



Houston Fire Department Life Safety Bureau (LSB)



LSB Standard No. 10, Rev. 07

LP-Gas and Open Flame Use

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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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LP-Gas and Open Flame Use

Section 10.1 – General

10.1.1 Scope.

The provisions of this standard apply to the regulation of LP-gas use at 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 and to other hazardous operations involving the use of open flames. The requirements presented in this standard are to be considered as minimum requirements.

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 persons using open flame at events and operations covered within the scope of this standard.

Section 10.2 – Definitions

10.2.1 Approved.

Acceptable to the fire code official.

10.2.2 Standby Personnel.

One or more Fire Inspectors who are current members of the Life Safety Bureau of the Houston Fire Department who, in the interest of public safety due to the nature of an operation, activity, or event, may be required to be on standby duty at a site while such operation, activity or event is conducted when required by the Fire Marshal as provided for in the *Fire Code*. See Section 11.5.5 of this standard for Permit Office contact information concerning standby personnel.

10.2.3 Districts 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 the centerline 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 Drive; thence, northerly along North MacGregor

Drive to Cambridge Street; thence westerly along Cambridge Street to Main Street, the place of beginning.

Section 10.3 – General Requirements

10.3.1 Standby Personnel Required.

Standby Personnel shall be required for all events where there are in use four (4) or more LP-gas cooking appliances, including mobile food preparation vehicles.

Exception: The standby personnel requirement may be waived at the discretion of the Fire Marshal, under the following conditions:

1. There are no more than four (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 6103.2.1.7 of the *Fire Code*.)
2. The appliances used are mobile food units that meet the requirements of Appendix E of this standard.

The jurisdiction shall provide the standby personnel upon application and payment of fees specified in the *Fire Code*, and 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.

10.3.2 LP-Gas.

Permits shall be required to store, use, handle, or dispense LP-gas, or to install or maintain any LP-gas container in excess of 125 gallons (473 L) aggregate water capacity.

A permit is required to use any amount of LP-gas for demonstrations, public exhibitions, portable heating (excluding R occupancies), or temporary commercial cooking or for use in conjunction with mobile food units.

For a single LP-gas container that is more than 500 gallons (1893 L) in water capacity or for multiple LP-gas containers for which the aggregate capacity is more than 2000 gallons (7570 L), the installer shall submit construction documents for the permit. For requirements to store, handle, or use LP-gas, see Chapter 61 of the *Fire Code*.

10.3.3 Permit for Commercial Cooking.

An LP-gas permit is required when LP-gas appliances are used for commercial cooking, including temporary commercial cooking.

10.3.4 Plans and Permits.

Permit applications submitted less than 5 business days prior to the event will incur special handling fees. The permit applicant shall submit the following with the permit application:

1. A “Plot View” diagram of the event showing:
 - a. Locations of booths or areas to be used for LP-gas and/or open flame use;

- b. Layout of the LP-gas cooking appliances or other LP-gas burning equipment; and
 - c. Location of access roads, utility runs, and other buildings.
2. Plans and permits for any tents, canopies, or air supported structures having an area of 1,200 square feet or more.
3. An application for Standby Personnel, if required.

Permit Office contact information is as follows:

The Houston Permitting Center

1002 Washington Avenue

Houston, Texas 77002

Hours of operation: 8:00am to 3:30pm (CST)

Monday through Friday

Office phone: (832) 394-8811

To E-mail Customer Service Questions: hfd.permitoffice@houstontx.gov

Link to City Wide Fee Schedule: www.houstoncityfees.org

10.3.5 Licensed Contractors Required.

Connections to LP-gas appliances may only be made in the presence of the Standby Inspector, who will ensure that 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 container.). At least one additional Standby Inspector will be required for the event to accomplish this.

When approved in advance, the licensed LP-gas contractor on-site to make and break connections may not be required to be in attendance for the entire event, contingent upon the LP-gas needs of the event. For example, the LP-gas contractor would not be required for the entire event when the appliance can operate all day on one container with no change out required.

Spare LP-gas containers shall be stored in an approved location. These provision are not intended for use as a substitute for providing an approved LP-gas contractor.

10.3.6 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 a 60-lb container. 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: 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 (0.3 L), non-refillable butane gas containers connected directly to the appliance any time. Containers shall comply with nationally recognized standards, have a maximum water capacity of 1.08-lbs (0.5 kg) per container and shall not be manifolded. 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. The aggregate amount of LP-gas used or stored shall not exceed 60-lbs (27 kg) LP-gas capacity. In Educational occupancies,

portable LP-gas containers shall not be used or stored except as permitted by Section 3803.2.1.4 of the *Fire Code*.

10.3.7 Container Size Outside DOL No. 1.

The maximum single LP-gas container size allowed outside DOL No. 1 may be a 100-lb container 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.

10.3.8 Storage of LP-Gas Containers in DOL No. 1 and No. 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, the capacity limit shall be determined by the fire code official, after consideration of special features such as topographical conditions, nature of occupancy, proximity to buildings, capacity of proposed containers, and degree of fire protection to be provided.

10.3.9 Inspection Sticker.

An inspection sticker must be displayed on equipment indicating the equipment has been inspected by licensed personnel within the immediately preceding period of 12 months (see 10.3.4 above).

10.3.10 Protective Barriers.

Protective physical barriers such as chains, ropes, or similar obstacles must be installed to prevent public access to LP-gas containers and cooking areas.

10.3.11 Securing LP-Gas Containers.

All LP-gas containers (empty or full) shall be secured in an upright position in such a manner that it does not 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 service tag. For 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 service 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 service tags attached, mounted in a located 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 2-A, 10-B: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 in booth areas. 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.

Standby Personnel will be required by the Fire Marshal when the event uses 4 or more LP-gas appliances or indoor use of deep fryers that are not protected by an approved vent hood and fire suppression system.

10.5.3 Tent Permit.

A tent permit is required for a tent, canopy, or air supported structure of 1,200 square feet or more. See Life Safety Bureau (LSB) Standard No. 22, "Tents and Other Membrane Structures."

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. See LSB Standard No. 22.

10.5.5 Plans.

Contact information for the Permit Office 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.

A Permits required for the ignition or burning of any material or device as part of a performance. The performer or artisan or the agent therefor shall submit an application for the permit, including plans and a list of the times and locations of all performances.

10.6.3 Reserved

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 (such as alcohol or cigarette lighter fluid) shall not be used. Class II combustible liquids may be used provided the combustible liquid is stored in a listed metal safety can 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 service tag indicating an inspection within the immediately preceding period of 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 used to “quick dry” paintings, art work, or similar objects, but 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 and/or wood may be started with an electrical starter designed for this purpose; quick starting charcoal is also allowed. Use of LP-gas as a fire starter shall require a permit. (See Section 10.3.2)

10.7.2 Clearance.

All cooking equipment shall be situated away from crowds, buildings, or flammable or combustible materials. A minimum clearance distance of 3 feet from cooking equipment is required.

10.7.3 Firebox Protection.

A metal pan constructed of a minimum of No. 18 U.S. gauge sheet metal shall be provided and placed under the fire box of barbecue pits or under 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 barriers acceptable to the Fire Marshal to prevent public access or exposure to cooking or heat producing devices. A minimum of 3 feet clearance distance from cooking devices 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 the performance. The extinguisher shall have a full charge and have a current service tag indicating an inspection within the immediately preceding period of 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 the requirements of the *Fire Code*, Chapter 31, 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 Units

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 established 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.

Acceptable to the fire code official.

10.10.2 Permits.

A permit for LP-gas usage will be charged to each individual MFU, and a permit is not transferable to another MFU or vehicle. Other applicable permits are defined within this standard.

10.10.4 Fire Protected Cooking Equipment.

Cooking equipment protected by automatic fire extinguishing systems in accordance with Section 904.12, installed and operational within one year of the effective date of the current *Fire Code*.

10.10.5 Districts of Limitations (DOL).

The Districts of Limitations shall be as noted in Section 10.2.3 of this standard.

Section 10.11 – General Requirements

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.

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 the *Fire Code*, the term mobile food unit shall have the meaning set forth in Chapter 20 of the City of Houston *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 a 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 in a Plot View format indicating cooking locations will be required to be affixed to the permit application when it is submitted. Plot Plans shall show:

1. MFU location.
2. Size of DOT listed LP-gas container.
3. Electrical hookup.
4. Structures on property.
5. Method employed to secure LP-gas containers in upright position.
6. Locations of other MFUs on same property

See Section 10.3.3 of this standard for Permit Office contact information.

10.11.5 Reserved.

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 a 100-lb container.

10.11.7 Container Size Outside DOL No. 1 and No. 2.

The maximum single LP-gas container size allowed outside the DOL shall be a 100-lb container 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 immediately preceding period of 12 months. In addition, the inspector must provide a receipt displaying the VIN or the license plate number of the vehicle to which the appliance inspected 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 chains, ropes, or similar obstacles 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 25 feet of another MFU that is not solely electrically powered, except at festivals or other 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 listed or Fire Marshal 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 (4-A, 40-B:C minimum) shall be provided. In addition, a Type “K” portable extinguisher shall be provided for equipment used in cooking involving vegetable or animal oils and fats. Both fire extinguishers shall be inspected and tagged annually.

10.11.15 Ventilation Systems.

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*.

10.11.17 Compliance Required. Permit applicants and the applicants' agents and employees shall carry out the proposed activities associated with this standard in compliance with the *Fire Code* and other laws and regulations applicable thereto, whether specified or not in this document, and in complete accordance with approved plans and specifications. Permits that purport to sanction a violation of the *Fire Code* or any other applicable laws or regulations shall be void and approvals of plans and specifications in the issuance of such permits shall likewise be void.

Appendix F – Art Cars

10.12 – General

10.12.1 Scope.

To provide and ensure a minimum level of safety for Art Cars that utilize 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.

Section 10.13 – Definitions

10.13.1 Art Car.

A form of art that is usually, but not always, a motorized vehicle that has its appearance modified as an act of personal artistic expression that uses LP-gas for special effects.

10.13.2 Standby Personnel.

A state-certified fire inspector assigned by the *fire code official* as deemed necessary to ensure public safety and compliance with this code in accordance with Section 114.

10.13.4 Flame Effect Operator.

An individual currently licensed by the State of Texas as a “Flame Effects Operator’s License” and approved by the Fire Marshal.

Section 10.14 – Guidelines

10.14.1 Permits required.

A permit shall be required for the use of an Art Car containing LP-gas, according to applicable sections of the Houston *Fire Code* and this standard.

10.14.2 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 in compliance 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 liquified petroleum gas flame effects shall be determined by the surface area required to prevent reduced fuel delivery to the burner during the effect.

10.14.3 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.

10.14.4 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 the intended use according to NFPA 160, "Standard for the Use of Flame Effects Before an Audience".

10.14.5 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.

10.14.6 Fire Extinguishers.

A minimum of two 2-A, 10-B:C multi-purpose fire extinguishers shall be provided for each vehicle, each of which 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".

10.14.7 Emergency Shut-Off.

The emergency shut-off for the LP-gas shall require one operation and shall be 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.

10.14.8 Flame Effects Operator.

Any time flame effects are used or otherwise demonstrated, a Texas licensed flame effects operator shall be in attendance and will be held responsible for compliance with the fire code, all other local codes and ordinances, and all fire- and life-safety requirements including but not limited to the following specific items:

- a. the safe operation of all special flame effects,
- b. all associated equipment,
- c. flame appliances, and
- d. the flame effects area.

10.14.9 No Smoking.

There shall be no smoking or open flames within 15 feet of an Art Car containing LP-gas.

10.14.10 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.

10.14.11 Plan Approval.

The owner of an Art Car shall submit plans for approval of the Fire Marshal when he plans to use the Art Car's flame effects. Any additions or modifications of flame effects

described in the approved plan shall be approved by the fire code official prior to use of the modified flame effects. The plans shall include the parade route, staging area, site plan, and other pertinent information. The plans shall also be stamped approved and inspected by a Texas licensed pyrotechnic operator and include the Texas Pyrotechnic Special Effects Operators license number.

10.14.12 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.

10.14.13 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.

10.14.14 Fuel Supply.

The fuel supply for the operation of the flame effect shall be available only during operation.

10.14.15 Arming of Flame Effect Devices.

Flame effects shall be fired only 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 Texas licensed flame effects operator or an assistant under the direct supervision of a Texas licensed flame effects operator firing the flame effect for the entire time that the effect is enabled and fired. The Texas licensed flame effects operator or their supervised assistant shall be within 15 feet of the flame effect during enabling and firing of the effect to ensure safety.

10.14.16 Compliance with LSB Standard No. 25.

Art Cars on display inside a building shall also comply with LSB Standard No. 25, "Safety Inspection for Vehicles on Display Indoors."

References

1. City of Houston *Fire Code*.
2. City of Houston *Building Code*.
3. National Fire Protection Association (NFPA) Standard 160.
4. Life Safety Bureau (LSB) Standard No. 22, "Tents and Other Membrane Structures."
5. Life Safety Bureau (LSB) Standard No. 25, "Safety Inspection for Vehicles on Display Indoors"

All reference materials used under this Life Safety Bureau standard shall be in accordance with the most current adopted City of Houston *Construction Code*.