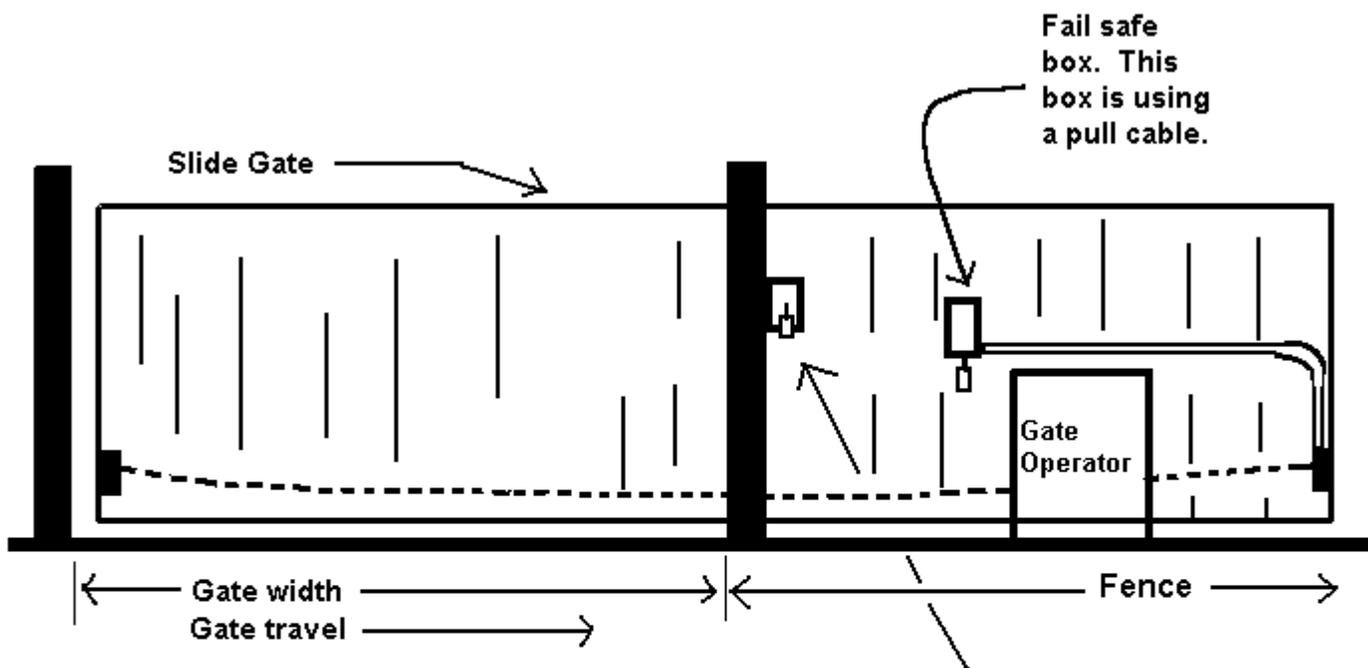
## AUTOMATIC SYSTEM USING A MICRO-SWITCH

'911' box is mounted on the gate post, facing the public street at five (5) feet above the ground level, or at the highest point on any gate post under five feet.



## APPENDIX H

### “9-1-1” AND “Fail-safe” system on electric gates



Fail safe box. This box is using a pull cable.

Gate Operator

Gate width  
Gate travel

Fence

**Note: The gate width opening is at least the same as required for the width of the street, drive or access way.**

'911' box has the switch inside that will open the gate electrically. The box will also contain the key that will release the lock on the fail safe box.

The '911' box is equipped with a FALCON lock.

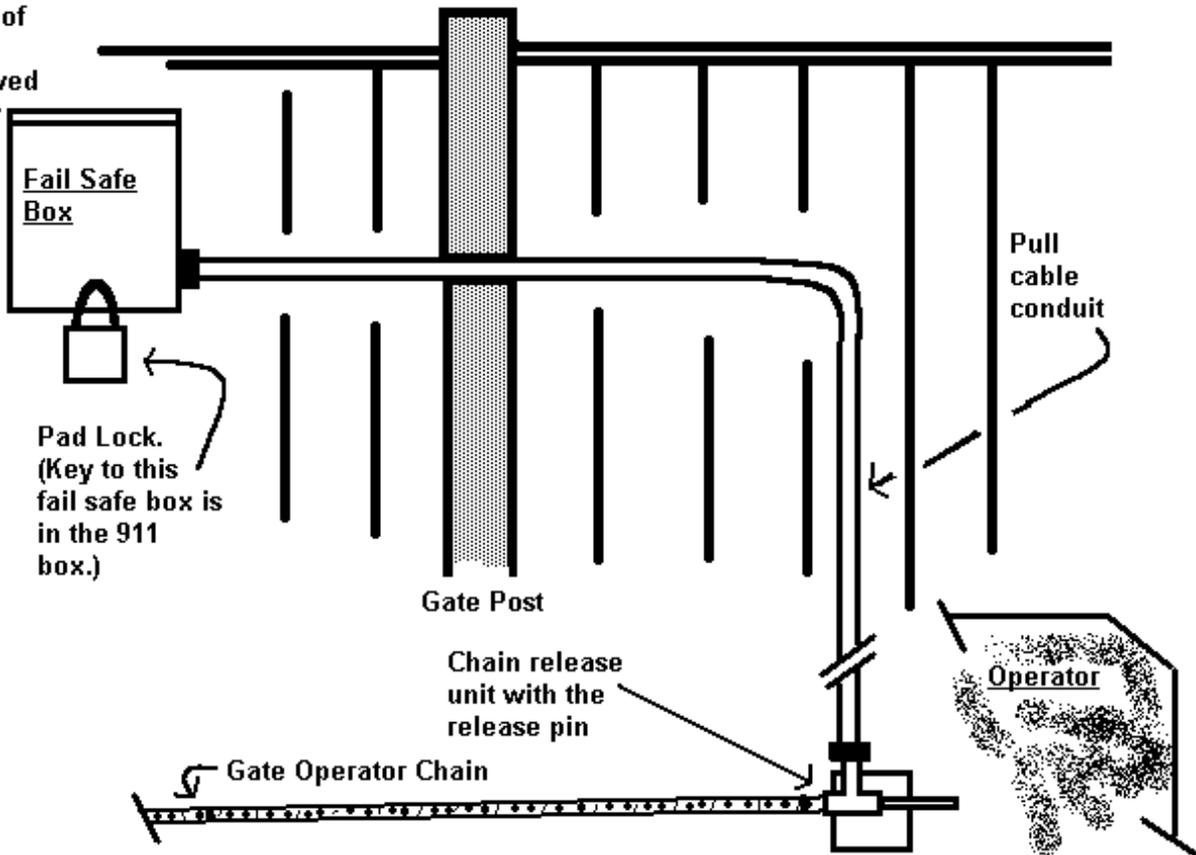
# APPENDIX I

## “Fail-safe” CABLE ASSEMBLY ON ELECTRICALLY OPERATED SWING GATE

The fail safe box is mounted on the entrance side of the fence as would be viewed by emergency responders.

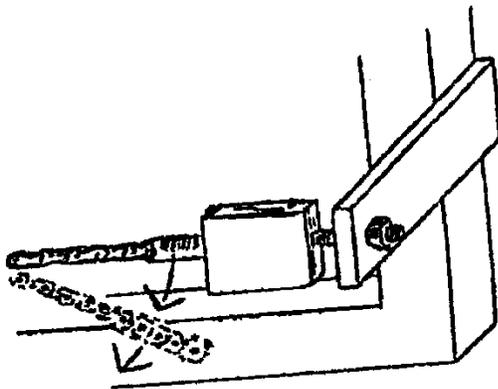
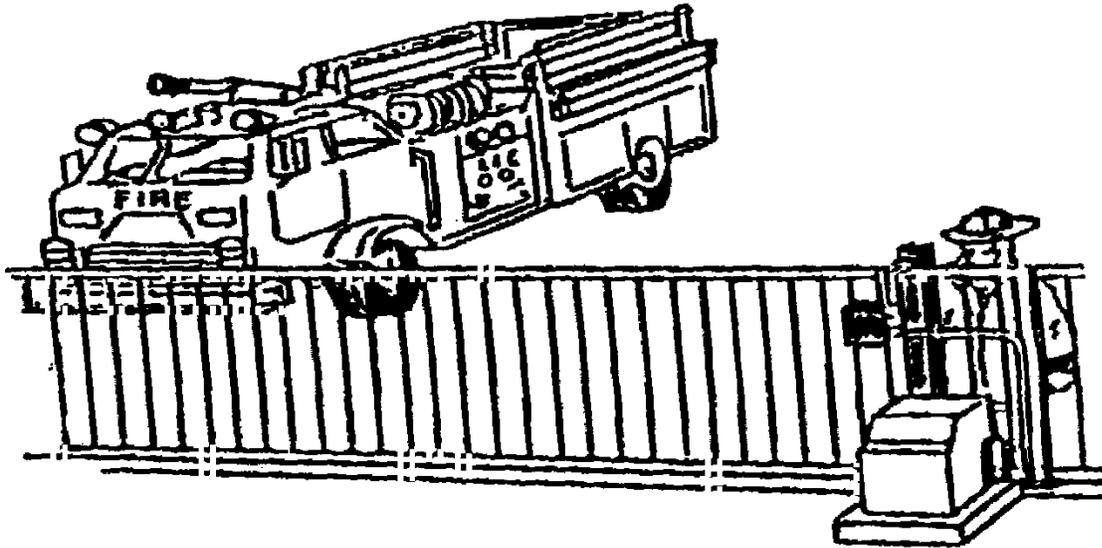
The cable in the box runs to the chain release unit. When pulled, the chain will drop.

Pad Lock. (Key to this fail safe box is in the 911 box.)



## APPENDIX J

### “Fail-safe” EMERGENCY ILLUSTRATION



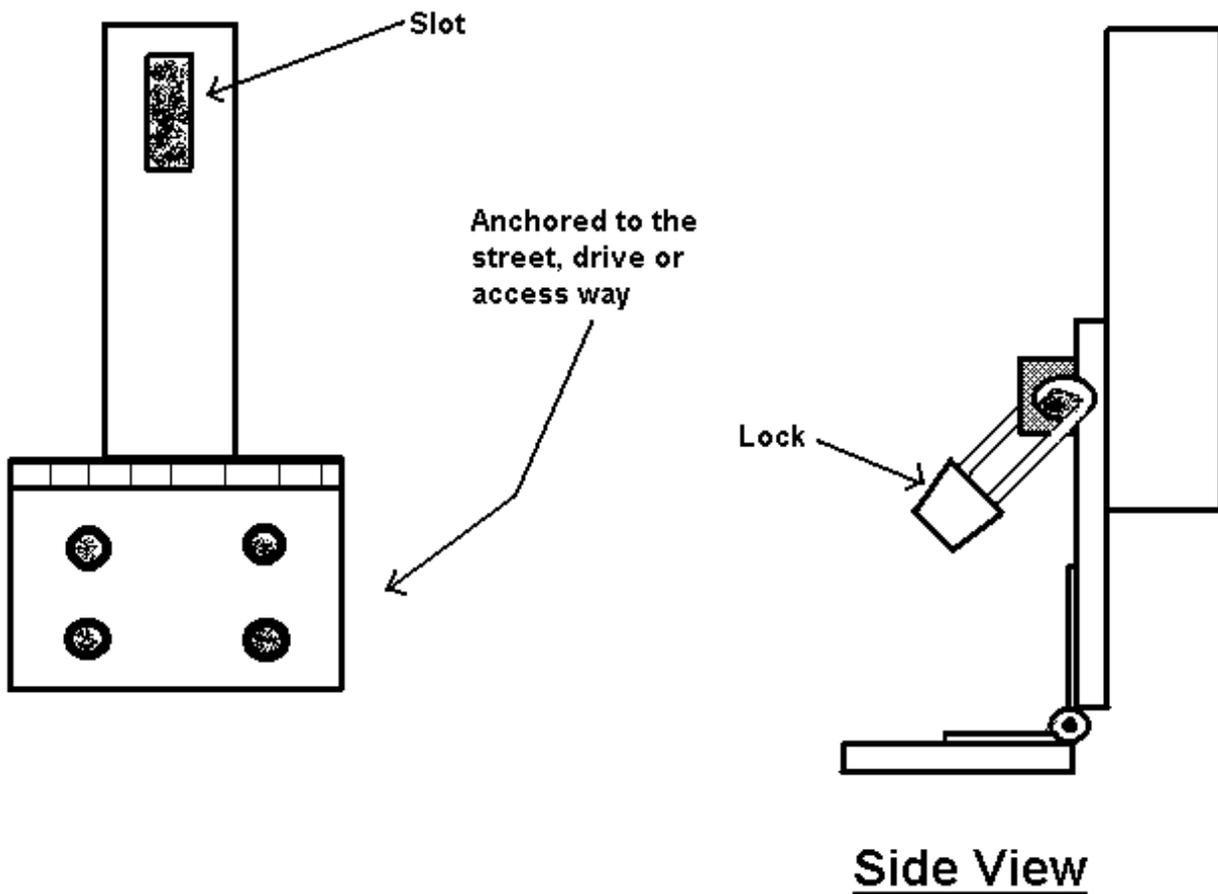
In this illustration the firefighter or other emergency responder unlocks the Falcon Lock located on the “9-1-1” Box. He will pull the handle on the cable that causes the gate operator chain to be released as shown in the lower drawing.

At this point, the emergency responder will manually open the gate for emergency access. The gate is required to open allowing the full-required width of the street, drive or access road to be available for use.

## APPENDIX K

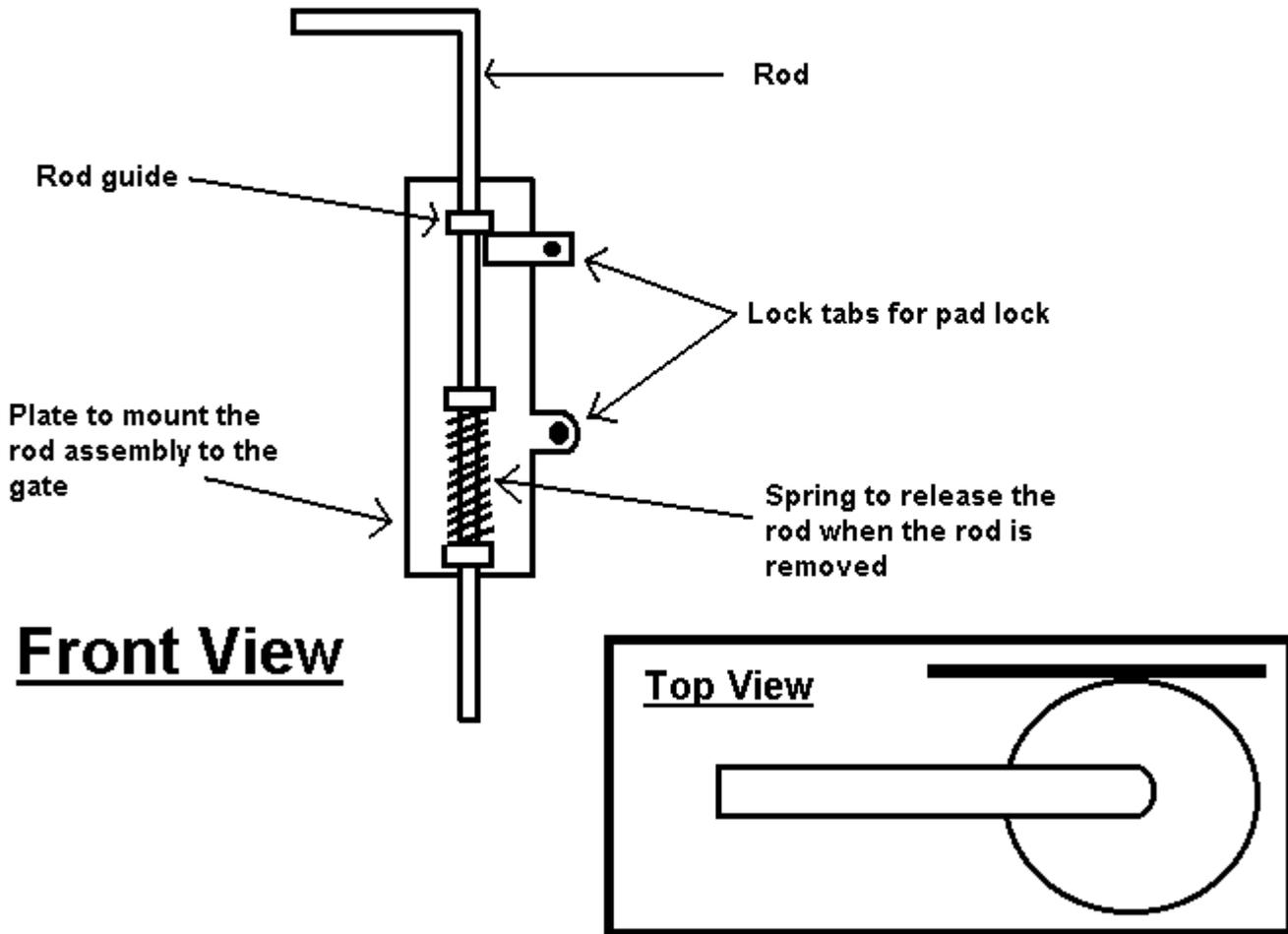
### FOLD DOWN HINGE SYSTEM

To operate the gate, remove the lock by using a key located in the “9-1-1” Box. The hinge will fall forward ( towards the property ) and will lie flat on the street, drive or access road. The gate will open automatically by a spring or counter weight and then will catch on the ‘Duckbill’ catch.



APPENDIX L

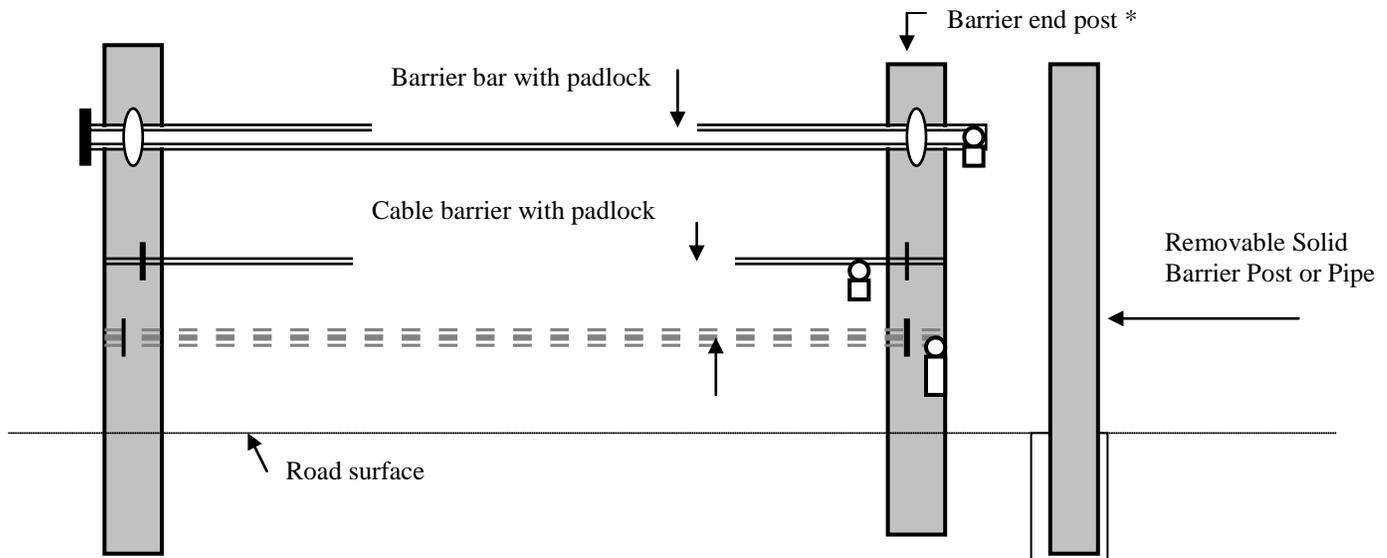
SPRING-LOADED "DROP ROD" ASSEMBLY



## APPENDIX M

### ACCESS CONTROL BARRIERS

Any device or construction that restricts a fire department access road. Examples of devices or construction below:



\*An approved “9-1-1” Box shall be provided, on the non-movable barrier post at the lock end of the barrier, containing the key for the lock or a release mechanism to open the barrier. (See Appendix F for description of “9-1-1” Box.)

**Note:** The barrier system is required to open allowing the full-required width of the street, drive or access road to be available for use. All swinging barriers shall be provided with a ‘Duckbill’ catch or similar hold-open device that must be manually released.

## APPENDIX N

### Performance Standards

**“9-1-1” Gate Procedures Meeting the Optional  
Performance Standards  
City of Houston *Code of Ordinances* Section 42-235**

**Fire Department Access  
City of Houston *Fire Code***

Private streets are 28 feet wide. Access roads less than 28 feet but not less than 20 feet in width may be considered provided that compliance with the *Performance Standards* have been met and approved by the City of Houston *Planning and Development Department*.

#### ***Where can I find the performance standards?***

The performance standards come from the City of Houston *Code of Ordinances* Section 42-235.

To use this option you must also be familiar with the requirements of Division 6, Multi-Family Residential Developments *regarding private streets*.

#### ***Can I install equipment inside the width of my access road under the Performance Standards?***

Access roads of 26 feet or less shall not have obstructions within the width of the access road under the requirements of the Performance Standards.

This means that card readers, telephone entry devices, remote control devices, and other equipment shall be installed in a manner referred to as a “*European Entry*”. This means that the street is free and clear of obstructions. Equipment may be installed within the curbside area.

## APPENDIX O

### PROCEDURE FOR SUBMITTAL FOR GATE (BARRIER) APPROVALS

#### STEP 1:

1. **Applications** - Make application at the City of Houston Permit Office, 3300 Main Street; telephone: 713-535-7897, for the following approvals:

a) Installation of "9-1-1" Access Control Gate/Barrier  
(Application made by the installer of the gate or barrier)

Or,

b) Access Control Gate/Barrier, to maintain (operate) "9-1-1" Gate/Barrier  
Note: This is an annual permit (must be renewed every year).  
(Application made by property management or owners )

2. At the Permit Office, furnish a *Deed Restriction and Law Compliance Affidavit* and the information for the permit application.

**Note:** The signature on the affidavit and on the permit must be the same individual.

#### Step 2:

Obtain the *Plot plan* of the property or a letter from the City of Houston Planning Department. City Planning is located downtown at 611 Walker Street.

#### Step 3:

Provide 3 sets of *plans* that shows all entrances and access points to the property from the public street(s).

Plans must show dimensions and information such as:

- Width of the gate/barrier openings.
- Type of gate/barrier operation: (slide, swing, cable, chain, etc.)
- Distance from the access roads to the gates/barriers.
- Distance from the gate to the reader.
- Location of the reader.
- Location of the "9-1-1" Box, with **WHITE** (9) (1) (1) numbers on the box contrasting to the **RED** "9-1-1" Box.
- Location and type of the hold-open devices. (Gates shall automatically open and remain open until closed manually.)
- Location and type of the automatic opening device(s).
- Names of the public streets in the immediate area.

- Or any other necessary information.

**Step 4:**

Provide a “Letter of Explanation” that fully explains the type of operation and “Fail-safe” system.

**Note:** *No electronic or battery back up “Fail-safe” operation shall be used. All “Fail-safe” operations shall be MANUAL.*

**Step 5:**

Take the paid copy or receipt that you should have received at the Permit Office and the letter or plat drawing obtained from the City Planning Department (611 Walker Street), along with 3 drawings (referred to as plans above), and your “Letter of Explanation”, to the Senior Fire Inspector, at the Fire Marshal’s office, located at Fire Station # 70, 11410 Beamer Road.

See a clerk to have your paperwork placed in the inter-office mail for the Senior Inspector over “9-1-1” Gate/Barrier plans review.

After being delivered to Fire Marshal’s office, the paperwork will be forwarded to the Senior Inspector. Plans are reviewed according to the order that they are received.

Plans will be approved or they will be disapproved. You should be notified within one to two weeks after the date that the plans are received. If you have any questions or require further information or assistance you may contact the Fire Marshal’s office to obtain the phone number for the fire prevention inspector reviewing the “9-1-1” Access Gate/Barrier plans for approval.

## APPENDIX P

### KEY BOXES

Figure No. 1 -Typical Key Box / “9-1-1” Box (Open, with padlock removed)

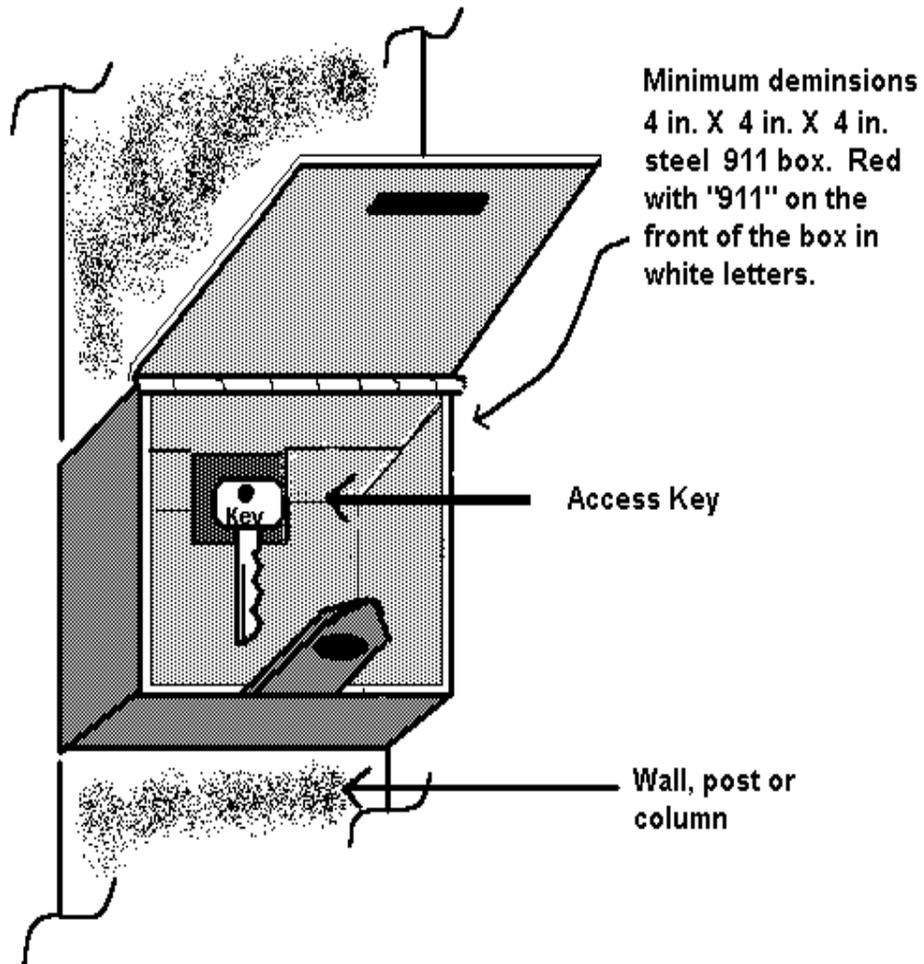
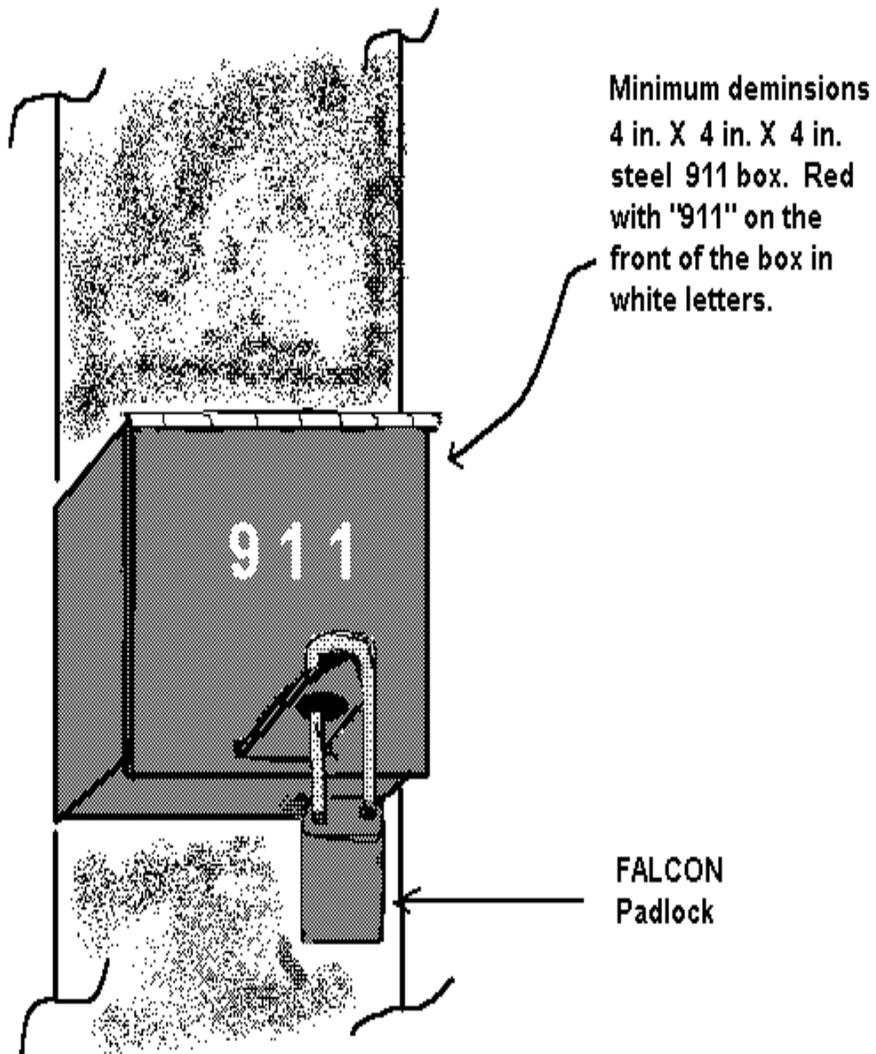
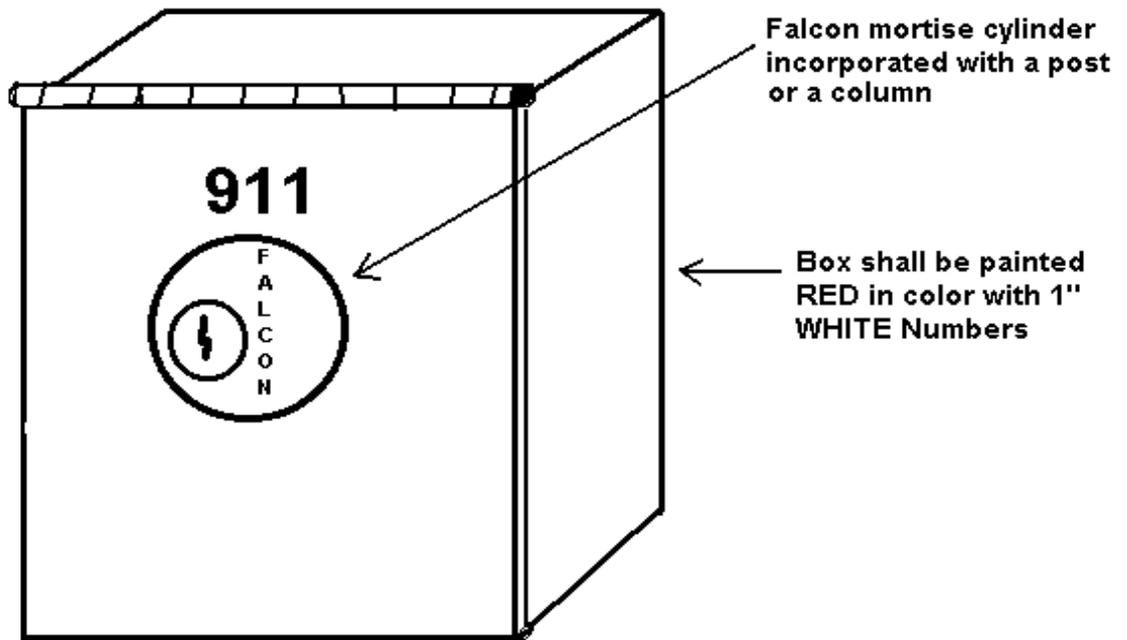


Figure No. 2 - Typical Key Box / "9-1-1" (Box closed with padlock)

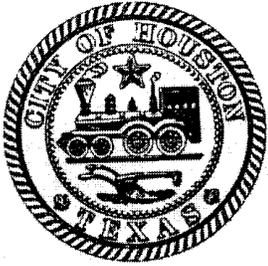


**Figure No. 3 – Key Box / “9-1-1” Box with FALCON Mortise Cylinder**



## REFERENCES

1. City of Houston *Fire Code*, International Fire Code, 2006 edition, as amended.
2. City of Houston *Code of Ordinances*, Section 42-235.



## HOUSTON FIRE DEPARTMENT LIFE SAFETY BUREAU (LSB)



### LSB STANDARD 05, REV. 03 KEY BOXES

**INCLUDES ELECTRIC FENCE and VOLUNTARY KNOX BOX REQUIREMENTS**

**SUPERSEDES:** LSB Standard 05, Rev. 02, dated 12/31/10

**NOTE: A vertical bar in the left-hand column delineates changes to the previous version.**

**Effective Date: 5/01/2012**



LSB standards are established in accordance with provisions of the City of Houston Fire Code. They are subject to the administrative sections covering alternative materials and methods, modifications and the Board of Appeals.

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# LSB STANDARD 05, rev. 03

## KEY BOXES

### SECTION 5.1 --- GENERAL

#### 5.1.1 Scope

This standard provides a method of providing for and maintaining adequate and unobstructed emergency access for Fire Department apparatus and personnel to buildings, structures, hazardous occupancies or other premises within the City of Houston as may be required by the Fire Marshal, Chief of the Houston Fire Department and the Houston *Fire Code*.

#### 5.1.2 Purpose.

The purpose shall be to provide clarification of requirements and guidance to person(s) charged with providing and maintaining required fire department access to premises in compliance with the *Fire Code*. The provisions of this standard are general in nature and are not intended to override the specific requirements of City of Houston *Code of Ordinances* or the *Fire Code*.

This standard is subject to periodic review and updates, to accommodate changes in local need or requirements, changes in nationally recognized standards, in related technology or where required by state or federal regulations.

**Notice:** Where references in this Standard are made to products manufactured by “Falcon Locks” and related 9-1-1 boxes, certain products manufactured by the “Knox Company” have been approved for voluntary use in lieu of “Falcon Lock” products and the 9-1-1 boxes.

Approved items manufactured by the “Knox Company” may be referenced online at [www.knoxbox.com](http://www.knoxbox.com).

The following is a list of acceptable “Knox Company” products that are allowed to be used inside the City of Houston City Limits.

- Elevator Box
- Electrical Shutdown Box
- Keyswitch
- Padlock
- FDC 2 ½” Locking Cap
- SecureCap
- Cabinets (1300 Series)
- 3200 Series Box, Single-Key Style, ONLY with the hinged lid.
- 4100 Series Box

The Fire Marshal’s final approval and a permit are required for the installation and use of any “Knox Company” or “Falcon Lock” product.

### SECTION 5.2 --- DEFINITIONS

### **5.2.1 Falcon Mortise Cylinder.**

An approved “9-1-1” mortise cylinder lock unit approved for use with “9-1-1” boxes and attainable only from certain gate companies or contractors. Only authorized emergency service personnel retain keys to these locks.

### **5.2.2 Falcon Padlock.**

An approved “9-1-1” padlock applied to “9-1-1” boxes and attainable only from certain gate companies or contractors. Only authorized emergency service personnel retain keys to these padlocks.

### **5.2.3 Key Box / “ 9-1-1” Key Box.**

A tamper proof box secured with a lock operable by an approved fire department key, or other approved means as provided for in Section 5.3.4 of this Standard, and having contents as required by applicable LSB Standards.

## **SECTION 5.3 -- GENERAL REQUIREMENTS**

### **5.3.1 Where required.**

When access to or within a structure or an area is unduly difficult because of secured openings or where immediate access is necessary for life-saving or fire fighting purposes, the Fire Marshal is authorized to require an approved key box or “9-1-1” key box to be installed in an accessible location. The key box shall be of a type approved by the Fire Marshal and shall contain all necessary keys to gain access. In addition to keys, boxes shall contain other items determined to be necessary by the Fire Marshal for the effective response of fire department personnel to an emergency at the premises.

#### **5.3.1.1 Access control gates and barriers.**

For Key Box / “9-1-1” Box use on access control gates and barriers, refer to LSB Standard 04, “Access Control Gates”.

#### **5.3.1.2 High-rise Buildings.**

A key box, used by the fire department to obtain building access, shall be installed on all high-rise buildings.

Exception:

1. The Fire Marshal may waive this requirement for buildings that have qualified, on-site personnel who are available at all times to provide immediate building access for the fire department.

### **5.3.2 Box Construction.**

Key boxes shall be constructed of metal materials as to be weather resistive and of sufficient strength and thickness to deter forced entry. The box should be of size sufficient to contain all keys, swipe cards, and other required items as may be deemed necessary by the Fire Marshal (for minimum box dimensions see Appendix A). The front for the box shall be hinged and be designed so as can be secured by an approved mortise cylinder lock or designed with a pad-eye so as can be secured by an approved padlock.

Boxes shall be painted any color approved by the Fire Marshal except that the door of the box shall be painted bright red so as to be readily noticeable, and have the words **"FIRE DEPARTMENT"** or the number **"911"** painted in white letters not less than 1 inch in height (see Appendix A).

### **5.3.3 Location.**

Key boxes shall be installed on the exterior of a structure or building, as near as practical to the main entrance door or designated emergency access door. Boxes should be located within 48 to 60 inches above the ground level and securely affixed to a wall, post or column so as not to be loose or movable. Boxes shall be positioned so as to be readily apparent upon approach to the door.

At locations where hazardous materials are stored in quantities requiring fire department permits and at warehouse locations, Key boxes shall be located at the main fire department access entrance to the facility, either at a guard shack or gate house, or similar location. Where no guard station or gate house is provided, then a weather resistant "9-1-1" box, large enough to contain all required Hazardous Materials Inventory Sheets, floor plans and access keys, shall be provided at a readily identifiable and accessible location that will not be endangered by fire in the facility.

### **5.3.4 Locking Device.**

Key boxes may be locked with a Falcon Mortise Cylinder Lock, Falcon Padlocks, or a padlock of a design so as can be cut open with standard bolt cutters carried on emergency apparatus. No "shankless", short shank, nor super hardened locks will be allowed.

### **5.3.5 Approval.**

Fire Department approval is required to install and maintain key boxes for access to or within such structures or properties as office buildings, residential buildings, nursing homes, hospitals, school buildings, industrial plants and facilities, hazardous materials storage buildings, large storage buildings, or other structures as the Fire Marshal may require. Approval shall be obtained through the permitting process prior to final installation of a key box or "9-1-1" key box.

## **SECTION 5.4 --- HIGH VOLTAGE ELECTRIC FENCES**

### **5.4.1 High Voltage Key Box Construction and Maintenance.**

Key boxes shall be constructed of metal materials that are weather resistive and of sufficient strength and thickness to deter forced entry. The front of the box shall be hinged and be designed so it can be secured by an approved mortise cylinder lock or designed with a pad-eye that can be secured by an approved padlock.

Boxes used for high-voltage fences shall be painted a bright "RED" color and have the words **"FIRE DEPARTMENT"**, or the numbers **"9-1-1"**, painted in at least 1-inch "WHITE" letters or numbers on the front of the box.. The front of the box shall also be labeled **"HIGH VOLTAGE KEY BOX"** in white letters at least 1-inch in height.

The box should be of size sufficient to contain red and green indicator lights, a "Mushroom" pushbutton no less than 1-1/2" in diameter and other required items as

may be deemed necessary by the Fire Marshal. The Indicator lights shall be readily visible and mounted on the interior of the box. The red light shall be labeled "Energized" and the green light shall be labeled "Deactivated" in letters that are readily visible. The Mushroom pushbutton shall be labeled "Push to Deactivate Fence". Deactivating the fence shall be accomplished by "**PUSHING**" the mushroom pushbutton. Once the mushroom button is pushed, it shall immediately activate a relay system, deactivating the fence and shall cause the red light to turn off and the green light to illuminate. Key Box and all components shall be maintained in proper working condition at all times.

#### **5.4.2 High Voltage Key Box Location.**

Key Boxes shall be located at the main fire department entrance as approved by the Fire Marshal and shall be outside of the perimeter fence or wall. The 911 box shall be mounted on a post or wall and located within 48 to 60 inches above ground level and securely affixed so as not to be loose or moveable. At no time shall the 911 box be in contact with any part of the high voltage fence or perimeter fence.

#### **5.4.3 High Voltage Fence Registration.**

Prior to installing the High Voltage Fence, the responsible party shall submit a completed, "*Houston Fire Department Electric Fence Registration Form*" to the code official. Any changes to the original fence design and construction or re-location of the **9-1-1 HIGH VOLTAGE KEY BOX** shall require submittal of a new registration form indicating what changes were made.

### **SECTION 5.6 --- Permit**

#### **5.6.1 Required**

A permit is required to install and maintain a Key Box or "9-1-1" Key Box. This permit shall be renewed annually.

#### **Permit Office contact information for Fire Prevention Permits is as follows:**

The Houston Permitting Center

1002 Washington Avenue

Houston, Texas 77007

Hours of operation: 8:00 a.m. to 3:30 p.m. Central Time

Monday through Friday

Office phone (832)394-8811

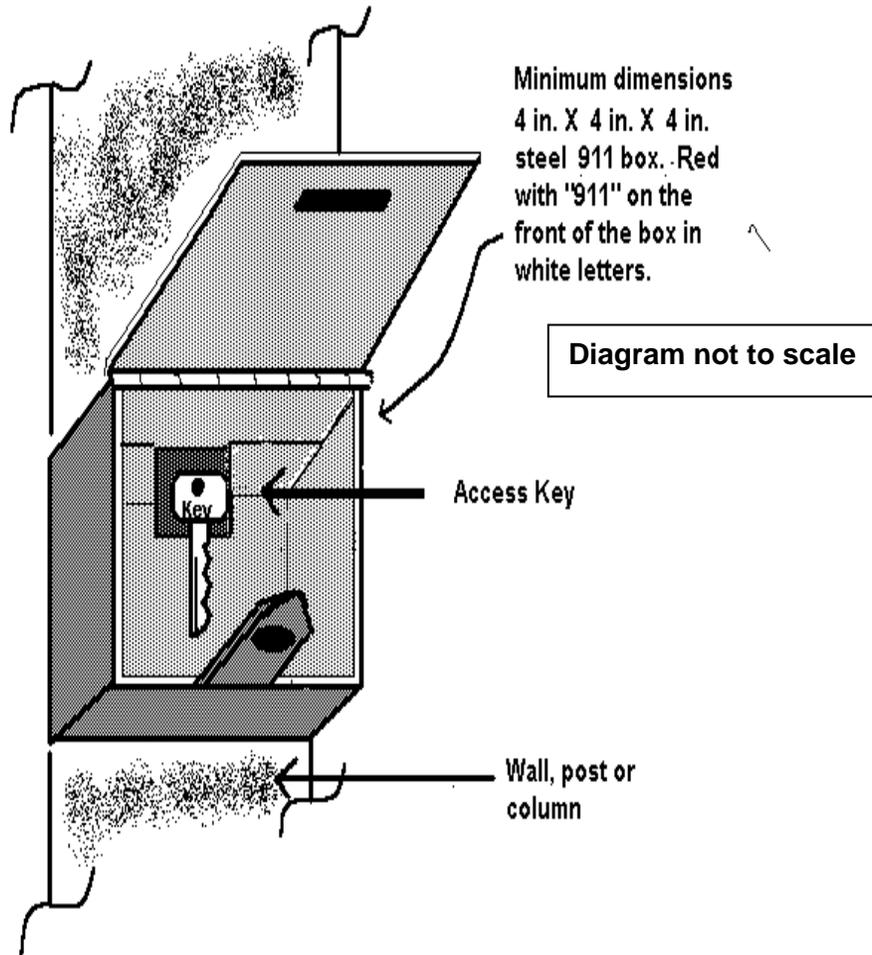
To Email Customer Service Questions: [hfd.permitoffice@houstontx.gov](mailto:hfd.permitoffice@houstontx.gov)

Link to City Wide Fee Schedule: [www.houstoncityfees.org](http://www.houstoncityfees.org)

# APPENDIX A

## KEY BOXES

Figure No. 1 -Typical Key Box / "9-1-1" Box (Open, with padlock removed)



**Figure No. 2 - Typical Key Box / "9-1-1" (Box closed with padlock)**

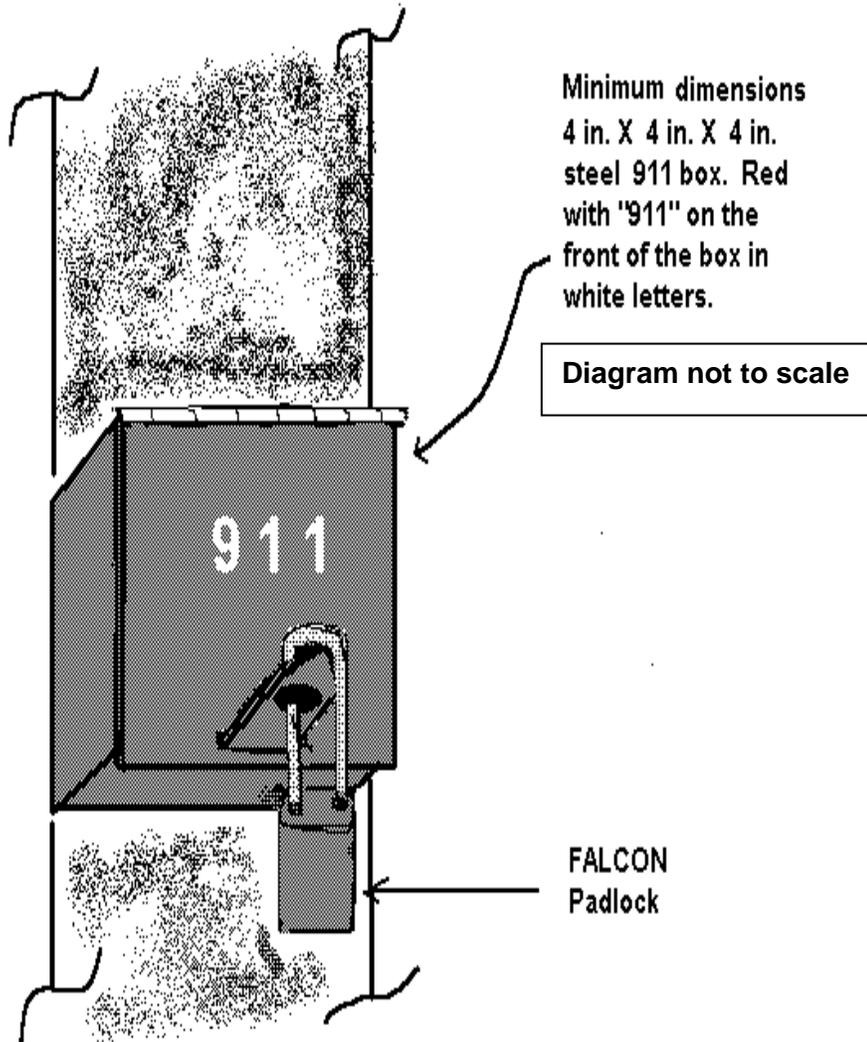
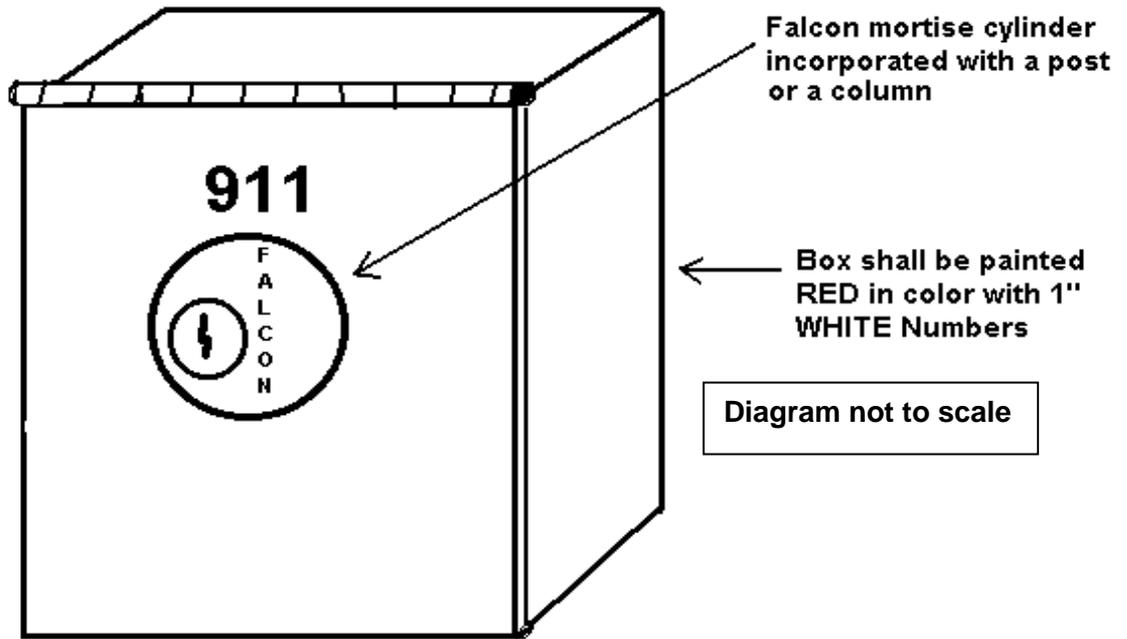


Figure No. 3 – Key Box / “9-1-1” Box with *FALCON* Mortise Cylinder



## REFERENCES

1. City of Houston *Fire Code*, International Fire Code, 2006 edition, as amended.
2. Life Safety Bureau (LSB) Standard 03, "Fire Department Access".
3. Life Safety Bureau (LSB) Standard 04, "Access Control Gates".
4. Life Safety Bureau (LSB) Standard 06, "Fire Depository Boxes".



# HOUSTON FIRE DEPARTMENT ELECTRIC FENCE REGISTRATION FORM

Name of Business:

Address Number and Street Name:  
Zip Code:

Responsible Party:  
(Print legibly)

Contact Person:  
(Print legibly)

Contact Number:

Alternate Contact Person:  
(Print legibly)

Alt. Contact Number:

Number of Access Gates:

Installing Company:

Installing Company Contact Number:

Installing Company Address:

I understand by signing and submitting this registration form the fence shall be installed in accordance with City Ordinance 2008-81 and all Fire Department Key Boxes shall be installed in accordance with all Houston Fire Department Life-Safety Bureau Standards. I also understand Fire Department access shall be constructed and maintained in accordance with the City of Houston Fire Code and all Life-Safety Bureau Standards. This registration is non-transferable and shall be resubmitted with any change in ownership, responsible party or contact persons. Any modification to the fence will require a new registration form and site plan.

Installing Contractor Name:  
(Print legibly)

Installing Contractor Signature:

Date:

Responsible Party Name:  
(Print legibly)

Responsible Party Signature:

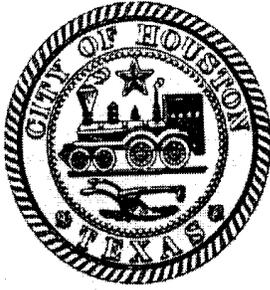
Date:



### Site Plan

Show all Fire Department access roadways, gates, key boxes and location of facility.

A large, empty rectangular box with a black border, intended for the site plan drawing.



**HOUSTON FIRE DEPARTMENT  
LIFE SAFETY BUREAU (LSB)**



**LSB STANDARD 06, Rev 04  
FIRE DEPOSITORY BOXES**

**SUPERCEDES:** LSB STANDARD 06, Rev. 03, Dated 12/31/2010

**NOTE:** A vertical bar in the left-hand column delineates changes to the previous version.

**Effective Date: 5/01/2012**



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LSB Standards are established in accordance with provisions of the City of Houston Fire Code. They are subject to the administrative sections covering alternative materials and methods, modifications, and the Board of Appeals.

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**LSB STANDARD 06, Rev 04**  
**FIRE DEPOSITORY BOXES**

**SECTION 6.1 --- GENERAL**

**6.1.1 Scope**

This standard provides a method of furnishing current, valid property information and means of emergency access for fire department personnel in all high-rise occupancies, and other facilities as may be required by the Fire Marshal as called for in the *Fire Code* or this standard.

**6.1.2 Purpose**

The purpose shall be to provide clarification of requirements and guidance to persons charged with providing and maintaining the Fire Depository Box in high-rise buildings as prescribed by the *Fire Code*, and this standard, in a state of operational readiness and reliability.

This standard is subject to periodic review and updates, to accommodate changes in local need or requirements, changes in nationally recognized standards, in related technology, or where required by state or federal regulations.

**Notice:** Where references in this Standard are made to products manufactured by “Falcon Locks” and related 9-1-1 boxes, certain products manufactured by the “Knox Company” have been approved for voluntary use in lieu of “Falcon Lock” products and the 9-1-1 boxes.

Approved items manufactured by the “Knox Company” may be referenced online at [www.knoxbox.com](http://www.knoxbox.com).

The following is a list of acceptable “Knox Company” products that are allowed to be used inside the City of Houston City Limits.

- Elevator Box
- Electrical Shutdown Box
- Keyswitch
- Padlock
- FDC 2 ½” Locking Cap
- SecureCap
- Cabinets (1300 Series)
- 3200 Series Box, Single-Key Style, ONLY with the hinged lid.
- 4100 Series Box

The Fire Marshal’s final approval and a permit are required for the installation and use of any “Knox Company” or “Falcon Lock” product.

## SECTION 6.2 --- DEFINITIONS

### 6.2.1 Fire Depository Box (FDB)

An approved metal protective box, container or cabinet that contains the information manuals, packets and keys as required by this standard. Boxes shall be painted any color approved by the Fire Marshal except that the door of the box shall be painted bright red so as to be readily noticeable, and have the words "**FIRE DEPOSITORY BOX**" in white permanent letters not less than 1 inch in height.

### 6.2.2 Key Box

A red protective container or box that contains the fire department emergency access key(s). For Key Boxes, see LSB Standard 05, "Key Boxes".

### 6.2.3 High-rise Building

Any building having occupied floors located more than 75 feet above grade plane.

### 6.2.4 High-rise Survey Forms

Survey forms (HFD Form 27) that have been compiled by the HFD Operations Division, to provide a variety of fire and life-safety information about a building, its contents and its fire protection systems, that are necessary for use in event of an emergency within that building.

### 6.2.5 Mobility Impaired List

A list, by name, impediment and work location, of persons who may have some type of physical condition or hindrance that could encumber their self-evacuation from the floor of incident or the building in event of an emergency, or who would need assistance by other personnel or an emergency service. Persons with a short-term illness or injury need not be placed on this list. Floor Wardens and building security personnel should however be knowledgeable of any person who may be in need of assistance in evacuating during an emergency.

## SECTION 6.3 --- GENERAL REQUIREMENTS

### 6.3.1 General Contents of Fire Depository Box (FDB)

The FDB shall contain only the following approved items and information:

1. Loose-leaf type binder containing required information sheets.
2. Building access keys.
3. Standardized floor plans (when not in the loose-leaf binder).

### 6.3.2 Binder Information Sheets

A loose-leaf binder that is tabbed and indexed, shall contain the following completed information sheets:

1. **High Rise Survey forms** - At least **5 Sets** (HFD 27, Rev. 3/2002), Completed.
2. **Supplemental Information sheet.** See Section 6.3.7.
3. **Mobility Impaired List.** The most current dated Mobility Impaired List giving person(s) name, nature of impairment, work floor and location. (If **NO** Mobility Impaired Persons are employed within the building, provide a sheet of paper

stating “*NO MOBILITY IMPAIRED – AS OF THIS DATE*”, and date the form). The dated Mobility Impaired List shall be reviewed, verified and updated at least every 6 months.

4. **Elevator Operating Instructions**. Detailed written instructions for elevator use. Should include elevator fire fighter re-call, cab use, and any other special details for elevator operations. (Instructions for elevator use should be obtained from building’s elevator service company.)

See Appendix B, “Instructions for Elevator Operation”.

5. **Elevator Diagram**. A side view diagram of all building’s elevator shafts, showing floors served by each elevator bank, any transfer floors, shuttle elevators, or private elevators. (Where possible show any dumb-waiter, mail cart or similar shaft-ways.) See Appendix A for examples.

6. **List of emergency contact phone numbers** for the building – property manager, engineer, and security company.

7. **Standardized Floor Plans**. See Section 6.3.6.

### **6.3.3 Building Emergency Access Keys, Elevator Switch Keys and Legend Card**

#### **6.3.3.1 Legend Card**

One laminated letter size (8 inch X 11 inch or longer) “**High-rise Fire Depository Box Key Tags” Legend Card**, specific to that building, shall be provided and maintained in the Fire Depository Box (FDB). The Legend Card, printed in at least an 18 font or equivalent lettering so as to be readily legible, shall describe all the required keys and their functions and the respective key tag colors. (See Appendix C for Legend information)

#### **6.3.3.2 Key Sets**

A minimum of **5 sets** of individually detachable keys shall be provided and maintained in the FDB. The key sets shall be assembled and tagged as indicated in the following:

The key tags shall be a rigid, plastic laminate material in the colors indicated and imprinted with Block lettering of 1/4<sup>th</sup> inch or equivalent in height, so as to be readily legible (See Appendix C, for examples of key set arrangements and tag colors). The following keys shall be provided on each of the **5 sets**:

**A. Building Emergency Access Keys** – for accessing all exit stairs, mechanical and electrical rooms and spaces, roof access doors or hatches, standpipe and sprinkler system control valves, and special hazard spaces.

- “**STAIRWAY ACCESS**” Keys required to access all locked building exit stair doors shall be provided on **WHITE** tags. All the building exit stairway door locks shall be keyed to the same emergency access key.
- “**MECHANICAL ROOMS**”, “**ELECTRICAL ROOMS**”, and “**ELEVATOR EQUIPMENT ROOMS**” Keys required to access all building elevator equipment rooms, air handler (HVAC) mechanical, and electrical panel rooms or spaces shall be provided on **WHITE** tags.

- **Exception:** Main building electrical service vault rooms require special keys that ONLY the electrical power service provider will possess due to extreme electrical hazards and dangerous nature of equipment within the vaults.
  - **“BUILDING ROOF ACCESS”** Keys required for roof access (if not on the building key system) shall be labeled on WHITE tags and shall identify which stairway(s) provide roof access.
  - **“SPRINKLER/STANDPIPE CONTROL VALVE”** Keys required for sprinkler and standpipe control valve operation. All locking devices on control valves shall be keyed to the same key that will unlock all sprinkler and standpipe control valves. Control valve keys shall be labeled on BLUE tags as **“SPRINKLER/STANDPIPE CONTROL VALVES”**.
  - **Additional Special Keys.** Where special keys are needed to access any special process or hazard areas or rooms in the building, such as “Flammable Liquids” Storage Rooms, “Hazardous Materials” Storage Rooms, large File Storage rooms, special equipment spaces, etc., appropriate access keys shall be provided, properly labeled to identify the specific Floor / Room location and Nature, on WHITE tags. Notation of all special keys shall also be included on the Supplemental Information sheet in the FDB.
- B. Elevator Switch Keys** – There shall be elevator switch keys provided for all Emergency Fire Service (Phase I) Recall and Emergency Fire Service (Phase II) firefighter elevator car operations.
- When one elevator switch key actuates both elevator recall and car operation functions, it shall be labeled with a **RED** tag as, **“Fire Service Phase I & Phase II”**.
  - When there are still two separate elevator switch keys required to operate an elevator in Emergency Fire Service, then the separate **RED** tags shall read:  
Key 1 - **“Fire Service Phase I”**  
Key 2 - **“Fire Service Phase II”**
- C. Additional Elevator Car Keys** – When applicable the following keys shall also be provided and labeled as indicated:
- **“Elevator Car Access Panel”** Keys on ORANGE tags.
  - **“Elevator Car Door Open”** Keys on RED tags.
  - **“Elevator Emergency Stop/Run”** Keys on ORANGE tags. When **“Elevator Emergency Stop/Run”** keys are provided, the **“Elevator Emergency Stop/Run”** key should be individually detachable, to be used in conjunction with the **“Elevator Fire Service Phase II”** key in the event of an elevator malfunction to immediately activate the **Emergency Stop** should the elevator operate incorrectly.

- **“Elevator Inspection On/Off” Keys.** Where no **“Elevator Emergency Stop/Run”** switches are provided in the elevator cars, **“Elevator Inspection On/Off”** switches, or keys on **YELLOW** tags, shall be provided as a substitute in an emergency.

#### **6.3.4 Elevator Hoistway Door Keys/Tools**

Where applicable, a minimum of 2 each appropriate elevator hoistway door keys/tools for all elevators in the building shall be provided for Fire Department use in elevator entrapments. (Multiple types of “Elevator Hoistway Door” keys/tools may be required where different elevator systems exist within a building, each key/tool shall then be labeled with WHITE tags, imprinted with Block lettering of 1/4th inch or equivalent, identifying the appropriate elevator locations.) “Elevator Hoistway Door” keys/tools shall be kept in the Fire Depository Box.

#### **6.3.5 Independent Service Keys**

“Independent Service” keys shall **NOT** be placed in the Fire Depository Box. A minimum of 2 “Independent Service” keys (labeled with BLACK tags), shall be made readily available to the Fire Department for use during Medical Emergencies and/or Elevator Entrapment Rescues. The key tags shall be of plastic laminate materials in the color indicated and imprinted with Block lettering of 1/4<sup>th</sup> inch or equivalent in height, so as to readily legible.

Where 24-hour on-site building security is provided, “Independent Service” keys may be kept secured at the security consol and be readily available for the Fire Department use upon request. Buildings without 24-hour on-site security shall provide a separate key box near the Fire Depository Box location, with the box labeled “EMS Elevator Keys”, and secured with an approved manner.

**NOTE:** Where elevator “Independent Service” key switches are located behind elevator car access panels, **“Elevator Car Access Panel”** keys on **ORANGE** tags (key tags shall be made of rigid plastic laminate material in the color indicated and imprinted with Block lettering of 1/4<sup>th</sup> inch or equivalent in height, so as to be readily legible), shall be provided on a key ring along with each the “Independent Service” key.

#### **6.3.6 Standardized Floor Plans**

A minimum of 3 sets of standardized floors plans shall be provided, unless more are deemed necessary by the HFD. All floor plans will include the following information for each floor and/or level when applicable:

- Fire Command Or Central Control Room
- Fire Depository Box
- Fire Alarm Annunciator Panel
- Public Address System Panel
- Enclosed Stairways
- Stairwell Identification
- Tenant Stairs/Escalators
- Two-Way Communication Means
- Fire Hose Valve Connections and Cabinets
- Elevator Lobbies

- Elevator Fire Service Recall Location
- Mechanical, Electrical Service and Air Handlers Rooms
- Sprinkler Control Valves
- Fire Extinguishing Systems
- Computer Telecom Rooms with Special Extinguishing Systems
- UPS Battery Rooms
- Pre-action Protected Areas and Location of Control Valves
- Other Emergency Control or Indicating Systems
- Gas Service Main Shut-off Location
- Smoke Removal Controls
- Emergency Generator

### **6.3.7 Supplemental Information Sheet**

Supplemental information sheet should contain the following information sections:

#### **6.3.7.1 Significant building information**

Important information needed by the fire department, in a bullet format, listing hazards or precautions peculiar to that building. (Ex: Presence of Shunt Trips, Lack of emergency generator, Lack of direct roof access from stairways, Hazardous materials/flammable liquid storage locations)

#### **6.3.7.2 Pertinent building information**

Pertinent to High-rise survey form (HFD 27, Rev. 3/2002), but not contained within the high-rise survey form, or where more narrative information maybe needed.

##### **A. Building information**

- Is sprinkler system(s) supplied by building's standpipe riser
- Number of stairs: pressurized or non-pressurized
- Exit stairway discharge locations
- Identify exit points to public way
- Evacuees will be directed to what location(s)
- Building construction type – Steel, Concrete

##### **B. Elevator information**

- Are elevators equipped with "Shunt Trips".
- Are Sprinklers in elevator machine rooms.
- Are Sprinklers in elevator hoistway.
- Alternate Recall Floors identified.

##### **C. Standpipe system information**

- Working pressure on systems with Pressure Reducing Valves (PRV) on fire hose connections.
- Do Fire Department Connections (FDC) supply individual standpipe risers.

## **SECTION 6.4 --- LOCATION OF FIRE DEPOSITORY BOX (FDB)**

#### **6.4.1 Fire Depository Box placement**

The FDB shall be located within the building's *Fire Command Center, Central Control Station, or Emergency Control Center* in buildings that have such dedicated rooms. In buildings that lack a Fire Command Center, the FDB shall be located adjacent to the main fire alarm panel, where it can be readily identified and accessed.

#### **6.4.2 Locks on FDB**

Locks must be the type approved for use on a "9-1-1" Boxes (openable with a special fire department key).

#### **6.4.3 Double Locking Boxes**

Double Locking FDBs shall use an approved "Falcon" Lock as one of the locking devices and a separate padlock as the other locking device, to facilitate property personnel's access into the box to update information and /or replace keys as needed.

### **SECTION 6.5 --- KEY BOX / FIRE DEPOSITORY BOX PERMIT**

#### **6.5.1 Permit Requirement**

A fire department "**KEY BOX / FIRE DEPOSITORY BOX**" permit is required for the lock box. This permit shall be renewed annually, and a copy of the permit shall be posted in or near the FDB.

#### **6.5.2 Permit Information**

A permit is required to install and maintain an approved Key Box and/or Fire Depository Box.

#### **Permit Office contact information is as follows:**

The Houston Permitting Center

1002 Washington Avenue

Houston, Texas 77007

Hours of operation: 8:00 a.m. to 3:30 p.m. Central Time

Monday through Friday

Office phone (832)394-8811

To Email Customer Service Questions: [hfd.permitoffice@houstontx.gov](mailto:hfd.permitoffice@houstontx.gov)

Link to City Wide Fee Schedule: [www.houstoncityfees.org](http://www.houstoncityfees.org)

## APPENDIX A

**Example No 1. Elevator Riser Diagram: Generic Elevator and Stairwell Diagram**

Floor	Stair A	Elevator Service																		Stair B	Floor						
		High Bank						Middle Bank						Low Bank								Frghs					
PH																					PH						
35								7	8	9	10	11	12	13	14	15	16	17	18				35				
34																											34
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2																							2				
1		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		1				
B																					B						

----- Elevator Car No.s -----



Elevator Service  
No elevator service in bank  
Floor of Recall



Stairwell  
Stairwell Re-Entry  
Floor of Alternate Recall

**Example No. 2 Elevator Riser Diagram: Elevator and Stairwell Diagram**

Elevator Service							
Floor Level	Stair A	Freight Elevator Car: 13	High Bank Elevator Cars: 1-4	Mid-Bank Elevator Cars: 4-8	Low Bank Elevator Cars: 8-12	Stair B	Floor Level
24	Reentry			XXXXXX	XXXXXX	Reentry	24
23				XXXXXX	XXXXXX		23
22				XXXXXX	XXXXXX		22
21				XXXXXX	XXXXXX		21
20	Reentry			XXXXXX	XXXXXX	Reentry	20
19				XXXXXX	XXXXXX		19
18				XXXXXX	XXXXXX		18
17			Alt. Recall	XXXXXX	XXXXXX		17
16			XXXXXX		XXXXXX		16
15	Reentry		XXXXXX		XXXXXX	Reentry	15
14			XXXXXX		XXXXXX		14
13			XXXXXX		XXXXXX		13
12			XXXXXX		XXXXXX		12
11			XXXXXX		XXXXXX		11
10	Reentry		XXXXXX		XXXXXX	Reentry	10
9			XXXXXX	Alt. Recall	XXXXXX		9
8			XXXXXX	XXXXXX			8
7			XXXXXX	XXXXXX			7
6			XXXXXX	XXXXXX			6
5	Reentry		XXXXXX	XXXXXX		Reentry	5
4			XXXXXX	XXXXXX			4
3			XXXXXX	XXXXXX			3
2		Alt. Recall	XXXXXX	XXXXXX	Alt. Recall		2
1	Reentry	Recall	Recall	Recall	Recall	Reentry	1
B	Reentry		XXXXXX	XXXXXX	XXXXXX	Reentry	B

Elevator Service	
No Elevator Service	XXXXXX
Primary Recall Floor	Recall
Alternate Recall Floor	Alt. Recall
Re-entry Floor	Reentry

## APPENDIX B

### INSTRUCTIONS FOR ELEVATOR OPERATION

ELEVATOR MACHINE RM. SPRINKLED:	_____	_____	
	yes	no	
ELEVATOR SHAFTS SPRINKLED:	_____	_____	
	yes	no	
SHUNT TRIPS:	_____	_____	
	yes	no	
PHASE 1 ELEVATOR RECALL	_____	_____	_____
	auto	manual	both
PRIMARY RECALL FLOOR (Designated Landing)	_____		
ALTERNATE RECALL FLOOR (Alternate Landing)	_____		

**To recall elevators:** Specify manual recall procedure. \*If doors close after being recalled, specify how to re-open and how long they remain open.

**To operate car:** \*\*Specify if cab fire key (Phase Two) must be turned to "on" to operate elevators. Specify if different keys are used for Phase One and Phase Two.

**To travel to desired floor:** Explain how to travel to the desired floor. Specify if the first step of this action requires the doors be open or closed.

**To close door:** Specify how to close doors completely to remain closed.

**To open door:** Specify how to open doors completely to remain open.

**To hold car at floor:** Specify how to retain the car at desired floor. Can keys be removed?

**To cancel floor selection:** Specify how to cancel the floor selected and/or choose another floor.

**To return car to designated or alternate landing:**  
Specify how to return the car to the recall floor. Specify if the key can be removed. Specify if a firefighter or other person must accompany the car to the recall floor.

#### PROVIDE INSTRUCTIONS FOR EACH (DIFFERENT) BANK OF ELEVATORS THAT MAY OPERATE INDEPENDENTLY FROM ANOTHER.

\* Buildings constructed under Houston's high-rise code, between 1979 and 1997, may have elevator doors that open for a predetermined time and then close.

\*\* The ASME A17.1, 1984 edition, requires a *ON-OFF-HOLD* position switch in the elevator cars. Switches must be changed if they have a *BYPASS* position, disallowed in 1976.

## APPENDIX C

### KEY SETS WITH IDENTIFICATION TAGS

There shall be 5 separate “quick release” key holders as pictured below, with the keys as described below for a total of 5 sets of keys all appropriately labeled, provided and maintained in the Fire Depository Box.



There shall be 5 separate “quick release” holders with the keys described below for a total of 5 sets of all keys appropriately labeled, provided and maintained in the Fire Depository Box.

#### C-1 Key Set Arrangements:

5 sets of building emergency access keys as described below shall be provided for Fire Department use in the FDB of all high-rise buildings:

1. Each key shall have a 7/8-inch (13 mm) split key ring through it attaching the key to the appropriate colored plastic laminate identification tag.
2. A “quick release” key holder with one button operation that has 1-inch (25 mm) split rings on each end shall be used.

a) At one end of this “quick release” key holder, a 2-inch (50 mm) split ring will be attached to the 1-inch (25 mm) split ring that has the following building access keys:

- Stairway key & **White** Tag - on a 7/8-inch (13 mm) split ring
- Roof Access key & **White** Tag - on a 7/8-inch (13 mm) split ring
- Mechanical/Electrical Room key & **White** Tag - on a 7/8-inch (13 mm) split ring
- Elevator Equipment Room key & **White** Tag - on a 7/8-inch (13 mm) split ring
- All special access keys & **White** Tags – on a 7/8-inch (13 mm) split rings
- Sprinkler/Standpipe key & **Blue** Tag - on a 7/8-inch (13 mm) split ring

b) The other end of this “quick release” holder will have attached to the 1-inch (25 mm) split ring another 2-inch (50 mm) split ring with the following keys. On this 2-inch (50 mm) split ring only the following elevator keys (if applicable to that specific building) with corresponding plastic laminated colored I. D. tags :

- Fire Service - Phase 1 & Phase 2 - **Red** Tags - on a 7/8-inch (13 mm) split rings
- Elevator Car Door - **Red** Tag - on a 7/8-inch (13 mm) split ring
- Elevator Inspection On/Off – **Yellow** Tag - on a 7/8-inch (13 mm) split ring
- Elevator Stop/Run - **Orange** Tag - on a 7/8-inch (13 mm) split ring
- Elevator Car Access Panel - **Orange** Tag - on a 7/8-inch (13 mm) split ring
- Elevator Car Emergency Power Selector - **Green** Tag - on a 7/8-inch (13 mm) split ring

Scale: 7/8 inch = Approximately 13 mm  
1 inch = Approximately 25 mm

**NOTE:** “Independent Service” keys (pictured for labeling purposes only) shall **NOT** be attached to any of the above key sets, **nor** shall these keys be kept in the Fire Depository Box. “Independent Service” keys shall kept in a secured location or separate key box (See Section 6.3.5).

## **C-2 Key Tag Legend Card:**

Laminated letter size (8 inch X 11 inch) “High-rise Fire Depository Box Key Tags” Legend Card shall be provided and maintained in the Fire Depository Box (FDB). The Legend Card, printed in least an 18 font or equivalent lettering so as to be readily legible, shall describe all the required keys and their functions and the respective key tag colors. (See example of Legend Card below)

# High-rise Depository Box Key Tags

Fire Service  
Phase 1

Phase 1 recalls Elevator Cars to predetermined floor.

Fire Service  
Phase 2

Phase 2 places Elevator Car in Firefighter control.

Fire Service  
Phase 1 & 2

Phase 1 and Phase 2 uses same key.

Elevator  
Car Door

Opens Elevator Car Doors after elevator has been recalled in Phase 1 and doors have previously opened and closed.

Elevator  
Inspection On/Off

Can be used to stop elevator when there is no Emergency Stop / Run Switch.

Elevator Emergency  
Stop/Run

Allows you to stop elevator at a point in elevator shaft.

Elevator Car  
Access Panel

Opens panel containing Emergency Stop/Run Switch and/or Independent Service Switch.

Elevator Emergency  
Power Selector

Allows you to select which Elevator Car will operate under Emergency Power.

Building Sprinkler &  
Standpipe Locks

Unlocks Sprinkler / Standpipe Control Valves.

**Building  
Stairway Doors**

Unlocks All Stairway doors.

**Building  
Roof Access - Stair A**

Roof access in Stairway (Example A, B etc.)

**Building  
Mechanical Rooms**

Unlocks Mechanical / HVAC room doors.

**Building  
Electrical Rooms**

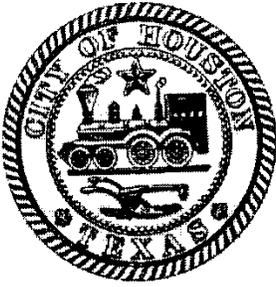
Unlocks Electrical Panel Closet/Room doors.

**Elevator  
Rooms**

Unlocks Elevator Equipment room doors.

## REFERENCES

1. City of Houston *Fire Code*, International Fire Code, 2006 edition as amended
2. City of Houston *Construction Codes*, all editions
3. LSB Standard 05, "Key Boxes"
4. American Society of Mechanical Engineers (ASME), Standard No. A17.3, "Safety Code for Elevators and Escalators", 1993 edition.



**HOUSTON FIRE DEPARTMENT  
LIFE SAFETY BUREAU (LSB)**



**LSB STANDARD 07, Rev 05  
HIGH-RISE FIRE SAFETY PLANS**

**SUPERSEDES:** LSB Standard 07, Rev. 04, effective 12/31/2010

**NOTE:** Sections concerning “Building Emergency Response Personnel” have been removed from this Standard and are no longer required, effective 5/01/2012.

**Effective Date: 5/01/2012**



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**LSB STANDARD 07, rev. 05  
HIGH-RISE FIRE SAFETY PLANS**

**SECTION 7.1 --- GENERAL**

**7.1.1 Scope.**

This standard shall apply to all high-rise buildings as defined by the *Building Code* and located within the City of Houston.

**7.1.2 Purpose.**

This standard shall provide guidance for all owners, managers and occupants of high-rise office/mercantile buildings, high-rise condominiums/apartments/dormitories, and high-rise hotels in the event of a fire emergency by applying all applicable provisions of the City of Houston *Fire Code* and *Building Code*, and this standard.

**SECTION 7.2 --- DEFINITIONS**

**7.2.1 High-rise Building.**

High-rise buildings are buildings having occupied floors located more than 75 feet above grade plane.

**7.2.2 Fire Safety Team.**

Building personnel selected and trained to utilize the approved Fire Safety Plan in promoting general fire and life safety in high-rise buildings. The Fire Safety Team shall include the Fire Safety Director, Assistant Directors, Fire Wardens and other such personnel included in the approved fire safety plan. The members of the Fire Safety Team shall possess a current certificate signed by the Fire Marshal or an approved instructor as per Section 18.3. Certificates shall be valid for a period of five years.

**7.2.3 Fire Safety Director.**

The Fire Safety Director is a representative of the owner of a high-rise building who is mandated by the Fire Marshal to implement the Fire Safety Plan by providing information and proper training to staff, tenants, residents and guests, as defined herein. The Director is responsible for directing the Fire Safety Plan during and after a fire emergency.

**7.2.4 Fire Warden.**

The Fire Warden is a dependable and responsible representative of a tenant in a high-rise office building who will, when safe to do so, help direct the evacuation of occupants according to the approved fire safety plan.

**7.2.5 Occupants.**

Occupants include management, staff, tenants, residents, guest, or visitors.

**7.2.6 Tenants.**

Tenants are lessees or occupants in a high-rise office / mercantile building.

### **7.2.7 Resident.**

A resident is an occupant of a high-rise condominium / apartment / dormitory building.

### **7.2.8 Guest.**

A guest is an occupant of a high-rise hotel room.

## **SECTION 7.3 --- SUBMITTING AND IMPLEMENTING A PLAN**

### **7.3.1 Process of receiving plan.**

The process to receive an approved Fire Safety Plan consists of the three following essential training elements conducted by persons, institutions or companies approved by the Fire Marshal according to regulations established by the Fire Marshal:

Consultation with building management

Certification training for Fire Wardens; and

A fire drill supervised by persons, institutions or companies approved by the Fire Marshal

### **7.3.2 Possession of Fire Safety Plan.**

The owner, management or designated representative of a high-rise building (office, mercantile, condominium, apartment, dormitories or hotel) shall possess and maintain a Fire Safety Plan approved by the Fire Marshal according to regulations established by the Fire Marshal.

### **7.3.3 Plan contents.**

The emergency plan should include the following:

1. Identify the person or persons responsible for maintenance of facilities and personnel required by the plan.
2. Identify the responsible person designated as the "Fire Safety Director" and their duties.
3. List of sufficient alternates shall be provided for each Fire Safety Director and Assistant Directors.
4. Provide approved procedures for reporting fires and / or fire alarms.
5. Instructions on the Fire Alarm system operations.
6. Procedures for fire safety.
7. Identify the building's fire safety features.
8. Maps with means of egress. A means of egress comprises the vertical and horizontal ways of travel to a public way.

9. The maps shall also indicate those stairwell doors through which, under emergency conditions, re-entry may be made into the building.

10. The locations of any of the following components will be required on the maps:

- a. Fire Alarm Pull Stations
- b. Fire Extinguishers and Fire Hose Cabinets
- c. Elevator Lobbies
- d. Fire Depository Box
- e. Emergency Generator
- f. Fire Alarm Annunciator Panel
- g. Fire Extinguishing Systems
- h. Smoke Removal Controls
- i. Public Address System Panels
- j. Two-way Communications means
- k. Fire Command or Central Control Room
- l. Elevator Fire Service Recall Location
- m. Stairwell Identification
- n. Air handlers, Mechanical and Electrical service rooms
- o. Other Emergency Control or Indicating Systems

## **SECTION 7.4 --- DUTIES AND RESPONSIBILITIES**

### **7.4.1 Fire Safety Director.**

#### **7.4.1.1 Maintain records.**

Maintain current Fire Safety Team training records. Records shall be made available to the Fire Marshal upon request.

#### **7.4.1.2 Notify Acting Safety Director.**

Notify an on-site management representative, who shall be the Acting Fire Safety Director and shall be capable of directing fire safety, as provided for in the Fire Safety Plan, when the Fire Safety Director is not on duty in the building. The training and related activities of the Acting Fire Safety Director shall be under the direction of the Fire Safety Director. Such activities shall be subject to fire department control.

#### **7.4.1.3 Distribute plans (Office / Mercantile Buildings).**

Distribute the applicable parts of the approved Fire Safety Plan to all tenants, fire wardens and building management or contract employees.

#### **7.4.1.4 Distribute plans (Condominiums / Apartments / Dormitories).**

Distribute the applicable parts of the approved Fire Safety Plan to all building management or contract employees and residents.

#### **7.4.1.5 Distribute plans (Hotels).**

Distribute the applicable parts of the approved Fire Safety Plan to all building management or contract employees.

#### **7.4.1.6 Conduct Fire Drills.**

Be familiar with the approved Fire Safety Plan and conduct a fire drill at least every six (6) months. The Fire Marshal, upon survey of conditions, may require additional drills. A written record of such drills shall be kept on the premises and shall be readily available for fire department inspection.

#### **7.4.1.7 Implement training program (Office / Mercantile Buildings).**

Implement an approved training program to provide fire prevention and emergency procedures for, but not limited to, the following person(s): building maintenance personnel, security personnel, custodial personnel, and such other specialized personnel the Fire Marshal deems applicable to each building. Ensure that each employee is familiar with the Fire Safety Plan, the location of exits, and the location and activation of fire alarm pull stations.

#### **7.4.1.8 Implement training program (Condominiums / Apartments / Dormitories).**

Implement an approved training program to provide fire prevention and emergency procedures for, but not limited to, the following person(s): the concierge, housekeeping, kitchen personnel, laundry personnel, doorman, building maintenance personnel, security personnel, custodial personnel, and such other specialized personnel the Fire Marshal deems applicable to each building. Ensure that each employee be familiar with the Fire Safety Plan, the location of exits and the location and operation of fire alarm pull stations and any applicable manually operated fire extinguishing systems.

#### **7.4.1.9 Implement training program (Hotels).**

Implement an approved training program to provide fire prevention and emergency procedures for, but not limited to, the following person(s): the MOD, PBX operators, housekeeping, kitchen personnel, laundry personnel, doorman, building maintenance personnel, security personnel, custodial personnel, and such other specialized personnel the Fire Marshal deems applicable to each building. Ensure that each employee be familiar with the Fire Safety Plan, the location of exits and the location and operation of fire alarm pull stations and any applicable manually operated fire extinguishing systems.

#### **7.4.1.10 Fire Depository Box (FDB).**

Be responsible for installation and maintenance of the FDB and its contents. See LSB Standard 06, "Fire Depository Boxes".

#### **7.4.1.11 Fire Safety Assistance List (Hotels).**

Maintain a current guest Fire Safety Assistance List at the front desk and **update it daily**.

#### **7.4.1.12 Assist the Fire Marshal.**

Provide facilities and assistance as needed by the Fire Marshal to obtain approval for the Fire Safety Plan.

#### **7.4.1.13 Ensure method of reporting fires (Office / Mercantile Buildings)**

The building manager or owner of a high-rise office or mercantile building, who has employed or contracted with an answering service, shall provide instructions to the answering service to call "9-1-1" when a fire, the smell of smoke, or a fire alarm is reported to them. Answering services outside of the local City of Houston / Harris County "9-1-1" service area shall call the Houston Fire Department Office of Emergency Communications emergency telephone number (713-884-3143). Answering services shall instruct the caller to dial "9-1-1" to report the conditions as well.

#### **7.4.1.14 Ensure method of reporting fires (Condos/Apartments/Dormitories).**

Ensure that all employees and the off-site alarm monitoring companies, if applicable, are properly trained in methods of reporting fires and / or fire alarms to the Fire Department whenever there is a fire of any size and / or fire alarm of any nature.

#### **7.4.1.15 Ensure method of reporting fires (Hotels).**

Ensure that all employees, the PBX operators and the off-site alarm monitoring companies, if applicable, are properly trained in methods of reporting fires and / or fire alarms to the Fire Department whenever there is a fire of any size and / or fire alarm of any nature.

#### **7.4.1.16 Individuals neglecting responsibilities (Office / Mercantile Buildings).**

Notify the tenant when any employee of the tenant or individual is neglecting their responsibilities contained in the Fire Safety Plan. If the tenant fails to correct the condition, the owner or person in charge of the building shall notify the Fire Marshal.

#### **7.4.1.17 Individuals neglecting responsibilities (Condos/Apartments/Dormitories).**

Be responsible for employees performing their responsibilities and duties contained in the Fire Safety Plan.

#### **7.4.1.18 Individuals neglecting responsibilities (Hotels).**

Notify the general manager when any employee or individual is neglecting their responsibilities contained in the Fire Safety Plan. If the general manager fails to correct the condition, the Fire Safety Director shall notify the Fire Marshal.

#### **7.4.1.19 Fire and Life-Safety systems.**

Understand the purpose and operation of all fire and life-safety systems located in the building under the control of the building owner or manager.

#### **7.4.1.20 Duties in the event of a fire or fire alarm.**

In event of a fire or fire alarm the Fire Safety Director shall:

1. Ensure that the fire department has been notified immediately whenever there is a fire of any size and / or fire alarm of any nature.

- a) Have someone knowledgeable of the building meet the fire department upon their arrival.
  - b) Advise the fire department in the location of the fire command station.
  - c) Report any known conditions on the fire floor or alarm floor to the fire department upon their arrival.
2. Ensure that all elevators serving the floor of incident are removed from service from the general public and made available to the Fire Department. Specific instructions will depend on the individual building. The specific instructions for each building shall be incorporated in the building's Fire Safety Plan.
3. Direct fire safety procedures utilizing the public address system, if available.
- a) Be familiar with the location of all exits / stairwells and select the safest exit/stairwell to use for evacuation on the basis of the location of the fire and any information available. If affected by smoke, an alternate exit/stairwell shall be selected.
  - b) The priority floors for immediate evacuation are the fire floor, one floor above and one floor below the fire.
  - c) Evacuation from other floors shall be instituted when conditions indicate such action or when instructed by the fire department or the Fire Safety Director. Evacuation should be via uncontaminated stairwells.
  - d) Relocation to three (3) or more levels below the fire floor is generally adequate.
  - e) Mobility-Impaired occupants may require special assistance in the event of an evacuation. Occupants not requiring assistance should evacuate first. This avoids the possibility of persons in need of assistance being bumped and / or falling down, thus slowing fire safety and / or causing injury. If there is evidence of fire, the person(s) having mobility impairments should be positioned near the fire exit / stairwell that is located farthest away from the fire. If fire conditions pose a personal threat, the fire warden or person assisting should enter into the fire exit stairwell with the person(s) needing special assistance and wait for the Fire Department. If fire conditions pose a personal threat in the stairwell, the mobility-impaired person(s) should be evacuated to a safe location. Fire Wardens shall have someone notify the fire department the location of all mobility-impaired occupants that have required special assistance in evacuating the affected areas of their location.

#### **7.4.2 Fire Wardens (High-rise Office Buildings only)**

#### **7.4.2.1 Each floor of a building.**

Each floor of a building shall be under the direction of the Fire Wardens for the fire safety of occupants in the event of a fire or fire alarm.

#### **7.4.2.2 Familiar with Fire Safety Plan and systems.**

Each Fire Warden shall be familiar with the Fire Safety Plan, the location of exits and the location and how to activate the fire alarm.

#### **7.4.2.3 Duties in the event of a fire or fire alarm.**

In the event of a fire or fire alarm the Fire Warden, **when it can be done safely**, shall:

1. Notify the fire department as specified in the approved Fire Safety Plan.
2. Shall see that all occupants are notified of the fire or fire alarm, and shall instruct occupants as per the Fire Safety Plan.
3. Direct the fire safety of the floor in accordance with directions received and the following guidelines:
  - a) The Fire Warden shall select the nearest fire exit stairwell to use for fire safety on the basis of the location of the fire and any information received. If it is affected by smoke, an alternate fire exit stairwell shall be selected.
  - b) The priority floors for immediate fire safety are the fire floor, one floor above and one floor below the fire. In the event of a fire alarm, minimum fire safety response is to prepare to evacuate by relocating occupants to the nearest fire exit stairwell door. Fire safety from other floors shall be instituted when conditions indicate such action or when instructed by the fire department or the Fire Safety Director. Fire safety should be via uncontaminated stairwells.
  - c) Relocation to three (3) or more levels below the fire floor is generally adequate.
  - d) Fire Wardens on the fire floor shall, as soon as practical, notify the Fire Safety Director of the conditions.
  - e) Fire Wardens shall notify the Fire Safety Director of all mobility-impaired occupants that may require special assistance in the event of an fire safety. Occupants not requiring assistance will evacuate first. This avoids the possibility of the person(s) in need of assistance being bumped and / or falling down, thus slowing fire safety and / or causing injury. If there is evidence of fire, the person(s) having mobility impairment should be positioned near the fire exit stairwell that is located farthest away from the fire. If fire conditions pose a personal threat, the Fire Warden or person assisting should enter into the fire exit stairwell with the person(s) needing special assistance and wait for the Fire Department. If fire conditions pose a personal threat in the stairwell, the mobility-impaired person(s) should be evacuated to a safe location.

Fire Wardens shall have someone notify the fire department of the location of all mobility-impaired occupants that have required special assistance in evacuating the affected areas of their location.

#### **7.4.3 Tenants (High-rise Office Buildings only).**

##### **7.4.3.1 Complying with approved Fire Safety Plan.**

Each tenant shall be required to comply with the approved Fire Safety Plan.

##### **7.4.3.2 Availability of Fire Wardens.**

All tenants, upon request of the owner, management or designated representative, shall make responsible and dependable employees available for Fire Warden certification training towards approval and implementation of the Fire Safety Plan.

1. A Fire Warden shall be provided for each tenancy per floor. When the floor area of a tenancy exceeds 7,500 square feet of occupiable space, a Warden shall be assigned for each such 7,500 square feet or part thereof.

2. Each floor of a building shall have a minimum of two (2) Fire Wardens.

##### **7.4.3.3 Distribution of Fire Safety Plan.**

The applicable parts of the approved Fire Safety Plan shall be distributed by the tenants to all their employees.

##### **7.4.3.4 Occupants needing special assistance.**

Advise the Fire Safety Director of any occupants that may need special assistance in the event of an evacuation so that the Mobility Impaired List can be updated in the Fire Depository Box (FDB).

##### **7.4.3.5 Drill Participation.**

When fire drills are conducted, all persons who are subject to the fire drill shall participate in the drill.

#### **SECTION 7.5 --- FIRE DRILLS**

##### **7.5.1 Frequency.**

A fire drill shall be conducted at least every six (6) months.

##### **7.5.2 Notification.**

All occupants shall be notified prior to the fire drill.

##### **7.5.3 Participants.**

When fire drills are conducted, all persons who are subject to the fire drill shall participate in the drill.

##### **7.5.4 Additional fire drills.**

The Fire Marshal, upon survey of conditions, may require additional drills.

**7.5.5 Fire Drill records.**

A written record of such drills shall be kept on the premises and shall be readily available for Fire Marshal's inspection.

## REFERENCES

1. City of Houston *Fire Code*, International Fire Code, 2006 edition, as amended.
2. City of Houston *Building Code*, all editions.
3. Life Safety Bureau (LSB) Standard 08, "Fire Drills"
4. Life Safety-Bureau (LSB) Standard 18, "High-Rise Fire Safety Plan Approval"
5. Houston Fire Department LSB, HIGH-RISE APARTMENT / CONDOMINIUM FIRE SAFETY PLAN
6. Houston Fire Department LSB, HIGH-RISE HOTEL FIRE SAFETY PLAN
7. Houston Fire Department LSB, HIGH-RISE OFFICE BUILDING FIRE SAFETY PLAN



## HOUSTON FIRE DEPARTMENT LIFE SAFETY BUREAU (LSB)



### LSB STANDARD 08, REV. 04 FIRE DRILLS

**SUPERCEDES:** LSB Standard 08, rev 03, 1/1/2009

Note: A vertical bar in the left-hand margin delineates revisions to the previous version.

Effective Date: December 31, 2010



Approved: \_\_\_\_\_

*Perry Schindewolf*  
Perry Schindewolf, Acting Assistant Fire Marshal

Approved: \_\_\_\_\_

*Richard W. Galvan*  
Richard W. Galvan, Fire Marshal

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LIFE SAFETY BUREAU (LSB) STANDARDS ARE ESTABLISHED IN ACCORDANCE WITH PROVISIONS OF THE CITY OF HOUSTON FIRE CODE. THEY ARE SUBJECT TO THE ADMINISTRATIVE SECTIONS COVERING - ALTERNATIVE MATERIALS AND METHODS, MODIFICATIONS, AND BOARD OF APPEALS.

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**LSB STANDARD 08, rev. 04**  
**FIRE DRILLS**

**SECTION 8.1 --- GENERAL**

**8.1.1 Scope.**

The code official (Fire Marshal) is authorized to require fire drills to be conducted in buildings of any occupancy type. Required fire drills shall be conducted in accordance with this standard and the City of Houston *Fire Code*.

**8.1.2 Purpose.**

This standard shall provide the guidance for the preparation and implementation of fire drills.

**8.1.3 Fire Drill Records**

A written record shall be kept on file for each fire drill performed. Fire drill records shall be made available to the Code Official upon request, and shall include the following information:

1. Date and time of each drill
2. Name of person(s) conducting the drill
3. Amount of time required to evacuate the building
4. Any other information required by the Code Official.

**SECTION 8.2 --- DEFINITIONS**

**8.2.1 High Rise Buildings.**

All buildings having occupied floors located more than 75 feet above grade plane.

**8.2.2 Mid-Rise Atrium Buildings.**

Buildings with space that extends vertically and connects three or more stories and where the highest floor used for human occupancy is 75 feet or less above grade plane.

**8.2.3 Obstructed Drills.**

An obstructed fire drill assumes that one, or more, exits or evacuation routes have been blocked by fire and cannot be used. In this type of drill, the primary evacuation route for certain rooms is considered "obstructed" and persons exiting from these areas would utilize the alternate evacuation route outlined in the buildings evacuation plan.

**8.2.4 Unobstructed Drills.**

An unobstructed fire drill assumes that all exits and evacuation routes from the building are open and available for use. In this drill, persons exiting the building would utilize the primary evacuation route from the room or area they occupied at the time the drill was initiated.

**SECTION 8.3 --- FIRE DRILLS IN SCHOOLS (EDUCATIONAL OCCUPANCIES)**

### **8.3.1 Evacuation Plan Required**

The person in charge of any building classified as an Educational (Group E) Occupancy in accordance with the *Construction Codes*, shall prepare an approved emergency evacuation plan for the building. The evacuation plan shall be submitted to the Fire Code Official for review. The person in charge shall also ensure that all students and staff members are properly trained in the evacuation procedures.

### **8.3.2 Posting of Floor Plans**

A Floor Plan showing the proper evacuation routes shall be posted in each classroom and in other areas of the building normally occupied by students. This Floor Plan shall include the primary evacuation route from each room and an alternate route that can be used if the primary route becomes obstructed.

### **8.3.3 Evacuation Signal**

An approved fire alarm system shall be utilized to conduct all fire drills in educational buildings.

**NOTE:** '3-2-1 Bell' systems are no longer approved for use in conducting fire drills.

### **8.3.4 Staff Training**

All staff members, including temporary office staff assigned to the school office, shall be trained in the procedure for sounding a general alarm, should a fire or other emergency make an evacuation necessary.

### **8.3.5 Fire Department Notification**

All drills shall include provisions for notifying the Fire Department. If the fire alarm system is monitored off-site, the monitoring service shall be notified that a drill is in progress so that Fire Department apparatus will not be dispatched.

### **8.3.6 Number of Required Drills**

It shall be the duty of the person in charge of each Educational Occupancy to conduct at least one (1) fire drill per month. At least one-half of all drills shall be "obstructed" drills, as per Section 8.2.3 of this Standard.

### **8.3.7 General Guidelines for Fire Drills**

Fire drills are an exercise in discipline, not speed, though the building should be evacuated within a reasonable time period. Drills should be conducted during different times of the day, with some drills being performed during times students occupy areas such as the cafeteria, auditorium, gym, and library. Drills are not required during periods of inclement weather or when State required testing is being conducted.

### **8.3.8 Written Records Required**

A written record shall be kept on file for each fire drill performed. Fire drill records shall be made available to the Code Official upon request and shall include the following information:

1. Date and time of each drill
2. Whether the drill was "obstructed" or "unobstructed"

3. If “obstructed”, which exits or routes were obstructed
4. Name of person(s) conducting the drill
5. Amount of time required to evacuate the building

### **8.3.9 Drill Participation**

All students, staff members and other occupants of the building shall participate in fire drills and shall immediately exit the building when the evacuation alarm is sounded. No one is permitted to remain in the building while a fire drill is being conducted.

### **8.3.10 Classroom Doors**

Doors to classrooms shall be closed after the room has been evacuated.

### **8.3.11 Outside Staging Area**

As part of the evacuation plan, a predetermined “Staging Area” shall be established outside the building. When the evacuation signal is activated, all staff members and students shall report to the designated staging area and await further instructions.

### **8.3.12 Roll Call**

Once the building has been evacuated, each teacher shall conduct a roll call of their class to ensure all students are accounted for. Provisions must be made for communicating this information to the person conducting the drill.

### **8.3.13 Building Search**

After the building has been evacuated, the entire school shall be checked to ensure no students have been left behind. The building search shall be conducted by adult staff members; ***students are never to be utilized for this purpose.*** The results of the building search shall be communicated to the person conducting the drill.

### **8.3.14 Mobility Impaired**

If mobility-impaired students and / or staff members occupy the building, provisions shall be made for ensuring these persons can safely exit the building during an emergency. These provisions might include assigning staff members to physically assist them or might involve identifying certain areas of the building that can serve as an area of refuge until the Fire Department arrives.

## **SECTION 8.4 --- FIRE DRILLS IN HIGH-RISE BUILDINGS**

### **8.4.1 Number of Required Drills**

The Fire Safety Director shall conduct a fire exit drill, in accordance with the approved Fire Safety Plan for their high-rise building, at least every six (6) months. The Code Official, upon survey of conditions, may require drills until the occupants can fulfill the requirements of the plan in a safe and efficient manner.

### **8.4.2 Drill Participation**

All occupants of the building shall participate in the fire drills as required by the Code Official and the *Fire Code*.

#### **8.4.3 Written Records Required**

A written record of fire drills shall be kept on the premises and shall be readily available for fire department inspection.

### **SECTION 8.5 --- FIRE DRILLS IN HOSPITALS AND NURSING HOMES**

#### **8.5.1 Number of Required Drills**

Each shift shall participate in at least one (1) fire drill every third (3) month.

#### **8.5.2 Frequency of Drills**

The Code Official may order the owner, operator, administrator, manager or person in charge of any hospital or nursing home to hold fire drills as often as may be deemed necessary by the code official.

#### **8.5.3 Alarm Signaling**

The alert signal for a fire drill shall be by a predetermined code approved by the code official. In the interest of public safety, the words "Fire" or "Fire Drill" shall not be used in a hospital or nursing home.

#### **8.5.4 Drill Participation**

During fire drills or fires in any hospital or nursing home, all on-duty staff personnel shall be activated.

#### **8.5.5 Written Records Required**

A complete and accurate record shall be kept of all fires and fire drills and shall be readily available for Fire Department inspection upon request.

### **SECTION 8.6 --- DAY CARE FACILITIES**

#### **8.6.1 Number of Fire Drills**

Fire drills in Day Care facilities shall be conducted once monthly.

#### **8.6.2 Drill Participation**

All occupants of the building shall participate in the fire drills as required by the Code Official.

#### **8.6.3 Written Records Required**

A written record of fire drills shall be kept on the premises and shall be readily available for fire department inspection upon request.

#### **8.6.4 Drills Conducted Without Warning**

Fire drills shall be conducted without advance warning and should simulate fire conditions.

#### **8.6.5 Prompt Evacuation**

Fire exit drills are an exercise in discipline, not speed, though reasonably prompt emptying of the building is required.

### **8.6.6 Occupants In the Building**

No one shall be permitted to remain in the building during a fire drill.

### **8.6.7 Roll-Call and Building Check**

The drill shall include a roll-call by each day care counselor of their class, taken outside the building, to make sure that no one is left behind. There shall be a routine complete check of the entire building, including the toilet rooms, to make sure that no one is left behind.

### **8.6.8 Doors to Class Rooms**

All doors to classrooms shall be closed after leaving the room.

### **8.6.9 Exit Routes Used**

All exits shall be used in drills, but routes should be varied from drill to drill. Occasional drills should be held simulating conditions when one exit door or exit route cannot be used because it is blocked or "obstructed" by fire or smoke. Day Care counselors and other personnel shall be instructed as to the use of different exits, and the drills should be conducted at different times of the day.

### **8.6.10 Fire Department Notification**

All drills shall include provisions to simulate the calling of "9-1-1" to notify the Fire Department.

## **SECTION 8.7 --- FOSTER HOMES**

### **8.7.1 Emergency Fire Exit Plan**

Every Foster Home shall have a diagrammed "Fire Emergency Exit Plan" indicating the exits of the residence. Discussions of what to do in case of fire and review of the fire emergency exit plan shall be gone over with each child and each member of the family, including a meeting place outside of the house to provide accountability of everyone, and the notification of the Fire Department by calling "9-1-1" from a safe location. This discussion and review shall take place monthly.

## **SECTION 8.8 --- PERSONAL CARE FACILITIES maintain fire drill records**

### **8.8.1 Drills in Large Personal Care Facilities**

Fire drills in large personal care facilities shall be conducted in the same manner as nursing homes. See Section 8.5 of this standard.

### **8.8.2 Personal Care Homes**

'Family home' type personal care facilities shall provide emergency evacuation exit plans in the same manner as Foster Homes. (See Section 8.7 of this standard.) All staff and responsible residents shall be trained in how to activate the home's fire system, and the notification of the Fire Department by calling "9-1-1" from a safe location.

## **SECTION 8.9 --- ADULT DAY CARE**

### **8.9.1 Drills in Adult Day Care Facilities**

Fire drills in Adult Day Care facilities shall be conducted in the accordance with Section 8.6 of this standard.

## **SECTION 8.10 --- FIRE DRILLS IN MID-RISE ATRIUM BUILDINGS**

### **8.10.1 Number of Required Drills**

The Fire Safety Coordinator shall conduct a fire drill in accordance with the approved Fire Safety Plan, at least every six (6) months. The Code Official, upon survey of conditions, may require additional drills until the occupants can fulfill the requirements of the plan in a safe and efficient manner.

### **8.10.2 Drill Participation**

All occupants of the building shall participate in the fire drills, as required by the code official and the Fire Code.

### **8.10.3 Written Records Required**

A written record of fire drills shall be kept on the premises and shall be readily available for fire department inspection.

## REFERENCES

1. City of Houston *Fire Code*, International Fire Code, 2006 edition, as amended.
2. City of Houston *Building Code*, all editions.

Conversion factors: 1 inch = 25mm; 1 foot = 305 mm



**HOUSTON FIRE DEPARTMENT  
LIFE SAFETY BUREAU (LSB)**



**LSB STANDARD 09, rev 03  
MARKING OF FIRE HYDRANT LOCATIONS**

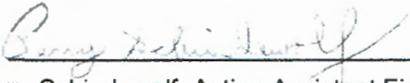
**SUPERCEDES:** LSB Standard 09, rev 02, dated 1/1/2009

**NOTE:** A vertical line in the left-hand margin delineates changes from the previous version.

**Effective Date:** December 31, 2010



**Approved:**

  
Perry Schindewolf, Acting Assistant Fire Marshal

**Approved:**

  
Richard W. Galvan, Fire Marshal

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LIFE SAFETY BUREAU (LSB) STANDARDS ARE ESTABLISHED IN ACCORDANCE WITH PROVISIONS OF THE CITY OF HOUSTON FIRE CODE. THEY ARE SUBJECT TO THE ADMINISTRATIVE SECTIONS COVERING - ALTERNATIVE MATERIALS AND METHODS, MODIFICATIONS AND BOARD OF APPEALS.

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**LSB STANDARD 09, Rev 03  
MARKING OF FIRE HYDRANT LOCATIONS**

**SECTION 9.1 --- GENERAL**

**9.1.1 Scope**

Marking of fire hydrants within the City of Houston shall be in accordance with LSB Standard 09, "Marking of Fire Hydrant Locations".

**9.1.2 Purpose**

This standard shall provide guidelines, for all apartment complexes containing fire hydrants (*new and existing*), and elsewhere as may be required by the Code Official to clearly identify locations of the fire hydrants, in accordance with the *Fire Code*.

**9.1.3 Obstruction of fire hydrants**

Posts, fences, vehicles, growth, trash, storage and other materials or objects shall not be placed or kept near fire hydrants, fire department inlet connections or fire protection system control valves in a manner that would prevent such equipment or fire hydrants from being immediately discernible. The fire department shall not be deterred or hindered from gaining immediate access to fire protection equipment or fire hydrants.

**9.1.4 Clearance around hydrants**

A 3-foot (914 mm) clear space shall be maintained around the circumference of fire hydrants except as otherwise required or approved.

**SECTION 9.2 --- DEFINITIONS**

**9.2.1 Apartment house**

An apartment house is any building, or portion thereof, which contains three or more dwelling units including residential condominiums.

**SECTION 9.3 --- IDENTIFICATION**

**9.3.1 Reflective signs**

A reflective sign with reflective numbers and letters shall be placed at every apartment complex entrance driveway. The sign shall be of durable materials no less than 18 inches by 18 inches, with lettering and numbering no less than 3 inches in height. The sign shall have "H.F.D." at the top with the number of fire hydrants in the complex at the bottom.

**9.3.2 Identifying hydrants**

A blue reflective *traffic marker*, approximately 4 inches by 4 inches, shall be placed in the apartment complex on the street or driveway in a permanent manner to indicate a fire hydrant. The marker should be placed *off the centerline* of the street 4 to 6 inches to indicate on which side of the street the fire hydrant is located.

## REFERENCES

1. City of Houston *Fire Code*, International Fire Code, 2006 edition, as amended.

Conversion factors: 1 inch = 25mm; 1 foot = 305 mm

Houston Fire Department

Life Safety Bureau

Standard 10

**LP-Gas and Open Flame Use, Rev 06**

*Supersedes: Standard 10, Rev 05, 5/12/2011*

**Note:** A vertical bar in the left-hand margin delineates changes to the previous version.

**Effective Date: 5/01/2012**

**This standard also includes:**

Art Car Regulations  
Mobile Food Units  
Festivals and Trade Shows  
Tents, Canopies and Air Supported Structures  
Theatrical Performers and Artisans  
Charcoal/ Wood Use



=====  
LSB Standards are established in accordance with provisions of the City of Houston Fire Code. They are subject to the administrative sections covering alternative materials, methods, modifications and the Board of Appeals.

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**LSB STANDARD 10, Rev 06  
LP-GAS AND OPEN FLAME USE**

**SECTION 10.1 --- GENERAL**

**10.1.1 Scope**

The provisions of this standard apply to the regulation of festival events, fairs, carnivals, trade shows and exhibitions, theatrical events, and mobile food units operating within the City of Houston, and where required by the *Fire Code* or Fire Marshal. This standard shall pertain to the regulation of LP-gas use at these events and other hazardous operations involving the use of open flames. The requirements given herein are to be considered as MINIMUM.

**10.1.2 Purpose**

This standard is prepared by the Life Safety Bureau (LSB) of the Houston Fire Department for the use and guidance of persons charged with selecting, purchasing, installing, approving, operating, maintaining and enforcing the safe usage of LP-gas equipment or open flame use at events and operations covered within the scope of this standard.

**SECTION 10.2 --- DEFINITIONS**

**10.2.1 Approved**

This standard is contingent upon approval of the Fire Marshal of the City of Houston. Permit applicants and the applicants agents and employees shall carry out the proposed activity in compliance with the *Fire Code* and other laws or regulations applicable thereto, whether specified or not, and in complete accordance with approved plans and specifications. Permits that purport to sanction a violation of the *Fire Code* or any other applicable law or regulation shall be void and approvals of plans and specifications in the issuance of such permits shall likewise be void.

**10.2.2 Standby Personnel**

As provided for within the *Fire Code* and when required by the Fire Marshal in the interest of public safety due to the nature of the operation, activity or event which requires the use of LP-gas for the commercial preparation of food, or open flame devices, one or more Fire Inspectors, who are current members of the LSB of the Houston Fire Department, will be required to be on standby duty at such place during the connection and operation or use of the LP-gas fired appliances or open flame devices.

**10.2.3 District Of Limitations (DOL)**

**10.2.3.1 DOL No. 1 (Downtown – Central Business District)**

Beginning at the intersection of U.S. Highway 59 with Pierce Street; thence northerly along U.S. Highway 59 to the centerline of Buffalo Bayou; thence, westerly following the meanders of Buffalo Bayou to Franklin Street; thence, westerly along Franklin Street to

Interstate Highway 45; Thence, southerly along Interstate Highway 45 to Pierce Street; thence easterly along Pierce Street to U.S. Highway 59, the place of beginning.

### **10.2.3.2 DOL No. 2 (The Texas Medical Center)**

Beginning at the intersection of Main Street with Cambridge Street; thence southerly along Main Street to Holcombe Boulevard; thence easterly along Holcombe Boulevard to Braeswood Boulevard; thence northerly along Braeswood Boulevard to North MacGregor Way; thence westerly along Cambridge Street to Main Street, the place of beginning.

## **SECTION 10.3 --- GENERAL REQUIREMENTS**

### **10.3.1 Standby Personnel permit.**

A permit for Standby Personnel shall be required for all events where there is in use 4 or more LP-gas cooking appliances. All events within the boundaries of the DOL No. 1 and DOL No. 2 shall require a standby permit for any number of LP-gas cooking appliances.

**Exception:** The standby requirement may be waived at the discretion of the Fire Marshal, under the following conditions:

1. There are no more than 4 appliances in use at the event and the appliances are of the approved, portable type that uses non-refillable canisters. (For food preparation inside a building or structure, see Section 3803.2.1.7, of the Houston Fire Code.)

### **10.3.2 Permit for commercial cooking**

An LP-gas permit is required when LP-gas appliances are used for commercial cooking, including temporary commercial cooking.

### **10.3.3 Plans and Permits**

**Permit applications submitted less than 5 business days prior to the event will incur special handling fees.** Attached to the permit application shall be a "Plot View" diagram of the event showing the locations of booths or areas to be used for LP-gas and/or open flame use, the equipment layout, the position of access roads and utility runs and other buildings. This shall include plans and permits for tents, canopies or air supported structures having an area of 1200 square feet or more.

### **Permit Office contact information for Standby Personnel, LP-gas Permits, Open Flame Permits, Tent Permits and Plan Approvals is as follows:**

The Houston Permitting Center  
1002 Washington Avenue  
Houston, Texas 77007

Hours of operation: 8:00 a.m. to 3:30 p.m. Central Time

Monday through Friday

Office phone (832)394-8811

To Email Customer Service Questions: [hfd.permitoffice@houstontx.gov](mailto:hfd.permitoffice@houstontx.gov)

Link to City Wide Fee Schedule: [www.houstoncityfees.org](http://www.houstoncityfees.org)

#### **10.3.4 Licensed contractors required**

Only personnel licensed by the *RAILROAD COMMISSION OF TEXAS* shall perform all connections for LP-gas appliances and **in the presence of a Fire Inspector from the Houston Fire Marshal's Office**. Licensed LP-gas personnel shall perform all connections of LP-gas at all events where 4 or more appliances are to be connected, and at all events held in DOL No. 1 and No. 2, regardless of the number of appliances.

**Exceptions:** 1. If an LP-gas contractor is not available due to conditions out of the control of the event coordinator, (example; unable to find an LP-gas company to handle the event, LP-gas company fails to show up for event), connections to LP-gas appliances may only be made in the presence of the Standby Inspector, who will insure that the excess gas is burned off before the connection is broken (example; the valve on the LP-gas container is closed and the excess is burned off at the burner prior to breaking the connection at the LP-gas). At least one additional standby inspector will be required for the event to accomplish this.

2. When approved in advance, the licensed LP-gas personnel on site to make and break connections may not be required to be in attendance for the entire event. This will be contingent upon the LP-gas needs of the event such as, when the appliances can operate all day on one container with no change out required.

3. Spare LP-gas containers shall be stored in an approved location.

4. This contingency is not intended for use as a substitute for providing an approved LP-gas company.

#### **10.3.5 Container size - DOL No. 1 and No. 2**

The maximum single LP-gas container size allowed within DOL No. 1 and No. 2 will be limited to 60-lbs water capacity. Two 30-lb containers may be manifolded when equipment is approved in advance and in compliance with section 10.3.4 above. When the project need is such that a greater amount of LP-gas is required for a specific appliance, 100-lb containers may be used when approved in advance.

**Exception:** 1. When approved, listed LP-gas commercial food service appliances are allowed to be used for food preparation within restaurants and in attended commercial food catering operations provided that an individual appliance shall not have more than two - 10-oz , non-refillable butane gas containers connected directly to the appliance any time.

2. Containers shall comply with nationally recognized standards, have a maximum water capacity of 1.08 lbs per container and shall not be manifolded.

3. The appliance's fuel containers shall be an integral part of the listed commercial food service device and shall be connected without the use of a rubber hose.

4. The aggregate amount of LP-gas used or stored shall not exceed 60 lbs LP-gas capacity.

5. In educational occupancies, portable LP-gas containers shall not be used or stored except as permitted by Sections 3803.2.1.4, of the Fire Code.

### **10.3.6 Container size outside DOL No. 1**

The maximum single LP-gas container size allowed outside the DOL may be 100-lb gas capacity when approved in advance. The approval will be conditional, based on the projected need of gas for specific appliances and/or the presence of Standby Personnel.

### **10.3.7 Storage of LP-gas containers in DOL No. 1 and 2**

The aggregate capacity of any one installation shall not exceed a water capacity of 2,000 gallons. Storage of spare LP-gas containers shall be in approved locations.

**Exception:** In particular installations, this capacity limit shall be determined by the fire code official, after consideration of special features such as topographical conditions, nature of occupancy, and proximity to buildings, capacity of proposed containers, degree of fire protection to be provided.

### **10.3.8 Inspection sticker**

An inspection sticker must be displayed on equipment indicating the equipment has been inspected within the past 12-month period by licensed personnel (see 10.3.4 above).

### **10.3.9 Protective barriers**

Protective physical barriers such as chain, ropes, or similar obstacles must be installed to prevent public access to LP-gas containers and cooking areas.

### **10.3.10 Securing LP- gas containers**

All LP-gas containers (*empty or full*) shall be secured in an upright position in such a manner as not to fall over.

## **APPENDIX-A**

### **FESTIVAL AND TRADE SHOW BOOTHS**

#### **SECTION 10.4 --- REQUIREMENTS**

##### **10.4.1 Fire extinguishers - Cooking booths**

All cooking booths at festivals, fairs, carnivals and trade shows or exhibition events will require at least one listed 2-A, 10-B:C portable fire extinguisher with current inspection date tag. All cooking booths where deep fry cooking is performed using vegetable or animal oils or fats, at least one listed **Type 'K'** fire extinguisher with current inspection date tag, will be required. All cooking booths exceeding 20 feet in any dimension will require a minimum of two 2-A, 10-B: C fire extinguishers with current date tags attached, mounted in a location that is fully visible and readily accessible. (**Type 'K'** fire extinguishers are for use only for cooking grease or oil fires (class "B" fires) and are not to be used, or substituted for the required 2A, 10B:C fire extinguishers, for use on other classes of fires.)

##### **10.4.2 Egress**

All booths must have an unobstructed path of egress to the exit.

##### **10.4.3 Flame retardant materials**

All booths and table coverings and other combustible materials composed of cloth, paper, and similar materials must be flame retardant treated. Any material added to a booth structure must be flame retardant. This shall include signage and awnings over cooking areas or attached to the booth in any manner.

##### **10.4.4 Protective barriers**

All booths using portable cooking equipment shall provide protective barriers to prevent public access or exposure to these areas. A minimum of 3 feet of clearance distance is required at all times.

##### **10.4.5 Combustible materials**

Highly combustible materials such as bales of hay or similar materials are prohibited. Trash, rubbish and debris shall not be allowed to accumulate in booth areas.

#### **SECTION 10.5 --- PERMIT REQUIREMENTS**

##### **10.5.1 Commercial cooking**

A permit for commercial cooking using LP-gas is required for a festival, and will cover all cooking booths within the boundaries of the area set aside for the event.

##### **10.5.2 Standby personnel**

A permit for Standby Personnel will be required by the Fire Marshal when the event uses 4 or more LP-gas appliances outside of the DOL No. 1 or No. 2, any number of LP-gas appliances inside of the DOL No. 1 or No. 2, or indoor use of deep fryers that are not protected by an approved vent hood and fire suppression system.

#### **10.5.2.1 Application for standby**

When Standby Personnel are required for the event, application for standby must be made when applying for the permit for the LP-gas use. The permit for LP-gas will not be approved until the requirement for Standby Personnel is satisfied.

#### **10.5.3 Tent permit**

A Tent Permit is required for a tent, canopy or air supported structure of 1200 square feet or more.

#### **10.5.4 Places used for assembly**

A Public Assembly Permit is required for all buildings or structures used for public assembly having an occupant load of 50 or more persons. A permit is required if a tent is used as an assembly area.

#### **10.5.5 Standbys, Plans and Permits**

Contact information for the Permit Office, for Section 10.5, may be found in Section 10.3.3, of this Standard.

## **APPENDIX- B**

### **THEATRICAL PERFORMERS AND ARTISANS**

#### **SECTION 10.6--- REQUIREMENTS**

##### **10.6.1 Performers**

Performers or artisans who, in their performance, ignite or burn any material or device will be regulated by this standard.

##### **10.6.2 Permit required**

Plans and Permits shall be in compliance with Section 10.3.3, of this Standard.

##### **10.6.3 Performance notification**

The Fire Marshal's office shall be furnished with a list of the times and locations of all performances.

##### **10.6.4 Standby Personnel**

Standby Personnel shall be provided during all performances. Application for standby personnel shall be submitted unless a standby is already in place for the festival event.

##### **10.6.5 Performance area**

The area of the performance will have a clearance distance of at least 10 feet in all directions between the performer and the public. Clearance shall be maintained by providing a distinct boundary, clearly marked and visible to the public. The marking of the boundary shall provide a *physical barrier* between the public and the performer, such as traffic cones with safety tape between them around the perimeter, or any other method approved by the Fire Marshal.

##### **10.6.6 Use of Flammable or Combustible Liquids**

Class I flammable liquids shall not be used. (Such as alcohol, or cigarette lighter fluid). Class II combustible liquids may be used provided the storage is in a UL listed, metal safety container equipped with a spring-loaded lid and flame-arrester.

##### **10.6.7 Fire extinguishers**

A portable fire extinguisher with a minimum rating of 2-A, 10-B:C shall be provided and readily accessible during the performance. The extinguisher shall have a full charge and have a current inspection date tag indicating an inspection within the past 12 months.

##### **10.6.8 Prohibited activity**

The igniting of aerosol container propellants, spray paints or lacquers by performers or artisans is prohibited. UL listed handheld heating or drying devices may be use to '*quick dry*' paintings, art work or similar objects, and only when approved in advance by the Fire Marshal.

## **APPENDIX – C**

### **CHARCOAL / WOOD USE**

#### **SECTION 10.7 --- REQUIREMENTS**

##### **10.7.1 Charcoal/Wood starters**

Combustible or flammable liquids used as fire starters are strictly prohibited. Charcoal/wood may be started with an electrical starter designed for this purpose; quick starting charcoal is also recommended. Use of LP-gas as a fire starter shall require a permit. (See Section 10.3.2, above)

##### **10.7.2 Clearance**

All cooking equipment shall be situated away from the crowds, buildings or flammable or combustible materials. A minimum clearance distance of 3 feet is required.

##### **10.7.3 Firebox protection**

A metal pan constructed of a minimum of No.18 U.S. gage sheet metal shall be provided and placed under the fire box of bar-b-que pits or fireboxes to catch live coals which may fall onto the ground. The dimensions of the pan shall be such that it will provide complete coverage beneath any openings under the pit or firebox.

##### **10.7.4 Barricade for cooking devices**

The area around portable cooking devices shall be provided with protective barriers such as wooden barricades, roped areas, streamers or other physical barrier acceptable to the Fire Marshal to prevent public access or exposure to cooking or heat producing devices. A minimum of 3 feet clearance distance is required and shall be maintained at all times during use.

##### **10.7.5 Fire extinguishers**

A portable fire extinguisher with a minimum rating of 2-A, 10-B:C shall be provided and readily accessible during pit use and operation. The extinguisher shall have a full charge and have a current inspection date tag indicating an inspection within the past 12 months.

##### **10.7.6 Hot ashes and spontaneous ignition sources**

Hot ashes, cinders, smoldering coals or other hot materials subject to spontaneous ignition shall not be deposited in a combustible receptacle within 10 feet of other combustible materials including combustible walls, awnings and partitions or within 10 feet of openings to buildings such as windows, fresh air vents or intakes, doors or other wall penetrations.

##### **10.7.7 Contact personnel**

Contact personnel for APPENDIX-C may be located through the Permit Office. See Section 10.3.3 of this Standard.

**APPENDIX –D**  
**TENTS, CANOPIES AND AIR SUPPORTED STRUCTURES**

**SECTION 10.8 --- REQUIREMENTS**

**10.8.1 Plans and Permits**

Plans and Permits shall be in compliance with Section 10.3.3, of this Standard.

**10.8.2 Fire Code requirements**

Tents, canopies and air supported structures shall comply with requirements of the *Fire Code*, Chapter 24, including certification of tent fabric as being flame-retardant, exit requirements (*signs and illumination*), and heating and cooking equipment.

**10.8.3 Cooking Tents**

Tents used for cooking shall be independent from any other tents on site by a distance of not less than 20 feet.

## **APPENDIX-E**

### **MOBILE FOOD UNIT**

#### **SECTION 10.9 --- GENERAL**

##### **10.9.1 Scope**

The provisions of this standard apply to the regulation of mobile food units (MFU) within the City of Houston, and where required by the *Fire Code* or Fire Marshal. The requirements given herein are to be considered as a MINIMUM.

##### **10.9.2 Purpose**

This standard is prepared by the Life Safety Bureau (LSB) of the Houston Fire Department for the use and guidance of persons charged with selecting, purchasing, installing, approving, maintaining and enforcing the safe usage of LP-gas equipment or open flame use within mobile food units covered within the scope of this standard.

#### **SECTION 10.10 --- DEFINITIONS**

##### **10.10.1 Approved**

This standard is contingent upon approval of the Fire Marshal of the City of Houston. Permit applicants and the applicants agents and employees shall carry out the proposed activity in compliance with the *Fire Code* and other laws or regulations applicable thereto, whether specified or not, and in complete accordance with approved plans and specifications. Permits that purport to sanction a violation of the *Fire Code* or any other applicable law or regulation shall be void and approvals of plans and specifications in the issuance of such permits shall likewise be void.

##### **10.10.2 Permits**

A permit for LP-gas usage will be charged to each individual MFU and permit is not transferable to another MFU or vehicle. Other applicable permits are defined within this standard.

##### **10.10.3 LP-gas**

An operational permit is required to install or maintain any LP-gas container of 125 gallons aggregate water capacity or more or operate any tank vehicle that is used for the transportation of LP gas.

An operational permit is required for the storage, handling or use of any amount of LP-gas in, on, or in connection with demonstrations, public exhibitions, temporary commercial cooking or on mobile food units.

For a single container with a capacity of 500-gallon water capacity or for one or more containers with an aggregate capacity of 2,000 gallons water capacity or more, the installer shall submit plans for the permit. For operational permit requirements for LP-gas storage, handling, or use see Chapter 38 of the *Fire Code*.

#### **10.10.4 Maintenance Log**

A document recording dates, name of company, license number and name of personnel connecting LPG or exchanging containers.

#### **10.10.5 Districts of Limitations (DOL)**

Districts of Limitations shall be as noted in Section 10.2.3 of this Standard.

### **SECTION 10.11 --- GENERAL REQUIREMENTS FOR MOBILE FOOD UNITS**

#### **10.11.1 Permit for commercial cooking**

When LP-gas appliances are used for commercial cooking, a permit to use LP-gas for temporary commercial cooking shall be required. One LP-gas Permit will apply to all appliances used in each mobile food unit.

Permits shall be required to store, use, handle or dispense LP-gas or to install or maintain LP-gas container (s) in excess of 125 gallons aggregate water capacity. A permit is required to use any amount of LP-gas for demonstrations, public exhibitions, temporary commercial cooking or in mobile food units. As used in Chapter 38 of the Fire Code, the term mobile food unit shall have the meaning set forth in Chapter 20 of the City Code of Ordinances.

#### **10.11.2 Mobile Food Unit (MFU)**

No permit for the use of LP-gas in connection with a MFU shall be issued unless the operator provides a detailed description of the means and methods by which the operator will secure the LP-gas container against shifting (bracing) and will protect the LP-gas container against damage (blocking) by third parties, which means and methods are approved by the fire department.

#### **10.11.3 Filling of LP-gas containers**

Distributors shall not fill an LP-gas container for which a permit is required unless a permit for installation has been issued for that location by the code official.

#### **10.11.4 Plans and Permits for Special Events**

**Permit applications submitted less than 5 business days prior to the event will incur special handling fees.** Site plans will be required to be submitted in a Plot View format indicating cooking locations, and shall be affixed to the Permit Application. Plot Plan shall indicate:

1. MFU location.
2. Size of DOT listed LP-gas container
3. Electrical hookup.
4. Structures on property.
5. Method LPG containers are secured in upright position.
6. Locations of other MFU's on same property.

| See Section 10.3.3, of this Standard for Permit Office contact information.

#### **10.11.5 Maintain logs of LP-gas connections on MFU**

Only personnel licensed by the *RAILROAD COMMISSION OF TEXAS* will perform connections for LP-gas appliances. A log shall be maintained on the MFU for all connections performed on all LP-gas appliances. All logs shall be maintained by the MFU operator/owner and made available to the Fire Marshal for review.

#### **10.11.6 Container size - DOL No. 1 and No. 2**

The maximum single LP-gas container size allowed within DOL No. 1 and No. 2 will be limited to 60-lb gas capacity. Two 30-lb containers may be manifold when equipment is approved in advance and in compliance with section 10.3.6 above. When a greater amount of LP-gas is required, a 100-lb container may be used when approved in advance.

#### **10.11.7 Container size outside DOL No. 1**

The maximum single LP-gas container size allowed outside the DOL may be 100 lb gas capacity when approved in advance. The approval will be conditional, based on the projected need of gas for specific appliances.

#### **10.11.8 Storage of LP-gas containers**

Storage of spare LP-gas containers shall be in approved locations not accessible to the public. Storage of LP-gas within DOL No. 1 and No. 2 shall be approved in writing.

#### **10.11.9 Inspection sticker**

An approved inspection sticker indicating the month and the year of inspection must be displayed on all LP gas appliances signifying licensed personnel have inspected the equipment within the past 12-month period. In addition, a receipt must be provided with the VIN or the license plate number displayed on it for the vehicle, on which it is attached.

#### **10.11.10 Protective barriers**

The operator of a MFU that uses any amount of LP-gas to prepare food must block or otherwise prevent public access to all LP-gas containers by erecting a suitable enclosure, physical barrier, or obstacle pursuant to the plan detailing the location and method of restricting public access to LP-gas containers submitted to and approved by the fire department prior to permit issuance.

#### **10.11.11 Securing LP-gas containers.**

All LP-gas containers (*empty or full*) shall be secured in an upright position in such a manner as not to fall over.

1. Vehicle impact protection, such as car stops or other barriers approved by the Fire Marshal will be required. When possible, positioning of the MFU in such a manner to utilize existing barriers on the property such as substantial sign posts, fences, or other approved structures may be used as vehicle impact protection.
2. **“Danger - No Smoking”** signs approved by the Fire Marshal shall be visible near LP-gas containers. Signs shall be in English and Spanish.

3. A barrier, such as a fence, shall be provided to maintain a distance of at least three (3) feet of separation between the public and the propane containers.

#### **10.11.12 Spacing of MFU**

The operator of a MFU that uses any amount of LP-gas to prepare food shall not operate such unit within 60 feet of another MFU, except, at festivals and events approved by the Fire Marshal.

#### **10.11.13 Generators**

Refueling of generators shall be performed in an approved location not less than 20 feet from the MFU. Fuel shall be stored in a metal, UL or FM approved flammable liquid safety container, in an approved location. Generators shall be grounded in an approved method.

#### **10.11.14 Portable Fire Extinguishers**

A portable fire extinguisher (class 3A-40BC minimum) shall be provided. In addition, a "Type K" portable extinguisher shall also protect cooking equipment involving vegetable or animal oils and fats. Both fire extinguishers shall be inspected and tagged annually.

#### **10.11.15 Ventilation System**

The Ventilation system in connection with hoods shall be operated at the required rate of air movement, and classified grease filters shall be in place when equipment under a kitchen grease hood is used.

#### **10.11.16 Temporary Wiring**

Temporary wiring methods shall meet the applicable provisions of the Fire Code, the Building Code, and the Electrical Code.

## **APPENDIX-F**

### **ART CARS**

#### **10.12---General**

##### **10.12.1 Scope**

To provide and insure a minimum level of safety for Art Cars that utilizes LP-Gas for special flame effects.

##### **10.12.2 Purpose**

To provide classified LSB personnel with guidelines for the inspection and approval of the use of LP-Gas special flame effects used in Art Cars.

#### **10.13---Definitions**

##### **10.13.1 Art Car**

For the purpose of these guidelines, an Art Car, is a form of art and is usually, but not always, a motorized vehicle that has its appearance modified as an act of personal artistic expression and uses LP-Gas for special effects.

##### **10.13.2 Standby Personnel**

Standby personnel shall be provided according to applicable sections of the Houston Fire Code and LSB Standard 10, "LP-Gas and Open Flame Use". See Section 10.3.3 of this Standard for Permit Office contact information concerning Standby Personnel.

##### **10.13.3 Permits**

**Permit applications submitted less than 5 business days prior to the event will incur special handling fees.** A permit shall be required according to applicable sections of the Houston Fire Code and LSB Standard 10, "LP-Gas and Open Flame Use". See Section 10.3.3 of this Standard for Permit Office contact information concerning permits.

##### **10.13.4 Flame Effect Operator**

An individual currently licensed by the State of Texas, that holds a "Flame Effects Operator's License", and approved by the Fire Marshal.

#### **10.14---Guidelines**

##### **10.14.1 LP-gas Cylinders**

LP-Gas cylinders shall be limited to one 30 pound cylinder unless otherwise preapproved by the Fire Marshal. Cylinders shall be in good condition and comply with the Texas Administrative Code and Railroad Commission of Texas Rules. They shall be securely mounted in an area protected from collisions and shielded from contact with the road surface. The minimum tank size for liquefied petroleum gas flame effects shall be determined by the surface area required to prevent reduced fuel delivery to the burner during the effect.

#### **10.14.2 LP-Gas Storage of Containers**

LP-Gas shall not be used or stored in a confined area, such as the trunk of a car, unless properly ventilated and in compliance with the National Fire Protection Association Standard 58 requirements. Those spaces shall be provided with explosion proof mechanical ventilation capable of providing six air changes per hour and explosion proof electrical wiring.

#### **10.14.3 LP-Gas Controls and Components**

All tubing, airlock valves, control valves, burners, piping, sensors, and other components used with LP-Gas shall be designed and pressure tested for such use according to NFPA 160 Standard for the Use of Flame Effects before and Audience, 2001 Edition.

#### **10.14.4 Compliance with NFPA 160**

Art Cars shall be created in compliance with NFPA 160 and inspected by a licensed State of Texas Flame Effects Operator.

#### **10.14.5 Fire Extinguishers**

A minimum of two 2A-10BC multipurpose fire extinguisher shall be provided for each vehicle and shall have a current State of Texas inspection tag. The fire extinguisher shall be securely mounted in a visible location or in a compartment provided with a sign stating, "Fire Extinguisher Inside".

#### **10.14.6 Emergency Shut-Off**

The emergency shut-off for the LP-Gas shall be one operation and clearly labeled with a white sign and red letters stating "Emergency LP-Gas Shut-off" in compliance with NFPA 160. Flame effects shall not be used prior to approval of a plan to extinguish the flame effect or approval of a supervisory control system for the emergency stop. The emergency stop shall initiate a complete shutdown of the flame effect and any interrelated safety – critical system.

#### **10.14.7 Flame Effects Operator**

The "Flame Effects Operator" shall be in attendance anytime special flame effects are used and will be held responsible for the safety, operation of all special flame effects, all associated equipment, flame appliances, and flame effects area.

#### **10.14.8 No Smoking**

There shall be no smoking or open flames within 15 feet of an Art Car containing LP-Gas.

#### **10.14.9 No-Smoking Signs**

Art Cars containing LP-Gas shall be appropriately labeled with "No Smoking- LP-Gas In Use" signs, as approved by the Fire Marshal.

#### **10.14.10 Plan Approval**

A plan for the use of flame effects shall be submitted to the authority having jurisdiction for approval. Any additions or modifications of flame effects described in the approved plan shall be approved by the authority having jurisdiction prior to use of the modified flame effects. The plan shall include the parade route, staging area, site plan, and other pertinent information. The plans shall also be stamped approved and inspected by the pyrotechnic Operator along with the Texas Pyrotechnic Special Effects Operators License number.

#### **10.14.11 Operating Instructions**

All flame effects shall have written operating instructions including start up, show operations, normal shutdown procedures, and emergency shutdown procedures. All flame effect devices and materials shall have drawings, manuals, or written descriptions to describe the type of item and performance specifications of the flame effect created.

#### **10.14.12 Pre-Performance Evaluation**

Flame effects shall be evaluated to verify that operators, performers, and the audience will not be exposed to a hazardous situation when flame effects are activated as designed or anticipated.

#### **10.14.13 Fuel Supply**

The fuel supply for the operation of the flame effect shall be only available during operation.

#### **10.14.14 Arming of Flame Effect Devices**

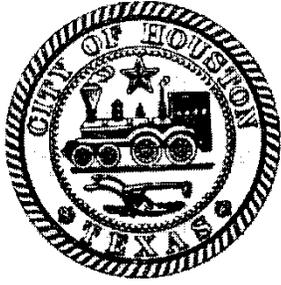
Flame effects shall only be fired after they have been confirmed as armed following the completion of the enabling and arming process and confirmation that the hazard area is clear. The accessible hazard area shall be under the direct observation of the operator or assistant firing the flame effect for the entire time that the effect is enabled and fired. The Operator or Assistant shall be within 15 feet of the flame effect during enabling and firing of the effect to insure safety.

#### **10.14.15 Compliance with LSB Standard 25**

Art Cars on display inside a building shall also comply with LSB Standard 25, "Safety Inspection for Vehicles on Display Indoors".

## REFERENCES

1. City of Houston *Fire Code*, International Fire Code, 2006 edition, as amended.
2. Houston Fire Department, LSB Standard 01, "Installation and Maintenance of Portable Fire Extinguishers".



**HOUSTON FIRE DEPARTMENT  
LIFE SAFETY BUREAU (LSB)**



**LSB STANDARD 11 rev. 05  
ROOFING OPERATIONS**

**SUPERCEDES: LSB Standard 11, rev. 04 (12/31/2010)**

**Note: Vertical lines in the left-hand margin denote revisions to the previous version.**

**Effective Date: 5/01/2012**



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# LSB STANDARD 11, rev 05

## ROOFING OPERATIONS

### SECTION 11.1 --- GENERAL

#### 11.1.1 Scope.

This standard applies to the application of roofing materials to a building or structure within City of Houston, involving the use of an asphalt kettle or torch.

#### 11.1.2 Purpose.

This standard shall prescribe the minimum safeguards during the application of roofing materials.

#### 11.1.3 Torches and other flame-producing devices.

The use of torches or other flame-producing devices for application of roofing membranes is prohibited.

Exception: When approved, in advance of the roofing operations, by the fire code official, roofing operations shall be conducted in accordance with this Standard

### SECTION 11.2 --- DEFINITIONS

#### 11.2.1 Barrel.

Forty-two (42) U.S. gallons.

#### 11.2.2 Certificate of Training.

A certificate of training indicating the person in possession of the certificate has completed an approved course of instruction on the proper application of torch applied modified bitumen roof system to a roof using a flame-producing device and the proper use of an infrared temperature scanner.

#### 11.2.3 Container.

Any vessel, including cylinders, tanks, portable tanks and cargo tanks, used for transporting and storing LP-gas.

#### 11.2.4 Course Of Instruction.

The material used to certify personnel on the proper application of roofing material. For the purpose of this standard, approved course of study will be the Certified Roofing Torch Applicator program (CERTA), provided by the Midwest Roofing Contractors Association (MRCA).

#### 11.2.5 Cylinder.

A portable container constructed to U.S. Department of Transportation (DOTn) cylinder specifications, or in some cases constructed in accordance with the ASME Code of a similar size and for similar service. The maximum size permitted under DOTn specifications is 1000-lb water capacity.

#### 11.2.6 District of Limitations (DOL).

**DOL No.1. (Downtown – Central Business District)**

Beginning at the intersection of U.S. Highway 59 with Pierce Street; thence northerly along U.S. Highway 59 to the centerline of Buffalo Bayou; thence, westerly following the meanders of Buffalo Bayou to Franklin Street; thence, westerly along Franklin Street to Interstate Highway 45; Thence, southerly along Interstate Highway 45 to Pierce Street; thence easterly along Pierce Street to U.S. Highway 59, the place of beginning.

**DOL No. 2. (The Texas Medical Center)**

Beginning at the intersection of Main Street with Cambridge Street; thence southerly along Main Street to Holcombe Boulevard; thence easterly along Holcombe Boulevard to Braeswood Boulevard; thence northerly along Braeswood Boulevard to North MacGregor Way; thence westerly along Cambridge Street to Main Street, the place of beginning.

(DOL for the purpose of this standard, and in accordance with the *Fire Code*, restrict the use and storage of LP-gas in DOL No. 1 and DOL No. 2.)

**11.2.7 Excess Flow Valve (also called Excess-Flow Check Valve).**

A device designed to close when the liquid or vapor passing through it exceeds a prescribed flow rate as determined by pressure drop.

**11.2.8 High Rise Building.**

Buildings having occupied floors located more than 75 feet above grade plane.

**11.2.9 Roofing Operations.**

Operations including but not limited to torch applied roofing, roofing kettle or any other similar situation.

**11.2.10 Listed.**

Equipment or materials included in a list published by an organization acceptable to the Fire Marshal.

**11.2.11 LP-gas.**

Liquefied petroleum gas.

**11.2.12 Protected Structure.**

For the purpose of this Standard, “protected structures” are structures equipped with automatic sprinklers or Class I, II, or III wet standpipe systems for fire department use.

**11.2.13 Roofing Kettle.**

Any container used for pre-heating tar, asphalt pitch or similar substances for waterproofing.

**11.2.14 Torch Applied Roof Systems.**

Bituminous roofing systems using membranes that are adhered by heating with a torch and melting asphalt back coating instead of the application of hot asphalt for adhesion.

### **11.2.15 Standby Personnel.**

In the interest of public safety and due to the nature of an operation or activity, one or more Fire Inspectors, who are current members of the Life Safety Bureau of the Houston Fire Department, may be required to be on duty at such place during a roofing operation when required by the Fire Marshal. See Section 11.5.5, of this Standard, for Permit Office contact information concerning standby personnel.

### **11.2.16 Water Capacity.**

The amount of water at 60 degrees (F) required to fill a container.

## **SECTION 11.3--- TORCH APPLIED ROOFING**

### **11.3.1 Regulations.**

Torch applied roofing shall be regulated in accordance with *City of Houston Ordinance* and the *Fire Code*.

#### **11.3.1.1 Permit required.**

No person shall use or cause or allow the use of any ignited torch, kettle, open flame or other flame-producing device for the purpose of constructing or repairing any roof of any building or structure unless work is performed pursuant to a valid permit issued by the Fire Marshal for the use of such device. See Section 11.5.5, of this Standard, for Permit Office contact information concerning permits.

#### **11.3.1.2 Certificate of training required.**

No person shall use any ignited torch, open flame or other flame-producing device for the purpose of constructing or repairing any roof of any building or structure unless that person holds a certificate of training in the use of flame-producing devices or is working under the direct supervision of a certified person who is present on the roof at all times while the work is being performed including the monitoring period required under Section 11.3.1.7 of this Standard.

#### **11.3.1.3 Course of instruction.**

To obtain a certificate of training in the use of flame-producing devices, a person shall complete a course of instruction on the proper application of torch applied modified bitumen roof system to a roof using a flame-producing device and the proper use of an infrared temperature scanner. The instruction must be obtained from a roofing industry educational institute. The course of instruction and the institute shall be approved by the Fire Marshal. Each certificate of training shall be valid for three (3) years and shall reflect the certified person's name, driver's license or personal identification number, and the expiration date of the certificate of training.

#### **11.3.1.4 Roof construction or repair permits requirements.**

Roof Construction or repair costing less than \$2000 on any one building that involves the use of a flame-producing device may be performed under an Annual Repair Permit. A Site-Specific Permit shall be required for each other use of a flame-producing device to construct or repair a roof costing \$2000 or more. This Site-Specific Permit shall be valid for the period of time the applicant has shown necessary to complete the work, but

not for more than one year. Site-Specific Permits shall be valid only for the buildings upon a specific tract or parcel of property, which shall be identified on the permit.

#### **11.3.1.5 Safety regulations.**

All roofing operations shall conform to the safety regulations of the manufacture of the roofing material for the roofing material's proper safe installation.

#### **11.3.1.6 LP-gas cylinders in use.**

LP-gas containers or containers of other approved fuels used for flame producing devices in roofing operations shall be shielded from the direct rays of the sun and from temperatures above 120 degrees Fahrenheit (49 degrees Centigrade). Such fuel tanks shall be used only in well-ventilated areas and shall not be allowed to remain on the roof or other areas being constructed or repaired at the end of each day's work.

All LP-gas containers used for roofing or similar operations shall be secured while being moved in a method approved by the Fire Marshal and such containers and their use must conform to the safety regulations prescribed in NFPA Standard 58. All containers shall be positioned so that the pressure relief device is within the vapor space of the container at all times.

#### **11.3.1.7 Monitoring.**

Any roof being repaired by the use of a flame-producing device shall be monitored by a certified person or by competent personnel working under his/her direct supervision. Monitoring shall continue until all elevated temperatures return to ambient temperature as determined by the use of an approved infrared temperature scanner device. This monitoring period shall not be less than 30 minutes. Any area of heat concentration that indicates a continuous temperature rise shall be investigated for possible smoldering materials and necessary actions taken to prevent the ignition of such material.

#### **11.3.1.8 Fire extinguishers.**

There shall be at least two listed portable fire extinguishers of a minimum rating of 3-A, 40-B:C classification on each roof under construction or repair. Both fire extinguishers shall be on the roof in close proximity to the roofing operation and be readily accessible. All fire extinguishers shall have current inspection tags from a licensed fire extinguisher service company.

### **11.3.2 EQUIPMENT**

#### **11.3.2.1 Approved type.**

All equipment such as hand held torches and torch trolleys shall be of an approved type. No torch trolleys will be allowed on the roof of any building without written approval from the Fire Marshal's Office.

#### **11.3.2.2 Hand held torches.**

All hand held torches shall be equipped with a pilot adjustment, flame height adjustment and a minimum of 25 ft to a maximum of 50 ft of listed hose, gauge and regulator. Hand held torches shall be equipped with properly installed torch stands or brackets. A spark lighter shall be used to ignite torches.

### **11.3.2.3 Safety valves.**

Torch trolleys and multiple torches shall be equipped with listed safety valves.

### **11.3.2.4 Number of torch devices.**

The number of torch devices in use on the roof of a building shall be limited to a maximum of 5 unless approved in writing by the Fire Marshal.

### **11.3.2.5 Number and quantity of LP-gas.**

The number and quantity of LP-gas containers allowed on the roof of a building shall be limited to the following unless approved in writing by the Fire Marshal.

The maximum number of LP-gas containers on the roof of a building within DOL No. 1 and No. 2 shall be limited to 5 with the largest container not exceeding 72-lb water capacity (30-lb. LP-gas capacity) provided all containers are connected to an approved device and in use.

The maximum number of LP-gas containers on the roof of a building outside DOL No. 1 and No. 2 shall be limited to 5 with the largest container not exceeding 120-lb water capacity (60-lb LP-gas capacity). One container not to exceed 240-lb water capacity (100-lb LP-gas capacity) may be used only when using a "Torch Trolley".

### **11.3.3 Transportation of LP-gas.**

Transportation of LP-gas within and on the roof of a building shall be in accordance with this section and NFPA Standard 58. All containers shall be positioned so that the pressure relief device is within the vapor space of the container at all times.

#### **11.3.3.1 Transportation of containers within a building**

Movement of containers having a water capacity greater than 2½ lb (nominal one-lb LP-gas capacity) within a building shall be restricted to movement directly associated with the roofing operation.

Valve outlets on containers shall be tightly plugged.

Only emergency stairs not generally used by the public shall be used and reasonable precautions shall be taken to prevent the container from falling down the stairs.

Freight or passenger elevators may be used when occupied only by those engaged in moving the container.

#### **11.3.3.2 Buildings under construction or undergoing major renovation.**

When buildings are under construction or undergoing major renovation and are not occupied by the public or, if partially occupied by the public, containers may be transported in the unoccupied portions with the prior approval of the Fire Marshal.

#### **11.3.3.3 Renovation in buildings frequented by the public.**

During the hours of the day when the public normally is in the building the following shall apply:

The maximum water capacity of individual containers shall be 72 lb (30-lb LP-gas capacity) and the number of containers shall not exceed the number of workers assigned to using the LP-gas heating devices.

Containers having a water capacity greater than 2½ lb (One-lb LP-gas capacity) shall not be left unattended.

During the hours of the day when the building is not open to the public, containers may be transported in the building for repair or minor renovation.

#### **11.3.4. LP-gas containers on the roof of a building.**

##### **11.3.4.1 Container's location.**

Containers on the roof of a building shall be located in areas where there is free air circulation, at least 10 feet from building openings such as windows and doors and at least 20 feet from air intakes of air conditioning and ventilating systems. All containers shall be positioned so that the pressure relief device is within the vapor space of the container at all times.

##### **11.3.4.2 Parapets**

Containers shall not be located on roofs, which are entirely enclosed by parapets more than 18 inches high unless either:

The parapets are breached with low level ventilation openings no more than 20 feet apart, or

All openings communicating with the interior of the building are at or above the top of the parapets.

There is an approved standby person on duty, in accordance with Section 11.2.15 of this Standard, while the LP-gas container is on the roof.

### **SECTION 11.4 --- ASPHALT ROOFING KETTLES**

#### **11.4.1 Construction of roofing kettles.**

##### **11.4.1.1 Material and methods.**

The materials and methods of construction of roofing kettles shall be acceptable to the Fire Marshal. This section shall apply to all roofing kettles or tar pots. The following are minimum requirements:

No roofing kettle shall have a capacity in excess of 5 barrels.

Roofing kettles 2-barrel capacity or less shall be constructed of sheet steel having a thickness of not less than 0.105 in (No. 12 Manufactures' Standard Gage) and kettles of

more than 2-barrel capacity shall be constructed of sheet steel having a thickness of not less than 0.135 in (No. 10 Manufactures' Standard Gage).

All supports, corners, and the top and bottom of the fire box shall be bound with angle iron or other reinforcements approved by the Fire Marshal. All doors shall be hinged, closely fitted, and adequately latched. Fireboxes shall be of sufficient height from the ground or provided with a system of shields or insulation to prevent heat damage to the any surface beneath the firebox.

Lids that can be gravity operated shall be provided on all roofing kettles. The tops and covers of all kettles shall be constructed of steel sheet having a thickness of not less than 0.075 inch (No. 14 Manufactures' Standard Gage), close fitting and attached to the kettle with hinges in a manner allowing for gravity closing of the lid.

The chassis shall be substantially constructed and capable of carrying the load imposed upon it whether standing still or being transported.

Fuel containers, burners and related appurtenances of roofing kettles in which LP-gas is used for heating shall comply with all the requirements of NFPA Standard 58.

Fuel containers that operate under air pressure shall not exceed 20 gallons in capacity and shall be subject to the approval of the Fire Marshal.

All fuel containers shall be maintained in accordance with the applicable NFPA Standards or at least 10 feet from the burner flame or at least 2 feet from heat or flame when properly insulated.

#### **11.4.1.2 Use of roofing kettles.**

Asphalt kettles shall not be used inside of a building or on the roof of a building except when approved by the Fire Marshal. For permits see the *Fire Code* and Section 11.5 of this standard.

#### **11.4.1.3 Location.**

Asphalt kettles shall not be located within 20 feet of any combustible materials, combustible building surfaces or building openings such as windows, fresh air vents or intakes, doors or other wall penetrations.

### **11.4.2 Asphalt kettles on the roof of a building.**

#### **11.4.2.1 Secondary containment.**

Secondary containment shall be provided for a kettle on the roof of a building. The secondary containment shall consist of a liquid tight pan capable of containing the volumetric capacity of the kettle being protected. The pan shall be constructed of sheet steel having a thickness of not less than 0.105 inches (No. 12 Manufactures' Standard Gage).

#### **11.4.2.2 Spare LP-gas containers.**

Spare LP-gas containers shall not be stored on the roof of a building where an asphalt kettle is in operation in accordance with Section 11.4.1.1 above unless approved by the Fire Marshal in writing.

#### **11.4.2.3 Attendant.**

A trained attendant shall at all times be within 100 feet of a kettle when the heat source is operating. Ladders and similar obstacles shall not form a part of the route between the attendant and the kettle.

#### **11.4.2.4 Fuel containers.**

Portable fuel containers shall not exceed 240-lb water capacity (100-lb gas capacity) and shall be adequately secured to in an upright position. LP-gas connected for use shall be kept a minimum of 15 feet from kettles. LP-gas containers not connected for use shall be kept a minimum of 25 feet from kettles. All containers shall be positioned so that the pressure relief device is within the vapor space of the container at all times.

### **SECTION 11.5 --- PERMITS REQUIRED**

#### **11.5.1 Torch Applied Roofing.**

##### **11.5.1.1 Site Specific Permit.**

Site-Specific Permits are for one location or address for jobs over \$2000 value. Permit Duration — 90 days, but may be extended as needed for up to one year maximum.

##### **11.5.1.2 Annual Repair Permit.**

Annual Repair Permits are for use at different addresses for jobs of less than \$2,000 value. Duration of permit is for one (1) year

#### **11.5.2 Asphalt Kettle on the Roof of a Structure Permit.**

For the location where needed. Permit Duration — 90 days but may be extended as needed for up to one year.

#### **11.5.3 LP-gas Storage / Use Permit.**

When the storage of LP-gas is 125 gallons water capacity or more aggregate amount, Permit Duration — 90 days, but may be extended as needed for up to one year maximum.

#### **11.5.4 Standby Personnel.**

Standby Personnel shall be required for roofing operations conducted on the roof of a building classified as a High-rise Building, and any other building containing parapets as described in Section 11.3.4.2 of this Standard, or as deemed necessary by the Fire Marshal.

#### **11.5.5 Permit.**

A Roofing Operations Permit is required for Torch Applied Roofing and/or an Asphalt Kettle on the Roof.

If Standby Personnel are required **in addition to** the Roofing Operations Permit; applications for both shall be made at the Houston Permitting Center.

**Permit Office contact information for a Roofing Operations Permit and/or Standby Personnel is as follows:**

The Houston Permitting Center

1002 Washington Avenue

Houston, Texas 77007

Hours of operation: 8:00 a.m. to 3:30 p.m. Central Time

Monday through Friday

Office phone (832)394-8811

To Email Customer Service Questions: [hfd.permitoffice@houstontx.gov](mailto:hfd.permitoffice@houstontx.gov)

Link to City Wide Fee Schedule: [www.houstoncityfees.org](http://www.houstoncityfees.org)

## APPENDIX-A

### **Roofing Operations Check List for Standby Inspectors for TORCHED APPLIED ROOFING:**

A person certified in "Torch-Down Roofing" shall be in attendance when an open flame (torch) is in operation. The training and certification shall be through the "Midwest Roofing Contractors Association" (MRCA). A certification expires 3 years from date of issue and then it must be renewed. (The certification card must not be more than three (3) years old.)

An Infrared Temperature Scanner shall be on the roof during the roofing operation.

At least two approved portable fire extinguishers with a minimum rating of 3-A, 40-B:C.

A maximum 5 torches in use on the roof, unless approved in writing.

Maximum cylinder size for hand held torches shall not exceed 30-lb gas capacity. Torch trolleys may use cylinders not to exceed 100-lb gas capacity.

Torches shall have properly installed stands or brackets that will keep the flame pointed up when the torch is set down.

Check LP-gas hoses for excessive wear or damage. (Excessive accumulation of tar on the hose could indicate problems)

At the end of the day or cessation of torch operation there shall be a monitoring period of not less than 30 minutes. During this time the infrared temperature scanner shall be used to determine any areas with temperatures in excess of ambient. Any area indicating a continuous rise in temperature shall be investigated for possible smoldering materials.

At the end of each day or torch operation the LP-gas cylinders shall have the hoses disconnected and the cylinder opening plugged and shall not be allowed to remain on the roof or other areas being constructed or repaired at the end of each day's work.

## APPENDIX-B

### Roofing Operations Check List for Standby Inspectors for ASPHALT KETTLE ON A ROOF:

The kettle shall have secondary containment.

LP-gas fuel cylinder(s) shall not exceed 100-lb gas capacity. Only one cylinder per kettle unless approved in advance by the Fire Marshal in writing. Fuel containers shall be secured to prevent from falling over.

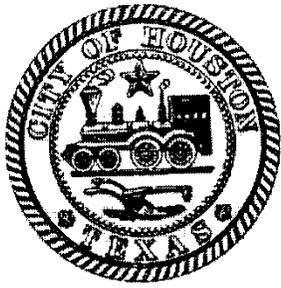
The kettle shall be attended when the heat source is operating.

Two approved portable fire extinguishers with a minimum rating of 3A 40B:C shall be on hand during the roofing operation.

The kettle shall be kept at least 20 feet from any building opening or combustible materials.

## REFERENCES

1. City of Houston *Fire Code*, International Fire Code, 2006 edition, as amended.
2. City of Houston *Code of Ordinances*, No. 94-10609, 01 January, 1995.
3. National Fire Protection Association (NFPA) Standard 58, "Storage and Handling of Liquefied Petroleum Gases".



# HOUSTON FIRE DEPARTMENT LIFE SAFETY BUREAU (LSB)



## LSB STANDARD 12, REV 05 FIREWORKS DISPLAY

Supersedes: LSB Standard 12, rev. 04 (12/31/10)

Note: Vertical lines in the left-hand margin delineates revisions to the previous version.

**Effective Date: 5/01/2012**



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LSB Standards are established in accordance with provisions of the City of Houston Fire Code. They are subject to the administrative sections covering alternative materials and methods, modifications, and the Board of Appeals.

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# LSB STANDARD 12 rev. 05 FIREWORKS DISPLAY

## SECTION 12.1 --- GENERAL

### 12.1.1 Scope.

Fireworks displays within the City of Houston shall be in accordance with the *Fire Code* and this standard.

### 12.1.2 Purpose.

This standard shall provide guidelines for Pyrotechnic Operators and Inspectors in the use and setting up of indoor and outdoor Fireworks Displays. Displays may be either aerial or non-aerial displays.

## SECTION 12.2 --- DEFINITIONS

### 12.2.1 Fireworks.

Fireworks are a combustible or explosive composition, or any substance, combination of substances, or device prepared for the purpose of producing a visible or audible effect by combustion, explosion, deflagration or detonation. Fireworks include but are not limited to: blank cartridges, toy pistols, toy cannons, toy canes, or toy guns, in which explosives are used; firecrackers, torpedoes, sky-rockets, Roman candles, sparklers, or other devices of like construction; any devices containing an explosive or flammable compound; or any tablet or other device containing an explosive substance. Fireworks do not include auto flares; paper caps containing an average of 0.25 grains of explosive content per cap or less; and toy pistols, toy canes, toy guns, or other devices for use of such caps.

### 12.2.2 Fireworks, 1.3G.

"Fireworks 1.3G" means a large fireworks device:

- (A) Primarily designed to produce visible or audible effects by combustion, deflagration, or detonation; and
- (B) Classified as a 1.3G explosive by the department in 49 C.F.R. Part 173 (1996).

### 12.2.3 Fireworks, 1.4G.

"Fireworks 1.4G" means a small fireworks device:

- (A) Primarily designed to produce visible or audible effects by combustion, deflagration, or detonation;
- (B) That complies with the construction, labeling, and chemical composition requirements of the United States Consumer

#### **12.2.4 Low Explosive.**

“Low Explosive”, is explosive material, which will burn or deflagrate when ignited. It is characterized by a reaction rate that is less than the speed of sound. Examples of low explosives are black powder, safety fuse, igniters, igniter cord; fuse lighters; 1.3G fireworks; 1.3G composite solid propellants and fireworks defined as 1.4G Explosives, as defined by the DOTn.

#### **12.2.5 Pyrotechnic Operator; Pyrotechnics Special Effects Operator; Flame Effects Operator.**

A Pyrotechnic Operator, Pyrotechnics Special Effects Operator or a Flame Effects Operator, respectively, are individual(s) approved by the Fire Marshal to be responsible for pyrotechnics, pyrotechnic special effects material, flame effects or any combination thereof, and holds an appropriate and current State of Texas License, issued by the Texas Department of Insurance, in that respective discipline(s).

#### **12.2.6 Pyrotechnic special effects material.**

Pyrotechnic special effects material is a low explosive material other than detonating cord, commonly used in motion picture, television, theatrical, or group entertainment production for which a permit from the Fire Marshal is required for use or storage.

#### **12.2.7 Standby Personnel.**

Standby personnel shall be fire inspectors, as certified by the Texas Commission on Fire Protection, who are current members of the Life Safety Bureau of the Houston Fire Department, and required by the Fire Marshal to perform standby duties at all fireworks events, as provided for in this standard.

### **SECTION 12.3 --- GENERAL INFORMATION**

#### **12.3.1 Hours of operation.**

No aerial display authorized by this standard shall be commenced prior to the hour of 1:00 p.m. or later than 10:00 p.m. (**Exception:** An authorized aerial display may commence at 1:00 p.m. through 12:00 a.m. on December 31<sup>st</sup> and from 12:00 a.m. through 1:00 a.m. on January 1<sup>st</sup> of any year.) Any display authorized by this standard shall be completed within one hour after the time of display is commenced and no permit shall authorize more than two displays in each twenty-four hour period.

#### **12.3.2 Permit extension.**

When a permit for fireworks display is issued it shall be for a period of time designated on the permit, but shall not exceed 14 days. The Code Official may authorize the permit to exceed 14 days, but not more than 180 days. The permit shall not be transferable.

#### **12.3.3 Materials used for fireworks.**

The material to be used for a fireworks display shall not be stored within the City of Houston, but shall be brought in on the day of the display and then shall be taken immediately to the place of display for further handling and storage.

#### **12.3.4 Persons handling the display.**

The person handling the display of fireworks shall meet all the requirements of the Texas Department of Insurance, “*Texas Occupations Code*”, Chapter 2154; the “*Texas Administrative Code*”, Title 28 and any other requirements as specified by the Fire Marshal.

#### **12.3.5 Theatrical Pyrotechnic Displays.**

Theatrical Pyrotechnic Displays shall require a permit and the presence of Standby Personnel. A copy of the plans indicating the exact placement of the pyrotechnic displays, and the distances from audience, stage props, scenery, curtains, performers and other items incidental to the theatrical performance, shall accompany each permit application. Exact type of pyrotechnic devices to be used shall be noted. This diagram shall indicate the points at which the pyrotechnic devices are located to be discharged, the fallout radius for each pyrotechnic device used in the performance and the lines behind which the audience shall be restrained. The determination of the necessity of Standby Personnel will be made by the Fire Marshal’s Office. See Section 12.4.3.

#### **12.3.6 Type of Fireworks to be used.**

Only “1.4G” and 1.3G” are allowed to be used.

### **SECTION 12.4 --- REQUIREMENTS**

#### **12.4.1 Prohibition.**

Possession, assembly, sale, purchase, transportation, storage, use, discharge, detonation and handling of fireworks, except for public display by a pyrotechnic operator, licensed in the state of Texas, and operating under an approved permit are prohibited within the City of Houston.

#### **12.4.2 Plans and Permits.**

Before the performance of any production, the permit applicant shall submit a plan and a list of proposed materials, for the use of pyrotechnics, to the Fire Marshal’s Office. An application for a permit shall be submitted, along with the applicable permit fees, not less than 4 business days prior to event. A “*Deed Restriction and Law Compliance Affidavit*” shall be completed and submitted with the permit application. Permits shall be granted only to an approved pyrotechnic operator according to Section 12.2.5, of this Standard.

#### **Permit Office contact information for Pyrotechnic Permits and Standby Personnel is as follows:**

The Houston Permitting Center

1002 Washington Avenue

Houston, Texas 77007

Hours of operation: 8:00 a.m. to 3:30 p.m. Central Time

Monday through Friday

Office phone (832)394-8811

To Email Customer Service Questions: [bfd.permitoffice@houstontx.gov](mailto:bfd.permitoffice@houstontx.gov)

Link to City Wide Fee Schedule: [www.houstoncityfees.org](http://www.houstoncityfees.org)

### **12.4.3 Standby Personnel.**

General requirements for Standby Personnel are as follows:

- 1) There shall be a minimum of two Standby Personnel for all aerial displays.
- 2) There shall be a minimum of one Standby Person for non-aerial (theatrical) displays, additional standby personnel may be required by the Code Official.
- 3) A minimum 4-hour fee shall accompany each Standby application for a standby inspector.

An additional per hour fee per Standby Inspector will be assessed for fire watches over the minimum of 4 hours. See Section 12.4.2, for Permit Office contact information concerning Standby Personnel.

### **12.4.4 Site Plan.**

A copy of the site plan showing the exact placement of launching site, distance to spectators, buildings, tents, fuel pumps, parking and other objects in the vicinity, shall accompany each permit application. Exact type of fireworks to be used shall be noted. The minimum distance required is *70 feet per inch* of size of shells.

### **12.4.5 Bond.**

The permit requester shall furnish a bond or certificate of insurance in an amount deemed adequate by the Code Official for the payment of damages which could be caused either to a person or persons or to property by reason of the permitted display and arising from acts of the permit requester, agents, employees, or subcontractors.

### **12.4.6 State Permit.**

Proof of State Permit application shall be provided. (Requirement for Aerial Display only)

**NOTE:** Chapter 2154 of the *Texas Occupations Code* establishes additional requirements in regards to certain flame effects or pyrotechnics, including requirements for an operator's license and insurance. Applicable provisions of state laws and regulations must be complied with in addition to provisions of the *Fire Code* and this standard.

### **12.4.7 Licenses Required.**

Proof of Pyrotechnic Operator License, a Pyrotechnic Special Effects License, or Flames Effects Operators License, shall comply with Section 12.2.5 of this Standard.

### **12.4.8 Demonstration and Approval.**

A demonstration of pyrotechnic special effects to be used shall be provided for the Code Official prior to approval of the fire department permit.

### **12.4.9 Storage Magazines.**

Approved methods of storage for fireworks shall be provided as indicated:

#### 12.4.9.1 within Buildings.

Explosives stored within a building shall not exceed 50 pounds. Low explosives stored within a building shall be stored in a Type 2 or Type 4 magazine. High explosives shall be stored in a Type 2 magazine.

#### 12.4.9.2 Outside of buildings.

Pyrotechnic special effects material, which is to be stored outdoors shall be stored in a Type 2 or Type 4 magazine. Pyrotechnic special effects material which is classified as a high explosive, including detonating cord and detonators that will mass detonate, such as fuse caps, shall be stored in a Type 2 magazine. When a Type 4 magazine is used for outdoor storage, such storage shall be in a constantly attended location or, if unattended, shall have wheels removed or the magazine immobilized by kingpin locking devices or by other approved security measures. When a quantity in excess of 50 pounds of explosive materials is stored outside of a building, such storage shall be located in accordance with nationally recognized standards.

#### **12.4.10 Security and barriers.**

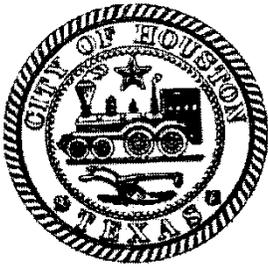
The Code Official is authorized to require security personnel and/or rope barriers, fences, signs, or other devices to be installed around the display area to aid in crowd control.

#### **12.4.11 Display discontinued.**

If the Code Official or the pyrotechnic operator determines that there is a lack of crowd control or that the crowd is in danger, the display shall be immediately discontinued. If any time high winds, weather conditions or the immediate surrounding environment creates a danger, the display shall be stopped, postponed or cancelled until conditions are acceptable to the Code Official.

## REFERENCES

1. City of Houston *Fire Code*, International Fire Code, 2006 edition, as amended.
2. *Texas Occupations Code*, Chapter 2154
3. *Texas Administrative Code*, Title 28
4. National Fire Protection Association (NFPA) Standard Nos. 160, 1123 and 1126.
5. Section 1, Title 13, Chapter 2154, *Texas Occupations Code*,



## HOUSTON FIRE DEPARTMENT LIFE SAFETY BUREAU (LSB)



### LSB STANDARD 13, REV 05 OUTSIDE PROTECTED ABOVEGROUND TANKS FOR GENERATORS AND FIRE PUMPS

**SUPERCEDES:** LSB Standard 13, Rev. 04 (12/31/2010)

**Note:** A vertical line in the left-hand margin delineates change from the previous version.

**Effective Date: 5/01/2012**



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LSB Standards are established in accordance with provisions of the City of Houston Fire Code. They are subject to the administrative sections covering alternative materials and methods, modifications, and the Board of Appeals.

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**LSB STANDARD 13, Rev. 05  
OUTSIDE PROTECTED ABOVEGROUND TANKS FOR  
GENERATORS AND FIRE PUMPS**

**SECTION 13.1 --- GENERAL**

**13.1.1 Scope.**

The installation of protected aboveground tanks, located on the outside of a building or structure, that supply fuel to engine-driven emergency and standby power generators or fire pumps, shall be in accordance with this standard and the City of Houston Fire Code (Fire Code).

**13.1.2 Purpose.**

The purpose of this standard is to provide guidance and instruction for the installation of protected aboveground tanks that are located outside of buildings or structures and that supply fuel to engine-driven power generators and fire pumps. This standard shall apply to all installations of protected aboveground tanks within the limits of the City of Houston, including the Districts of Limitations.

This standard is subject to periodic review and updates to accommodate changes in local need or requirements, changes in nationally recognized standards in related technology, or where required by state or federal regulations.

**SECTION 13.2 --- DEFINITIONS**

**13.2.1 Protected Aboveground Tank**

A listed *UL 2085* or equivalent tank system consisting of a primary tank provided with protection from physical damage, and fire-resistive protection from a high-intensity liquid pool fire exposure. The tank system is allowed to provide these protection elements as a unit or is allowed to be an assembly of components, or a combination thereof.

**SECTION 13.3 --- GENERAL REQUIREMENTS**

**13.3.1 Permits and plans required.**

A permit and plan approval are required to install, use, repair or modify protected aboveground tanks that are located on the outside of buildings or structures and used to supply fuels to engine-driven power generators and fire pumps.

**Permit Office contact information for Generator Storage Tanks is as follow:**

The Houston Permitting Center

Third Floor

1002 Washington Avenue

Houston, Texas 77007

Hours of operation: 8:00 a.m. to 3:30 p.m. Central Time

Monday through Friday

Office phone (832)394-8811

To Email Customer Service Questions: [hfd.permitoffice@houstontx.gov](mailto:hfd.permitoffice@houstontx.gov)

Link to City Wide Fee Schedule: [www.houstoncityfees.org](http://www.houstoncityfees.org)

### **13.3.2 Installation and site plans.**

Installation and site plans shall be submitted with permit applications. The plans shall include the design, details, and specifications of the following:

- a. Type of protected aboveground tanks and their supports to be used;
- b. Quantities and types of fuel to be stored;
- c. Distances from tanks to property lines and buildings (see Table 13 below);
- d. Distances between adjacent tanks (see Table 13 below);
- e. Overfill prevention, spill containment, vents, leak monitoring and other equipment and accessories;
- f. Venting;
- g. Piping and valves;
- h. Electrical systems;
- i. Emergency controls;
- j. Fire department access;
- k. Location of fire appliances;
- l. Vehicle impact protection;
- m. Site security measures;
- n. Other information as required by the Fire Marshal.

### **13.3.3 Site Inspection.**

All outside aboveground fuel tank installations shall be visited and physically inspected by personnel from the Fire Marshal's office prior to approval of permits.

### **13.3.4 Prohibited locations.**

Installation of outside aboveground fuel tanks on top of buildings is prohibited.

**Exception:** Approved Day Tanks of 60 gallons or less capacity.

### **13.3.5 Locations subject to flooding.**

Where a tank is located in an area that is subject to flooding, uplift protection shall be provided.

## **SECTION 13.4 - TANK DESIGN**

### **13.4.1 General.**

Protected aboveground tanks shall be listed and labeled to meet the requirements specified for *UL 2085* or equivalent tanks or systems.

### **13.4.2 Primary Tanks.**

The design, fabrication and construction of primary tanks shall be in accordance with recognized good engineering practice and nationally recognized standards. Each tank

shall bear a permanent nameplate or marking indicating the standard used as the basis of design, fabrication and construction.

#### **13.4.3 Size.**

Primary tanks shall not exceed a 12,000-gallon individual or 48,000-gallon aggregate capacity.

#### **13.4.4 Vents.**

##### **13.4.4.1 Normal and Emergency Venting.**

Venting for normal and emergency venting for aboveground tanks shall be installed in accordance with the *Fire Code*.

##### **13.4.4.2 Capacity.**

The vent capacity reduction factors shall be in accordance with the *Fire Code*.

##### **13.4.4.3 Flame-arresters.**

Approved flame-arresters shall be installed in normal vents.

#### **13.4.5 Projectile Protection.**

When a projectile test is required by the Fire Marshal, the protected tank shall be tested in accordance with the requirements for bullet resistance as specified in the *Fire Code*.

**Exception:** Listed protected aboveground tanks that have projectile protection incorporated into their design and construction.

### **SECTION 13.5 - INSTALLATION OF TANKS**

The installation of protected aboveground tanks shall be in accordance with the following:

#### **13.5.1 Separation Distances.**

A protected aboveground tank shall be separated from property lines, important buildings, public ways and other tanks in accordance with the *Fire Code*. (see Table 13 below)

##### **13.5.1.1 Aggregate Capacity.**

Protected aboveground tank installations having the maximum allowable aggregate capacity shall be separated from other installations of protected aboveground tanks by not less than 100 feet.

##### **13.5.2 Secondary Containment.**

Protected aboveground tanks shall be provided with drainage control or diking or with secondary containment that is a component of the listed protected aboveground tank.

A method of monitoring the secondary containment shall be provided. Enclosed secondary containment shall be provided with emergency venting.

### **13.5.3 Vehicle Impact Protection.**

Where aboveground tanks may be subject to vehicular impact, and when required by the Fire Marshal, guard posts or other approved means shall be provided to protect aboveground tanks and connecting piping, valves and fittings.

Where guard posts are installed, the posts shall be:

1. Constructed of a strength equivalent to that of 4-inch diameter Schedule 40 steel pipe and filled with concrete,
2. Spaced not less than 4 feet between posts on center,
3. Set not less than 3 feet deep in a concrete footing of not less than 15-inch diameter,
4. Set with the top of the posts not less than 3 feet above ground, and
5. Located not less than 5 feet from the tank.

**Exception:** Guard post are not required for Listed protected aboveground tanks that have vehicle impact protection incorporated into their design and construction.

### **13.5.4 Overfill Protection.**

Protected aboveground tanks shall not be filled in excess of *90 percent* of their capacity. An overfill prevention system shall be provided for each tank. During tank filling operations, the system shall:

1. Provide an independent means of notifying the person filling the tank that the fluid level has reached *85 percent* of tank capacity by providing an audible or visual signal, providing a tank level gauge marked at *85 percent* of tank capacity or other approved means, and
2. Automatically shut off the flow of fuel to the tank when the quantity of liquid in the tank reaches *90 percent* of tank capacity.

For rigid hose fuel-delivery systems, an approved means shall be provided to empty the contents of the filler hose into the tank after the automatic shutoff device is activated.

A permanent sign shall be provided at the fill point for the tank to document the filling procedure and the tank calibration chart.

The filling procedure shall require the person filling the tank to determine the gallonage required to fill it to *90 percent* of capacity before commencing the filling operation.

### **13.5.5 Fill Pipe Connections.**

The fill pipe shall be provided with a means for making a direct connection to the tank vehicle's fuel delivery hose so that the delivery of fuel is not exposed to the open air during the filling operation. When any portion of the fill pipe exterior to the tank extends below the top of the tank, a check valve shall be installed in the pipe not more than 12 inches from the fill hose connection.

### **13.5.6 Spill Containers.**

A spill container having a capacity of not less than 5 gallons shall be provided for each fill connection. For tanks with a top fill connection, spill containers shall be noncombustible and shall be fixed to the tank and equipped with a manual drain into the primary tank. For tanks with a remote fill connection, a portable spill container shall be provided.

### **13.5.7 Warning Signs.**

Warning signs and NFPA 704 hazard identification signs shall be installed to clearly identify hazards. Warning signs shall have RED colored lettering on a white background, stating **NO SMOKING, WELDING OR OPEN FLAMES WITHIN 25 FEET**, shall be provided on the sides of tanks, or on security fencing, in the direction of fire department approach. Warning signs and NFPA 704 hazard signs, shall have lettering at least 3 inches in height and of weather-resistive materials.

### **13.5.8 Security.**

When required by the Fire Marshal, the storage, dispensing, use and handling areas shall be secured against unauthorized entry and safeguarded with such protective facilities as public safety requires. When security fences are installed, the fences shall be as follows:

1. Substantially built of iron, steel or concrete, fabricated and installed in accordance with the *Building Code*,
2. Not less than 7 feet above the surrounding floor or ground surface, no portion of which shall be less than 6 feet above the surrounding floor or ground surface,
3. Topped by 3 rows of barbed wire, 4 inches apart,
4. Such necessary openings are designed and fabricated to provide security equivalent to the fence,
5. Locked at all times except when in use by authorized personnel,
6. Located not less than 5 feet from the tank, valves or piping.

### **13.5.9 Electrical installations.**

All electrical equipment and wiring shall be in accordance with City of Houston Electrical Code and listed for intended service.

## SECTION 13.6 – PARKING OF TANK VEHICLES

### 13.6.1 Tank vehicles.

Tank vehicles shall not be parked within 25 feet of a protected aboveground tank.

**Exception:** When the tank is being filled from the tank vehicle.

## SECTION 13.7 – MAINTENANCE

### 13.7.1 Maintain tank and piping.

Protected aboveground tanks and associated piping systems located outside shall be maintained in a safe operating condition. Protected aboveground tanks and components shall be maintained in accordance with their listings. Tanks, valves and piping should be visually inspected monthly for rust, deterioration or leakage.

Damage to listed protected aboveground tanks shall be repaired using materials and methods having equal or greater strength and fire resistance, and shall be in accordance with the manufacture's guidelines or recommendations and the tank's listing.

The areas surrounding tanks and their associated piping shall be kept clear of storage, combustible materials, weeds, trash and waste.

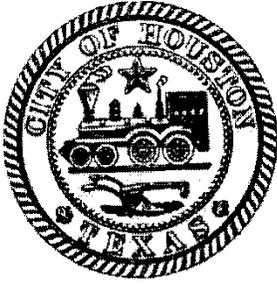
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**TABLE 13**  
**Minimum Separation Requirements for Protected Above Ground Tanks**

<b>INDIVIDUAL TANK CAPACITY</b>	<b>MINIMUM DISTANCE FROM PROPERTY LINE WHICH IS OR CAN BE BUILT UPON, INCLUDING THE OPPOSITE SIDE OF A PUBLIC WAY</b>	<b>MINIMUM DISTANCE FROM THE NEAREST SIDE OF ANY PUBLIC WAY OR FROM THE NEAREST IMPORTANT BUILDING ON THE SAME PROPERTY</b>	<b>MINIMUM DISTANCE BETWEEN TANKS</b>
<b>Gallons</b>	<b>Feet</b>	<b>Feet</b>	<b>Feet</b>
<b>Less than or equal to 6,000</b>	<b>15</b>	<b>5</b>	<b>3</b>
<b>Greater than 6,000</b>	<b>25</b>	<b>15</b>	<b>3</b>

## REFERENCES

1. City of Houston *Fire Code*, International Fire Code, 2006 edition, as amended.
2. City of Houston *Building Code*.
3. City of Houston *Electrical Code* (NFPA Standard No. 70, “National Electrical Code”).
4. National Fire Protection Association (NFPA) Standard No 704, “Identification of Hazards of Materials”.



**HOUSTON FIRE DEPARTMENT  
LIFE SAFETY BUREAU (LSB)**

**LSB STANDARD 14, REV. 04  
UNATTENDED SERVICE STATIONS**



**SUPERCEDES:            LSB Standard 14, Rev. 03 Effective 12/31/2010**

**Note: Vertical lines in the left-hand margin delineate changes from the previous version.**

**Effective Date: 5/01/2012**



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LSB Standards are established in accordance with provisions of the City of Houston Fire Code. They are subject to the administrative sections covering alternative materials and methods, modifications, and the Board of Appeals.

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**LSB STANDARD 14, rev. 04**  
**UNATTENDED SERVICE STATIONS**

**SECTION 14.1 --- GENERAL**

**14.1.1 Scope.**

Unattended Service Stations shall be in accordance with the *Fire Code*, this standard and the State Health and Safety Code on Flammable Liquids. Such facilities shall conform to pertinent sections of NFPA Standards 30 and 30-A. Where this is a conflict with this standard and these other requirements, the most restrictive standard shall apply.

**14.1.2 Purpose.**

This standard shall provide guidelines for the installation of Unattended Service Stations. Requirements for such Unattended Service Stations are in addition to the *Fire Code* requirements relative to service stations and are subject to approval of the Fire Marshal's appointed committee to review such installations.

**SECTION 14.2 --- DEFINITIONS**

**14.2.1 Unattended Service Station.**

Unattended Service Stations are service stations not engaged in the retail sale of flammable liquids to the general public and are without an attendant or supervisor on location to monitor dispensing. These stations are classified as private clubs, selling only to members.

**SECTION 14.3 --- REQUIREMENTS**

**14.3.1 Permit for Unattended Service Station Vehicle Fuel Dispensing**

When unattended service stations are used for vehicle fuel dispensing, a permit for "Motor Vehicle Fuel-dispensing Stations" shall be required.

**Permit Office contact information for Motor Vehicle Fuel-dispensing Station Permits is as follow:**

The Houston Permitting Center  
Third Floor  
1002 Washington Avenue  
Houston, Texas 77007  
Hours of operation: 8:00 a.m. to 3:30 p.m. Central Time  
Monday through Friday  
Office phone (832)394-8811  
To Email Customer Service Questions: [hfd.permitoffice@houstontx.gov](mailto:hfd.permitoffice@houstontx.gov)  
Link to City Wide Fee Schedule: [www.houstoncityfees.org](http://www.houstoncityfees.org)

**14.3.2 Fire Alarm.**

A fire alarm system shall be required and shall provide the following:

- 1) Control panel
- 2) Pull stations
- 3) Audible devices
- 4) Combination fixed temperature and rate of rise detectors (spacing in accordance with listing requirements)
- 5) System must be weatherproof.
- 6) Automatic fuel shut-off when the fire alarm is activated. These devices will remain inactive until controls are manually re-set at a service location onsite and accessible only by the proprietor or the proprietors designee.
- 7) The system shall be connected to a Underwriters Laboratory (UL) listed central station.

#### **14.3.3 Telephone.**

A readily accessible telephone not requiring a coin to operate shall be provided to notify the Houston Fire Department in case of fire, fuel spills or other emergencies.

#### **14.3.4 Emergency sign.**

A sign of durable materials, with letters a minimum of 1-inch in height on a background of contrasting color so that the lettering is clearly visible, shall be posted at the telephone location with the following information:

<p style="text-align: center;"><b>IN CASE OF FIRE, SPILL OR RELEASE</b></p> <p>1. Use emergency pump shut-off!</p> <p>2. Report the accident Fire Department No. <b>9-1-1</b> Facility address _____</p>
--

#### **14.3.5 Canopy.**

A non-combustible canopy is required to cover all dispensing areas.

#### **14.3.6 Written operation and safety instructions.**

Unattended service stations shall provide written operation and safety instructions to their members and post such instructions in dispensing areas.

#### **14.3.7 No Smoking and stop engine signs.**

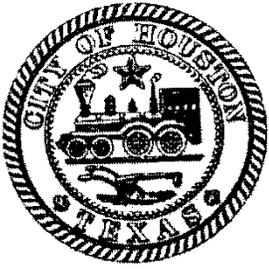
Signs, prohibiting smoking, dispensing into unapproved containers, and requiring vehicle engines to be stopped during fueling, shall be conspicuously posted within sight of each dispenser. Sign lettering shall be a minimum of 1-inch in height, on a background of contrasting color, so that the lettering is clearly visible.

### **14.3.8 Fire protection.**

Two listed portable fire extinguishers with a minimum rating of 20:B each shall be provided and mounted so that both fire extinguishers are readily visible and accessible and so that the path-of-travel distance to either fire extinguisher shall not be more than 35 feet. All fire extinguishers shall be inspected and tagged annually by an approved fire extinguisher service company.

## **REFERENCES**

1. City of Houston *Fire Code*, International Fire Code, 2006 edition, as amended.
2. State of Texas Health and Safety Code, Title 9, Safety Subtitle A. Public Safety, Chapter 753, Flammable Liquids.
3. National Fire Protection Association (NFPA) Standard 30, "Flammable and Combustible Liquids Code".
4. National Fire Protection Association (NFPA) Standard 30-A, "Automotive and Marine Service Station Code



## HOUSTON FIRE DEPARTMENT LIFE SAFETY BUREAU (LSB)



### LSB STANDARD 15, REV. 04 MOBILE REFUELING / WET HOSING

**SUPERCEDES:** LSB Standard 15, Rev. 03, dated 12/31/2010

**Note:** Vertical lines in the left-hand margin delineate changes from the previous version.

**Effective Date: 5/01/2012**



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LSB Standards are established in accordance with provisions of the City of Houston Fire Code. They are subject to the administrative sections covering alternative materials and methods, modifications, and the Board of Appeals.

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**LSB STANDARD 15, REV. 04**  
**MOBILE REFUELING / WET HOISING**

**SECTION 15.1 --- GENERAL**

**15.1.1 Scope.**

Mobile refueling, the transfer of fuel from one vehicle to another vehicle, creates a fire hazard and life safety concern. Precautions shall be taken to help alleviate the hazards in regards to the site location, exposed property, the equipment used, the vehicle used, as well as the operators-drivers conducting the refueling, in accordance with this standard and the “*City of Houston Fire Code*” (*Fire Code*).

**15.1.2 Purpose.**

The purpose of this standard is to provide guidance and instruction for fire and life safety at a company’s vehicle fleet site location. In addition, guidance and instructions for the independent mobile refueling operations, practices, or functions in dispensing liquids from a tank vehicle into the fuel tanks of other mobile vehicles. (For Aircraft Refuelers see applicable sections in the *Fire Code*)

This standard is subject to periodic review and updates to accommodate changes in local need or requirements, changes in nationally recognized standards in related technology, or where required by state or federal regulations.

**SECTION 15.2 --- DEFINITIONS**

**15.2.1 Fuel Limit Switch.**

A mechanism located on a tank vehicle, which limits the quantity of product dispensed at one time.

**15.2.2 Mobile Fueling.**

The operation of dispensing liquid fuels from tank vehicles into the fuel tanks of motor vehicles.

**15.2.3 Remote Emergency Shut-off Device.**

The combination of an operator carried signaling device and a mechanism on the tank vehicle. Activation of the remote emergency shut off device sends a signal to the tanker-mounted mechanism and causes fuel flow to cease.

**SECTION 15.3 --- GENERAL REQUIREMENTS**

**15.3.1 Permit required.**

Permit applications shall be obtained from The Houston Permitting Center, for “Fleet On-Site Mobile Refueling”, and approval from the Fire Marshal shall be obtained prior to the engaging in any mobile vehicle fueling operations, practices, or functions.

**Permit Office contact information for Fleet On-Site Mobile Refueling is as follow:**

The Houston Permitting Center  
Third Floor

1002 Washington Avenue  
Houston, Texas 77007  
Hours of operation: 8:00 a.m. to 3:30 p.m. Central Time  
Monday through Friday  
Office phone (832)394-8811  
To Email Customer Service Questions: [hfd.permitoffice@houstontx.gov](mailto:hfd.permitoffice@houstontx.gov)  
Link to City Wide Fee Schedule: [www.houstoncityfees.org](http://www.houstoncityfees.org)

### **15.3.2 Approved Locations.**

Dispensing of Class I, II, and III motor vehicle fuel from tank vehicles into the fuel tanks of motor vehicles will be approved at commercial, industrial, governmental or manufacturing establishments.

### **15.3.3 Permitted sites.**

#### **15.3.3.1 Site plan.**

A detailed Site Plan shall be submitted with each application for a permit. The Site Plan must indicate:

1. All buildings, structures, and appurtenances on site and their use or function
2. All uses adjacent to the property lines of the site
3. Location of storm drain openings
4. Location adjacent waterways or wetlands
5. Information regarding slope, natural drainage, curbing and impounding
6. How a spill will be retained upon the site property
7. Scale of the Site Plan
8. Fire Department Access Roads

#### **15.3.3.2 Adjoining property owners.**

The names, addresses, and telephone numbers of all adjoining property owners will be submitted to the Fire Marshal's office along with the Site Plan.

#### **15.3.3.3 Site Inspection.**

All prospective mobile refueling sites shall be visited and physically inspected by an inspector from the Fire Marshal's office prior to approval of mobile refueling at a site.

#### **15.3.3.4 Storm Water Run-Off Plan.**

The property owner shall develop and file a "Storm Water Run-Off Plan" with the Fire Marshal's office.

#### **15.3.3.5 Notification of Insurance carrier.**

The owner shall notify, in writing, their insurance carrier that mobile refueling is being conducted on the insurer's property.

#### **15.3.3.6 Annual inspection.**

Permitted sites shall be inspected annually to assure compliance with the requirements of this standard. Inspection reports shall be made available to the public upon request.

#### **15.3.3.7 Fuel spill response plan.**

Owners of companies engaging in mobile refueling operations shall provide a written response plan to the Fire Marshal which demonstrates a readiness to respond to a fuel spill, carry out appropriate mitigation measures, and to indicate its process to properly dispose of contaminated materials when circumstances require.

#### **15.3.3.8 Mobile refueling company proof of insurance.**

The mobile refueling company shall show proof of pollution insurance to cover the cost of a potential spill and clean-up.

#### **15.3.3.9 Authorization to fuel on private property.**

A copy of the 'Certificate of Authorization' to fuel on private property shall be completed and be located in the operation manual.

#### **15.3.3.10 Operational manual contents.**

Operational Manual shall contain items listed in Section 15.3.3 - Permitted Sites.

### **SECTION 15.4 ---OPERATIONAL REQUIREMENTS**

#### **15.4.1 Site.**

##### **15.4.1.1 Containment.**

The mobile refueling containment area shall be subject to final approval by the Fire Marshal dependent on the topography.

##### **15.4.1.2 Access to public.**

Mobile refueling operations shall not be conducted in areas accessible to the public.

##### **15.4.1.3 Distance to buildings, property lines, combustible storage.**

Mobile refueling operations shall not take place within 50 feet of any residential buildings, or 25 feet from other structures, property lines, public ways or combustible storage.

##### **15.4.1.4 Spills.**

Absorbent materials, non-water absorbent pads, a drip pan, an approved container with lid, and a non-metallic shovel shall be provided to mitigate small spills.

##### **15.4.1.5 Ignition source precautions.**

Prior to beginning dispensing operations, precautions shall be taken to assure ignition sources are not present.

##### **15.4.1.6 Nighttime refueling operations.**

Nighttime fueling operations shall only take place when approved and in adequately lighted areas.

#### **15.4.1.7 Electrical wiring and devices**

Electrical devices, ground wires to control static electricity and wiring in areas where fuel dispensing is conducted shall be in compliance with the City of Houston *Electrical Code (National Electric Code)*.

#### **15.4.1.8 Spill Notifications.**

The fire department, Texas Commission on Environmental Quality (TCEQ) and other appropriate authorities shall be notified when a reportable spill or unauthorized discharge occurs.

#### **15.4.1.9 Fire Department Access Roads.**

Fire department access roads with an unobstructed width of 20 feet and a vertical height clearance of at least 13 feet six inches, shall be provided to the refueling site.

#### **15.4.1.10 Tractor-trailer Rigs.**

Tractor-trailer rigs shall not be used as refueling vehicles.

### **15.4.2 Refueling Vehicles (Tank Vehicles).**

#### **15.4.2.1 Compliance with other agencies.**

The tank vehicle shall comply with the requirements of NFPA 385 and local, state and federal Department of Transportation (DOTn) requirements. The tank vehicle's specific function shall include that of supplying fuel to motor vehicle tanks. The vehicle and all its equipment shall be maintained in good repair.

#### **15.4.2.2 Pumps.**

Mobile refueling trucks shall be equipped with Underwriters Laboratories (UL) listed or other nationally approved pumps that can transfer fuel without having to run the engine of the refueler apparatus, unless specifically designed for such operations.

#### **15.4.2.3 No smoking signs.**

Signs prohibiting smoking or open flames within 25 feet of the tank vehicle or the point of fueling shall be prominently posted on 3 sides of the vehicle (back and both sides).

#### **15.4.2.4 Fire Extinguishers.**

A portable fire extinguisher with a minimum rating of 4A, 40:BC shall be provided on the vehicle, with signs clearly indicating the fire extinguisher location. All fire extinguishers shall have a current inspection tag affixed by an approved fire extinguisher service company.

#### **15.4.2.5 Dispensing nozzles and hose.**

The dispensing nozzles and hose shall be UL listed for such service. Latch open devices shall not be used. When required, vapor recovery systems must be incorporated into nozzles in order for the nozzle to be approved.

#### **15.4.2.6 Length of hose.**

The dispensing hose shall not extend from the hose reel more than 100 feet in length.

#### **15.4.2.7 Protection of hoses.**

The tank vehicle shall be positioned with respect to vehicles being fueled so as to prevent vehicular traffic between the tank vehicle and the motor vehicle being fueled and driving over the delivery hose. Fuel hoses shall not be stretched across potential lanes of traffic.

#### **15.4.2.8 Hose reels.**

The dispensing hose shall be properly placed on an approved reel or in an approved compartment prior to moving the tank vehicle to prevent any accidental discharge while in transit.

#### **15.4.2.9 Brakes- chocks-warning lights.**

During fueling operations, tank vehicle brakes shall be set, chock blocks shall be in place and warning lights shall be in operation.

#### **15.4.2.10 Fuel limit switch.**

All fuel pumps must be equipped with a UL Listed or other approved high-low flow switch or similar device.

### **15.4.3 Drivers.**

#### **15.4.3.1 Constantly attended.**

The tank vehicle dispensing equipment shall be constantly attended and operated only by designated personnel who are trained to handle and dispense motor fuels. Vehicles shall be equipped with an approved operator's manual with all qualified operators listed.

#### **15.4.3.2 Emergency communication device.**

Operators of tank vehicles used for mobile refueling shall have in their possession at all times an emergency communication device to notify the proper authorities in the event of an emergency.

#### **15.4.3.3 Hose inspection and reports.**

Drivers shall provide to the Fire Marshal upon request, daily written reports detailing inspections of the dispensing hose. All pressure hoses shall be inspected at intervals appropriate to service. With the hose fully extended, pressure shall be applied to the hose and couplings to the maximum operating pressure. Any hose or coupling showing signs of leakage, material deterioration, or weakness shall be removed from service or repaired.

#### **15.4.3.4 Topping off of vehicles.**

Drivers shall not top-off motor vehicle fuel tanks.

#### **15.4.3.5 Shut off engines.**

Drivers shall ensure the engines of vehicles being refueled are shut off during dispensing operations, unless otherwise approved by the Fire Marshal.

#### **15.4.3.6 Remote Emergency Shut-off Device**

The drivers shall be in control of the Remote Emergency Shut-off Device at all times to prevent over-fills.

#### **15.4.3.7 License and Certification.**

Mobile refueler drivers responsible for dispensing fuel shall possess a Commercial Drivers License with the appropriate endorsements. This license shall be presented to the Fire Marshal upon request. In addition, mobile refueler drivers must show a current certification indicating completion of the "Basic Plus" courses from *Houston Area Contractors' Safety Council* (HACSC) or with one of the *Association of Reciprocal Safety Councils* (ARSC) member councils.

APPENDIX A

**CERTIFICATION OF AUTHORIZATION TO FUEL ON  
PRIVATE PROPERTY**

**SERVICE PROVIDER**

Date: \_\_\_\_\_

Company name: \_\_\_\_\_

Telephone number: \_\_\_\_\_

HFD Vehicle fueling permit number: \_\_\_\_\_

Date permit expires: \_\_\_\_\_

**CUSTOMER**

Date: \_\_\_\_\_

Name: \_\_\_\_\_

Telephone number: \_\_\_\_\_

Address: \_\_\_\_\_

Customer grants authorization to fuel vehicles: \_\_\_\_\_

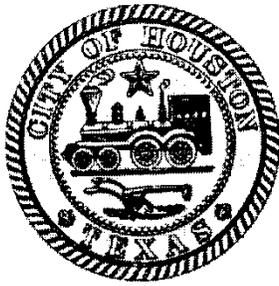
Fueling of vehicles shall be done in a safe manner and in compliance with the City of Houston *Fire Code*, and LSB Standard 15, "Mobile Refueling / Wet Hosing". The submitted operations manual and any other regulations that may be required by other regulating authorities. A copy of the operations manual, including company-authorized operators, shall be maintained at each vehicle-fueling site and made available for inspection upon request.

Service provider signature: \_\_\_\_\_

Customer signature: \_\_\_\_\_

## REFERENCES

1. City of Houston Fire Code, 2006 International Fire Code, as amended.
2. City of Houston Electrical Code, (NFPA Standard No. 70, “National Electrical Code”), all editions.
3. National Fire Protection Association (NFPA) Standard No. 385, “Tank Vehicles for Flammable and Combustible Liquids”.



## HOUSTON FIRE DEPARTMENT LIFE SAFETY BUREAU (LSB)



### LSB STANDARD 16, REV. 05 OPEN BURNING AND RECREATIONAL FIRES

Please note: A vertical bar in the left-hand column delineates changes from the previous editions.

**SUPERSEDES:** LSB Standard 16, rev. 04 Effective 12/31/2010

Note: A vertical bar in the left-hand column indicates changes since the previous version.

**Effective Date: 5/01/2012**



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LSB Standards are established in accordance with provisions of the City of Houston Fire Code. They are subject to the administrative sections covering alternative materials and methods, modifications, and the Board of Appeals.

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**LSB STANDARD 16, REV. 05**  
**OPEN BURNING AND RECREATIONAL FIRES**

**SECTION 16.1 --- GENERAL**

**16.1.1 Scope.**

Open burning and recreational fires within the corporate limits of the City of Houston shall be in accordance with the “*City of Houston Fire Code*” (*Fire Code*) and this standard.

**16.1.2 Purpose.**

This standard is for the use and guidance for approved open burning and recreational fires.

**16.1.3 Open burning prohibited.**

All open burning within the City of Houston shall be prohibited unless approved by the Fire Marshal and a permit issued.

**16.1.4 Discontinuance of open burning.**

The Fire Marshal is authorized to require that open burning be immediately discontinued (permitted or otherwise) if it is determined that the emissions are offensive to occupants of surrounding property or if the open burning is determined to constitute a hazardous condition.

**SECTION 16.2 --- DEFINITION**

**16.2.1 Open Burning.**

Open burning’, for the purpose of this standard is the burning of: a bonfire, rubbish fire, campfire, trench fire, or other fire in an outdoor location where fuel being burned is not contained in an approved incinerator, outdoor fireplace, barbecue grill or barbecue pit.

**SECTION 16.3 --- BARBECUE PITS**

**16.3.1 Permit not required.**

Permits are not required for barbecue pits indoors or outdoors.

**16.3.2 Barbecue pits indoors.**

Barbecue pits used for commercial cooking in buildings shall be constructed as commercial food heat-processing equipment in accordance with the *Construction Code*.

**16.3.3 Barbecue pit outdoors.**

Portable and stationary barbecue pits outdoors shall be constructed of concrete or other approved noncombustible material.

#### **16.3.4 Barbecue pits used for burning trash.**

Barbecue pits shall not be used for the burning of trash, rubbish, or discarded leaves and branches.

#### **16.3.5 Location to buildings.**

Portable barbecue pits, charcoal grills and other open-flame cooking devices outside of a building shall not be operated on combustible balconies or located within 10 feet of combustible walls or roofs or other combustible materials.

#### **16.3.6 Disposal of ash and coals.**

Hot ash and coals from barbecue pits and charcoal burners shall be placed in a non-combustible container until cooled or thoroughly saturated with water, before being disposed of.

### **SECTION 16.4 --- TRENCH BURNING**

#### **16.4.1 Compliance with Texas Commission on Environmental Quality (TCEQ).**

Trench burning shall be in accordance with this section and written permission from the Executive Director of the TCEQ. If there is a conflict in regulations, the more restrictive shall apply. Compliance with TCEQ rules does not indicate automatic approval for a Houston Fire Department 'Open Burning' (Trench) Permit.

#### **16.4.2 Permit required.**

**Applications** for 'Open Burning' (Trench Burning), **submitted less than 5 business days prior to the event will incur special handling fees.** If an inspection is requested by the permit applicant at a specific time, special handling fees shall apply.

#### **Permit Office contact information for Open Burning (Trench Burning) is as follows:**

The Houston Permitting Center

1002 Washington Avenue

Houston, Texas 77007

Hours of operation: 8:00 a.m. to 3:30 p.m. Central Time

Monday through Friday

Office phone (832)394-8811

To Email Customer Service Questions: [hfd.permitoffice@houstontx.gov](mailto:hfd.permitoffice@houstontx.gov)

Link to City Wide Fee Schedule: [www.houstoncityfees.org](http://www.houstoncityfees.org)

#### **16.4.3 Plot plan required.**

A Plot Plan of the proposed 'Open Burning' (trench burning) site containing the address of the site, length, width, and depth of the property, location of the trench on the property, distance to building exposures, and length, width, and depth of the trench shall be submitted with the permit application.

#### **16.4.4 Permit at location.**

An approved 'Open Burning' permit shall be at the site any time burning is in progress.

**16.4.5 Length of permit approval.**

'Open Burning' (trench burning) shall only be approved for 90 continuous days at a time, including permanent sites, and a renewal application for burning shall be submitted for each 90-day period.

**16.4.6 Operation shut down.**

The trench burning operation shall be shut down if wind direction or other atmospheric conditions cause the operation to become a nuisance or hazardous to the public or it is determined that emissions are offensive to occupants of surrounding property. The operation shall be shut down upon the order of any fire or police officer. Failure to do so shall result in the permit being revoked.

**16.4.7 Operation after dark.**

There shall be no open burning operations after nightfall. Any operation after dark shall void the fire department permit and shall result in the permit being revoked.

**16.4.8 Distance to exposures.**

No site nearer than 600 feet to any school, residence (apartment, condominium, etc.) or medical facility shall be approved. Trench burning shall be operated at least 300 hundred feet from any recreational area, residence or other structure not occupied or used solely by the owner of the trench burner or the owner of the property upon which the trench burner is located.

**16.4.9 Ground opening.**

The trench shall be opened in undisturbed soil not previously excavated, built up, compacted, or used in any type of landfill operation.

**16.4.10 Trench size.**

The trench shall be no wider than 12 feet with a minimum depth of 10 feet. The maximum length of the burning area as measured along the bottom of the trench shall not exceed by more than 5 feet the length of the manifold. The walls of the trench must be maintained such that they will remain vertical.

**16.4.11 Operating hours.**

Operation of the trench burner is limited to the hours between 8:00 a.m. and 6:00 p.m. (daylight hours only) and is limited to a total of 8 hours per day and 1,000 hours per year. A written record or log of the hours of operation of the trench burner shall be maintained at the burn site and made available at the request of Fire Marshal.

**16.4.12 Added material.**

Material shall not be added to the trench and debris shall have been consumed to ash residue by sunset or 6 p.m.

#### **16.4.13 Blower operation.**

The blower shall remain on until all material is consumed so that any remaining material in the trench will not smoke when the blower is turned off or the material shall be completely extinguished.

#### **16.4.14 Material to be burned.**

Material not being consumed by the fire and material being stock piled to be burned at a later date must be kept at least 75 feet from the trench. If water is not available for firefighting, this distance shall be increased to 200 feet.

#### **16.4.15 Material height in trench.**

Material shall not be added to the trench in such a manner as to be stacked above the air curtain at any time.

#### **16.4.16 Removal of ash.**

Ash generated by this operation shall be removed from the trench as often as necessary in order to maintain the minimum trench depth of 10 feet. The ash shall be removed in such a manner as to minimize becoming airborne. All material removed from the trench must be completely extinguished before being land filled or placed in contact with combustible material to prevent combustion outside of the trench or in the land fill.

#### **16.4.17 Operating instructions.**

Operating instructions provide in this standard for the trench-burning device shall be posted at the burn site and all operators shall read and have knowledge of these instructions. The operating instructions shall be made available at the request from the Fire Marshal.

#### **16.4.18 Trench burner operator.**

The trench burner operator shall remain with the trench burner at all times when the burner is in operation.

#### **16.4.19 Wind speed.**

Trench burning operations shall not be operated when surface wind speed is predicted to be less than 6 miles per hour or greater than 23 miles per hour.

#### **16.4.20 Weather stagnation advisories and Burn Bans.**

Burning shall not be conducted during periods of actual or predicted persistent (12 hours or more) low-level atmospheric temperature inversions (non-surface based) or in areas covered by a current county 'Burn Ban' warning, or State or National Weather Air Stagnation Advisory.

#### **16.4.21 Burning inside Loop 610.**

Trench burning operations are prohibited from location inside of Loop 610.

#### **16.4.22 Fire Dispatcher notification.**

The operator of the trench burner must notify the Fire Department Communication Center Dispatch Supervisor before and at the end of each burning operation. Telephone: (713) 884-3143

### **SECTION 16.5 --- BONFIRES**

#### **16.5.1 Compliance with TCEQ.**

Bonfires shall be in accordance with this section and the TCEQ. If there is a conflict in regulations, the more restrictive shall apply. Compliance with TCEQ rules does not indicate automatic approval for a fire department 'Open Burning' (Bonfire) Permit.

#### **16.5.2 Permit required.**

**Applications for 'Open Burning' (Bonfire), submitted less than 5 business days prior to the event will incur special handling fees.**

#### **Permit Office contact information for Open Burning (Bonfire) is as follows:**

The Houston Permitting Center

1002 Washington Avenue

Houston, Texas 77007

Hours of operation: 8:00 a.m. to 3:30 p.m. Central Time

Monday through Friday

Office phone (832)394-8811

To Email Customer Service Questions: [hfd\\_permitoffice@houstontx.gov](mailto:hfd_permitoffice@houstontx.gov)

Link to City Wide Fee Schedule: [www.houstoncityfees.org](http://www.houstoncityfees.org)

Standby personnel and equipment shall be required by the Fire Marshal in accordance with the *Fire Code*.

#### **16.5.3 Site Plans.**

Site Plans showing the exact location of the bonfire indicating the distances to buildings and other exposures shall be submitted with the permit application.

#### **16.5.4 Distance to exposure.**

The minimum distance of the bonfire to the nearest building or other exposure (fences, autos, etc.) shall be at least 300 feet.

#### **16.5.5 Time limit.**

Bonfires shall be limited to 1-hour duration.

#### **16.5.6 Wind speed.**

Wind speeds at the time of the bonfire shall not exceed 23 miles per hour.

#### **16.5.7 Size of bonfire.**

The overall size of the bonfire shall not exceed 12 feet in height, 12 feet in width, and 12 feet in length or 1728 cubic feet of area.

**16.5.8 Materials for bonfire.**

Combustible materials shall not be moved onto the premises before 7:00 am on the date of the bonfire.

**16.5.9 Prohibited materials for bonfires.**

Use of flammable or combustible liquids, auto tires, waste oil, asphalt roofing and asphalt waste, creosoted materials, or any other hydrocarbon derivatives and highly combustible materials such as paper, excelsior, wood shingles and cardboard boxes are prohibited from use in a bonfire.

**16.5.10 Approved combustibles and quantities.**

Combustible liquids such as kerosene, diesel fuel, etc. may be used for igniting the bonfire. A maximum of 5 gallons of said combustible liquid, if stored in an approved metal safety container, may be kept on the premises for this purpose.

**16.5.11 Bonfire supervision.**

The bonfire shall be supervised by at least one responsible adult, and the said adult's name and title shall appear on the permit (permit holder).

**16.5.12 Fire protection.**

Approved portable fire extinguishers with minimum 4A ratings or a garden hose of sufficient length and connected to an approved water supply, shall be provided within 35 feet path-of-travel distance to all sides of the bonfire.

**16.5.13 Bonfire extinguishment.**

The bonfire shall be completely extinguished before the site is left unattended. The permit holder will be held responsible for complete extinguishment of the bonfire and subsequent debris created by the fire.

**16.5.14 Debris removal.**

Debris resulting from the bonfire must be removed from the premises within 24 hours, and is the responsibility of the permit holder.

**16.5.15 Fire Dispatcher notified**

The Houston Fire Department Communications Center shall be notified on the evening of the burning, at least one hour prior to the burn; Telephone: (713) 884-3143.

**16.5.16 Air Quality Control notified.**

The City of Houston *Bureau of Air Quality Control* shall be notified on the evening of the burning.

**16.5.17 Weather stagnation advisories and Burn Bans.**

Bonfires shall not be conducted during periods of actual or predicted persistent (12 hours or more) low-level atmospheric temperature inversions (non-surface based) or in

areas covered by a current county 'Burn Ban' warning, or State or National Weather Air Stagnation Advisory.

## **SECTION 16.6 --- CAMPFIRES**

### **16.6.1 Compliance with TCEQ .**

Campfires shall be in accordance with this section and the **TCEQ**. If there is a conflict in regulations, the more restrictive shall apply. Compliance with TCEQ rules does not indicate automatic approval for a Fire Department Open Burning (Campfire) Permit.

### **16.6.2 Permit required.**

**Applications for "Open Burning" (Campfires), submitted less than 5 business days prior to the event will incur special handling fees.**

#### **Permit Office contact information for Open Burning (Campfire) is as follows:**

The Houston Permitting Center

1002 Washington Avenue

Houston, Texas 77007

Hours of operation: 8:00 a.m. to 3:30 p.m. Central Time

Monday through Friday

Office phone (832)394-8811

To Email Customer Service Questions: [hfd.permitoffice@houstontx.gov](mailto:hfd.permitoffice@houstontx.gov)

Link to City Wide Fee Schedule: [www.houstoncityfees.org](http://www.houstoncityfees.org)

### **16.6.3 Plans required.**

A drawing of the campfire site indicating the location of the campfire or campfires shall be submitted with the permit application.

### **16.6.4 Distance to exposures.**

The location of the campfire shall not be within 50 feet from any structure or combustible exposures such as buildings, fences, automobiles, trailers and trees.

Exception: (1) If the burn container measures 36" x 36" x 24" tall and there is no burning material above the rim, the distance from combustible exposures may be reduced to 25'.

(2) Combustible materials used for bench style group seating arrangements shall be no less than 15 feet from the burn containers rim and each bench shall be separated horizontally from the others by not less than 36". Seating materials that are treated to be flame resistant may be used within 10 feet of the container upon successful passing of a field flame test conducted by the Fire Inspector. No less than two directions of egress shall be maintained from the burn container area.

### **16.6.5 Containment of campfire.**

The campfire shall be contained in a metal container not to exceed 60 inches by 60 inches and the sides not less than 15 inches high. This stack shall be limited to 15

inches above the rim and shall be stacked in a flat pallet style configuration to eliminate the possibility of the burning wood to fall out of the container. The volume of wood allowed to be burned in this container shall never exceed 50% of the container volume. An additional amount of wood equal to the amount of wood in the container may be stacked above the rim in the same configuration. This will allow the container to hold 100% of the burning wood at all times. Adding wood to the campfire as it is consumed will be allowed as long as the maximum amounts are not exceeded.

#### **16.6.6 Campfire supervision.**

The campfire shall be attended at all times by a responsible adult knowledgeable in the use of the fire extinguishment required by this section. Additional burn material may be cautiously and safely added to the campfire only by a responsible adult, when it is safe to do so. The campfire shall be fully extinguished before the site is left unattended. The permit holder will be held responsible for complete extinguishment of the campfire and subsequent debris created by the fire.

#### **16.6.7 Fire protection.**

An approved portable fire extinguisher with a minimum 4A rating and a garden hose of sufficient length, with a spray nozzle attached, shall be provided. It shall be connected to an approved water supply and shall provide fire protection in all directions around the camp fire.

#### **16.6.8 Wind speed.**

Wind at the time of or during the campfire shall not exceed 23 mph.

#### **16.6.9 Prohibited Materials for campfires.**

Use of flammable or combustible liquids, auto tires, waste oil, asphalt roofing and asphalt waste, creosoted materials, or any other hydrocarbon derivatives and highly combustible materials such as paper, excelsior, wood shingles and cardboard boxes are prohibited from use in campfires.

#### **16.6.10 Debris removal.**

Debris resulting from the campfire must be removed from the premises within 24 hours, and is the responsibility of the permit holder.

#### **16.6.11 Fire Dispatcher notified.**

The Houston Fire Department Communications Center shall be notified at least one hour prior to the burn; Telephone: (713) 884-3143.

### **SECTION 16.7 --- FIREWALKING**

#### **16.7.1 Compliance with TCEQ .**

Firewalking shall be in accordance with this section and the TCEQ. If there is a conflict in regulations, the more restrictive shall apply. Compliance with TCEQ rules does not indicate automatic approval for a Fire Department 'Open Burning' (Firewalking) Permit.

### **16.7.2 Permit required.**

**Applications for 'Open Burning' (Firewalking), submitted less than 5 business days prior to the event will incur special handling fees.**

### **Permit Office contact information for Open Burning (Firewalking) is as follows:**

The Houston Permitting Center

1002 Washington Avenue

Houston, Texas 77007

Hours of operation: 8:00 a.m. to 3:30 p.m. Central Time

Monday through Friday

Office phone (832)394-8811

To Email Customer Service Questions: [hfd.permitoffice@houstontx.gov](mailto:hfd.permitoffice@houstontx.gov)

Link to City Wide Fee Schedule: [www.houstoncityfees.org](http://www.houstoncityfees.org)

### **16.7.3 Plans required.**

A drawing of the firewalking site indicating the location of the firewalking shall be submitted with the permit application. Permission from the owner of the property must be secured specifically in writing before the permit can be approved.

### **16.7.4 Standby firewatch required.**

A Standby firewatch paid for by the person conducting the firewalk will observe the activity to verify that the activity is conducted safely. The standby firewatch shall remain on site until such time the coals are completely extinguished. A Standby firewatch permit application shall be submitted with 'Open Burning' permit application and plans in accordance with the *Fire Code*.

### **16.7.5 Distance to exposures.**

The location of the firewalking shall not be within 25 feet from any structure or combustible exposures such as fences, automobiles, and trailers.

### **16.7.6 Firewalking coals.**

The coals for firewalking shall be contained in an approved container of metal construction with sides at least 4 inches high or in the ground at least 4 inches deep. The height of the coals shall not extend above the side of the containment.

### **16.7.7 Fire protection.**

An approved portable fire extinguisher with minimum 4A ratings, or a garden hose of sufficient length and connected to an approved water supply, shall be provided within 35 feet path-of-travel distance to the firewalk area.

### **16.7.8 Wind speed**

Wind at the time of or during the firewalk shall not exceed 23 mph.

### **16.7.9 Prohibited Materials for firewalking.**

Use of flammable or combustible liquids, auto tires, waste oil, asphalt roofing and asphalt waste, creosoted materials, or any other hydrocarbon derivatives and highly

combustible materials such as paper, excelsior, wood shingles and cardboard boxes are prohibited from use in firewalking.

#### **16.7.10 Firewalking coals extinguishment.**

The Firewalking coals shall be completely extinguished before the site is left unattended. The permit holder will be held responsible for complete extinguishment of the coals and subsequent debris created by the Firewalking event.

#### **16.7.11 Debris removal.**

Debris resulting from the firewalk must be removed from the premises within 24 hours, and is the responsibility of the permit holder.

#### **16.7.12 Fire Dispatcher notified.**

The Houston Fire Department Communications Center shall be notified on the evening of the burning, at least one hour prior to the burn; Telephone: (713) 884-3143.

### **SECTION 16.8--- OPEN FLAMES (Torch Devices)**

#### **16.8.1 Permit required.**

No person shall install, erect or maintain any open flame torch for aesthetic or decorative value on any premises within the City of Houston unless a permit is obtained for the installation or erection of such from the Permit Office.

#### **Permit Office contact information for "Open Burning" (Torch Devices) is as follows:**

The Houston Permitting Center

1002 Washington Avenue

Houston, Texas 77007

Hours of operation: 8:00 a.m. to 3:30 p.m. Central Time

Monday through Friday

Office phone (832)394-8811

To Email Customer Service Questions: [hfd.permitoffice@houstontx.gov](mailto:hfd.permitoffice@houstontx.gov)

Link to City Wide Fee Schedule: [www.houstoncityfees.org](http://www.houstoncityfees.org)

#### **16.8.2 Plans and permit required.**

Before beginning the installation or erection of any open flame torch in the city, (natural gas or combustible liquids) an applicant must submit a permit request to the Permit Office and include a plot plan showing the location of torches and their proximity to buildings, vegetation and other combustibles, driveways, parking areas, streets, and walk ways. Cut away drawings of the device and the method of installation must be submitted. **Applications submitted less than 5 business days prior to the event will incur special handling fees.**

### **16.8.3 Torches using Natural Gas.**

Devices utilizing Natural Gas shall be installed by a licensed plumber and shall have the installation of the device and piping permitted and approved by the City of Houston Building Department, Plumbing Section.

### **16.8.4 Flammable liquids.**

Flammable liquids, including Liquefied Petroleum Gas (LPG), shall not be used for open flame torches.

### **16.8.5 Regulated orifice.**

A regulated orifice shall be placed within the supply line of each torch of such size to prevent a flame of over 18 inches in height above the burner outlet when the valve is fully open (including Natural Gas or combustible liquids).

### **16.8.6 Gas pressure.**

Gas shall be delivered to the device at a pressure not greater than the pressure normally provided for by the building department permitted installations.

### **16.8.7 Height of burner.**

The height of the bottom of the burner of the torch shall be at least 8 feet above the ground level.

### **16.8.8 Torch protection.**

Torches adjacent to streets, parking areas, driveways, or walkways shall be curbed or otherwise barricaded to prevent mechanical damage.

### **16.8.9 Torch location.**

Torches shall not be located closer than 10 feet to any street, parking area, driveway, or walkway and shall not be installed closer than 10 feet to any building or combustible material including vegetation, shrubbery, banners, decorations or similar materials.

## **SECTION 16.9 --- OPEN FLAMES (Candles)**

### **16.9.1 Candles and Other Open-flame Decorative Devices.**

#### **16.9.1.1 General.**

The use of candles and other open-flame decorative devices shall be in accordance the *Fire Code* and this standard. Permits and standby firewatch shall be required by the Fire Marshal for public assembly activities, events and theatrical performances where candles and other open-flame devices are to be used. **Applications submitted less than 5 business days prior to the event will incur special handling fees.**

#### **Permit Office contact information for “Open Burning” (Candles) and Standby Fire Watch is as follows:**

The Houston Permitting Center  
1002 Washington Avenue

Houston, Texas 77007

Hours of operation: 8:00 a.m. to 3:30 p.m. Central Time

Monday through Friday

Office phone (832)394-8811

To Email Customer Service Questions: [hfd.permitoffice@houstontx.gov](mailto:hfd.permitoffice@houstontx.gov)

Link to City Wide Fee Schedule: [www.houstoncityfees.org](http://www.houstoncityfees.org)

### **16.9.1.2 Candles and other open-flame decorative devices.**

The use of candles and other open-flame decorative devices in places of public assembly and drinking or dining establishments shall be in accordance with the *Fire Code* and this standard:

1. Classes I and II flammable liquids and LP-gas shall not be used.
2. Liquid- or solid-fueled lighting devices containing more than 8 ounces must self-extinguish and not leak fuel at a rate of more than 1/4 teaspoon per minute if tipped over.
3. The devices or holder shall be constructed to prevent the spillage of liquid fuel or wax at the rate of more than 1/4 teaspoon per minute when the device or holder is not in an upright position.
4. The device or holder shall be designed so that it will return to the upright position after being tilted to an angle of 45 degrees from vertical.

**Exception:** Units that self-extinguish if tipped over and do not spill fuel or wax at the rate of more than 1/4 teaspoon per minute if tipped over.

5. The flame shall be enclosed except as follows:
  - 5.1 Openings on the side shall not be more than 3/8 inch diameter.
  - 5.2 Openings on the top and the distance to the top shall be such that a piece of tissue paper placed on the top will not ignite in 10 seconds.
6. Chimneys shall be made of noncombustible materials. Such chimneys shall be securely attached to the open-flame device.

**Exception:** The chimney need not be attached to any open-flame device that will self-extinguish if the device is tipped over.

7. Fuel canisters shall be safely sealed for storage.
8. Storage and handling of combustible liquids shall be in accordance with Fire Code.

9. Shades, if used, shall be made of noncombustible materials and securely attached to the open-flame device holder or chimney.

10. Candelabras with flame-lighted candles shall be securely fastened in place to prevent overturning and located away from occupants using the area and away from possible contact with drapes, curtains or other combustibles.

#### **16.9.1.3 Religious ceremonies.**

When, in the opinion of the Fire Marshal, adequate safeguards have been taken, participants in religious ceremonies are allowed to carry handheld candles. Handheld candles shall not be passed from one person to another while lighted.

#### **16.9.1.4 Theatrical performances.**

When approved, open-flame devices used in conjunction with theatrical performances are allowed to be used when adequate safety precautions have been taken.

#### **16.9.1.5 General precautions for candle use.**

Candles and open flame decorative devices should not be placed on or near combustible materials, including table or desk tops, and should be placed so as not to be subject to accidental overturning. Flame tips should not reach beyond lip of container or holder. Candles not within a container or holder shall be safeguarded from accidental contact with, or hot wax spillage onto, any combustible materials.

### **SECTION 16.10 – OPEN FLAME (Food Preparation)**

#### **16.10.1 General.**

The preparation or use of flaming foods or beverages in places of public assembly and drinking or dining establishments shall be in accordance with standard.

#### **16.10.2 Dispensing.**

Flammable or combustible liquids used in the preparation of flaming foods or beverages shall be dispensed from one of the following:

1. A 1-ounce unbreakable container, or
2. An unbreakable container not exceeding 1-quart capacity with a controlled-pouring device that will limit the flow to a 1-ounce serving.

#### **16.10.3 Containers not in use.**

Containers shall be secured to prevent spillage when not in use.

#### **16.10.4 Serving of flaming food.**

The serving of flaming foods or beverages shall be done in a safe manner and shall not create high flames. The pouring, ladling or spooning of liquids is restricted to a maximum height of 8 inches above the receiving receptacle.

#### **16.10.5 Location.**

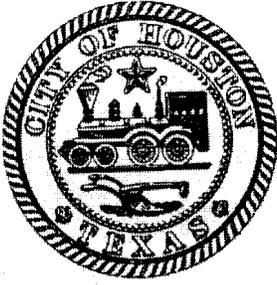
Flaming foods or beverages shall be prepared only in the immediate vicinity of the table being serviced. They shall not be transported or carried while burning.

**16.10.6 Fire protection.**

The person preparing the flaming foods or beverages shall have a wet cloth towel immediately available for use in smothering the flames in the event of an emergency.

**REFERENCES**

1. City of Houston *Fire Code*, International Fire Code, 2006 edition, as amended.
2. City of Houston *Building Code*, all editions.



## HOUSTON FIRE DEPARTMENT LIFE SAFETY BUREAU (LSB)



### LSB STANDARD 17, REV. 04 TIRE CHIPPING AND SHREDDING OPERATIONS

**SUPERCEDES:** LSB Standard 17, Rev. 03, dated 12/31/2010

**Note:** A vertical line in the left-hand margin delineates changes from the previous version.

**Effective Date: 5/01/2012**



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LSB Standards are established in accordance with provisions of the City of Houston Fire Code. They are subject to the administrative sections covering alternative materials and methods, modifications, and the Board of Appeals.

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**LSB STANDARD 17, REV. 04  
TIRE CHIPPING AND SHREDDING OPERATIONS**

**SECTION 17.1 --- GENERAL**

**17.1.1 Scope.**

Storage of scrap tires and tire byproducts and tire chipping and shredding operations in the City of Houston shall be in accordance with Houston *Fire Code* and this standard.

**17.1.2 Purpose.**

This standard shall provide guidelines for Tire Disposers and their operations. Tire Disposers and their operations shall comply with this standard.

**17.1.3 Plans.**

Plot plans shall be submitted to the Fire Marshal for all storage of scrap tires and tire byproducts and tire chipping and shredding operations. Plot plans shall include fire department access roads throughout, area division of piles, pile height and width, and all exposures.

**17.1.4 Permit.**

An operational permit is required to establish, conduct or maintain storage of scrap tires and tire byproducts that exceeds 2,500 cubic feet of total volume of scrap tires and for indoor storage of tires and tire byproducts and tire chipping and shredding operations.

**Permit Office contact information for Storage of Scrap Tires and Tire Byproducts is as follows:**

The Houston Permitting Center

Third Floor

1002 Washington Avenue

Houston, Texas 77007

Hours of operation: 8:00 a.m. to 3:30 p.m. Central Time

Monday through Friday

Office phone (832)394-8811

To Email Customer Service Questions: [hfd.permitoffice@houstontx.gov](mailto:hfd.permitoffice@houstontx.gov)

Link to City Wide Fee Schedule: [www.houstoncityfees.org](http://www.houstoncityfees.org)

**SECTION 17.2 – DEFINITIONS**

**17.2.1 Tire Disposers.**

A Tire Disposer is any person who, in compliance with all applicable state, federal and local laws, rules and regulations, disposes of or converts tires to other purposes. Including but not limited to person who:

- (a) Landfill, incinerate, or otherwise dispose of tires as waste or as fuel.

(b) By shredding, grinding or chemically treating, reduces tires into basic components for oil carbon black, rubber, road paving, or other marketable salvage material.

(c) Converts tires into other useful items such as doormats and sandal shoes.

## **SECTION 17.3 --- INSIDE BUILDING STORAGE**

### **17.3.1 Permit.**

A permit shall be required for inside storage. Refer to Section 17.1.4, of this Standard, for contact information.

### **17.3.2 Plans.**

Plot plans shall be submitted to the Fire Marshal for all storage of scrap tires and tire byproducts and tire chipping and shredding operations. Plot plans shall include fire department access roads throughout, area division of piles, pile height and width, and all exposures.

### **17.3.3 Storage and operations inside of a building.**

Storage and operations inside of a building shall be based upon standards established in NFPA 231D.

## **SECTION 17.4 --- OUTDOOR STORAGE AND USE**

### **17.4.1 Area division.**

Every outdoor area used for storage or operation of tire chipping or shredding shall be divided into single storage and fire area combinations by a driveway 30 feet in width and main aisles 10 feet in width.

### **17.4.2 Area limitation.**

There shall be no materials stored within a single storage area (fire area) more than 35 feet from any driveway nor more than 15 feet from a main aisle.

### **17.4.3 Height limitation**

The height of storage piles shall be limited to 13 feet, except that single storage areas bordered on three (3) long sides by driveways or main aisles may be increased to 30 feet.

### **17.4.4 Drainage.**

Stored material shall be arranged to facilitate and promote drainage from stored materials.

### **17.4.5 Access to a single fire area.**

Each single fire area shall have access to a public street by a driveway (Fire Lane) of unobstructed way of at least 30 feet in width and in compliance with LSB Standard 03.

#### **17.4.6 Screening of property.**

The entire property shall be surrounded by a fence of at least 6 feet in height of non-combustible material or other suitable means to prevent access of any unauthorized persons. An adequate number of gates shall be provided in the surrounding fence or other barriers as determined by the Fire Marshal so as to provide ready access of fire apparatus. Access gates shall be provided as per LSB Standard 04.

#### **17.4.7 Buildings in storage areas.**

Buildings in outside storage areas shall be of 1-hour rated construction as required by the City of Houston *Building Code* if located within 50 feet from the nearest storage pile.

#### **17.4.8 Maintenance of premise.**

The entire storage site shall be kept free from accumulation of unnecessary combustible materials. Weeds and grass shall be kept down and regular procedure provides for the periodic clean up of the entire area. Weed burners or any type of burning are prohibited.

#### **17.4.9 Heating equipment.**

No heating equipment shall be allowed in the storage or use area.

#### **17.4.10 Vehicles.**

All vehicles shall be garaged in separate detached buildings or parked in designated areas located 50 feet from shredding or tire chipping operations or storage. All fuel handling shall be done in accordance with applicable provisions of the *Fire Code*.

#### **17.4.11 Fire protection.**

Fire protection provided shall be in accordance with this section.

##### **17.4.11.1 Water supply.**

A fire protection system consisting of an approved monitor nozzle(s), water supply system, and fire hydrants capable of supplying the required flow shall be provided to within 150 feet of all portions of the yard and in accordance with NFPA Standard No. 24.

##### **17.4.11.2 Fire extinguishers.**

A minimum of one 4A:30BC portable fire extinguisher shall be provided for every 50 feet of unobstructed path of travel and in accordance with LSB Standard 01.

##### **17.4.12 Fire Department notification**

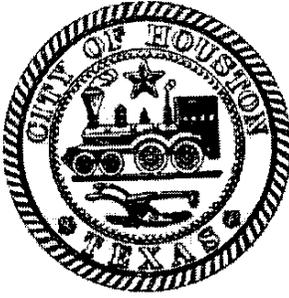
Means shall be provided at all times on site for contacting the fire department in event of an emergency. There shall be no delays in reporting fires. The fire department shall be immediately notified of all fires, by telephoning: “**9-1-1**”.

##### **17.4.13 Texas Commission on Environmental Quality (TCEQ) notification.**

The TCEQ shall be notified of all Tire Chipping and Shredding Operations and the operation shall be in accordance with TCEQ regulations and other state and local ordinances. Where this is a conflict with this standard and other state and local requirements the most restrictive shall apply. Compliance with TCEQ rules does not indicate automatic approval for a fire department permit.

## REFERENCES

1. City of Houston Fire Code, International Fire Code, 2006 edition, as amended.
2. City of Houston *Building Code*, International Building Code, current edition, as amended.
3. National Fire Protection Association (NFPA) Standard No. 24, "Installation of Private Fire Service Mains and Their Appurtenances".
4. National Fire Protection Association (NFPA) Standard No. 231D, "Storage of Rubber Tires"



**HOUSTON FIRE DEPARTMENT  
LIFE SAFETY BUREAU (LSB)**



**LSB STANDARD 18, REV. 04  
HIGH-RISE FIRE SAFETY PLAN APPROVAL**

**SUPERCEDES: LSB STANDARD 18, REV. 03, DECEMBER 31, 2010**

**NOTE:** All references to “Building Emergency Response Personnel” have been removed from this Standard and are no longer required as part of a High-Rise Fire Safety Approval, effective 5/01/2012.

**Effective Date: May 01, 2012**



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LSB Standards are established in accordance with provisions of the City of Houston Fire Code. They are subject to the administrative sections covering – alternative materials and methods, modifications, and the Board of Appeals.

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**LSB Standard 18, Rev. 04**  
**High-Rise Fire Safety Plan Approval**

**SECTION 18.1 ---- GENERAL**

**18.1.1 Scope.**

This standard shall apply to all persons seeking to provide high-rise fire safety training and high-rise fire safety plan approvals within the City of Houston in accordance with the *Fire Code*.

**18.1.2 Purpose.**

This standard shall provide minimum guidelines for high-rise training as permitted by LSB Standard 07, "High-Rise Fire Safety Plans" toward a fire-safety plan approval by the Fire Marshal.

**SECTION 18.2 --- DEFINITIONS**

**18.2.1 Fire Safety Director.**

Representative of the owner of a high-rise building and who is mandated by the Fire Marshal, to implement the Fire Safety Plan by providing information and properly training building staff, tenants, residents and guest, as defined herein. The Fire Safety Director is responsible for directing the Fire Safety Plan during and after a fire emergency.

**18.2.2 Fire Safety Team.**

Building personnel selected and trained to utilize the approved Fire Safety Plan in promoting general fire and life safety in high-rise buildings. The Fire Safety Team shall include the Fire Safety Director, Assistant Directors, Fire Wardens and other such personnel included in the approved fire safety plan. The members of the Fire Safety Team shall possess a current certificate signed by the Fire Marshal or an approved instructor as per Section 18.3. Certificates shall be valid for a period of five years.

**18.2.3 High-rise Certification Classes.**

Training provided to tenant designated Fire Wardens and all property management employees, staff and/or contract personnel by an instructor approved by the Fire Marshal to certify that they have been trained in accordance with the requirements of the City of Houston Fire Code and this standard.

**18.2.4 Supervised Fire Drill.**

A planned fire drill performed under supervision of an approved training instructor.

**18.2.5 Approved Training Instructor.**

A qualified individual approved in accordance with Section 18.3.1 to instruct high-rise safety for fire safety plan approval by the Code Official.

## **SECTION 18.3 --- QUALIFICATIONS TO INSTRUCT**

### **18.3.1 Qualifications.**

Qualifications of individuals to instruct high-rise fire safety in accordance with requirements of the City of Houston *Fire Code* shall meet all the following requirements as set forth by below, and be acceptable to the Code Official:

1. Background in the Fire Service or related Fire Safety field:
  - a. Certified Firefighter, Fire Protection Engineer, or combination thereof, for a minimum of 10 years, *or*
  - b. Fire/Life Safety Director, with a minimum of 10 years experience in high-rise occupancies, *or*
  - c. Building manager or engineer with a minimum of 15 years experience in high-rise occupancies.
2. Possess at minimum a Level I (Basic) Instructor or Teaching Certification issued by:
  - a. Accredited educational institution, *or*
  - b. Certified Fire Training Academy, *or*
  - c. Texas Instructor Certificate or equivalent credentials.
3. Demonstrate working knowledge of applicable City of Houston Codes and Ordinances.

## **SECTION 18.4 ---- COMPONENTS OF FIRE SAFETY PLAN APPROVAL**

### **18.4.1 High-rise Fire Safety Plan approvals.**

High-rise fire safety plan approval by the Code Official is dependent upon successful fulfillment of all of the following three essential training elements:

1. Consultation with property management,
2. Fire Warden high-rise certification class, and
3. Completion of supervised fire drill.

## **SECTION 18.5 --- PROPERTY MANAGEMENT CONSULTATION**

### **18.5.1 Consultations with Management.**

The following elements shall be covered during consultations with property management personnel:

1. Explain that all high-rise buildings within the City of Houston must have a Code Official approved High-rise Fire Safety Plan.
2. Explain what is required to receive and maintain a Code Official approved Fire Safety Plan.
3. Provide copies of and explain HFD Life Safety Bureau (LSB) Standard 07, "High-rise Fire Safety Plan".
4. Provide sample copy of the Houston Fire Department standard fire safety plan specific to applicable occupancy. (i.e.: High-rise Office Plan, High-rise

Condominium and Apartment Plan, or High-rise Hotel Plan). Explain in detail how the plan should be completed and how to provide necessary information concerning how the building's fire and life-safety systems operate.

5. Explain that property management is responsible for disseminating appropriate information regarding the High-rise Fire Safety Plan to the people within their building.
6. Provide copy of and discuss Code Official's letter, "Burning Issues."
7. Explain that certification training is required for all high-rise property management staff, employees, contract personnel and all tenant Fire Wardens.
8. Discuss the responsibilities of and train the Fire Safety Director(s) to manage and direct the execution of the approved emergency plans and procedures. Including the following:
  - (1) That the Fire Safety Director will notify the fire department of alarms and any known existing conditions without delay.
  - (2) Explain how and when to direct the activation of all applicable building fire safety equipment and systems to minimize the emergency's effect on the occupants, the building and responding fire department personnel.
  - (3) Convey to the Fire Safety Directors the administration of appropriate public address announcements.
  - (4) Ensure that the Fire Safety Director assigns someone to:
    - (a) Call the Fire Department,
    - (b) Meet the arriving fire department personnel,
    - (c) Recall the elevators,
    - (d) Monitor the fire panel for additional alarms.
9. Train the Fire Safety Director(s) in the elevator car selection process and the automatic and manual activation of the Phase-I Fire Service Elevator Recall. Train Fire Safety Director(s) on the activation and operation of Phase-II Fire Service.
10. Discuss notification of Answering Service as to the requirements for reporting of automatic fire alarms in accordance with the City of Houston Fire Code.
11. Provide sample copy of and discuss the Code Official's approved fire alarm recording messages.
12. Provide sample copy of and discuss Building Information Sheet.
13. Provide copy of the Code Official's letter, "Fire Alarm System Maintenance During Construction in High-rise Buildings", and discuss "false" fire alarms due to construction work being performed with in buildings.
14. Discuss the provisions City of Houston's *False Alarm Ordinance* as may apply to the particular occupancy in question.
15. Discuss fire drill procedures and the importance of tenants notifications in advance of any planned fire drill.
16. Provide sample letters for fire drill and fire warden certification participation.

17. Discuss the number of fire wardens required per code and set a date for the Fire Warden training if possible.

## **SECTION 18.6 --- HIGH-RISE CERTIFICATION CLASS**

### **18.6.1 High-rise Certification Class.**

Attendance at a High-rise Certification Class is required for all high-rise tenant Fire Wardens and appropriate property management employees, staff and/or contract personnel.

#### **18.6.1.1 Elements of High-rise Fire Warden Certification training.**

High-rise Fire Warden Certification training shall include, at a minimum, the following elements:

1. All high-rise buildings within the City of Houston must have a Code Official approved fire safety plan.
2. Explain that the property management is responsible for disseminating appropriate information regarding the High-rise Fire Safety Plan to the people within their building.
3. Explain the building's fire safety features; fire alarm system automatic and manual operation, audible and visual alarms, public address system operations, emergency generator and/or lighting, etc.
4. Explain Elevator functions and their dangers, shunt trips, elevator recall, "alternate floor" response, service elevators, etc.
5. Explain automatic fire sprinkler systems and their effectiveness.
6. Explain dangers of fire fighting and how it is best to close the door to confine the fire, notify everyone and "*Get Out, Never Go Back In.*" *Leave firefighting to the professionals.*
7. Discuss the uses and hazards of portable fire extinguishers and tenant fire hoses. When possible, provide demonstration and practice on the safe and effective use of portable fire extinguishers.
8. Discuss the role of the Fire Safety Director in the event of a fire or fire alarm.
9. Discuss the role of the Fire Wardens in the event of a fire or fire alarm.
10. Discuss in detail the fire plans - "Procedures for Reporting Fires and Fire Alarms".
11. Discussion on how fires can quickly spread the movement of smoke within buildings and the effects on the human body. Emphasize the need to get down and stay down low in a fire situation.
12. Discuss the "Delay of Alarm" and present examples in history.

13. Discuss the cause and effect of panic during fire situations.
14. Discuss smoke detector use, functions and the location of detectors in relation to early or delayed detection.
15. Discuss fire prevention, safety, and pre-fire planning on the job.
16. Discuss the planned fire drill to be conducted within the high-rise building and what it may entail.
17. Discuss fire department responses and need to notify the fire department of any changes in conditions.
18. Explain the “Three Phases of Evacuation”, and the simultaneous multi-phase to determine which Phase applies to whom and when initiation of each Phase should take place. Explain:
  - (1) Phase #1 - Horizontal evacuation to the 1<sup>st</sup> Staging location on your floor adjacent to the exit stairway door ( It is generally as safe for mobility impaired occupants).
  - (2) Phase #2 – Vertical evacuation to the 3<sup>rd</sup> Staging location which is down the exit stairway to three or more floors below the lowest fire affected floor.
  - (3) Phase # 3 – Vertical evacuation is through the exit stairway, if not on the exit egress floor, to the exterior of and away from the building, to place of safe refuge.
19. Discuss “Compartmentalization” – floor and ceiling assemblies, inside doors, hallway walls and doors, stair doors, stair ratings, and stair pressurization.
20. Discuss general fire safety and pre-fire planning in the home (E.D.I.T.H. or similar fire safety programs).

## **SECTION 18.7 --- FIRE DRILL**

### **18.7.1 Fire Drill as final step in plan approval.**

The final step in the plan approval process is a supervised fire drill.

### **18.7.2 Prepare for and Conduct a Drill.**

It is recommended that the following steps be taken in preparation for and conducting of a fire drill.

#### **18.7.2.1 Pre-drill preparations.**

1. Property management should provide all of the tenants on every floor with written notification of the intent to conduct a fire drill in advance of the date chosen by management.
2. It is recommended that property management arrange for representatives from the fire alarm and elevator service companies to be present at the building at the time of the fire drill when possible.

#### **18.7.2.2 Day of Drill preparations.**

1. It is recommended that property management again provide means for the notification of tenants and visitors to the building as to the specific time of the planned fire drill.
2. Property management shall notify their fire alarm monitoring services (where applicable) and the fire department emergency communication center in advance of the planned fire drill. The UL monitoring station shall be told to NOT call the fire department during time of the fire drill.

#### **18.7.2.3 Conducting the Drill.**

1. At the previously announced start time, the building or the selected floors within the building should be put into alarm.
2. All elevators should be placed in Fire Service Recall (Phase-I Fire Service) to recall to their designated floor(s).
3. Design the fire drill to spot check building systems operation to see if they will function properly.

#### **18.7.2.4 Post-drill.**

1. At the conclusion of the drill, property management shall immediately notify their fire alarm monitoring services (where applicable) and the fire department emergency communication center, that the fire drill has concluded and that the building is to be placed back on fire alarm monitoring status.
2. A post-fire drill review should be conducted to analyze the effectiveness of the fire drill and resolve any problems encountered.
3. Recommendations should be made on how additional training can improve performance.

### **SECTION 18.8 --- FIRE SAFETY PLAN APPROVAL**

#### **18.8.1 Conditions of approval.**

Approval of a fire safety plan by the Code Official is contingent upon completion of the following:

1. Completion of all three phases of training and consultation.
2. Submission of a completed standard fire safety plan with adequate number of trained Fire Wardens.
3. Building management and personnel demonstrating adequate knowledge and performance of emergency procedures and basic operation of building's emergency systems.

## **SECTION 18.9 --- CERTIFICATES OF APPROVAL**

### **18.9.1 Code Official Approval letters.**

Once building management has completed all of the requirements covered within this standard, letters requesting approval shall be prepared and submitted to the Code Official for approval by the individual(s) approved to provide such training. Upon receipt of the request letters, and approval by the Code Official, the Code Official will issue a letter or certificate of approval for that building.

### **18.9.2 Certificates of Completion of Fire Warden training.**

A certificate of satisfactory course completion shall be issued by individuals providing Code Official approved Fire Warden training. Provision and distribution of certificates are solely the responsibility of those individuals providing the class instruction. A copy of such certificate shall be submitted to the Code Official for prior approval. The design of the certificate shall be sufficiently different so as not to be confused with those issued by the Houston Fire Department. Each certificate shall include the recipient's name, the instructor's name and date of the class written or printed legibly on it, and shall be considered valid for a period of 5 years from the class date.

### **18.9.3 Maintaining an approved fire safety plan.**

Fire Safety Plan approvals are maintained for a period of 2 years, unless any of the following conditions should occur:

1. Change of Fire Safety Director, unless site certified within 30 days of change, *or*
2. The minimum required number of Fire Wardens lack certification, *or*
3. Change of building's occupancy classification, *or*
4. Building employees are not properly trained or training is not maintained as required by the *Fire Code*, and this standard, *or*
5. Plan becomes outdated due to age or changes in City of Houston codes, ordinances or standards.

## REFERENCES

1. City of Houston *Fire Code*, International Fire Code, 2006 edition, as amended
2. Life Safety-Bureau (LSB) Standard 06, "Fire Depository Boxes"
3. Life Safety-Bureau (LSB) Standard 07, "High-rise Fire Safety Plans"
4. Life Safety Bureau (LSB) Standard 08, "Fire Drills"
5. Fire Marshal's Letter, "***Burning Issues***", Richard W. Galvan
6. Fire Marshal's Letter, "Fire Alarm System Maintenance During Construction In High-rise Buildings",
7. Houston Fire Department LSB, HIGH-RISE APARTMENT / CONDOMINIUM FIRE SAFETY PLAN, Rev. 7/23/08
8. Houston Fire Department LSB, HIGH-RISE HOTEL FIRE SAFETY PLAN, Rev 7/23/08
9. Houston Fire Department LSB, HIGH-RISE OFFICE BUILDING FIRE SAFETY PLAN, Rev. 07/23/08



Fire Department

**BURNING ISSUES**

.....  
**PROCEDURES FOR TRANSMITTING AUTOMATIC FIRE ALARMS**

*Effective December 31, 2010*

It has come to my attention that there is some confusion as to the proper procedures for transmitting automatic fire alarms to the Houston Fire Department. Let me clarify this procedure by referring to Chapter 4, Section 401.3 of the City of Houston Fire Code (*Fire Code*).

Section 401.3 of the *Fire Code* states: *“In the event an unwanted fire occurs or upon the discovery of a fire, smoke or authorized release of flammable or hazardous materials on any property, the owner or occupant shall immediately report such condition to the fire department. Building employees and tenants shall implement the appropriate emergency plans and procedures and notify the Fire Department as soon as notice can safely be given. No person shall, by verbal or written directive, require any delay in the reporting of a fire to the fire department.”*

Simply stated, the first action taken by building personnel responsible for safety evacuation, is to call 9-1-1 immediately upon receipt or knowledge of an alarm or any suspicion of fire. This shall be the first step in your evacuation plan. UL Listed central receiving stations and second-party monitoring companies shall also immediately relay any signal they receive from a subscriber building without delay to this department.

After the initial transmission of the alarm to this department, any secondary qualifying information such as a determination of a false alarm may be relayed to our emergency communication center; we will make the determination as to the proper emergency equipment response at that time.

Any occupancy or receiving station found guilty of delaying or otherwise suppressing the immediate relay of alarms or reports in their facility, will not only subject themselves to the full liability of any unnecessary damage or loss of life resulting from that delay, but will also receive a citation issued by a Fire Inspector. Fines range from \$500 to \$2000 for each violation of the aforementioned City Ordinance.

Also remember that alarm systems are required to be in proper working order at all times; repeated alarms due to malfunction or inoperative alarm systems must be corrected by responsible parties.

I know that you are as concerned as we here at the Houston Fire Department with the safety of personnel and guests at your facility. Working together, we can make a difference through quicker response, which is imperative in any emergency where human life and property are at risk.

Richard Galvan  
Fire Marshal



## Fire Department

### Fire Alarm System Maintenance During Construction in Buildings

*Houston Fire Code Section 901.6 Fire detection, alarm and extinguishing systems shall be maintained in an operative condition at all times, and shall be replaced or repaired where defective. Nonrequired fire protection systems and equipment shall be inspected, tested and maintained or removed.*

If the nature of construction warrants, the following options are approved by the Houston Fire Department, in accordance with the *Fire Code*, during the full or partial construction of floor(s) within a building:

1. Installation of molded plastic cups over smoke detectors.
2. Installation of bags over smoke detectors.
3. Replacement of smoke detectors with rate-of-rise heat detectors.

If cups or bags are installed, a written process shall be established by the Building Management and included into all Building's Constructions Rules and Regulations to ensure:

1. Proper installation of cups/bags.
2. Proper removal of cups/bags whenever area is unoccupied and following up to verify removal.
3. Maintenance of daily documentation of involved locations, including contact names.
4. Designation of appropriate person(s) in construction area to activate the fire alarm, call the Houston Fire Department and building management in the event of an actual smoke / fire situation.

Heat detectors are not acceptable in elevator lobbies. Lobbies must have cups/bags installed on smoke detectors.

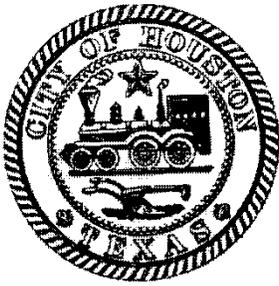
The Houston Fire Department does not allow the disabling of an alarm system by device, zone or floor, nor the complete deactivation of the fire alarm system.

In the event of demolition of a floor(s) including the removal of the fire alarm system, building management shall:

1. Notify the Houston Fire Department Office of Emergency Communications by telephone at: (713) 884-3143 fax (713) 884-4237.
2. Check with an alarm company for temporary alternatives.
3. Minimum requirements are a temporary standpipe and two exits from the building.

Violation of the above requirements may subject the building management to Fire Code citations, (fines \$500 - \$2000) for each violation, and /or fines for violation of False Fire Alarm Ordinance.

Richard Galvan  
Fire Marshal  
Effective December 31, 2010



**HOUSTON FIRE DEPARTMENT  
LIFE SAFETY BUREAU (LSB)**



**LSB STANDARD 19, rev. 04  
RAW WOOD WASTE PROCESSING / RECYCLING  
STORAGE AND OPERATIONS**

**SUPERCEDES:** LSB STANDARD 19, Rev. 03, Effective 12/31/10

**Note:** A vertical line in the left-hand margin delineates changes since the previous version.

**Effective Date: 5/01/2012**



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LSB Standards are established in accordance with provisions of the City of Houston Fire Code. They are subject to the administrative sections covering alternative materials and methods, modifications, and the Board of Appeals.

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**LSB STANDARD 19, Rev. 04  
RAW WOOD WASTE PROCESSING / RECYCLING  
STORAGE AND OPERATIONS**

**SECTION 19.1 --- GENERAL**

**19.1.1 Scope**

The storage and processing of wood chips, hogged material, fines, compost, mulch and raw products in association with yard waste and recycling facilities located within Houston city limits shall be in accordance with the Houston *Fire Code* and this standard.

**19.1.2 Purpose**

This standard shall provide guidelines for raw wood waste processors and recyclers and their operations. Wood chipping, hogging, composting and mulching operations and storage create a significant fire hazard and are rated as a very high hazard with a 'Heat of Output' Btu per pound of product.

While generally more difficult to ignite than usual Class A combustibles such as paper and cardboard, after being ignited the spread of fire and smoke can be rapid and deep-seated. The larger the storage of raw wood products, the greater the fire hazard and the more difficult a fire is to control. Wood waste processors and recyclers and their operations shall comply with this standard.

**19.1.3 Plans**

The owner or operator shall develop the following plans for monitoring, controlling, and extinguishing spot fires and submit the plans to the Fire Marshal for review and approval.

**19.1.3.1 Plot Plan**

Plot plans shall be submitted to the Fire Marshal for all raw wood waste processing and recycling operations. Plot plans shall include fire department access roads throughout, area division of piles, pile height and width, and all exposures.

**19.1.3.2 Operation Plan**

Operational plans indicating procedures and schedules for inspection, monitoring and restricting of excessive internal temperatures in static piles.

**19.1.3.3 Emergency Plan**

Emergency plans for monitoring, controlling, extinguishing spot fires and the reporting of all fires.

**SECTION 19.2 – DEFINITIONS**

**19.2.1 Permits required.**

A Wood Products permit shall be required to use an open area or portion thereof to store or process wood chips, logged material, compost, mulch and raw products in

excess of 200 cubic feet. A Waste Handling permit is required for the operation of wrecking yards, junkyards and waste material-handling facilities.

**Permit Office contact information for Wood Products and/or Waste Handling is as follow:**

The Houston Permitting Center

Third Floor

1002 Washington Avenue

Houston, Texas 77007

Hours of operation: 8:00 a.m. to 3:30 p.m. Central Time

Monday through Friday

Office phone (832)394-8811

To Email Customer Service Questions: [hfd.permitoffice@houstontx.gov](mailto:hfd.permitoffice@houstontx.gov)

Link to City Wide Fee Schedule: [www.houstoncityfees.org](http://www.houstoncityfees.org)

### **19.2.2 Raw Wood Waste Processors and Recyclers**

A raw wood waste processor and recycler is any person who, in compliance with all applicable state, federal and local laws, rules and regulations, disposes of or converts wood product produced from yard waste, debris, timber removal or pruning, or lumbering operations to other purposes. Including but not limited to person who:

- (a) Landfill, incinerate, or otherwise dispose of raw wood waste or as fuel.
- (b) By shredding, hogging, grinding or chemically treating, raw wood into basic components for mulch, compost or other marketable material.

Exception: Commercial plywood, pressed wood, veneer and paper production facilities.

### **19.2.3 Static piles**

Piles in which processed wood product is mounded and is not being turned or moved.

## **SECTION 19.3 --- INSIDE BUILDING STORAGE**

### **19.3.1 Storage and operations inside of a building**

Storage and operations inside of a building shall be in accordance with *Fire Code*.

## **SECTION 19.4 --- OUTDOOR STORAGE AND USE**

### **19.4.1 Site identification**

Facility name and address shall be posted at main entrance and clearly visible from the street. A 24-hour emergency contact telephone number shall be posted at the main entrance and clearly visible from the street.

### **19.4.2 Storage site**

Storage sites shall be level and on solid ground or paved with blacktop, concrete or other hard surface material. Sites shall be thoroughly cleaned before transferring wood products to the site or starting new piles.

Operating plans for the buildup and reclaiming of the pile(s) should be based upon a maximum turnover time of 1 year under ideal conditions. Piles containing other than screened chips can be subject to greater degree of spontaneous heating and thermal degradation and should be reclaimed more frequently.

#### **19.4.3 Area division**

Every outdoor area used for storage or operation of raw wood waste processing and recycling shall be divided into single storage and fire area combinations by a driveway 30 feet in width and main aisles 10 feet in width.

#### **19.4.4 Area limitation**

There shall be no materials stored within a single storage area (fire area) more than 35 feet from any driveway having access to a public street nor more than 15 feet from a main aisle.

#### **19.4.5 Size of piles**

Piles shall not exceed a maximum of 25 feet in height, 150 feet in width and 250 feet in length. The pile size should be limited. Fundamentally, several small piles with low heights are better than one large pile.

**Exception:** The Fire Marshal is authorized to allow the pile size to be increased when additional fire protection is provided in accordance with the *Fire Code*. The increase shall be based upon the capabilities of the system installed.

#### **19.4.6 Pile height indicators**

Indicator posts of sufficient construction and taller than the highest point of each pile Pole shall be marked at readily recognizable 10-foot increments, shall be provided to give visual height references at or near the highest point(s) of each pile. The post(s) shall not be positioned so as to interfere with access to the piles.

#### **19.4.7 Static Pile protection**

Piles shall be monitored by an approved means to measure temperatures within the static piles. Internal temperatures shall be monitored and recorded weekly. Records shall be kept on file at the facility and made available for inspection.

#### **19.4.8 Pile fire protection**

Automatic sprinkler protection shall be provided in conveyor tunnels and combustible enclosures that pass under a pile. Combustible conveyor systems and enclosed conveyor systems shall be equipped with an approved automatic sprinkler system. Temporary conveyors and motors on the surface or adjacent to the piles should be avoided.

Where pile height and width is such that all portions of the pile cannot be reached by direct hose streams from the ground, arrangements shall be made to provide firefighting service in these areas, and small stream supplies shall be available on top of the pile for handling surface fires and for wetting the pile in dry weather.

#### **19.4.9 Drainage**

Stored material shall be arranged to facilitate and promote drainage from stored materials.

#### **19.4.10 Screening of property**

A fence of at least 6 feet in height of non-combustible material or other suitable means to prevent access of any unauthorized persons shall surround the entire property. Sufficient "No Trespassing" signs shall be posted. An adequate number of gates shall be provided in the surrounding fence or other barriers as determined by the Fire Marshal so as to provide ready access of fire apparatus. Access gates shall be in accordance with Houston Fire Department LSB Standard 04.

#### **19.4.11 Buildings in storage areas**

Buildings in outside storage areas shall be of 1-hour rated construction as required by the City of Houston *Building Code* if located within 50 feet from the nearest storage pile.

#### **19.4.12 Maintenance of premise**

The entire storage site shall be kept free from accumulation of unnecessary combustible materials. Weeds and grass shall be kept down and regular procedure provides for the periodic clean up of the entire area. The use of Weed Burners or any type of burning is prohibited.

#### **19.4.13 Heating equipment and smoking prohibited**

No heating equipment shall be allowed in the storage or use area. Smoking or open flames shall be prohibited outside of designated areas. Sufficient "No Smoking" signs posted. All welding and other hot work shall be performed in accordance with the *Fire Code*.

#### **19.4.14 Protection from heat**

Physical protection should be provided to prevent heat sources such as steam lines, air line, electrical motors and mechanical drive equipment from becoming buried or heavily coated with combustible material. A high standard of housekeeping shall be maintained around all potential heat sources.

#### **19.4.15 Material-handling equipment and vehicles**

Approved material-handling equipment or scoop-type vehicles shall be available for moving wood chips, hogged material, wood fines and raw product during firefighting operations. All vehicles shall be garaged in separate detached buildings or parked in designated areas located 50 feet from chipping or hogging operations or storage. All fuel handling shall be done in accordance with applicable provisions of the *Fire Code*.

#### **19.4.16 Fire protection**

Fire protection provided shall be in accordance with this section and the *Fire Code*.

##### **19.4.16.1 Water supply**

A fire protection system consisting of approved monitor nozzle(s), water supply system, and fire hydrants capable of supplying the minimum required flow of 500 GPM, shall be provided to within 150 feet of all portions of the yard. Additional flows should be

provided as needed where conditions are likely to produce serious surface fires or large internal fires. Where fire hose houses/stations are provided, fire hydrants connected to yard mains should be provided in accordance with NFPA Standard No. 230, Appendix E-5.

#### **19.4.16.2 Fire extinguishers**

Approved listed portable fire extinguishers, with minimum rating of 2-A: 60BC, shall be provided on all vehicles and equipment operating on the piles and at all processing equipment. Additional minimum 2-A fire extinguishers shall be provided for every 75 feet of unobstructed path of travel and in accordance with Houston Fire Department LSB Standard 01.

#### **19.4.17 Fire Department notification**

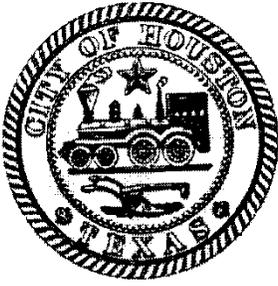
Means shall be provided at all times on site for contacting the fire department in event of an emergency. There shall be no delays in reporting fires. The fire department shall be immediately notified of all fires, by telephoning: “**9-1-1**”.

#### **19.4.18 Texas Commission on Environmental Quality (TCEQ) notification**

The TCEQ shall be notified of all Raw Wood Waste Processing and Recycling Operations in accordance with TCEQ regulations and other state and local ordinances. Where there is a conflict with this standard and other state and local requirements the most restrictive shall apply. Compliance with TCEQ rules does not indicate automatic approval for a fire department permit.

## REFERENCES

1. City of Houston *Fire Code*, International Fire Code, 2006 edition, as amended.
2. City of Houston Building Code, International Building Code, current edition, as amended.
3. Houston Fire Department, Life Safety Bureau (LSB) Standard No.1, "Installation and Maintenance of Portable Fire Extinguishers".
4. Houston Fire Department, Life Safety Bureau (LSB) Standard No.4, "Access Control Gates".
5. National Fire Protection Association (NFPA) Standard No. 230, "Fire Protection of Storage", Appendix E-5.



**HOUSTON FIRE DEPARTMENT  
LIFE SAFETY BUREAU (LSB)**



**LSB STANDARD 22 REV 03  
TENTS AND OTHER MEMBRANE STRUCTURES**

**SUPERSEDES:** LSB Standard 22 Rev. 02, dated 12/31/2010

**Note:** A vertical bar in the left-hand column indicates changes since the previous version.

**Effective Date: 5/01/2012**



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LSB Standards are established in accordance with provisions of the City of Houston Fire Code. They are subject to the administrative sections covering alternative materials and methods, modifications, and the Board of Appeals.

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# LSB STANDARD 22 Rev 03

## TENTS AND OTHER MEMBRANE STRUCTURES

### SECTION 22.1 --- GENERAL

#### 22.1.1 Scope.

Use of tents, canopies, and air-supported, air-inflated or tensioned membrane structures within the City of Houston shall be in accordance with the “*City of Houston Fire Code*” (*Fire Code*) and this standard.

#### 22.1.2 Purpose.

This standard shall provide guidelines on the use of and permitting requirements for temporary tents or other membrane structures.

### SECTION 22.2 --- DEFINITIONS

#### 22.2.1 Air-supported structure.

A structure wherein the shape of the structure is attained by air pressure and occupants of the structure are within the elevated pressure area.

#### 22.2.2 Canopy.

A structure, enclosure or shelter constructed of fabric or pliable materials supported by any manner, except by air or the contents it protects, and is open without sidewalls or drops on 75 percent or more of the perimeter.

#### 22.2.3 Fire Marshal.

The Fire Marshal or duly authorized representative.

#### 22.2.4 Place of assembly.

For the purposes of this standard, a place of assembly shall include a circus, carnival, tent show, theater, skating rink, dance hall, religious observance, benefit functions or other such assembly purposes in or under which 50 or more persons gather for any purpose.

#### 22.2.5 Tent.

A structure, enclosure or shelter constructed of fabric or pliable material supported by any manner except by air or the contents that it protects.

### SECTION 22.3 --- APPROVAL REQUIREMENTS

#### 22.3.1 Approval required.

Tents, canopies, and membrane structures having an area of 1200 square feet or more, shall not be erected, operated or maintained for any purpose without first obtaining a permit and approval from the Fire Marshal.

#### Exception:

1. Tents used exclusively for recreational camping purposes

### **22.3.2 Building code approval.**

Tents and other membrane structures having an area in excess of 1200 square feet intended to be erected for other than temporary public assembly use shall have approval by the City of Houston Building Official. Where the tent or other membrane structure occupies the same property with other buildings or structures, those buildings or structures shall have posted on site an approved ***Certificate of Occupancy*** issued in accordance with the *Building Code*.

### **22.3.3 Permit required.**

A Fire Marshal Approval is required to erect a tent and other membrane structures having an area of 1,200 square feet or more, for any purpose. Permit applications submitted less than 5 business days prior to the event will incur special handling fees.

#### **Permit Office contact information for Tents or Membrane Structures is as follows:**

The Houston Permitting Center

1002 Washington Avenue

Houston, Texas 77007

Hours of operation: 8:00 a.m. to 3:30 p.m. Central Time

Monday through Friday

Office phone (832)394-8811

To Email Customer Service Questions: [hfd.permitoffice@houstontx.gov](mailto:hfd.permitoffice@houstontx.gov)

Link to City Wide Fee Schedule: [www.houstoncityfees.org](http://www.houstoncityfees.org)

### **22.3.4 Permit approval.**

### **22.3.5 Plans provided.**

Where tents, canopies, air-supported, air-inflated or tensioned membrane structures are used for assembly with an occupant load of 50 or more, or used for temporary display or storage of goods and merchandise, detailed site and floor plans shall be provided with each permit application. The site and floor plan shall indicate details of the fire and emergency vehicle access, means of egress facilities, seating capacity, arrangement of the seating, location of stages, and location and type of heating, cooking and electrical equipment.

### **22.3.6 Period of permitted use.**

Temporary tents, air-supported, air-inflated or tensioned membrane structures and canopies shall be not used for any purpose for a period of ***more than 180 days*** within a 12-month period on a single premise.

## **SECTION 22.4 --- LOCATION**

### **22.4.1 Location.**

Temporary membrane structures, tents, canopies, air-supported, or air-inflated structures shall not be located within 20 feet of lot lines, buildings, other temporary membrane structures, other tents and canopies, parked vehicles or internal combustion engines. For the purpose of determining required distances, support ropes and guy

wires shall be considered as part of the temporary membrane structure, tent or canopy. For exceptions see the *Fire Code*

#### **22.4.2 Location of structures in excess of 15,000 square feet in area.**

Tents, air-supported, air-inflated or tensioned membrane structures having an area of 15,000 square feet or more shall be located not less than 50 feet from any other tent or structure as measured from the side wall of the tent unless joined together by a corridor.

#### **22.4.3 Connecting corridors.**

Tents, air-supported, air-inflated or tensioned membrane structures are allowed to be joined together by means of corridors. Exit doors shall be provided at each end of such corridor. On each side of such corridor and approximately opposite each other, there shall be provided openings not less than 12 feet wide.

#### **22.4.4 Fire break.**

An unobstructed fire break passageway or fire road not less than 12 feet wide and free from guy ropes or other obstructions shall be maintained on all sides of all tents, air supported, air-inflated or tensioned membrane structures unless otherwise approved by the Fire Marshal.

#### **22.4.5 Anchorage and stability required.**

Tents, air-supported, air-inflated or tensioned membrane structures and their appurtenances shall be adequately roped, braced and anchored to withstand the elements of weather and prevent against collapsing. Documentation of structural stability shall be furnished to the Fire Marshal on request.

### **SECTION 22.5 --- FIRE SAFETY REQUIREMENTS**

#### **22.5.1 Flame-resistant treatment.**

Before a permit is granted, the owner or owner's agent shall provide the Fire Marshal a certificate issued by an approved testing laboratory, certifying that the tents, air-supported, air-inflated or tensioned membrane structures and their appurtenances, sidewalls, drops and tops of temporary membrane structures, canopies, tarpaulins, floor coverings, bunting, combustible decorative materials and effects, including sawdust when used on floors or passageways, shall be composed of flame-resistant material or shall be treated with a flame retardant in an approved manner and meet the requirements for flame resistance as determined in accordance with NFPA 701, and that such flame resistance is effective for the period specified by the permit.

#### **22.5.2 Label.**

Temporary membrane structures, tents or canopies shall have a permanently affixed label bearing the identification of size and fabric or material type. Label shall be located so as to be readily accessible and legible.

#### **22.5.3 Certification.**

An affidavit or affirmation shall be provided to the Fire Marshal, and a copy shall be retained on the premises on which the tent or air-supported structure is located and be

readily available for inspection by the Fire Marshal. The affidavit shall attest to the following information relative to the flame resistance of the fabric:

1. Names and address of the owners of the tent or air-supported structure.
2. Date the fabric was last treated with flame-resistant solution.
3. Trade name or kind of chemical used in treatment.
4. Name of person or firm treating the material.
5. Name of testing agency and test standard by which the fabric was tested.

#### **22.5.4 Combustible materials.**

Hay, straw, shavings or similar combustible materials shall not be located within any tent or air-supported structure containing an assembly occupancy. Sawdust and shavings utilized for a public performance or exhibit may be permitted, provided the sawdust and shavings are dampened with water so that dust is not produced from the sawdust or shavings. Combustible materials shall not be permitted under stands or seats at any time. The areas within and adjacent to the tent or air-supported structure, shall be maintained clear of all combustible materials or vegetation that could create a fire hazard within 20 feet from the structure. Combustible trash shall be removed at least once a day from the structure and stored in approved containers located at least 20 feet from the structure.

**Exception:** the materials necessary for the daily feeding and care of animals.

#### **22.5.5 Interior contents clearance.**

There shall be a minimum clearance of at least 3 feet between the fabric envelope and all contents located inside the air-supported structure.

#### **22.5.6 Smoking prohibition.**

Smoking shall not be permitted in tents or air supported structures. Approved "No Smoking" signs shall be conspicuously posted at all entrances into and exits from the tent or air supported structure, at any location where alcoholic beverages may be dispensed, and in accordance with the *Fire Code*.

#### **22.5.7 Open or exposed flame.**

Open flame or other devices emitting flame, fire or heat or any flammable or combustible liquids, gas, charcoal or other cooking device or any other unapproved devices shall not be permitted inside or located within 20 feet of the tent, air-supported, air-inflated or tensioned membrane structures while open to the public unless approved by the Fire Marshal.

#### **22.5.8 Pyrotechnic displays.**

Pyrotechnic displays shall not be used within 100 feet of tents, canopies, air-supported, air-inflated or tensioned membrane structures.

### **22.5.9 Spot lighting.**

Spot or effect lighting shall only be by electricity, and all combustible construction located within 6 feet of such equipment shall be protected with approved noncombustible insulation not less than 9.25 inches thick.

### **22.5.10 Safety film.**

Motion pictures shall not be displayed in tents, air-supported, air-inflated or tensioned membrane structures unless the motion picture film is safety film.

### **22.5.11 Electrical lighting, wiring and equipment.**

All electrical lighting, wiring and equipment shall comply with the *Electrical Code*. Temporary wiring shall be in accordance with the Electrical Code, and shall not be affixed to metal supports of a tent, canopy, air-supported, air-inflated or tensioned membrane structure except in a manner approved by the Fire Marshal. Extension cord and multi-adaptor use shall be in accordance the *Fire Code*. All decorative and/or seasonal lighting wiring and devices shall be UL (or similarly approved) Listed.

## **SECTION 22.6 --- FIRE PROTECTION**

### **22.6.1 Fire extinguishers.**

Listed portable fire extinguishers shall be provided in every tent, canopy, air-supported, air-inflated or tensioned membrane structure as follows:

1. 200-500 square feet of floor area: One 2-A:10-B:C rated portable fire extinguisher. 501-1000 square feet of floor area: Two 2-A:10-B:C rated portable fire extinguisher. Each additional 2000 square feet of floor area or fraction thereof: One 2-A:10-B:C rated portable fire extinguisher.
2. At least one 40-B:C rated portable fire extinguisher shall be provided for each kitchen, mess hall, power generator or transformer and at locations where flammable and combustible liquids are used, stored or dispensed, and as required by the Fire Marshal.
3. All fire extinguishers shall have a current annual inspection tag by an approved licensed fire protection equipment company.
4. Portable fire extinguishers shall be maintained in a fully charged and operable condition.
5. Portable fire extinguishers shall be conspicuously located where they will be readily accessible and immediately available in the event of fire. Preferably they shall be located along normal unobstructed paths of travel, including exits from areas.

### **22.6.2 Fire protection equipment.**

Fire hose lines, water supplies and other auxiliary fire equipment shall be maintained at the site in such numbers and sizes as required by the Fire Marshal.

## SECTION 22.7 --- OCCUPANT LOAD AND SEATING

### 22.7.1 Occupant loads.

The occupant load allowed in an assembly structure, or portion thereof, shall be determined in accordance with the *Fire Code*.

#### **Maximum Floor Area Allowance Per Occupant:**

Assembly without fixed seats;

Concentrated (chairs only—not fixed) = 7 sq ft per person

Standing space = 5 sq ft per person

Un-concentrated (tables and chairs) = 15 sq ft per person

### 22.7.2 Seating arrangements.

Seating in tents, canopies, air-supported, air-inflated or tensioned membrane structures, temporary membrane structures shall be in accordance with the *Fire Code*.

### 22.7.3 Posting of occupant load.

Where a tent, canopy, air-supported, air-inflated or tensioned membrane structure is used for assembly with an occupant load of 50 or more, the occupant load of the tent, canopy, air-supported, air-inflated or tensioned membrane structure shall be posted in a conspicuous place, near the main access doorway. Posted signs shall be of an approved legible design, constructed of weather resistant materials and indicating the number of occupants permitted within the tent, canopy, air-supported, air-inflated or tensioned membrane structure. Posted signs shall be maintained by the owner or authorized agent.

## SECTION 22.8 --- EXITS

### 22.8.1 Number required.

Tents, canopies, air-supported, air-inflated or tensioned membrane structures, temporary membrane structures or usable portion thereof shall have at least one exit and not less than the number of exits required by the *Fire Code*. The widths of means of egress required shall be divided approximately equally among the separate means of egress. The total width of means of egress in inches shall not be less than the total occupant load served by a means of egress multiplied by 0.2 inches per person. (See Table 22.8 of Appendix A)

### 22.8.2 Distribution of exits.

Exits shall be spaced at approximately equal intervals around the perimeter of the tent, canopy, air-supported, air-inflated or tensioned membrane structure, temporary membrane structure, and shall be located such that all points are 100 feet or less from an exit.

### **22.8.3 Exit openings.**

Exit openings from tents shall remain open unless covered by a flame-resistant curtain. The curtain shall comply with the following requirements:

1. Curtains shall be free sliding on a metal support. The support shall be a minimum of 80 inches above the floor level at the exit. The curtains shall be so arranged that, when open, no part of the curtain obstructs the exit.
2. Curtains shall be of a color, or colors, that contrast with the color of the tent.

### **22.8.4 Doors.**

Exit doors shall swing in the direction of exit travel. To avoid hazardous air and pressure loss, such doors shall be automatic-closing against operating pressures. Opening force at the door edge shall not exceed 15 pounds.

### **22.8.5 Aisles.**

The width of aisles without fixed seating shall be in accordance with the following:

1. In areas serving employees only, the minimum aisle width shall be 24 inches.
2. In public areas, smooth-surfaced, unobstructed aisles having a minimum width of not less than 44 inches shall be provided from seating areas, and aisles shall be progressively increased in width to provide, at all points, not less than 1 foot of aisle width for each 50 persons served by such aisle at that point.

### **22.8.6 Aisle arrangement and maintenance.**

The arrangement of aisles shall be subject to approval by the Fire Marshal and shall be maintained clear at all times during occupancy.

### **22.8.7 Exit signs.**

Exits shall be clearly marked. Exit signs shall be installed at required exit doorways and where otherwise necessary to indicate clearly the direction of egress when the exit serves an occupant load of 50 or more.

### **22.8.8 Exit sign illumination.**

Exit signs shall be of an approved self-luminous type or shall be internally or externally illuminated by fixtures supplied in the following manner:

1. Two separate circuits, one of which shall be separate from all other circuits, for occupant loads of 300 or less; Or
2. Two separate sources of power, one of which shall be an approved emergency system, shall be provided when the occupant load exceeds 300. Emergency systems shall be supplied from storage batteries or the on-site generator set, and the system shall be installed in accordance with the *Electrical Code*.

### **22.8.9 Means of egress illumination.**

Means of egress shall be illuminated with light having an intensity of not less than 1 foot-candle (11 lux) at floor level while the structure is occupied. Fixtures required for means of egress illumination shall be supplied from a separate circuit or source of power.

### **22.8.10 Maintenance of means of egress.**

The required width of exits, aisles and passageways shall be maintained at all times to a public way. Guy wires, guy ropes and other support members shall not cross a means of egress at a height of less than 8 feet. The surface of means of egress shall be maintained in an approved manner.

## **SECTION 22.9 --- HEATING AND COOKING EQUIPMENT**

### **22.9.1 Cooking.**

Cooking is prohibited within Tents, canopies, and air-supported, air-inflated or tensioned membrane structures, temporary membrane structures.

**Exception:** Tents approved and designated for cooking operations.

### **22.9.2 Food preparation operations.**

Operations such as warming of foods, cooking demonstrations and similar operations that use solid flammables, butane or other similar devices which do not pose an ignition hazard, shall be used to fuel equipment inside a tent, air-supported, air-inflated or tensioned membrane structure, temporary membrane structure or canopy shall be adequately protected to prevent tampering, damage by vehicles or other hazards and shall be located in an approved location.

### **22.9.3 Cooking tents.**

Tents where cooking is performed shall be separated from other tents, air-supported, air-inflated or tensioned membrane structures, temporary membrane structures or canopies by a minimum of 20 feet.

### **22.9.4 Cooking location.**

Within cooking tents the cooking and heating equipment shall not be located within 10 feet of exits or combustible materials.

### **22.9.5 Outdoors cooking.**

Outdoor cooking that produces sparks or grease-laden vapors shall not be performed within 20 feet from a tent, air-supported, air-inflated or tensioned membrane structure, temporary membrane structure or canopy.

### **22.9.6 Electrical heating and cooking equipment.**

Electrical cooking and heating equipment shall comply with the *Electrical Code*.

### **22.9.7 LP-gas use.**

#### **22.9.7.1 General.**

LP-gas equipment such as tanks, piping, hoses, fittings, valves, tubing and other related components shall be approved and in accordance with the *Fuel Gas Code* and the *Fire Code*.

#### **22.9.7.2 Location of containers.**

LP-gas containers shall be located outside. Safety release valves shall be pointed away from the tent, air-supported, air-inflated or tensioned membrane structure, or canopy.

##### **22.9.7.2.1 Containers 500 gallons or less.**

Portable LP-gas containers of 500 gallons or less capacity shall have a minimum separation between the containers and structure not less than 10 feet.

##### **22.9.7.2.2 Containers more than 500 gallons.**

Portable LP-gas containers of more than 500 gallons capacity and shall have a minimum separation between the container and structures not less than 25 feet.

##### **22.9.7.3 Protection and security.**

Portable LP-gas containers, piping, valves and fittings which are located outside and are being used to fuel equipment inside a tent, air-supported, air-inflated or tensioned membrane structure, temporary membrane structure or canopy shall be adequately protected to prevent tampering, damage by vehicles or other hazards and shall be located in an approved location. Portable LP-gas containers shall be securely fastened in place to prevent unauthorized movement.

### **SECTION 22.10 --- FLAMMABLE AND COMBUSTIBLE LIQUIDS**

#### **22.10.1 Use.**

Flammable-liquid-fueled equipment shall not be used in tents, air-supported, air-inflated or tensioned membrane structures, temporary membrane structures or canopies.

#### **22.10.2 Flammable and combustible liquid storage.**

Flammable and combustible liquids shall be stored outside in an approved manner not less than 50 feet from tents, air-supported, air-inflated or tensioned membrane structures, temporary membrane structures or canopies. Storage shall be in accordance with *The Fire Code*.

#### **22.10.3 Refueling.**

Refueling shall be performed in an approved location not less than 20 feet from tents, air-supported, air-inflated or tensioned membrane structures, temporary membrane structures or canopies.

#### **22.10.4 Spills.**

Flammable and combustible liquid spills shall be cleaned up immediately and disposed of in an approved manner.

### **SECTION 22.11 --- LIQUID- AND GAS-FUELED VEHICLES**

#### **22.11.1 Display of motor vehicles.**

Liquid and gas-fueled vehicles and equipment used for display within tents, air-supported, air-inflated or tensioned membrane structures, temporary membrane

structures or canopies shall be in accordance with the *Fire Code and LSB Standard 25, Safety Inspections for Vehicles on Indoor Display*.

#### **22.11.2 Competitions and demonstrations.**

Liquid- and gas-fueled vehicles and equipment used for competition or demonstration within a tent, air-supported, air-inflated or tensioned membrane structure, temporary membrane structure or canopy shall comply with the *Fire Code*.

#### **22.11.3 Generators.**

Generators and other internal combustion power sources shall be separated from tents, air-supported, air-inflated or tensioned membrane structures, temporary membrane structures or canopies by a minimum of 20 feet and shall be isolated from contact with the public by fencing, enclosure or other approved means.

#### **22.11.4 Fuel storage.**

Fuel for vehicles or equipment shall be stored in approved containers at an approved location outside of the structure and not less than 50 feet from tents, air-supported, air-inflated or tensioned membrane structures, temporary membrane structures or canopies. Storage shall be in accordance with the *Fire Code*.

#### **22.11.5 Fueling.**

Refueling shall be performed outside of the structure in an approved location not less than 20 feet from tents, air-supported, air-inflated or tensioned membrane structures, temporary membrane structures or canopies.

#### **22.11.6 Spills.**

Fuel spills shall be cleaned up immediately and disposed of in an approved manner.

### **SECTION 22.12 --- HOUSEKEEPING**

#### **22.12.1 Vegetation removal.**

Combustible vegetation shall be removed from the area occupied by a tent, air-supported, air-inflated or tensioned membrane structure, temporary membrane structure or canopy and from areas within 30 feet of such structures.

#### **22.12.2 Waste material.**

The floor surface inside tents, air-supported, air-inflated or tensioned membrane structures, temporary membrane structures or canopies and the grounds outside and within a 30-foot perimeter shall be kept clear of trash and combustible waste accumulation. Such waste shall be stored in approved containers until removed from the premises.

### **SECTION 22.13 --- STANDBY PERSONNEL**

#### **22.13.1 General.**

In accordance with the *Fire Code*, the Fire Marshal is authorized to require one or more standby inspectors be provided, when it is essential for public safety in a place of assembly or any other place where people congregate, because of the number of

persons, or the nature of the performance, exhibition, display, contest or activity. When required, the owner, agent or lessee shall employ one or more approved standby personnel on duty. The jurisdiction shall provide the standby personnel upon payment of fees specified in the *Fire Code*. The standby personnel assigned shall be in uniform and shall remain on duty during the times such places are open to the public, or when such activity is being conducted.

#### **22.13.2 Crowd managers.**

When it is essential for public safety in a place of assembly or any other place where people congregate, because of the number of persons, or the nature of the performance, contest or activity, the owner, agent or lessee shall provide trained crowd managers or crowd manager supervisors at a ratio of one crowd manager/supervisor for every 250 occupants.

### **SECTION 22.14 --- OCCUPANCY CAPACITY SIGNS**

#### **22.14.1. Where required.**

Rooms having an occupancy load of 50 or more where fixed seating is not installed, and which are used for classroom, assembly or similar purpose, shall have the maximum occupancy capacity of the room posted on an approved sign adjacent to the main exit from the room. Additional signs may be required as deemed necessary by the Fire Marshal for rooms without a distinct main exit or multiple main exits. (The maximum occupancy load in a building or portion of a building shall not exceed the amount specified in the *Building Code*.)

#### **22.14.2. Sub-dividable rooms.**

Rooms with areas that are sub-dividable into smaller separated rooms, with occupancy loads of 50 or more persons, shall have room capacity signs posted by the main exit for each separate room in addition the main room sign.

#### **22.14.3. Sign construction.**

Signs shall be constructed of durable materials, with minimum of 1-inch block letters and numbers, on a contrasting background so as to be readily visible. The number of occupants permitted for each room use and the room identification for each separate room area (where provided) shall be included on the sign. (See Figure 22.14.3, Page 12, Sign Example)

#### **22.14.4. Sign placement.**

The sign shall be located in a conspicuous location not obstructed by doors, curtains, poster board stands, furniture, room dividers, or similar items. The sign shall be posted not more than 60-inches or less than 48-inches above the floor.

#### **22.14.5. Sign maintenance.**

The owner or the owner's authorized agent shall maintain all occupancy capacity signs legible.

**Figure 22.14.3**

SIGN EXAMPLE: (Reference: Current edition of the Fire Code)

Large lettering shall be a minimum 1" in height.

Small lettering shall be a minimum of 3/8" in height.



**(NOTE: Occupancy sign is not to scale. Background shall contrast lettering.)**

**APPENDIX A**

**Table 22.8 - EGRESS REQUIREMENTS FOR TENTS AND CANOPIES**

**MINIMUM NUMBER OF MEANS OF EGRESS AND MEANS OF EGRESS WIDTHS FROM TEMPORARY MEMBRANE STRUCTURES, TENTS AND CANOPIES**

Occupant Load	Minimum Number of Means of Egress	Minimum Width of each Means of Egress (inches)	Minimum Width of each Means of Egress (inches)
		Tent or Canopy	Membrane Structure
10 to 100	2	72	36
200 to 499	3	72	72
500 to 999	4	96	72
1,000 to 1,999	5	120	96
2,000 to 2,999	6	120	96
Over 3,000 <sup>a</sup>	7	120	96

- a. When the occupant load exceeds 3,000, the total width of means of egress in inches shall not be less than the total occupant load multiplied by 0.2 inches per person.

## REFERENCES

1. City of Houston *Fire Code*, International Fire Code, 2006 edition, as amended
2. City of Houston *Building Code*, International Building Code, current edition, as amended
3. City of Houston Electrical Code, International Electrical Code, current edition, as amended
4. National Fire Protection Association (NFPA) Standard 10, "Portable Fire Extinguishers"
5. National Fire Protection Association (NFPA) Standard 701, "Methods of Fire Tests for Flame-Resistant Textiles and Films"
6. Life Safety Bureau (LSB) Standard 01, "Installation and Maintenance of Fire Extinguishers"
7. Life Safety Bureau (LSB) Standard 10, "LP-Gas Storage and Use"



CITY OF HOUSTON  
HOUSTON FIRE DEPARTMENT  
LIFE SAFETY BUREAU (LSB)



LSB STANDARD 23, REV 02

**MID-RISE ATRIUM FIRE SAFETY PLAN APPROVAL**

SUPERCEDES: LSB Standard 23, Rev. 01, effective 9/23/08

Note: A vertical line in the left-hand margin delineates changes from the previous version.

EFFECTIVE DATE: December 31, 2010



Approved: *Perry Schindewolf*  
Perry Schindewolf, Acting Assistant Fire Marshal

Approved: *Richard W. Galvan*  
Richard W. Galvan, Fire Marshal

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LIFE SAFETY BUREAU (LSB) STANDARDS ARE ESTABLISHED IN ACCORDANCE WITH PROVISIONS OF THE CITY OF HOUSTON FIRE CODE. THEY ARE SUBJECT TO THE ADMINISTRATIVE SECTIONS COVERING – ALTERNATIVE MATERIALS AND METHODS, MODIFICATIONS, AND BOARD OF APPEALS.

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## LSB STANDARD 23, REV. 02

### MID-RISE ATRIUM FIRE SAFETY PLAN APPROVAL

#### SECTION 23.1 ---- GENERAL

##### 23.1.1 Scope.

This standard shall apply to all persons seeking to provide mid-rise Atrium fire safety training and Mid-Rise Atrium fire safety plan approvals within the City of Houston in accordance with the *City of Houston Fire Code (Fire Code)*.

All Mid Rise Atrium Buildings shall comply with all applicable Fire and Building Codes including ordinances that require alarm or sprinkler retrofit.

Prior to compliance with the required retrofit deadline, mandated by city ordinance, all Mid Rise Atrium Buildings shall provide adequate temporary measures to accommodate all fire wardens with a means to alarm the building.

Acceptable measures will include whistles, public address systems, bullhorn, air-horn noise emitting canisters or other temporary measure as approved by the Fire Marshal. Temporary measure shall be universally applied within each Mid Rise Atrium Buildings. The use of any such temporary devices will be introduced in training, included into the written plan, along with the intentions to transition to the alarm/sprinkler retrofit ordinance.

Training in temporary and alarm/sprinkler retrofit will be determined to be effective by successful completion of a supervised fire drill by an approved instructor.

##### 23.1.2 Purpose.

This standard shall provide minimum guidelines for Mid-rise Evacuation Training (MET) as mandated by LSB Standard 24, "Mid-Rise Atrium Fire Safety Plans" that requires approval by the Fire Marshal.

#### SECTION 23.2 --- DEFINITIONS

##### 23.2.1 Fire Safety Coordinator.

The Fire Safety Coordinator is the representative of the owner and/ or management company of a mid-rise atrium building who is mandated by the Fire Marshal, to implement and manage all the requirements of the Fire Safety Plan. The Fire Safety Coordinator is not required to be a tenant of the building and may manage more than one mid rise atrium provided that all the fire safety plan requirements are successfully implemented at each location.

##### 23.2.2 Fire Safety Team.

The Fire Safety Coordinator and Fire Wardens as specified in the approved safety plan, comprise the Fire Safety Team. The members of the Fire Safety Team shall attend required MET for certification and possess a MET certificate signed by the Fire Marshal.

### 23.2.3 MET Certification Classes.

Classes for MET certification training shall be provided to the Fire Safety Coordinator, tenant designated Fire Wardens, all property management employees, staff and/or contract personnel, by an instructor approved by the Fire Marshal to certify that they have been trained in accordance with the requirements of the City of Houston Fire Code and this standard.

### 23.2.4 Supervised Fire Drill.

A planned fire drill performed under supervision of an approved training instructor.

### 23.2.5 Approved Training Instructor.

A qualified individual approved in accordance with Section 23.3.1, of this Standard, to instruct Mid-Rise Atrium safety to attain fire safety plan approval by the Fire Marshal.

## SECTION 23.3 --- QUALIFICATIONS TO INSTRUCT

### 23.3.1 Qualifications.

Qualifications of individuals to instruct mid-rise atrium fire safety in accordance with requirements of the *Fire Code* shall meet all the following requirements as set forth below, and be acceptable to the Fire Marshal:

1. Background in the fire service or related fire safety field:
  - a. Certified firefighter by the Texas Commission on Fire Protection, fire protection engineer, or combination thereof, for a minimum of 10 years, *or*
  - b. Fire/life safety director, with a minimum of 10 years experience in high-rise occupancies, *or*
  - c. Building manager or engineer with a minimum of 15 years experience in high-rise occupancies.
2. Possess at minimum a Level I (Basic) Instructor or Teaching Certification issued by:
  - a. an accredited educational institution, *or*
  - b. certified fire training academy, *or*
  - c. Texas instructor certificate or equivalent credentials.
3. Demonstrate working knowledge of applicable City of Houston Codes and Ordinances.

**Exception:** Required training of building Fire Wardens *only* may be performed by persons who meet qualifications 1 and 3 above. Those individuals shall submit a letter to the Fire Marshal requesting approval to train along with proof of their qualifications.

## SECTION 23.4 --- COMPONENTS OF FIRE SAFETY TRAINING AND CONSULTATION

### 23.4.1 Mid-Rise Atrium Fire Safety Training Elements.

Mid-Rise Atrium fire safety plans require the completion of all of the following three essential training elements:

1. Consultation with property management,
2. Fire Warden Mid-Rise Atrium certification class, and

3. Completion of supervised fire drill.

## **SECTION 23.5 --- PROPERTY MANAGEMENT CONSULTATION**

### **23.5.1 Consultations with Management.**

The following elements shall be covered during consultations with property management personnel:

1. All Mid-Rise Atrium buildings within the City of Houston must have a Fire Marshal approved Mid-Rise Atrium Fire Safety Plan.
2. What is required to receive and maintain a Fire Marshal approved Fire Safety Plan.
3. Provide a copy of and explain HFD Standard 24, "Mid-Rise Atrium Fire Safety Plan".
4. Review a sample copy of the Houston Fire Department standard fire safety plan specific to applicable occupancy. (i.e.: Mid-Rise Atrium Office Plan, Mid-Rise Atrium Condominium and Apartment Plan, or Mid-Rise Atrium Hotel Plan). Explain in detail how the plan should be implemented and how to provide necessary information concerning operation of the building's fire and life-safety systems operate.
5. Property management is responsible for disseminating appropriate information regarding the Mid-Rise Atrium Fire Safety Plan to the people within their building.
6. Provide copy of and discuss Fire Marshal's letter, "Burning Issues."
7. Certification training is required for all Mid-Rise Atrium property management staff, employees, contract personnel and all tenant Fire Wardens.
8. Discuss the responsibilities of and train the Fire Safety Coordinator(s) to manage the approved emergency plans and procedures. Including the following:
  - a. That the Fire Wardens will notify the fire department of alarms and any known existing conditions without delay.
  - b. Explain how and when to maintain all applicable building fire safety equipment and systems to minimize the emergency's effect on the occupants, the building and responding fire department personnel.
  - c. Convey to the Fire Safety Coordinators the administration of appropriate public address announcements if applicable.
  - d. Instruct that the Fire Wardens:
    - 1) Call the Fire Department,
    - 2) Meet the arriving fire department personnel if they have pertinent information to communicate to the Fire Department.
9. Discuss notification of Answering Service as to the requirements for reporting of automatic fire alarms in accordance with the City of Houston Fire Code.
10. Provide sample copy of and discuss the Fire Marshal's approved fire alarm recording messages if applicable.
11. Provide sample copy of and discuss Building Information Sheet.
12. Provide copy of the Fire Marshal's letter, "Fire Alarm System Maintenance During Construction In High-Rise Buildings", and discuss "false" fire alarms due to construction work being performed within buildings.

13. Discuss the provisions City of Houston's *False Alarm Ordinance* as may apply to the particular occupancy in question.
14. Discuss fire drill procedures and the importance of tenants notifications in advance of any planned fire drill.
15. Provide sample letters for fire drill and fire warden certification participation.
16. Discuss the number of fire wardens required per code and set a date for the Fire Warden training if possible.

## **SECTION 23.6 --- MID-RISE ATRIUM CERTIFICATION CLASS**

### **23.6.1 Mid-Rise Atrium Certification Class.**

Attendance at a Mid-Rise Atrium Certification Class is required for all Mid-Rise Atrium tenant Fire Wardens and appropriate property management employees, staff and/or contract personnel.

### **23.6.2 Elements of Mid-Rise Atrium Fire Warden Certification training.**

Mid-Rise Atrium Fire Warden Certification training shall include, at a minimum, the following elements:

1. All Mid-Rise Atrium buildings within the City of Houston must have a Fire Marshal approved fire safety plan.
2. Explain that the Fire Safety Coordinator is responsible for disseminating appropriate information regarding the Mid-Rise Atrium Fire Safety Plan to the people within their building.
3. Explain the building's fire safety features; fire alarm system automatic and manual operation, audible and visual alarms, public address system operations, emergency generator and/or lighting, etc.
4. The Fire Safety Coordinator is responsible to provide an adequate facility large enough to train all the required fire wardens in each Mid Rise Atrium building.
5. Explain Elevator functions and their dangers, shunt trips, elevator recall, "alternate floor" response, service elevators, etc.
6. Explain automatic fire sprinkler systems and their effectiveness.
7. Explain dangers of fire fighting and how it is best to close the door to confine the fire, notify everyone and "Get Out, Never Go Back In." Leave fire fighting to the professionals.
8. Discuss the uses and hazards of portable fire extinguishers and tenant fire hoses. When possible, provide demonstration and practice on the safe and effective use of portable fire extinguishers.
9. Discuss the role of the Fire Safety Coordinator.
10. Discuss the role of the Fire Wardens in the event of a fire or fire alarm.
11. Discuss in detail the fire plan's - "Procedures for Reporting Fires and Fire Alarms".
12. Discussion on how fires can quickly spread, the movement of smoke within buildings and the effects on the human body. Emphasize the need to get down and stay down low in a fire situation.
13. Discuss the "Delay of Alarm" and present examples in history.
14. Discuss the cause and effect of panic during fire situations.
15. Discuss smoke detector use, functions and the location of detectors in relation to early or delayed detection.
16. Discuss fire prevention, safety, and pre-fire planning on the job.

17. Discuss the planned fire drill to be conducted within the Mid-Rise Atrium building and what it may entail.
18. Discuss fire department responses and need to notify the fire department of any changes in conditions.
19. Explain how smoke spreads in an atrium building and the need for immediate evacuation and the limits and feasibility of areas of refuge within the atrium building.
20. Discuss "Compartmentalization" – floor and ceiling assemblies, inside doors, hallway walls and doors, stair doors, stair ratings, and stair pressurization.
21. Discuss general fire safety and pre-fire planning in the home (E.D.I.T.H. or similar fire safety programs).

## **SECTION 23.7 --- FIRE DRILL**

### **23.7.1 Fire Drill as final training element.**

The final step in the plan approval process is a supervised fire drill.

### **23.7.2 Prepare for and Conduct a Drill.**

The following steps shall be taken to prepare for, conduct, and review the effectiveness of a fire drill.

#### **23.7.2.1 Pre-drill preparations.**

1. The Fire Safety Coordinator shall provide all of the tenants on every floor with written notification of the intent to conduct a fire drill in advance of the date chosen by management.
2. It is recommended that property management arrange for representatives from the fire alarm and elevator service companies to be present at the building at the time of the fire drill when possible.

#### **23.7.2.2 Day of Drill preparations.**

1. It is recommended that property management again provide means for the notification of tenants and visitors to the building as to the specific time of the planned fire drill.
2. Property management shall notify their fire alarm monitoring services (where applicable) and the fire department emergency communication center in advance, of the planned fire drill. The UL monitoring station shall be told to NOT call the fire department during the time of the fire drill.

#### **23.7.2.3 Conducting the Drill.**

1. At the previously announced start time, the building or the selected floors within the building should be put into alarm.
2. All elevators should be placed in Fire Service Recall (Phase-I Fire Service) to recall to their designated floor(s).
3. Design the fire drill to spot check building systems operation to see if they will function properly.

#### **23.7.2.4 Post-drill.**

1. At the conclusion of the drill, property management shall immediately notify their fire alarm monitoring services (where applicable) and the fire department

emergency communication center, that the fire drill has concluded and that the building is to be placed back on fire alarm monitoring status.

2. A post-fire drill review should be conducted to analyze the effectiveness of the fire drill and resolve any problems encountered.
3. Recommendations should be made on how additional training can improve performance.

## **SECTION 23.8 --- FIRE SAFETY PLAN APPROVAL**

### **23.8.1 Conditions of approval.**

Approval of a fire safety plan by the Fire Marshal is contingent upon completion of the following:

1. Completion of all required training elements.
2. Completion of a standard fire safety plan with adequate number of trained Fire Wardens.
3. Building management and personnel demonstrating adequate knowledge and performance of emergency procedures and basic operation of building's emergency systems.

## **SECTION 23.9 --- CERTIFICATES OF APPROVAL**

### **23.9.1 Fire Marshal Approval letters.**

Once Property Management has completed all of the requirements covered within this standard, a letter requesting approval shall be prepared and submitted to the Fire Marshal for approval by the individual(s) approved to provide such training. Upon receipt of the request letter and approval by the Fire Marshal, the Fire Marshal will issue a letter or certificate of approval for that building.

### **23.9.2 Certificates of Completion of Fire Warden training.**

A certificate of satisfactory course completion shall be issued by individuals providing Fire Marshal approved Fire Warden training. Provision and distribution of certificates are solely the responsibility of those individuals providing the class instruction. A copy of such certificate shall be submitted to the Fire Marshal for prior approval. The design of the certificate shall be sufficiently different so as not to be confused with those issued by the Houston Fire Department. Each certificate shall include the recipient's name, the instructor's name and date of the class written or printed legibly on it, and shall be considered valid for a period of 5 years from the class date.

### **23.9.3 Maintaining an approved fire safety plan.**

Fire Safety Plan approvals are maintained for a period of 2 years, unless any of the following conditions should occur:

1. Change of Fire Safety Coordinator, unless site certified within less than 30 days of change, *or*
2. The minimum required number of Fire Wardens lack certification, *or*
3. Change of building's occupancy classification, *or*
4. Plan becomes outdated due to age or changes in City of Houston codes, ordinances or standards.

## REFERENCES

1. City of Houston *Fire Code*, International Fire Code, 2006 edition, as amended
2. Life Safety-Bureau (LSB) Standard 06, "Fire Depository Boxes"
3. Life Safety-Bureau (LSB) Standard 24, "Mid-Rise Atrium Fire Safety Plans"
4. Life Safety Bureau (LSB) Standard 08, "Fire Drills"
5. Fire Marshal's Letter, "***Burning Issues***",
6. Fire Marshal's Letter, "Fire Alarm System Maintenance During Construction In Mid-rise Atrium Buildings",



Fire Department

**BURNING ISSUES**

**PROCEDURES FOR TRANSMITTING AUTOMATIC FIRE ALARMS**

*Effective December 31, 2010*

It has come to my attention that there is some confusion as to the proper procedures for transmitting automatic fire alarms to the Houston Fire Department. Let me clarify this procedure by referring to Chapter 4, Section 401.3 of the City of Houston Fire Code (*Fire Code*).

Section 401.3 of the *Fire Code* states: *"In the event an unwanted fire occurs or upon the discovery of a fire, smoke or authorized release of flammable or hazardous materials on any property, the owner or occupant shall immediately report such condition to the fire department. Building employees and tenants shall implement the appropriate emergency plans and procedures and notify the Fire Department as soon as notice can safely be given. No person shall, by verbal or written directive, require any delay in the reporting of a fire to the fire department."*

Simply stated, the first action taken by building personnel responsible for safety evacuation, is to call 9-1-1 immediately upon receipt or knowledge of an alarm or any suspicion of fire. This shall be the first step in your evacuation plan. UL Listed central receiving stations and second-party monitoring companies shall also immediately relay any signal they receive from a subscriber building without delay to this department.

After the initial transmission of the alarm to this department, any secondary qualifying information such as a determination of a false alarm may be relayed to our emergency communication center; we will make the determination as to the proper emergency equipment response at that time.

Any occupancy or receiving station found guilty of delaying or otherwise suppressing the immediate relay of alarms or reports in their facility, will not only subject themselves to the full liability of any unnecessary damage or loss of life resulting from that delay, but will also receive a citation issued by a Fire Inspector. Fines range from \$500 to \$2000 for each violation of the aforementioned City Ordinance.

Also remember that alarm systems are required to be in proper working order at all times; repeated alarms due to malfunction or inoperative alarm systems must be corrected by responsible parties.

I know that you are as concerned as we here at the Houston Fire Department with the safety of personnel and guests at your facility. Working together, we can make a difference through quicker response, which is imperative in any emergency where human life and property are at risk.

Richard Galvan  
Fire Marshal



# CITY OF HOUSTON

Richard W. Galvan, *Fire Marshal*

## Fire Department

### Fire Alarm System Maintenance During Construction in Buildings

*Houston Fire Code Section 901.6 Fire detection, alarm and extinguishing systems shall be maintained in an operative condition at all times, and shall be replaced or repaired where defective. Nonrequired fire protection systems and equipment shall be inspected, tested and maintained or removed.*

If the nature of construction warrants, the following options are approved by the Houston Fire Department, in accordance with the *Fire Code*, during the full or partial construction of floor(s) within a building:

1. Installation of molded plastic cups over smoke detectors.
2. Installation of bags over smoke detectors.
3. Replacement of smoke detectors with rate-of-rise heat detectors.

If cups or bags are installed, a written process shall be established by the Building Management and included into all Building's Constructions Rules and Regulations to ensure:

1. Proper installation of cups/bags.
2. Proper removal of cups/bags whenever area is unoccupied and following up to verify removal.
3. Maintenance of daily documentation of involved locations, including contact names.
4. Designation of appropriate person(s) in construction area to activate the fire alarm, call the Houston Fire Department and building management in the event of an actual smoke / fire situation.

Heat detectors are not acceptable in elevator lobbies. Lobbies must have cups/bags installed on smoke detectors.

The Houston Fire Department does not allow the disabling of an alarm system by device, zone or floor, nor the complete deactivation of the fire alarm system.

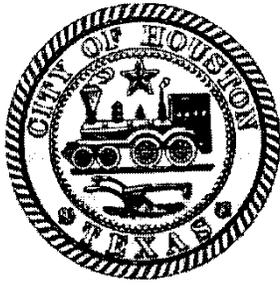
In the event of demolition of a floor(s) including the removal of the fire alarm system, building management shall:

1. Notify the Houston Fire Department Office of Emergency Communications by telephone at: (713) 884-3143 fax (713) 884-4237.
2. Check with an alarm company for temporary alternatives.
3. Minimum requirements are a temporary standpipe and two exits from the building.

Violation of the above requirements may subject the building management to Fire Code citations, (fines \$500 - \$2000) for each violation, and /or fines for violation of False Fire Alarm Ordinance.

A handwritten signature in black ink, appearing to read "Richard W. Galvan".

Richard Galvan  
Fire Marshal  
Effective: December 31, 2010



**HOUSTON FIRE DEPARTMENT  
LIFE SAFETY BUREAU (LSB)**



**LSB STANDARD 25, REV 01  
SAFETY INSPECTIONS FOR VEHICLES ON INDOOR DISPLAY**

**SUPERSEDES: NEW STANDARD, dated 12/31/2010**

**Effective Date: 5/01/2012**



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LSB Standards are established in accordance with provisions of the City of Houston Fire Code. They are subject to the administrative sections covering – alternative materials and methods, modifications, and the Board of Appeals.

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**LSB STANDARD 25 Rev. 01**  
**SAFETY INSPECTIONS FOR VEHICLES ON INDOOR DISPLAY**

**SECTION 25.1 --- GENERAL**

**25.1.1 Scope.**

To establish guidelines for LSB classified personnel to use when conducting motorized vehicle safety inspections for motorized vehicles on indoor displays.

**25.1.2 Purpose.**

To insure that all motorized vehicles comply with the Houston Fire Code when placed on indoor display.

**SECTION 25.2 --- DEFINITIONS.**

**25.2.1 Motorized Vehicle**

For the purpose of these guidelines, any motorized vehicle powered by an internal combustion engine including but not be limited to the following:

A **car, truck, snow mobile, lawn equipment, or motor driven cycle** that is self-propelled; that does not run on rails.

A **watercraft** that is any self-propelled motorized vessel that moves on or through the water.

An **aircraft**, which is a motorized vehicle that can fly.

A **recreational** vehicle that uses fuels to propel, heat, or cooking.

Any object, with an internal combustion engine, such as generator or pump that is displayed for public view or exhibition.

**25.2.2 Vehicle Safety Inspection Checklist (VSIC)**

A list of items that LSB inspection personnel will review and approve or disapprove, for each motorized vehicle on indoor display. (See APPENDIX "A".)

**SECTION 25.3 --- GENERAL REQUIREMENTS**

**25.3.1 Standby Personnel permit.**

A permit for Standby Personnel may be required for events where motorized vehicles are placed on indoor display.

**25.3.2 Permit for Liquid or Gas Fueled Vehicles or Equipment in Assembly Building**

A "Liquid or Gas Fueled Vehicles or Equipment in Assembly Building Permit" is required.

### 25.3.3 Plans and Permits

**Permit applications submitted less than 5 business days prior to the event will incur special handling fees.** Plans shall be submitted in a Plot Plan View format showing booth locations, access driveways, permanent buildings and other pertinent information and shall be affixed to the Permit Application.

#### **Permit Office contact information for “Liquid or Gas Fueled Vehicles or Equipment in Assembly Buildings” permits and standby personnel is as follows:**

The Houston Permitting Center

1002 Washington Avenue

Houston, Texas 77007

Hours of operation: 8:00 a.m. to 3:30 p.m. Central Time

Monday through Friday

Office phone (832)394-8811

To Email Customer Service Questions: [hfd.permitoffice@houstontx.gov](mailto:hfd.permitoffice@houstontx.gov)

Link to City Wide Fee Schedule: [www.houstoncityfees.org](http://www.houstoncityfees.org)

### 25.3.4 VSIC Inspection

A Fire Inspector shall conduct an inspection of all motorized vehicles submitted for indoor display. A VSIC shall be completed, approved and signed by the Fire Inspector, for the motorized vehicle to be placed on indoor display. The management of the venue that is displaying the motorized vehicles shall collect and secure all VSIC forms in a manner approved by the Fire Marshal. The venue management shall also be responsible to ensure that all items on the checklist are adhered to. A Fire Inspector shall conduct an inspection of the vehicle or propane cylinder that is allowed for display indoors as follows:

**25.3.4.1** The Fire Inspector assigned to the venue may inspect vehicles and cylinders if there are less than 15, **by appointment and during regular work hours.**

**25.3.4.2** The inspection of 15 or more vehicles or 15 or more propane cylinders will require an after hour permit allowing the vehicles and cylinders to be inspected by a standby Fire Inspector.

**25.3.4.3** Any amount of vehicles that requires an after hour inspection shall be conducted by a standby Fire Inspector.

### 25.3.5 Vehicle Fuel Level.

Any motorized vehicle that does not have an operable fuel gauge or other reliable means of determining its fuel capacity will be **disapproved** and not be allowed to be placed on indoor display. Fuel in the fuel tank(s) shall not exceed one-fourth (1/4) tank capacity or 5 gallons, whichever is least.

### 25.3.6 Vehicles Approved for Display

**If** the motorized vehicle meets the fuel capacity measuring requirements and is allowed to be placed on indoor display, the following requirements, of the current Houston Fire Code, shall be strictly adhered to.

**25.3.6.1** Batteries must be disconnected after being placed on display or if the battery disconnect switch is included in the vehicle it may be turned to the off position and secured in an approved manner.

**25.3.6.2** Fuel tanks and fill openings shall be closed and sealed to prevent tampering.

**25.3.6.3** Vehicles shall not be fueled or defueled within the building.

**25.3.6.4** Lp-Gas cylinders shall be **new and unused** unless prior written approval has been given by the Fire Marshal. The vendor or his representative will disconnect piping from the cylinder and valves will be open to verify the cylinder is void of gas. Any tools required shall be provided by the vendor.

**25.3.6.5** Motorized vehicles using LP-Gas for special flame effects shall comply with LSB Guidelines for Art Car/Equipment Vehicle Inspections.

## References

- 1 City of Houston *Fire Code*, International Fire Code, 2006 edition, as amended.

**APPENDIX "A"**

Houston Fire Department  
**Vehicle Safety Inspection Checklist**  
**For Indoor Display of Liquid or Gas-Fueled Motorized Vehicles**

Date of Inspection: \_\_\_\_\_ Venue: \_\_\_\_\_

Name of Event: \_\_\_\_\_

Booth Number \_\_\_\_\_ Exhibitor Name \_\_\_\_\_

Motorized Vehicle Type:

Car       Truck       Boat       Personal Watercraft

Motor-Driven cycle       Aircraft

Other (specify): \_\_\_\_\_

In order to comply with the City of Houston Fire Code Regulations, the following requirements must be adhered to:

- Fuel in fuel tanks shall not exceed one-fourth (1/4) capacity or 5 gallons, whichever is least. An accurate means of measuring the fuel amount shall be provided. (Pre-requisite to entry into the building.)
- Batteries must be disconnected.
- Fuel tanks and fill openings shall be closed and sealed to prevent tampering.
- Propane cylinders shall be new and unused unless prior written approval has been given by the Fire Marshal. The Vendor or his representative will disconnect piping from the cylinder. Valves will be opened to verify the cylinder is void of propane gas. Any tools required shall be provided by the vendor.
- Approved for display.
- Rejected for display.

Reason(s) for rejection: \_\_\_\_\_

Fire Inspector (Print): \_\_\_\_\_

Signature of Fire Inspector: \_\_\_\_\_