

FILMING IN CALIFORNIA



The Fire Protection Handbook

California State Fire Marshal
Motion Picture and Entertainment Unit

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_ INTRODUCTION _

Fire prevention inspections are very important, yet they can become a relatively routine task for fire department staff. However, the arrival of a film company to "shoot on location" can test the fire department's ability to successfully accommodate this unfamiliar activity with a level of comfort. Because film production is centralized in the Hollywood area, many fire departments have not had the frequent experiences of film companies shooting on their city streets or in public buildings. Consequently, inspecting a film location for the first time can be somewhat intimidating. Once the unusual or spectacular aspect of the business is overcome, the fire department is faced with the fundamental issue of providing fire protection services to that film company as well as the public.

Fire protection laws and regulations aim to prevent and minimize the loss of life and property due to fire or other misfortunes by use of standard fire prevention procedures, proper utilization of codes, construction practices and enforcement. These responsibilities outline the necessary components for providing a safe working environment for a variety of entities. Alternative materials and methods are referenced in various state and local codes to meet the challenge of providing and maintaining a fire safe environment. The California Fire Code Section 104.8 states that whenever there are practical difficulties involved in carrying out the provisions of this code, the fire official shall have the authority to grant modifications for individual cases.

Alternative means of compliance is widely applied in motion picture production because of constant changing of sets, scenery, locations, personnel and activities. The film company and the fire department must discuss, prepare and agree to all of the activities prior to start of film production, this is accomplished through the film permitting process.

Inspection of filming sites is simply a matter of regulating hazards similar to those found in many other occupancies. Film production encompasses a wide variety of unusual concerns that may or may not present a fire and life safety hazard. The fire official must play a primary role when establishing a working relationship with the film maker. Proper communication and understanding will only assist in achieving mutual interests.

Although the use of pyrotechnic special effects and the performance of dramatic stunts will always challenge the fire official, it should be known that all special effects technicians are required to be licensed by the State Fire Marshal. Other concerns may be the construction of temporary sets; the delivery of lighting and power equipment; transportation vehicles, trucks and trailers; tents; and a large cast and crews.

With the exception of the use of pyrotechnic special effects, a routine fire inspection can simply resolve any fire and life safety concern that may affect public or private interests. FSO's assigned to such film productions should be properly trained and familiar with film production fire safety prior to the interaction with a film company.

This Fire Protection Handbook, in conjunction with traditional fire prevention practices aims to promote safety on the set, enforcement consistency and a high level of cooperation between the film maker and FSO. In addition, information contained within has been specifically intended for both the industry and fire service as a means for identifying, addressing and illustrating the steps to be taken to mitigate fire and life safety concerns on the set.

Since this document attempts to reach two diverse interests (the film industry and fire service), portions of the text may appear to be unnecessarily simplistic. Information contained herein has been reviewed carefully by experts of each discipline.

THE FIRE SAFETY OFFICER

RESPONSIBILITIES

FSO's perform an important role during the application process and issuance of a filming permit when a film production company is shooting on location. The fire department must be able to recognize specific types of filming activities, particularly when a production company is preparing for action types of sequences. Once the activity is outlined; specifically who, what, when, where, why and how aspects of filming, the FSO must determine whether or not the proposed filming activity is safe and can be approved.

Another important task is to determine the type of production being filmed. The most common productions will be one of the following: feature, television, commercial, documentary, student film or still photography. Each production has factors that may determine the level of service required.

Once this information has been obtained, the FSO will be able to provide input as to their respective needs and concerns. Examples of fire department interests may include, but are not limited to, the type and number of equipment brought to the location, proper exiting from buildings that may be occupied by the public, fire department access, construction of sets, how long the company will be filming (i.e., hours, days, weeks...), the size of the cast and crew, parking considerations, use of aircraft, use of flammable liquids and gases, pyrotechnic special effects, stunt sequences, etc.

PERSONNEL ON THE SET

Regardless of the size or type of production, every FSO needs to know who is responsible for the various functions relating to the set. Each of these individuals has important responsibilities and will assist you in getting things done.

Producer

The Producer is responsible for developing the project from start to finish including financing and distribution of the film. This individual is responsible for the business decisions on the production, (i.e., hiring the director, actors, writers, etc).

Director

The Director is the person with the overall responsibility for all of the creative aspects of the production. This person holds ultimate control on the set.

First Assistant Director (1st AD)

The First Assistant Director is in charge of the set and everything that happens on it, working as an intermediary between the Director and the cast and crew. The First Assistant Director is one of your most important contacts on the day of filming.

Unit Production Manager (UPM)/Producer

The UPM/Producer is the on-site executive most closely involved in actual production decisions. They are in charge of all production arrangements, i.e., location contracts,

negotiations and shooting schedules. The Location Manager reports to the UPM (features and television) or Producer (commercials). On some productions, the UPM may not be at the location for the whole day or at all.

Location Manager

The Location Manager is one of the first people the FSO will meet. This individual is responsible for scouting, selecting and finalizing the best location for the script. The Location Manager is also responsible for obtaining the required filming permits from the authority having jurisdiction, as well as working with governmental agencies (i.e. film permit office, police, fire, CHP, park rangers, life guards, etc) and will be the primary contact for most logistical production questions and answers.

Special Effects Coordinator

The Special Effects Coordinator is responsible for the creation of all types of special effects. The Coordinator reports to the Director or 1st AD and works closely with the Stunt Coordinator when necessary. The Coordinator shall carry a 1st or 2nd Class Pyrotechnic Operator Special Effects license when using or handling pyrotechnic special effects.

Stunt Coordinator

The Stunt Coordinator is responsible for the preparation, choreography, and execution of each stunt. The Coordinator may hire additional stunt performers for the more complicated stunts and will be able to specifically layout all stunt activity prior to the shoot. The Stunt Coordinator reports to the Director and 1st Assistant Director.

Transportation Captain

The Transportation Captain coordinates vehicle movement, parking of trucks, cast and crew cars, stunt cars, car carriers, etc. This is one of the first people to arrive on location. All drivers report to the Transportation Captain. The Transportation Captain reports to the UPM or 1st AD.

INSPECTION PROCESS

During the fire department review of the proposed activity by the film production company the following guidelines and sequence of events should occur:

- a) The fire department and film production company representative should discuss the proposed activity; i.e., pre-production construction, special effects or other fire/life safety hazards, dates, times, etc.
- b) A film production liaison should be identified to the fire department; i.e., Location Manager or Unit Production Manager.
- c) The fire department issues a permit for special effects, refueler's, tents, welding/cutting or other hazardous conditions.
- d) Determination is made if periodic site inspection will suffice or if assignment of a standby FSO (FSO) is necessary.

- e) If periodic site inspection is utilized, prior to the first day of filming, an examination of the location should be conducted to affirm the proposed activity. Agreements made between the fire department and production company shall be passed on to the next FSO and consistently enforced, especially on multiple-day shoots.
- f) The production company should have met all film inspection requirements prior to the fire departments arrival on the first day of filming.
- g) If a standby FSO is assigned, an on-site inspection should be conducted.

The inspection is conducted on the first day of filming to assure that the production company has complied with the requirements previously discussed and agreed upon. If a change is made to the film that may impact fire and life safety, the fire department should be notified.

A periodic site inspection is recommended, with or without assignment of a standby FSO. The fire department should advise the film production company as part of the inspection that the fire department has the right to conduct additional inspections for the maintenance of mandatory fire prevention requirements. It is in the best interest of the production company to make a conscious effort to police its own activities and not compromise fire and life safety concerns.

If the production company cannot prove its ability to police its own activities and correct violations in a timely fashion, then other mitigating steps of enforcement should be taken, such as; warnings, citations with temporary halting of production, full-time standby FSO's, and, as a last resort, permanent halting of film production.

DUTIES

The duty of the FSO is to prevent and abate fire and life hazards. If pyrotechnic special effects, stunts or other hazardous activities are planned by the production company, the FSO should contact key production personnel for briefing on the day of the activity. Depending on the size of the production and degree of fire and life safety services involved, a pre-production safety meeting may be required to become oriented with the proposed activity.

On the day of filming, the FSO should conduct an initial inspection of the set. Following the inspection, the FSO should continue to monitor mandatory fire and life safety requirements throughout the day as determined by the approved permit(s) and activities which have been outlined and agreed upon by both the production company and the authority having jurisdiction.

The FSO should make certain he/she has access to the film production liaison at all times. The FSO should also have direct communication with radio command centers to report and dispatch emergency equipment if the need arises. FSO's should also be familiar with the area and know the location of nearby hospitals, fire stations, telephones, escape routes, fire hydrants and other fire protection equipment and services.

The FSO may observe an activity that, while not directly related to fire and life safety, cannot be ignored. In such situations, the FSO should report the matter to the appropriate authority and company representatives.

QUALIFICATIONS

In order to perform the job adequately, the FSO should possess fire prevention skills at least equal to those found at the fire inspector level:

- * Completion of a fire prevention course such as Fire Prevention 1A, Fire Inspection Practices. (A technical overview of fire prevention codes, ordinances, inspection practices and key hazards.
- * Emergency Medical Technician certified and/or CPR and first-aid training.
- * Completion of the certified State Fire Marshal FSO training course on Motion Picture & Entertainment.

SAFETY EQUIPMENT

All FSO's must be prepared to accommodate and provide a high level of service when assigned to a filming location. The following is a recommended list of items, equipment and supplies that will be necessary to obtain to properly perform the duties of a FSO:

- a) Assure that a copy of the filming permit is on site. It is advisable that the FSO have a copy (or at least access) to where a copy may be.
- b) Assure that all fire department permits have been issued and approved. Obtain copies of all permits, especially when pyrotechnic special effects are used.
- c) Assure that the production company provides you with a radio (handy-talky) to communicate with key production personnel.
- d) Assure that a fire department issued radio is available to communicate with appropriate dispatch centers in the event of an emergency.
- e) Bring an Inspection Check List and necessary resources (i.e., code books, inspection reports, citations) to assist you in providing the best service available.
- f) Be familiar with the filming area and location. The importance of knowing the locations of nearby hospitals, fire and police stations, escape routes, fire hydrants, telephones and other fire protection equipment is critical should an emergency occur.

CONTINGENCY PLANNING

FSO's should always come prepared to handle unusual activities, especially when special effects and stunts are being performed. **DO NOT BE AFRAID TO GET INVOLVED!**

Asking questions about activities you are not familiar with is what will make you a better and more responsible FSO.

Being able to recognize unusual circumstances and listening to others will assist the FSO in understanding the intended action. In order to avoid the possibility of problems, we suggest that you do the following:

- * Keep informed about what is happening on the set. Know when certain events are scheduled, in particular, special effects and stunts.
- * If the production company appears to be behind schedule, watch carefully for pressure being applied on the crew. This is crucial when special effects are planned.
- * During the setup of all special effects and stunts, assure that the coordinators are continuously planning and discussing the intended action. SAFETY MEETINGS ARE A MUST AND SHOULD INCLUDE ALL PERSONNEL.
- * If the Director has made any changes following the initial safety meeting, another meeting should take place in order to assure that everyone is aware of the changes.
- * Ask what will happen if the intended action does not go as planned. How will the special effects and stunt coordinators respond? Do they have a back-up plan, escapes routes or other alternatives prepared?
- * Assure that there is proper fire protection and rescue equipment available during all special effects and stunts.
- * Each of the special effects and stunt coordinators will have assistants helping them perform the stunt or activity. Ask what the assistant's specific duties will be during the intended action.
- * Ask a lot of questions and get involved during the entire process of a special effects and stunt sequence.

ASSIGNING AN FSO

The following guidelines can be used for determining when a standby FSO should be assigned or when a simple fire inspection can be implemented.

Standby FSO(s) will be required for:

- Productions using pyrotechnic special effects, as defined by California Health and Safety Code SS 12532, and other special effects such as flame bars, propane canons and other large fire scenes where flammable liquids and gases are used.
- Productions involving stunts, this may include pyrotechnic special effects, use of helicopters, automobile crashes, chase scenes, body burns, and any type of jumps or leaps involving automobiles, motorcycles, and people.

- Productions using tents where the occupant load exceeds 500.
- Interior productions where generators, lights, and other filming equipment create a fire hazard and where set decorations, props and equipment may obstruct exits, access ways, and other building fire protection systems.
- Interior and exterior productions that may cause the public to congregate and/or where the size of the crew may affect safe egress.
- Productions occurring in mountainous brush covered or forested areas where the potential for a wild fire exist. In addition, roads or trails traversing through such areas.

All filming activities shall be reviewed on a case-by-case basis to determine the level of hazard and whether or not the production requires a standby FSO or a fire inspection(s). Still photography, documentaries and student filming are exempt unless they fall into one of the categories listed above.

PERMIT AND LICENSE REQUIREMENTS

SPECIAL EFFECTS PERMIT REQUIREMENTS

State law requires that whenever pyrotechnic special effects are used during any type of motion picture or entertainment production, a permit shall be issued from the AJH to a State Fire Marshal Licensed Pyrotechnic Operator. "Pyrotechnic" Special Effects is defined in Section 12532 of the California Health and Safety Code. It is important to understand the State of California's definition of special effects (see Glossary of Terms).

The following requirements shall be obtained from the fire authority having jurisdiction prior to the issuance of a special effects permit:

- 1) A valid pyrotechnic operator's license issued by the State Fire Marshal
- 2) Only pyrotechnic operators who possess a valid 1st or 2nd Class license shall be allowed to apply for a special effects permit for motion picture and television. Pyrotechnic operator 3rd Class is a trainee license and must be under direct supervision of a 1st or 2nd Class licensee.
- 3) After the fire department has seen proof of the license, the following must be identified:
 - a) Name, address, license #, phone and fax of permittee.
 - b) Assistant's names and license #'s.
 - c) Special effects activity, location(s) and plot plan if necessary.

- d) Proof of insurance (usually provided by Production Company).
- e) Conditions (i.e., standby FSO's, fire protection equipment, area of operation, limitations, demonstration if necessary, storage and transportation requirements).
- f) A list of pyrotechnic special effects material being used (including total quantities of each device).
- g) Issue and expiration dates.
- h) Signatures of the licensee and the fire authority having jurisdiction.
- i) Assure that a copy of all permits are on site at all times.

SPECIAL EFFECT PERMIT NOTES

Insurance for filming must meet the same requirements mandated by the jurisdiction issuing the film permit. The certificate of insurance provides all of the following:

- 1) That the insurer will not cancel the insured's coverage without 30 days prior written notice to this jurisdiction.
- 2) That this jurisdiction shall not be responsible for any premium or assessments on the policy.
- 3) That the duly licensed pyrotechnic operator required by law to supervise and discharge special effects, acting either as an employee of the insured or as an independent contractor, is included as additional insured, but only insofar as any operations under contract are concerned.

PYROTECHNIC LICENESES

In accordance with Title 19, California Code of Regulations, Section 981.5, the following pyrotechnic operator licenses can only be used for motion picture and television productions.

Pyrotechnic Operator-Special Effects First Class may conduct and is restricted to the use, preparation for transportation and the preparation and use of all types of fireworks and special effects pyrotechnics, for the sole purpose of producing a visible or audible effect where and when such use is a necessary part of motion picture, television, theatrical or operatic production, as permitted by the fire authority having jurisdiction.

Pyrotechnic Operator-Special Effects Second Class may conduct and is restricted to the use of special effects, the loading of blank cartridges, colored fire, flash paper, smoke composition, the preparation and use of binary A and B flash composition, and such other fireworks of whatever kind and class as may be permitted by the fire authority having jurisdiction, under a special permit in connection with television and motion picture production.

Pyrotechnic Operator-Special Effects Third Class authorizes the loading of blank cartridge shells and use of special effects when under the direct supervision and control of a Pyrotechnic Operator-Special Effects First or Second Class.

For further information on laws, regulations and information pertaining to the use and handling of pyrotechnic special effects, see section on Special Effects.

REFUELING PERMIT REQUIREMENTS (2010 CFC 105.6.16)

California Fire Code, Section 105.6.16 (10,11) requires that a permit be obtained from the fire authority having jurisdiction whenever flammable or combustible liquids are used and dispensed from fuel-dispensing tank vehicles (refueler's). Such vehicles are frequently used in the motion picture and television industry for the refueling of generators, vehicles and other equipment. All refueler's shall be permitted and meet the minimum provisions of the California Fire Code prior to operation.

Issuance

The issuance and expiration of a Fuel-Dispensing Tank Vehicle (Refueler's) Permit shall be determined by the fire authority having jurisdiction. In most cases, particularly where such operations will continue for extended periods of time, permits have been issued for periods not exceeding one year.

Inspection

All refueler's shall be inspected and approved by the fire authority having jurisdiction. Such requirements shall include, but not limited to the following:

- a) All refueler vehicles shall have "NO SMOKING" signs posted on the vehicle at all times.
- b) Refueler vehicles shall be equipped with a fire extinguisher having a minimum rating of 2-A, 20-B:C.
- c) Refueler's shall be equipped with protection to prevent the accumulation of static electric charges during dispensing operations. Protection shall consist of a metallic bond wire (grounding strap) that is permanently connected to the refueling vehicle unit. During dispensing operations, the grounding strap shall be equipped with a clamp or other securing device and attached to the equipment that is being fueled.
- d) Tank construction shall be designed, constructed, equipped and maintained in accordance with NFPA 385 (Per 2010 CFC Chapter 34) All tanks shall be constructed of noncombustible materials.
- e) Hoses and nozzles used for the dispensing of flammable liquids shall be by a means of an approved-type hose equipped with a listed automatic-closing nozzle with or without a latch-open device.
- f) Refueling vehicles shall be equipped with an emergency pump shut-off switch in

the event of an over-spill, leak or other hazard.

- g) All refueling vehicles shall be limited to a maximum of 120 gallons of flammable liquids. Vehicles in excess of 120 gallons shall be placarded and meet the provisions of the California Vehicle Code, Title 13, Article 3 Hazardous Materials Transportation.
- h) Refueling vehicles shall not be left unattended at any place that would present an extreme fire hazard.
- i) During fuel dispensing operations, refueling vehicle wheels shall be chocked to prevent movement, spillage, or any other hazardous motions.
- j) Operators refueling mechanically operated equipment (i.e., portable generators, etc.) shall assure all motors are off and not running during dispensing operations.

Retention of Permits

Permits shall be kept on the approved permitted vehicle. Permits shall be subject to inspection at all times by the FSO.

TENT PERMIT REQUIREMENTS

California Fire Code, Article 1, Section 105.6.43, (Permits) requires that a permit be obtained from the fire authority having jurisdiction for any temporary membrane structure or tent having an area in excess of 400 square feet and canopies in excess of 400 square feet.

Exceptions:

1. Tents used exclusively for recreational camping purposes.
2. Tents open on all sides, which comply with all of the following:
 - 2.1. Individual tents having a maximum size of 700 square feet (65 m²).
 - 2.2. The aggregate area of multiple tents placed side by side without a fire break clearance of not less than 12 feet (3658 mm) shall not exceed 700 square feet (65 m²) total.
 - 2.3. A minimum clearance of 12 feet (3658 mm) to structures and other tents shall be provided.

All tents shall comply with the minimum provisions of the Title 19, California Code of Regulations, Division 1, Chapter 2.

Definitions:

Assembly (for tents only)

Is the gathering together of 10 or more persons for deliberation, education, instruction, worship, entertainment, amusement, drinking or dining establishments, or awaiting transportation.

Temporary Membrane Structure

Is an air-inflated, air supported, cable, or frame-covered structure as defined by the

Building Code, which is erected for less than 180 days and not otherwise defined as a tent.

Tent

A shelter, structure or enclosure made of fabric or similar pliable material.

Large Tent

A tent designed for use by 10 or more people.

Small Tent

A tent designed for use by less than 10 people.

Inspection Requirements

- a) To assure structural stability, all tents, and temporary membrane structures shall be adequately roped, braced, and anchored to withstand the elements of weather against collapsing.
- b) Vehicles necessary to the operation of the establishment shall be parked at least 20 feet from any tent. No other vehicle shall be parked within 100 feet from any tent except vehicles parked on a public street shall park at least twenty feet from any tent.
- c) All tent fabrics and all interior decorative fabrics or material shall be flame resistant. Certificates of Flame Resistance or other documentation affirming these requirements shall be made available upon request of the enforcement authority. Each tent shall bear the State Fire Marshal Seal of Registration.
- d) Smoking is not permitted in any tent, or in any adjacent areas where hay or other highly flammable materials are kept. "No Smoking" signs shall be conspicuously posted in all tents open to the public and wherever otherwise specified by the authority having jurisdiction.
- e) Fireworks, special effects, open flames shall not be used in or immediately adjacent to any tent while open to the public, except when approved by the enforcing agency.
- f) Approved fire extinguishers shall be located inside the tent as required by the enforcing agency.
- g) A standby FSO is required for tents having an occupant load of 500 or more.
- h) Flammable and combustible liquids shall be stored outside and in an approved manner not less than 50 feet from any tent.
- i) Exiting requirements for tents, canopies and temporary membrane structures shall comply with the provisions of the - California Fire Code, table shown below:

**TABLE 2403.12.2
MINIMUM NUMBER OF MEANS OF EGRESS AND MEANS OF EGRESS
WIDTHS FROM TEMPORARY MEMBRANE STRUCTURES AND TENTS**

	Minimum Number of Means of Egress	Minimum Width of Each Means of Egress (inches) – x 25.4 for mm	
		Tent	Membrane Structure
10 to 199	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 3000□	7	120	96

For SI: 1inch=25.4 mm.

a. When the occupant load exceeds 3000 the total width of means of egress (in inches) shall not be less that the total occupant load multiplied by 0.2 inches per person

OTHER REQUIRED FIRE PERMITS

Other fire department permits may be required when a production company intends to utilize other hazardous materials on the set, particularly the various uses of fire that have not previously been outlined in this section. The FSO should identify all of the relevant fire activities on the set during the application of the filming permit. In most cases where fire is being used as a pyrotechnic special effect, the Special Effects Permit will prevail as the main fire permit.

The following permits are required to be obtained in accordance with the California Fire Code.

- a) **Candles and Open Flames in Assembly Areas (105.6.32)** To use open flames or candles in connection with assembly areas.
- b) **Open Burning (105.6.31)** When burning is done on public or private property, permission shall be obtained from the authority having jurisdiction (see glossary for definition of open burning).
- c) **Welding and Cutting Operations (105.6.11)** Set construction that requires welding and the cutting with a torch shall be approved by the fire authority having jurisdiction.

Other fire department permits may be required for performers who engage in activities that involve fire. Such activities include, but are not limited to: body burns, juggling, eating and breathing fire.

FILM PRODUCTION FIRE SAFETY

EXITING (2010 CBC/CFC Chapter 10)

The FSO plays a major role at the beginning of the filming day and can save a great deal of time, energy and perhaps even frustration for the production company if an agreement is made prior to the time the cameras start rolling.

Properly maintained exits from the filming area shall always be a high safety priority for the public and the production company, whether indoors or out, as film productions continue to utilize existing streets, highways, buildings and other public facilities and areas for backdrops and sets.

Exit passageways, corridors, aisles, ramps and stairways utilized by film companies shall be clearly identified and used specifically as exits. Equipment and materials used by the production company shall not obstruct or violate any portion of the exiting system. All exits shall be maintained in accordance with the appropriate fire and building codes.

When a production company has been permitted by the authority having jurisdiction to use a particular location, it is the FSO's responsibility to assure that all equipment (i.e., lighting, cables, props, scenery, cameras, etc.) used by the company is arranged in a neat and orderly manner. Sometimes, this may be difficult, especially when the production company wants to film in an area that may include part of the exiting system. In either case, the FSO must be able to recognize these situations and provide the best methods for reasonable fire and life safety.

One way to prevent problems associated with exiting at the filming location is to arrive at the site before the crew begins bringing in the equipment. Arrival times (all time) for the production should be stipulated on the filming permit. In most cases, the transportation department will be the first to arrive. In order for a clear understanding, it is important for the FSO to make contact with the Transportation Captain or Gaffer (head electrician) to assure proper placement of vehicles, equipment and materials.

Exiting Terms

It is important that the FSO understands the meaning of the term exit and the components that make up an exit.

Exit

The exit is that portion of the means of egress system between the exit access and the exit discharge or the public way. Components that may be selectively included in the exit include exterior exit doors, exit enclosures, exit passageways and horizontal exits, in addition to those common means of egress components; i.e., doors, gates, stairways and ramps that are incorporated in the design of any portion of the means of egress system.

Exit Access

The exit access is that portion of a means of egress system between any occupied point in a building or structure and a door of the exit components that may be selectively included in the exit access include aisles, hallways and corridors.

Exit Discharge

The exit discharge is that portion of the means of egress system between the exit and the public way. Components that may be selectively included in the exit discharge include exterior exit balconies, exterior exit stairways, exterior exit ramps and exit courts.

Exit Door

The term “exit door” shall mean all of those doors or doorways along the path of exit travel anywhere in a means of egress system.

It is important to the FSO to know and distinguish the different types of doors used in a building, particularly when the door is part of an exiting system or a fire rated door.

Panic Hardware

A door latching assembly incorporating an unlatching device, the activating portion of which extends across at least one half the width of the door leaf on which it is installed.

Public Way

Any street, alley or similar parcel of land essentially unobstructed from the ground to the sky that is deeded, dedicated or otherwise permanently appropriated to the public for public use and having a clear width of not less than 10 feet.

Inspection Requirements

- a) Exit signs shall be posted in a room or area that contains more than 50 persons.
- b) Occupancy limits shall be maintained. Overcrowding a room can cause a serious fire and life safety hazard.
- c) Travel distance in the exit discharge at grade level shall not be limited. Travel distance in the exit discharge at other than grade level shall not exceed 200 feet if the building is not equipped with an automatic fire sprinklers system throughout and 250 feet in buildings equipped with an automatic fire sprinklers system throughout.
- d) Assure that electrical cables for lighting and power equipment are maintained in a neat and orderly manner. When possible, cables should be flown, ramped with cable trays, and/or taped down in an orderly arrangement to prevent tripping hazards or exiting obstructions.
- e) Electrical cables that must be strung through exit or fire doors shall be either monitored by the Gaffer or shall have connections that can be quickly disconnected if a fire and life safety hazard arises.

ELECTRICAL CABLING AND LIGHTING (2010 CEC)

Achieving the right amount and type of lighting for every filming scene is a very critical part of the creative photography process. There are many different types of lighting and power systems that may or may not present an electrical fire safety hazard. In addition, the number of lamps, generators and cables brought to a set can easily contribute to such hazards.

The FSO must be fully aware of the type of systems that may found on the set. On a filming location, lamps are used for a variety of purposes and will come in different sizes and intensities. The important thing the FSO has to remember is not what specific type of light the company is using. Rather, the FSO must consider where they are being used and how close they are placed to combustible materials.

Specific examples of electrical and lighting hazards include:

- a. **Lighting:** proximity of lamps to combustibles, fire sprinkler heads, under eaves, near flammable liquids and, exposure to a cast or crew member where the potential for a burn injury is prevalent.
- b. **Power sources and cables:** arcs from deteriorated cables, cables not intended for its specific use, distribution plugging boxes (spiders), and improperly spliced cables.
- c. **Air Conditioning (A/C) Equipment:** Not properly grounded.
- d. **Arc lights:** Can be the most hazardous lighting system in terms of creating a fire. The arc light produces its light from the burning of carbon rods and requires an operator to feed the rod into the lighting unit. Small-unused portions of the rod are extremely hot and should be disposed of in a bucket of water. Arc lights should never be used in areas where thick brush and vegetation are present.
- e. **Cables:** should be checked for proper usage. Except when used for grounding, welding cable is prohibited when using A/C equipment.
- f. **Cables:** should not be left where vehicles can damage them. Cable ramps should always be used.
- g. **Cables:** should occasionally be checked for warmth, fraying, and possible exposed conductors.

PORTABLE GENERATORS

The use of portable generators is common on a filming set. Because most filming locations do not have sufficient power supplies to operate lighting and electrical equipment, portable generators are frequently used as a primary source of power.

When a portable generator is used on location, there must be a qualified operator (usually the gaffer or a journeyman electrician) to oversee its use. The following items

should be inspected and discussed with the operator to assure the safety guidelines are being met:

- a) Assure there that is an appropriately sized fire extinguisher available.
- b) Inspect the generator compartment for leaky fuel hoses or oil soaked insulation.
- c) Assure that the generator is not parked beneath a combustible fuel source (i.e., eaves, dry vegetation, fire sprinklers heads) or blocking fire protection systems such as fire hydrants, standpipes, fire dept. connections, access ways or exits.
- d) To prevent filming interruptions, production companies require that all generators have been fueled to capacity prior to arriving on location. If a generator is required to be refueled, the generator operator shall shut down the power prior to refueling and assure that a "no smoking" policy is implemented.
- e) On most generators, exhaust and intake ventilation doors automatically open when the generator is started. Assure that the generator operator has opened the ventilation doors on those generators that require manual operation.
- f) Assure that the tractor mounted or the trailer-mounted generator is properly secured and stationary. Emergency breaks and/or chocks should be placed on the wheels to prevent movement.
- g) Inspect for obvious electrical hazards such as: proper grounding of the generator, frayed electrical cables, proper cable connectors to the bus bars, bus bars protected from unauthorized personnel. Obvious electrical hazards can be remedied by the FSO, however a licensed electrician or electrical inspector should immediately correct more serious electrical hazards.

Portable Generator Characteristics

Types

Tractor Mounted/Trailer Mounted
Gasoline/Diesel

Manufactures

Engine and Equipment Company
Alturdyne
Young Generator
Bee Bee Generators
Sealock Generators
"M" Engineering

Powerhouse

Detroit Diesel
Caterpillar
International
Cummings
Volvo

Characteristics

Tractor mounted generators carry 150 to 300 gallons of fuel. In addition, the fuel tanks are normally providing fuel to the tractor as well as the generator.

Trailer mounted generators carry 80 to 150 gallons of fuel.

90% of all generators are run by diesel fuel.

The average generator amperage per day is approximately 300 amps.

Running Time:

Trailer mounted = 12 to 16 hours

Tractor mounted = several days

Gallons/hr:

Gasoline: 6 gallons/hr

Diesel: 4.7 gallons/hr

Sizes:

200, 500, 750, 1000, and 1200 AMPS

750 amp generators are the most common.

Industry safety guidelines recommend that generators over 200 amps shall have a qualified generator operator.

Emergency Features

All generators are equipped with kill switches to seize the power in case of an emergency.

All generators will automatically shut down when the following conditions exist:

1. Low oil pressure
2. Low water level
3. High water pressure
4. Over speed
5. Over crank
6. Over current surge

Cost:

The average costs per generator is approximately \$70 - 80,000.00

HOUSEKEEPING

Title 19, CCR, §3.19 requires that every building or portion of a building shall be maintained in a neat orderly manner, free from any condition that would create a fire of life hazard or a condition which would add to or contribute to the rapid spread of fire. Provisions shall be made for the proper disposal of waste materials and rubbish consistent with the following:

- a) Areas not open to continuous observation shall be kept free from combustible litter and rubbish at all times.
- b) All combustible waste material and rubbish shall be stored in an approved manner by the AHJ. Approved containers shall be noncombustible.
- c) Approved self-closing metal containers shall be provided and maintained in areas where combustible/flammable materials are present.
- d) Ashes shall be placed in approved metal containers until properly removed from the premises.
- e) No dry vegetation shall be permitted to exist within 20 feet of any building or occupancy.
- f) Mechanical, switchgear vaults, boiler and electrical rooms shall not be used for storage.

A clean and orderly arranged filming location will help assure a safe set. The proper storage of combustibles, designated smoking areas equipped with approved smoking cans, and good general housekeeping is an important responsibility for the production company and the FSO.

Specific examples of housekeeping hazards include:

- a) Accumulation of sawdust and wood scrap from the construction of sets.
- b) Combustible litter and rubbish allowed to accumulate on floors, platforms, sets, stages, and other similar areas.
- c) Dry vegetation within 20 feet of any building. (CCR T19 §3.07)
- d) The storage of props, equipment and materials that may obstruct exits and fire protection equipment and systems (i.e., fire department access ways; fire extinguisher and hose cabinets; fire sprinklers system valves, heads, and connections; standpipes, fire alarm and protection systems, etc.)
- e) Materials which are inherently flammable such as sawdust, hay-bails, trees and plants used for sets and scenery, foams and plastic sets should be treated with approved fire retardant materials as required by the enforcing agency having authority.
- f) The improper storage or disposal of hazardous materials, especially the use of combustible and flammable liquids and gases.

WELDING, CUTTING, AND GRINDING (2010 CFC Chap. 26)

The presence of arc welders, oxyacetylene cutting torches and grinders are common materials for set building and construction. As in any other area where hot work is being performed, users of this equipment must be constantly on guard to prevent heat sources from causing a fire.

Inspection Procedures

- a) Assure cylinders or containers are properly constructed, charged and marked.
- b) Assure compressed cylinders are adequately fastened and secured.
- c) Check to see that hoses are properly maintained and are not leaking.
- d) Assure that appropriate fire extinguishers are maintained and kept in close proximity to the welding, cutting or grinding operation.
- e) Assure that all welding, cutting and grinding operations are performed in safe areas. All combustible materials, flammable liquids and pyrotechnic special effects shall be placed in safe areas at least 10 feet away.
- f) A fire watch is required when welding, cutting or grinding is being conducted within 10 feet of combustible material.
- g) Fire watch staff shall remain on site for at least 30 minutes after the completion of welding and cutting operations.
- h) Assure that fire blankets or approved protective coverings are used to protect from hot slag and sparks.
- i) Assure that not more than 3000 cubic feet of fuel gases is allowed inside buildings.
- j) Assure that cylinders, valves, regulators, hose and other apparatus are kept free from oil and grease.

SMOKING (CFC Section 310)

No **Smoking** signs must be posted where hazardous conditions exist in areas (i.e., studios, warehouses, places of assembly, schools, institutions, stores, industrial plants, and open areas) the FSO should designate safe locations where smoking may be permitted.

Smoking is prohibited in the following areas:

- a) Any mountainous, brush, or forest covered land.
- b) Anywhere pyrotechnic special effects are used and stored.
- c) Anywhere flammable liquids and gases are used or stored (i.e., for pyrotechnic special effects, fuel dispensing and refueling operations).
- d) Within a tent or air supported structure.
- e) Near spray finishing areas.

FIRE DEPARTMENT ACCESS/PARKING (CCR T19 §3.05a)

The CFC requires that every building shall be accessible to fire department apparatus by way of access roadways with all-weather driving capabilities of not less than 20 feet of unobstructed width, with adequate roadway turning radius capable of supporting the imposed loads of fire apparatus and having a minimum of 13 feet, 6 inches of vertical clearance.

The FSO's primary contact in coordinating the parking of all vehicles, trucks and trailers is the Transportation Captain.

Unless specifically permitted by the AHJ, production vehicles shall not obstruct fire lanes, fire hydrants, exits, and fire department standpipes or connections.

Typical Vehicle on Set

40' Electrical/grip trucks	60' Tractor-trailer with generator
30' Wardrobe trucks	65' Honey-wagons (dressing/toilet rooms)
30' Catering trucks	30' Special effects truck
20' Camera truck	20' Set dresser's/prop truck
30' Crew/extras bus	Motor homes (for talent)
Generators	Water Trucks
Refueling Trucks	Shuttle Vans
Chapman or Titan cranes	Picture vehicles (Shot-maker)
Station wagons (Errands)	Personal Vehicles

Inspection Guidelines

- a) Access roads shall be required for every building when any portion of an exterior wall of the first story is located more than 150 feet from fire department vehicle access.
- b) Access roads shall be 20 feet in width with hard surface all-weather driving capabilities.
- c) Access roads shall have a vertical clearance of 13 feet 6 inches.
- d) Turnarounds are required for dead-ends over 150 feet.
- e) Production vehicles, trucks and trailers shall not block fire access roads, exits or fire protection equipment.
- f) On filming locations that are fenced or gated, keys or a key box located on the premises must be readily available in case of an emergency.

FIRE

It is important for the FSO, the special effects coordinator or the stunt performer using fire to have an understanding about fire behavior, especially if it is going to be used on the set.

Fire effects are frequently used on location. Fire is used in many ways to characterize a simple candle burning at a dinner table to an entire community on fire. In California, the use of fire effects will normally require that a licensed Pyrotechnic Operator be permitted to perform such activities. There are some small circumstances where a licensed Pyrotechnic Operator is not required (see Section on Special Effects).

Fire Characteristics

Fire

Fire is defined as a rapid, persistent chemical reaction that releases heat and light especially the exothermic combination of a combustible substance with oxygen.

Heat Transfer

Conduction

Heat transferred by direct contact from one body to another is transferred by conduction. Thus, a steam pipe in contact with insulation transfers its heat to the insulation by actual contact: In this example, the pipe is the conductor.

Convection

By convection, heat is transferred by a circulating medium - either a gas or a liquid. Thus, heat generated in a stove is distributed throughout a room by heating the air by conduction; the circulation of heated air through the room to distant objects is heat transfer by convection.

Radiation

Is a form of energy traveling through space or materials as an electromagnetic wave such as light, radio waves or x-rays. A common example of radiation is a candle flame.

Classification

Extinguishing Agents

Class A - Ordinary Combustibles

Water

Class B - Flammable Liquids

Dry Chemicals, Foam, CO₂

Class C - Energized Electrical

CO₂, Halon, Dry Chemicals

Class D - Combustible Metals

Metal X, Fog Spray

Various types of flammable substances such as rubber cement, gasoline, kerosene, and other petroleum products are used to create fire effects. These are frequently used in conjunction with pyrotechnic devices to produce, for example, a leaking or ruptured fuel tank from a vehicle which is about to explode, a structure fire, bon-fires, fire places, and other types of fire effects.

BODY BURNS

Another common use of fire on the set is the "body burn." A professionally trained stunt performer should only perform body burns. With the use of protective clothing, gels, and fire extinguishing equipment and, in some cases, breathing apparatus, a well-trained stunt performer can actually perform a safe body burn while fully engulfed in flames. Since the highly flammable liquids are used for ignition and burning, several important points should be observed:

- a) A well-trained stunt performer should always come prepared with appropriate protective equipment, as well as their own standby personnel, who understand the stunt and are comfortable with one another.
- b) Charged Carbon Dioxide fire extinguishers should be on hand and in the ready position prior to the stunt.
- c) The FSO must assure that there are no other combustibles in the area of the performance.
- d) Immediate plans for extinguishments should be planned, communicated, and rehearsed prior to the stunt.
- e) First aid and/or emergency personnel should be on standby during a body burn.
- f) **Wind is the stunt performer's worst enemy.** If at all possible, body burns should be performed indoors provided the building meets the approval of the fire department. In addition, a test of such wind conditions shall be conducted.
- g) The FSO must assure that a dry run or rehearsal is performed prior to the performance and a safety meeting is carried out.

Any type of fire used on location requires a permit from the fire department. An FSO arriving to a filming location should be aware of fire permits issued and how the fire is going to be used. Some examples of "fire" hazards include:

- a) Allowing the fire to get out of control.
- b) No consideration given to radiant heat.
- c) Fire generating equipment not maintained.
- d) Improperly trained special effects operators and or stunt performers.
- e) Overestimating the amount of flammable liquids and gases needed to perform the desired effect.
- f) Underestimating the amount of flammable liquids and gases needed for the desired effect.
- g) Allowing combustibles that are not part of the planned activity to be in the area.

FLAMMABLE LIQUIDS AND GAS (CFC Chapter 34 & 35)

Flammable liquids and gases are used for two principal purposes at filming sites:

1. Use of special effects.
2. Powering energy sources.

Flammable liquids and gases are commonly utilized to produce the effect of fire. It is rare when the Special Effects Coordinator will actually burn something to create the effect.

Some other common uses of flammable liquids and gases are: gasoline used for powering portable generators and propane used for space heating and cooking.

Inspection Requirements

The FSO should be aware of the use of flammable liquids and gases and should inspect the location for the following concerns:

- a) Assure that fire permits are obtained when required.
- b) An approved location for use.
- c) Storage of portable tanks, cylinders and equipment should be properly secured, fenced and maintained.
- d) All pipes, valves, fittings, hoses, manifolds and equipment shall be properly designed and construction.
- e) "No smoking" signs should be placed where applicable.
- f) Sources of ignition should be removed (i.e., heated surfaces, lighting, power equipment, special effects, smoking areas, etc).
- g) Assure that all fuel-dispensing operations are conducted in an approved and safe area.
- h) Assure that fire protection equipment is readily available (i.e., fire extinguishers, fire hoses, water trucks, etc).

FIREARMS

As a rule, live ammunition is not permitted on a filming set. A weapon that fires blanks is considered "property" (or "prop") and is under the control of the Weapons Handler or Property Master. When improperly handled and fired from a gun, blanks have produced serious, even fatal, injuries. The Property Manager is responsible for safeguarding all personnel who are in proximity to these types of activities. The following recommendations should be followed when firearms are used on the set:

- a) The loading of blank cartridges shall be done only when a test shot is required or just before the weapon will be used in the scene.

- b) When weapons are used on the set, all cast and crewmembers shall be informed of their use.
- c) Only a licensed Pyrotechnic Operator Special Effects 1st or 2nd Class shall load black powder in a blank cartridge shell casing.
- d) Live ammunition is prohibited on any set.
- e) No actor, extra, Property Master or Weapons Handler shall be coaxed, coerced or otherwise forced into handling a firearm.
- f) The Property Master or Weapons Handler is the only person permitted to provide Instructions on the use and handling of all firearms.
- g) All firearms should be treated as if they are loaded. A firearm or prop should not be pointed at anyone at anytime.
- h) Keep your finger along side the trigger. Never have your finger on the trigger until actually firing the weapon.
- i) When the scene is completed, it is the responsibility of the Property Master or Weapons Handler to safely maintain, store and handle all weapons. **Weapons should never be left unattended.**
- k) When a weapon is equipped with a safety, the safety shall remain in the locked position until the time of firing.
- l) Protective shields, hearing protection, and safety glasses shall be available for all personnel on the set who will be in close proximity to the firing.

HELICOPTER SAFETY

Helicopters on the set are frequently used for either stunt sequences, above ground filming, camera platforms, or as part of the set. The pilot has ultimate authority over the aircraft. Since flying an aircraft in close proximity to cast and crew is a necessary part of production, the Federal Aviation Administration has established procedures for pilots operating motion picture helicopters which are known as the Motion Picture and Television Flight Operations Manual.

Whenever helicopters are used on the set, the following Safety Guidelines should be used:

- a) Smoking is prohibited within 50 feet of any helicopter.
- b) Extreme caution shall always be taken when working near helicopters, particularly when the rotors are turning.
- c) Avoid all areas near the rear or tail rotors.

- d) All unauthorized personnel should be kept away from the aircraft.
- e) When helicopters are taking off or landing, all loose objects, equipment, trash, clothing or other articles should be properly fastened and secured.
- f) No equipment should be thrown or extended near the rotors, whether the rotors are turning or not.
- g) During take off or landing, caution should be taken with loose debris. The FSO should either clear the area or assure that eye protection is provided.
- h) Whenever stunts or pyrotechnic special effects are to be used with the aircraft, a safety meeting shall be conducted with the Aerial Coordinator, Special Effects Coordinator, FSO and other production personnel.
- i) The FSO should coordinate all air operations with the pilot or Aerial Coordinator. Who, what, when, where, why and how, of the air operation, are the questions that the FSO should always know the answers to.
- j) The pilot is responsible for notifying all production personnel about the risks, emergency procedures, and safeguards for operating the helicopter.
- k) Extreme caution should be taken to determine possible safety hazards that may affect the air operations, both above ground and below, (i.e., high tension wires, weather conditions, security of the aircraft, unauthorized personnel, air traffic, special effects, etc.).
- l) The FAA mandates that the pilot meet minimum requirements for experience and operation of the aircraft. The pilot should assume that the aircraft is airworthy, has a clear understanding of specific routes and locations, has proper communication equipment, and has a copy of the Motion Picture and Television Flight Operations Manual in their possession.

STUDIOS AND WAREHOUSES

STUDIOS AND WAREHOUSES

For years, motion picture and television studios have provided the facilities to produce many of the entertainment industry's famous films, television shows and commercials.

Since the cost to produce a film can be extremely expensive, filming at a studio is usually the producer's first choice. When business is good, often there are no stages available and the producer must find alternative space. In other instances, limited budgets require that less expensive space be found for filming. Some production companies have discovered that they can accomplish their objective economically, if they bring the filming equipment required (i.e., lighting, generators, props, sets, cameras, etc.) to another location, such as a vacant building or warehouse.

Filming in vacant buildings, particularly warehouses, is increasingly becoming a viable alternative to filming at a studio. Unfortunately, this has caused fire and life safety problems. For years, building standards have not adequately addressed comments for motion picture/television production facilities. Countless fire and building officials have struggled with the industry to come up standard fire and building requirements. The industry has also become frustrated with governmental agencies attempting to solve their problems. This has resulted in a variety of policies and procedures that have developed and become dissimilar from jurisdiction to jurisdiction.

The following items should be considered to eliminate the problems and concerns with production companies filming in vacant buildings:

- 1) Vacant buildings which are used for film production shall require a filming permit from the authority having jurisdiction.
- 2) Buildings where interior sets are constructed and where automatic fire fire sprinklers systems are installed, shall not restrict the operation of such system.
- 3) Existing building electrical systems shall not be used to supplement lighting and power systems used by film production companies unless specifically approved and permitted by the authority having jurisdiction.
- 4) Assure that the building has adequate exiting and complies with appropriate exiting requirements for the intended use of the production company.
- 5) When sets are under construction, assure that the building is kept neat, orderly, and free of combustible materials, particularly after the days work.
- 6) Sets, scenery and other equipment shall not impact the structural integrity of the existing building. Additional loads applied onto the building shall require approval from the authority having jurisdiction.
- 7) The parking of any production vehicles outside the property limits of the building shall be approved and permitted by the authority having jurisdiction. Fire department access shall be maintained at all times in accordance with fire code.
- 8) Fire permits as outlined in the permit requirements of this handbook shall be approved and permitted by the authority having jurisdiction.

2010 CALIFORNIA FIRE CODE CHAPTER 48
MOTION PICTURE AND TELEVISION PRODUCTION STUDIO SOUND STAGES,
APPROVED PRODUCTION FACILITIES AND PRODUCTION LOCATIONS

SECTION 4801

GENERAL

4801.1 Scope.

Production studios, sound stages, approved production facilities, and production locations used by the entertainment industry for the purpose of motion picture, television and commercial production shall be

in accordance with the provisions of this article.

4801.2 Purpose.

The purpose of this article is to establish minimum requirements that will provide a reasonable degree of safety from fire, panic and explosion. Buildings and structures defined herein shall be in accordance with this article.

4801.3 Definitions.

APPROVED FIRE WATCH are individuals provided with at least one approved means for notification of the fire department and their only duty shall be to perform constant patrols of the protected premises and keep watch for fires.

APPROVED PRODUCTION FACILITY is an existing building, or portion of a building, or a group of buildings altered for use by the entertainment industry for the purpose of motion picture, television and commercial production.

PLATFORM is part of a set, which is a floor or horizontal surface raised above stage floor level.

PRODUCTION LOCATION is any area or facility outside a production studio, approved production facility or sound stage used by the entertainment industry for the purpose of motion picture, television and commercial production.

PRODUCTION STUDIO is a building, portion of a building, or a group of buildings designed and constructed for use by the entertainment industry for the purpose of motion picture, television and commercial production.

SET is a structure built or assembled for the purpose of motion picture, television and commercial production.

SOUND STAGE is a building or portion of a building usually insulated from outside noise and natural light for use by the entertainment industry for the purpose of motion picture, television and commercial production.

SECTION 4802

OCCUPANCY CLASSIFICATION

4802.1 Live audience stages. Production facilities, sound stages and approved production studios with live audience stages shall be classified as Group A-1 occupancies in accordance with the California Building Code.

4802.2 All other stages. Production studios, sound stages and approved production facilities without live audience stages shall be classified as Group F-1 occupancies in accordance with the California Building Code.

Note: Sections 4803 through 4810 apply only to studio sound stages and approved production facilities.

SECTION 4803

REQUIRED PERMITS

4803.1 Change in use. A permit from the fire code official shall be obtained any time a change in use or occupancy is intended by the owner (e.g., for live audience shows, wrap parties).

4803.2 Additional permits. A permit shall be required for:

1. Use of pyrotechnic special effects
2. Open flames
3. Flammable or combustible liquids, gases and dust
4. Hot work
5. Presence of motor vehicles within a building
6. Any additional permits as required by the fire code official

4803.3 Live audiences. A permit shall be required for seating arrangements of all live audience stages.

SECTION 4804

GENERAL REQUIREMENTS

4804.1 Housekeeping. Provisions of this part shall maintain proper housekeeping in accordance with Chapter 3.

4804.2 Aisles. Perimeter aisles within the sound stage and approved production facility shall be provided. Aisles required by this section shall have a minimum width of 4 feet (1219 mm). See Chapter 10 for maintenance requirements. Aisles required by this section shall have a minimum clear unobstructed height of 7 feet (2134 mm).

4804.3 Travel distance. The maximum travel distance to any exit within the sound stage and approved production facility shall be 150 feet (45 720 mm).

4804.4 Exit doors. Exit doors shall be equipped with panic hardware and swing in the direction of exit travel.

4804.5 Exit signs. Illuminated exit signs shall be installed in accordance with the California Building Code.

4804.6 Exit illumination. Exit illumination shall be provided in accordance with the California Building Code. In the event of power failure, exit path illumination shall be automatically provided by an approved emergency backup system.

4804.7 Exit obstructions. All means of egress shall be maintained in accordance with the provisions of Chapter 10, Section 1005.1.

4804.8 Foam plastics. All foam plastics shall meet the requirements of Chapter 8, Sections 807.4.2.4 and 807.4.5.

4804.9 Decorative materials. Drapes, drops, cut greens, etc., shall meet the flame-retardant requirements of California Code of Regulations, Title 19, Division 1, Chapter 5, and Chapter 8, Sections 807.4.2.4 and 807.4.5.

SECTION 4805

FIRE-EXTINGUISHING SYSTEMS

4805.1 Existing sound stages and approved production facilities.

All existing sound stages and approved production facilities equipped with an automatic fire sprinkler system shall be maintained in accordance with the provisions in Chapter 9.

4805.2 New sound stages. All new sound stages shall be equipped with an approved automatic fire sprinkler system.

The system shall be installed in accordance with the provisions of Chapter 9 and shall meet the minimum design requirements of an Extra Hazard, Group 2 system.

4805.3 Solid-ceiling sets and platforms. All interior solid-ceiling sets over 600 square feet (55.7 m²) in area, and platforms (when provided) over 600 square feet (55.7 m²) in area and which exceed 3 feet (914 mm) in height shall be protected by one of the following:

1. An approved and listed heat detector system. Heat detectors shall be spaced 30 feet (9144 mm) on center or as required by the manufacturer's installation instructions. Detectors shall be connected to an approved and listed central, proprietary or remote station service or a local alarm, which will give an audible signal at a constantly attended location. Such system shall be installed in accordance with Chapter 9.
2. The ceiling shall be positioned to allow for the operation of the building's automatic fire sprinkler system after rehearsal, videotaping, filming or broadcasting of programs has been completed for the day.
3. An approved fire watch.
4. Special hazards shall be reviewed by the fire code official (see additional fire protection systems, Section 901.4.3).

SECTION 4806

FIRE-DETECTION EQUIPMENT

4806.1 Fire alarm control units. Fire alarm control units shall be California State Fire Marshal listed

and shall be utilized in accordance with their listing. Control units may be temporarily supported by sets, platforms or pedestals.

4806.2 Heat detectors. Heat detection required by this article shall be defined as a portable system as it is intended to be reinstalled when platforms or sets are changed. Heat detectors may be secured to standard outlet boxes which may be temporarily supported by sets, platforms or pedestals. Heat detectors shall be provided for solid-ceiling sets and platforms where required by Sections 4805.3 and 4811.14.

SECTION 4807

FIRE SAFETY OFFICERS

4807.1 Where permits are required by the fire code, a requirement for standby fire safety officers shall be determined by the fire code official on a case-by-case basis. Standby fire safety officers shall not be required when the provisions of this article are met.

SECTION 4808

ELECTRICAL REQUIREMENTS

4808.1 General. All electrical equipment including lighting, cabling and temporary power, such as portable generators, shall be maintained in good working order and shall comply with the provisions of the California Electrical Code.

4808.2 Lighting and power requirements. A studio sound stage and approved production facility shall be provided with a minimum of 35 watts per square foot of permanently installed power dedicated for the distribution of production lighting and power. Mobile generators may be utilized for auxiliary power.

4808.3 Distribution. Distribution equipment shall be designed for sound stage use. The wiring to such equipment shall be considered permanent and shall comply with applicable provisions of the California Electrical Code. Temporary feeders shall not be tapped from panelboards and switchboards where deadfront covers have to be removed.

4808.4 Installations. Permanent or temporary electrical installations shall be installed in accordance with the California Electrical Code and this code. Such equipment shall not obstruct exits, means of egress or fire department access, unless approved by the fire code official.

4808.5 Generators. Portable, mobile or stationary power-generating equipment may be used to supplement building electrical power for temporary use. Equipment shall be located at a predesignated location as approved by the fire code official.

Temporary auxiliary power cables supplied from mobile generators or adjacent buildings may pass through exterior walls and interior fire-resistive assemblies provided an approved through-penetration firestop system is utilized for protection of the opening.

SECTION 4809

MECHANICAL EQUIPMENT

4809.1 Existing equipment. All mechanical equipment used as part of the building ventilation system shall be maintained in good working order and shall comply with the provisions of the California Mechanical Code.

4809.2 Auxiliary equipment. All auxiliary heating, ventilation and air-conditioning equipment shall be approved and listed for the intended use. Flexible duct, if utilized, shall be noncombustible. Such auxiliary equipment shall not obstruct exits, means of egress or fire department access.

SECTION 4810

DESIGN REQUIREMENTS

4810.1 The fire code official shall be provided with certification that approved production facilities and studio sound stages will sustain the anticipated loads of sets, props or other temporary modifications.

Where the anticipated loads exceed the design criteria for an approved production facility and studio sound stage, the building or portions thereof shall be modified for the additional loads.

SECTION 4811 PRODUCTION LOCATIONS

4811.1 General. This chapter shall apply to production locations.

4811.2 Permits. A permit shall be obtained, unless waived by the fire code official for any of the activities that follow:

1. Use of pyrotechnic special effects, see Section 3308.1.1 and California Code of Regulations, Title 19, Division 1, Chapter 6
2. Open flames
3. Flammable or combustible liquids, gases and dust
4. Hot work
5. Presence of motor vehicles within a building
6. Tents and canopies, see Chapter 24
7. Any additional permits as required by the AHJ

4811.3 Pyrotechnic special effects and open flames. The use of pyrotechnic special effects and open flames shall be subject to the approval of the fire code official.

4811.4 Standby fire personnel. A requirement for standby fire safety officers shall be determined by the fire code official on a case-by-case basis.

4811.5 Foamed plastic materials. All foam plastics shall meet the requirements of Chapter 8, Sections 807.4.2.4 and 807.4.5.

4811.6 Smoking. When the fire code official determines that hazardous conditions necessitate controlled use of smoking materials, smoking may be prohibited or limited to designated smoking areas.

4811.7 Structural loads. Sets, scenery and other equipment shall not impact the structural integrity of a building or structure. Consultation with a building official or structural engineer may be required.

4811.8 Electrical requirements.

4811.8.1 General. All electrical equipment including lighting, cabling and temporary power, such as portable generators, shall be maintained in good working order and shall comply with the provisions of the California Electrical Code.

4811.8.2 Distribution. Temporary feeders shall not be tapped from panelboards and switchboards where deadfront covers have to be removed.

4811.8.3 Installations. Electrical installations shall be installed in accordance with the California Electrical Code. Such equipment shall not obstruct exits, means of egress or fire department access, unless approved by the fire code official.

4811.8.4 Generators. Portable, mobile or stationary power-generating equipment may be used to supplement building electrical power for temporary use. Equipment shall be placed in a location acceptable to the fire code official.

4811.9 Fire department access. Required emergency vehicle access shall be maintained. Any deviations are subject to approval by the fire code official.

4811.10 Means of egress. The production location shall be provided with means of egress appropriate for the intended use as approved by the fire code official.

4811.11 Fire protection systems and equipment. Functional fire protection systems and equipment shall be maintained in an operable condition, unless approved by the fire code official. Disconnecting or altering of fire protection systems and/or equipment shall be prohibited, unless otherwise approved by the fire code official with alternate means of protection provided

4811.12 Fire hydrants and fire appliances. Hydrants, standpipes and Fire Department Connections

(FDC) shall not be obstructed, blocked or rendered inoperable in accordance with Chapter 9, unless approved by the fire code official.

48II.13 Fire extinguishers. Approved fire extinguishers shall be provided as required by the fire code official.

48II.14 Solid-ceiling sets and platforms. In buildings with existing fire protection systems and where production intends to construct solid-ceiling sets over 600 square feet (55.7 m²) in area, and platforms over 600 square feet (55.7 m²) in area and which exceed 3 feet (914 mm) in height shall be protected by one of the following:

1. An approved and listed heat detector system. Heat detectors shall be spaced 30 feet (9144 mm) on center or as required by the manufacturer's installation instructions. Detectors shall be connected to an approved and listed central, proprietary or remote station service or a local alarm, which will give an audible signal at a constantly attended location. Such system shall be installed in accordance with Chapter 9.
2. The ceiling shall be positioned to allow for the operation of the building's automatic fire sprinkler system after rehearsal, videotaping, filming, or broadcasting of programs has been completed for the day.
3. An approved fire watch.
4. Special hazards shall be reviewed by the enforcing agency (see additional fire protection systems, Section 901.4.3).

48II.15 Buildings without fire protection systems. Special hazards shall be reviewed by the fire code official (see special hazards Section 901.4.3).

FSO Requirements

- 1) Standby FSO's shall be required for all productions where pyrotechnic special effects are used, as set forth in the California Health and Safety Code.
- 2) Standby FSO's shall not be required when the provisions of this chapter are met.

OTHER CODE REQUIREMENTS

Electrical Requirements (2010 CEC Article 520)

- 1) All electrical equipment including lighting, cabling and temporary power (portable generators) shall be maintained in good working order and shall comply with the provisions of the California Electrical Code.
- 2) Electrical installations, permanent or temporary shall be installed in accordance with the California Electrical Code and the California Fire Code. Such equipment shall not obstruct exits, means of egress or fire department access.
- 3) Portable, mobile or stationary power generating equipment may be used to supplement building electrical power for temporary wiring. Equipment shall be located at a pre-designated location as approved by the Chief of the Fire Department.

Production Studio Sound Stages

WIRING METHODS TO HEAT DETECTORS BENEATH SOLID-CEILING SETS AND PLATFORMS.

The heat detector system shall be defined as a portable system since it is intended to be reinstalled when platforms or sets are changed. The wiring methods prescribed in Article

760 of the California Electrical Code shall prevail except that hard usage flexible cord with a minimum #18 gauge wire shall be used in lieu of fire protection cable.

Cables shall be identified either by a continuous red outer finish along its entire length or by painting or taping the outer jacket red every four feet. Exposed cables shall be protected from physical damage.

Heat detectors shall be secured to standard outlet boxes which may be temporarily supported to sets, platforms or pedestals. Connections may be by means of listed connectors of a different configuration from standard 15-20 ampere rated receptacles or by approved splicing methods.

Types of Fire Alarm Panels

Fire alarm panels shall be listed by a nationally recognized testing laboratory and by the California State Fire Marshal. Residential and combination burglar and fire warning control panels shall not be permitted. Panels may also be temporarily supported to sets, platforms or pedestals.

Fire alarm panels shall provide the basic functions as required in NFPA Standard 72.

Power Supply for Heat Detection Systems

The power supply shall be from any 15-20 ampere circuit that supplies other loads or from the same source that supplies a fire sprinklers monitor system.

Approved Production Facilities

Minimum Power Requirements

A studio sound stage shall be provided with a minimum of 35 watts per square foot dedicated for temporary lighting and power. This does not prohibit the use of mobile generators for auxiliary power.

Type of Distribution Equipment

The type of distribution equipment shall be designed for sound stage use. The wiring method to such equipment is considered permanent and shall comply with the provisions of the California Electrical Code. Temporary feeders shall not be tapped from panelboards and switchboards where deadfront covers have to be removed.

Penetrations of Fire-Resistive Assemblies

- 1) Auxiliary power cables supplied from mobile generators or adjacent buildings shall not be routed through windows and doors. Cables are permitted to pass through exterior walls and fire-resistive assemblies provided a steel conduit threaded on both sides is permanently installed. Metal threaded caps shall be attached to the pipe by means of chain or cable and shall be screwed on the conduit when not in use.
- 2) Exterior penetrations shall be located near the pre-designated location for portable and mobile power generating equipment.

HVAC/Mechanical Equipment (2010 California Mechanical Code)

- 1) All auxiliary heating, ventilation and air-conditioning equipment shall be approved and listed and the flexible duct shall be noncombustible. Such equipment shall not obstruct exits, means of egress or fire department access.
- 2) All HVAC and mechanical equipment that is a necessary part of the existing building ventilation system shall be in good working order and shall comply with the provisions of the California Mechanical Code.

General Design Requirements (2010 CFC Section 4810)

4810.1 The fire code official shall be provided with certification that approved production facilities and studio sound stages will sustain the anticipated loads of sets, props or other temporary modifications. Where anticipated loads exceed the design criteria for an approved production facility and studio sound stage, the building or portions thereof shall be modified for the additional loads.

SPECIAL EFFECTS

PYROTECHNIC SPECIAL EFFECTS

The term "Special Effects" in the motion picture and television industry has a wide range of definitions that include:

Optical Effects: Generally created by the use of special cameras, optical printers, animation, rotoscoping, or motion controls.

Make-up Effects: The use of prosthetics, sculpturing with clay, rubber and plastics; the making of monsters, masks and use of animatronics.

Physical Effects: Utilize fire, pyrotechnics, explosives, wind, rain, fog, snow, smoke, hail, lighting, the flying of performers, use of models and other mechanical devices.

Fire safety concerns regarding special effects are most often physical effects that use pyrotechnics. Pyrotechnic special effects are used for many purposes and produce a range of effects from audible and visual, to mechanical and thermal. They vary from the use of smokes and fogs to the use of squibs and bullet effects and can be used in developing pyrotechnic chemical compounds to simulate gunfire, welding, electrical arcing, colored fire, and spectacular explosions.

California Health and Safety Code and Title 19, California Code of Regulations, regulates pyrotechnic special effects. To assist fire departments and production FSO's on the uses of pyrotechnic special effects, it is important to understand some of the basic laws and regulations concerning the use, handling, transportation and storage of pyrotechnics.

In California, pyrotechnic special effects are regulated under the Firework's Laws and are generally excluded from explosives law (Health & Safety Code 12540). Following are some of the state laws and regulations commonly used that apply specifically to pyrotechnic special effects. They are meant to give the FSO a more familiar understanding of the laws and regulations that govern the use of special effects in California.

CALIFORNIA HEALTH & SAFETY CODE (California Law)

Definitions

Fireworks - *Section 12511* - means any device containing chemical elements and chemical compounds capable of burning independently of the oxygen of the atmosphere and producing audible, visual, mechanical, or thermal effects which are useful as pyrotechnic devices or for entertainment.

Fire Nuisance - *Section 12510* - means anything or any act which increases, or may cause an increase of, the hazard or menace of fire, or which may obstruct, delay, or hinder, or may become the cause of any obstruction, delay, or hindrance, to the prevention of extinguishments of fire.

License - *Section 12516* - means any nontransferable authorization granted by the State Fire Marshal to engage in any activity regulated by this part.

Licensee - *Section 12517* - means any person 21 years of age or older holding a fireworks license issued pursuant to Chapter 5 (commencing with Section 12570).

Permit - *Section 12522* - means the nontransferable permission granted by the public agency having local jurisdiction to a license for the purposes of establishing and maintaining a place where fireworks are manufactured, constructed, produced, packaged, stored, sold, exchanged, discharged, or used, or the nontransferable permission granted by the public agency having local jurisdiction or by the State Fire Marshal to a licensee for the purpose of transporting fireworks.

Pyrotechnic Compositions - *Section 12525* - means any combination of chemical elements or chemical compounds capable of burning independently of the oxygen of the atmosphere.

Pyrotechnic Device - *Section 12526* - means any combination of materials, including pyrotechnic compositions, which, by the agency of fire, produce an audible, visual, mechanical or thermal effect designed and intended to be useful for industrial, agricultural, personal safety, or educational purposes.

The term "Pyrotechnic Device" includes, but is not limited to, agricultural and wildlife fireworks, model rockets, exempt fireworks, emergency signaling devices, and special effects.

Pyrotechnic Operator - *Section 12527* - means any licensed pyrotechnic operator, who by examination, experience, and training, has demonstrated the required skill and ability in the use and discharge of fireworks as authorized by the license granted.

Special Effects - *Section 12532* - means articles containing any pyrotechnic composition manufactured and assembled, designed, or discharged in connection with television, theater, or motion picture productions, which may or may not be presented before live audiences and any other articles containing any pyrotechnic composition used for commercial, industrial, education, recreation, or entertainment purposes when authorized by the authority having jurisdiction.

Exceptions

Section 12540 - The provisions of this part shall not apply to any of the following:

- (a) Explosives regulated under Part 1 (commencing with Section 12000) of Division II.
- (b) Arms and handguns defined as firearms by the Federal Gun Control Act of 1968 as well as such devices and weapons classified under Section 12020 or 12301 of the Penal Code, including blank cartridge pistols of the type used at sporting events or theatrical productions.

Administration

Section 12555 - The State Fire Marshal or his salaried deputies may make an examination of the books and records of any licensee or permittee relative to fireworks, and may visit and inspect any building or other premises subject to the control of, or used by, the licensee or permittee for any purpose related to fireworks of any licensee or permittee at any time he may deem necessary for the purpose of enforcing the provisions of this part.

Section 12556 - The licensee or permittee shall permit the chief of the issuing authority, or his authorized representatives, as qualified in section 12721, to enter and inspect any building or other premises subject to the control of or used by the licensee or permittee for any purpose related to fireworks at any time for the purpose of enforcing the provisions of this part.

Licenses

Section 12578 - The State Fire Marshal shall adopt regulations that identify and specify the scope of each class of pyrotechnic operator license. A pyrotechnic operator license shall allow the licensee to handle, supervise, or discharge dangerous fireworks at public displays of all types, and to handle, supervise, or discharge rockets and special effects pyrotechnic devices which produce an audible or visual effect in connection with group entertainment or motion picture productions which may or may not be held before live audiences.

Permits

Section 12640 - In any case where this chapter requires that a permit be obtained from the State Fire Marshal, or in any case where the public agency having local jurisdiction requires pursuant to this chapter that a permit be obtained, any licensee shall possess a valid permit before performing any of the following:

- Discharging dangerous fireworks at any place, including a public display.
- Using special effects.

Section 12642 - The effective period of the permit shall be defined in the permit and in no case shall the period of the permit exceed the valid period of the license. This section shall not prohibit the revocation of the permit by the issuing authority for just cause where a fire nuisance exists or where personal injury may occur.

Section 12643 - Any licensee desiring to do any act specified in Section 12640 shall first make written application for a permit to the Chief of the Fire Department or the Chief Fire Prevention Officer of the city or county, or to such other issuing authority which may be designated by the governing body of the city or county. In the event there is no such officer or person appointed within the area, application shall be made to the State Fire Marshal or his deputy. Applications for permits shall be made in writing at least 10 days prior to the proposed act.

Section 12644 - The issuing authority shall not accept an application for a permit from any person who does not possess, and present at the time of application, evidence of a valid license to perform those acts specified on the application for the permit. When a license is not required for specific acts, the issuing authority may prescribe such reasonable conditions to qualify the applicant to receive a permit and provide for the public safety.

Violations

Section 12673 - It is unlawful for any person to store any fireworks without having in his possession a valid permit as required by this part.

Section 12677 - It is unlawful for any person to possess dangerous fireworks without holding a valid permit.

Section 12679 - It is unlawful for any person to store, sell, or discharge any type of fireworks in or within 100 feet of a location where gasoline or any other flammable liquids are stored or dispensed.

Section 12680 - It is unlawful for any person to place, throw, discharge or ignite, or fire dangerous fireworks at any person or group of persons where there is a likelihood of injury to any person.

Section 12682 - It is unlawful for any person to allow or permit a fire nuisance, as defined in Section 12510, to exist on any premises where fireworks are manufactured, sold, assembled, discharged, packaged, stored, or distributed. The authority to determine that a fire nuisance exists shall be vested in those officers identified in Section 12721.

Section 12690 - It is unlawful for any person to perform any act, or transact or attempt to transact any business, with an expired license or an expired permit where a license or permit is required for the performance of such act or transaction.

Section 12691 - It is unlawful for any person to violate any provision of any regulation adopted by the State Fire Marshal pursuant to this part.

Section 12692 - This chapter shall not prohibit the operations or functions of a licensed pyrotechnic operator holding a special effects license when the operations or functions are a necessary part of the production and are performed pursuant to a valid permit issued by the authority having jurisdiction.

CALIFORNIA CODE OF REGULATIONS (TITLE 19)

Chapter 6 Fireworks

(See Fireworks in California Book)

TABLE 14A

SPECIAL EFFECTS MATERIALS

The following materials may be used in the motion picture, television, theatrical industry by licensed Special Effects Pyrotechnicians when permitted by the authority having jurisdiction. In California, these materials are regulated as fireworks, pyrotechnic materials and devices and not as explosives.

Bulk Powder Compositions and Devices

Black Powder

Smokeless Powder

Smoke Flash Compositions

Common Photo Flash Compositions

Illuminating Compositions

Atomized Flash Compositions

Two Component Flash Powder

Flash Paper

Flash Cotton

Flash Powder

Simulated Phosphorus

Sparking Granules

Lifters

Smoke Powder Composition and Devices (all colors)

Smoke Compositions

Smoke Pellets

Smoke Granules

Smoke Candles

Smoke Cookies

Smoke Grenade

Smoke Pots

Smoke Signals

Matches and Fuses

Quick Match

Black Match

Arcing Match

Silver Match

Cannon Fuse

Safety Fuse

Thermalite

Instantaneous Fuse

Ignitor Cord

Squibs and Detonators

Bullet Hits
Electric Match
Soft Detonators
Squibs
Detonators
Ignitors

Fireworks

Common Class C Safe and Sane Fireworks
Common Class C Dangerous Fireworks
Special Class B Fireworks

Other Materials

Primacord or Detonating Cord
Exploding Bolts and Cable Cutters
Non Electric Fuse
Shape Charges
Trick Noise Makers

OTHER PYROTECHNIC SPECIAL EFFECTS MATERIALS, DEFINITIONS & TERMS

Arcing Match

A black match that has been made with nodules of sparking compound spaced along the length of the string.

Binary Flash Compositions

Two compounds that are packaged and shipped separately. When mixed together, become a dangerous complete flash compound.

Black Match

A cotton string which has been impregnated with a black powder slurry and allowed to dry. Black match is frequently used in conjunction with a squib to light other substances or circuits.

Black Powder

A pyrotechnic mixture of potassium nitrate, sulphur and charcoal.

Black Powder Bomb

A pyrotechnic lifting charge which comes in a variety of sizes from 2 ounces to 16 ounces. Black powder bombs are handmade in soft or hard wrapped forms and may be dipped in lacquer for sealing and hardening. Each bomb contains black powder and an ignition squib for detonation. Black powder bombs are frequently made on the set.

Det-Cord (Primacord)

Flexible detonating cord, used frequently as a cutting device. It is a highly explosive powder encased in a plastic-covered cord resembling a clothesline cord.

Flash Charge

A flash compound used to simulate a pyrotechnic flash or shower of sparks.

Flash Compositions

A compound that, when lit, burns extremely rapid, creating a very bright flash.

Flash Paper

Nitro-cellulose in paper form, used principally by magicians.

Smoke Compositions

These pyrotechnic materials are made into various forms, most often granular or powder. They also come in various colors. They can be fired manually either with an open flame, heated surface or electrically, with a squib.

Smokeless Powder

A pyrotechnic mixture of nitrocellulose and nitroglycerin.

FLAMMABLE SOLIDS

Lycopodium

The spores produced by the genus of mosses called Lycopodium. This powdery, organic, yellow material can be agitated and dispersed into a cloud, then ignited by a spark or pilot flame. Although technically not a pyrotechnic composition, this product occasionally is used by pyrotechnicians to produce fire effects.

Naphthalene

Naphthalene (a pesticide) is a flammable solid resembling a white-crystalline substance that comes in flakes or small crystals and discharges a strong mothball odor. When mixed with black powder ("naphthalene bomb"), it liquefies and emits a flammable vapor, causing the crystals to burn in a distinctive fingered pattern which creates a unique special effect.

LIQUID SMOKE EFFECTS

Smoke (Liquid)

There are smoke effects that do not incorporate pyrotechnic compositions. These chemical liquids are vaporized either under exposure to the atmosphere (titanium tetrachloride) or by exposing one chemical component to a second chemical component (A & B smoke).

INSPECTION GUIDELINES

There are many statutory and regulatory requirements for the use of pyrotechnic special effects, both the special effects coordinator and the FSO must coordinate the use, handling, transportation, and storage of all special effects materials. For specific requirements, refer to California Code of Regulations, Title 19, "Fireworks in California."

The following items shall be accomplished prior to the use of all pyrotechnic special effects on location:

- a) Special Effects permits shall be obtained and approved by the authority having jurisdiction.
- b) Assure the operator has a valid special effects license.
- c) If you're uncertain about how a particular effect works, have the operator perform a test.
- d) Assure all personnel on the set are aware that special effects are going to be used.
- e) When special effects are going to be used in conjunction with stunt performers, assure that all parties have rehearsed and have made a "dry run" prior to filming.
- f) Establish conditions on the set when setting up for a special effects scene (i.e., no smoking, no radios, no unauthorized personnel in the area, fire
- g) Protection equipment is on standby, know the escape routes from the location...).
- h) Be aware of the wind direction and speed, lay of the land (topography), exposures to people, buildings, sets, debris, power lines, shrubbery, and vehicles.
- i) Assure there is constant communication on the set. Everyone involved should have a clear understanding of what is going in the upcoming scene. SAFETY MEETINGS ARE A MUST!
- j) Stay alert, stay informed, ask a lot of questions and especially GET INVOLVED WITH THE SCENE. The information a FSO provides may be of valuable assistance to the production company and may easily prevent an unfortunate mishap.

STUNT SAFETY

DEFINITIONS

Stunt: Webster's defines a stunt as a daring feat displaying unusual strength, skill and risk; something of unusual nature.

Stunt Performer: A stunt performer is one who substitutes for an actor in scenes requiring physical prowess or involving physical risk. A performer who does the dangerous falls, leaps, car chases, fast and trick horseback riding, fights, body burns and other physically demanding acts.

Stunt Coordinator: A Stunt Coordinator oversees, prepares, choreographs and usually performs the stunt him/herself. Creating a stunt requires technical knowledge, skills and experience which can only be accomplished under the supervision of the Stunt Coordinator.

FSO RESPONSIBILITIES

It is the FSO's responsibility to assure that any planned stunt is permitted through the appropriate governmental agency. The FSO shall discuss, plan and organize the proposed

activity with the Stunt Coordinator. Prior to and after filming, the FSO and Coordinator shall be responsible for all safety procedures.

DETERMINING SAFETY

Evaluating the difference between a safe stunt and an unsafe stunt can be somewhat difficult and intimidating. A competent FSO will communicate, coordinate and cooperate with the stunt coordinator and stunt person(s). A collaborative effort will ultimately provide for an effective and safe stunt while still maintaining a maximum visual impact.

STUNT SAFETY CHECKLIST

- * GET INVOLVED! Ask questions about the stunt. After the filming permit has been issued and approved, you should already know the who, what, when, where, why and how factors of the particular stunt.
- * Question the experience and competence of the Stunt Coordinator.
- * Check for unusual or abnormal procedures during the preparation of the stunt (i.e. faulty equipment, unsecured devices, construction problems, and possible dangerous after or side effects).
- * Check for safety equipment that may be impaired or required such as harnesses, seat belts, safety ropes or lines, roll-bars and cages, protective shields, protective clothing, safety glasses, earplugs, headgear, boots, air-bags and parachutes.
- * Check for standby emergency equipment: fire extinguishers, first-aid, paramedics, fire apparatus, ambulance, water tenders, fire-fighting and rescue equipment.
- * Check for possible hazards which may affect the cameraman, cast and crew, the public or other on-lookers and exposures.
- * Look for a way out! Alternate routes and escapes.
- * Assure there is help and assistance if required.
- * Listen to the Stunt Coordinator, they are the people who are qualified, experienced and know how to coordinate and perform this type of activity more than anyone else on the set, including the FSO.
- * Listen for other comments from crew members or cast. They sometimes may see a hazard that the Stunt Coordinator or you may have missed.
- * Listen for unusual sounds and noises that are uncommon.
- * ASK QUESTIONS -- there will be stunts or other activities that are completely unfamiliar to you, don't be afraid to ask: Who is involved, the performers. What is going happen. When it's going to happen. Where it's going to happen. Why the stunt is performed in the prescribed method. How it works and happens.

- * Performance of all stunts shall be preceded with a safety meeting on the site with all appropriate parties.
- * Be alert for sudden changes in plans, time running out, pressure from the director's which may have an adverse affect on the safety and planning of the stunt.
- * All safety meetings should include a "walk-thru" or "dry-run" with all personnel involved. The meeting should include: The intended action, possible deviations and abort instructions if necessary.
- * Any changes by the director or stunt coordinator after the safety meeting will require another meeting to confirm everyone's understanding and agreement to said change(s).
- * Stay alert, get involved, and understand how the stunt is performed.

Through a collective effort of examination, inspection, and coordination, the FSO in conjunction with the Stunt Coordinator will determine whether or not the stunt is safe.

This responsibility may have an enormous impact on the film production company. Any stunt that may possibly and unexpectedly injure, hurt, damage or destroy any person, structure or property should be considered as a life safety hazard and should be discontinued, revised or re-planned so as not to affect the health and safety of those involved.

COMMON EQUIPMENT, GEAR AND MATERIALS

Air Ram

A mechanically operated catapult used to propel a stunt performer into the air.

Frequently used during scenes with explosions to depict the performer getting blown up.

Air Bag

A large membrane (bag) which is air-supported and specially designed to absorb the impact of a stuntman/woman when performing a high fall.

Body Burn

A stunt performer who is portraying a scene where the actor is on fire. Body burns shall be done under the supervision of an experienced stunt coordinator. Protective equipment such as stunt gels, nomex hoods, pants, shirts, and undergarments shall be worn. Stunt performers frequently use rubber cement as an ignitor fluid. "Safety's" shall be appropriately dressed and have fire extinguishing equipment to safeguard the performer.

Decelerator

A mechanical device which operates similar to a bungi cord, attached to a stuntman/woman and used to decelerate the speed of the performer when conducting a high fall.

Pipe Ramp

A ramp manufactured and designed to roll a vehicle over on its side as the vehicle impacts the ramp. A single pipe which is supported by a steel frame and is angled upwards to propel the vehicle.

Ratchet

A mechanical pulley system which employs a cable and harness apparatus, designed to jerk-back the stunt performer when subjected to a scene which simulates an explosive charge, shotgun blast or some other force.

Safety's

A person who works with the stunt performer. Usually another stunt performer. Safety's act as a protective support to the performer. Frequently used when performing a stunt when the action may call for additional emergency support, such as a body burn, high fall, pipe ramp jump...

Stunt Gel

A gel product developed to protect the skin of a stuntman/woman when performing a body burn. The Gel should be generously applied to the skin when exposed to fire.

GLOSSARY OF TERMS

Definitions given below relate either to the motion picture industry or the fire service. Those definitions concerning the fire service may prove useful to members of the motion picture industry; those relating to film making may prove beneficial to those in the fire service.

Terms followed by the symbol (T19) are defined in the State Fire Marshal's Regulations, while definitions followed by the letters UFC are taken from the Uniform Fire Code, 1991 edition.

Action

The order given by the director, once the sound recording equipment and the film in the camera are running at filming speed, to begin the action within the shot.

Air Bag

A large air supported membrane designed to withstand the fall from a stuntman.

Air Ram

A catapult designed for propelling a stuntman. Can be extremely dangerous if not properly trained.

Approved

Refers to approval by the building or fire official as the result of investigation and tests conducted, or by reason of accepted principles or tests by national authorities, or technical or scientific organizations.

Assembly

Is the gathering together of 50 or more persons for such purposes as deliberation, education, instruction, worship, entertainment, amusement, drinking, dining, or awaiting transportation.

Assistant Director (AD)

Is in charge of the set and everything which happens on it. Working as an intermediary between the director and the cast and crew. Responsible for the daily operations of the production. One of the most important contacts on the day of filming.

Back Lot

That portion of the studio that is away from the stages and offices. There may be standing sets, storage facilities, or just bare land on the back lot.

Backings

Large sheets of fabric painted with a scene, foliage, or (scenic or solid) buildings, and used as a continuation of the set. Solid backings are usually black or white fabric and are used to hide the backs of other sets or stage walls where no scenery or set continuation is required.

Beds (Greenbeds)

A type of lighting scaffold that is hung by chain over sets on stages.

Best Boy

The assistant to the foreman of the Set Lighting Department or Grip Department (a sub-foreman).

Body Burn

A fire gag which involves the total or partial burning of an experienced stuntman or woman.

Cage

Refers to the roll cage in a vehicle.

Call (Call Time)

The time for reporting to work. Different personnel or crews may have different calls, and an individual may have several calls in a day (makeup call at 7:30 AM, set call at 9:00 AM, etc.).

Call Sheet

A schedule of work, personnel, equipment needed and calls for the next day/s shooting.

Cannon Roll

A large projectile placed within a fixed mortar inside a vehicle which causes the vehicle to roll over during a stunt. The projectile is pyrotechnically discharged.

Camera Car

A specially designed vehicle for the mounting of cameras. Used for filming driving shots.

Cameraman

Also known as the Director of Photography or the Cinematographer. The person responsible for lighting the scene and setting up the shots. Members of the camera crew report to the cameraman.

Cinematographer

See Cameraman

Cinemobile

A large, self-contained motion picture equipment truck.

Commercial

Commercial production companies are much smaller than feature film or television productions. Cast and crew normally range between 25-30. They operate with very short turnaround time, often shooting and editing in one week, and airing the following week.

Commercial Fireworks

Those class B&C fireworks used in religious and public display type functions, (i.e., firecrackers, sparklers, and small and large diameter public display shells.)

Construction Coordinator

Supervises the construction of sets in and out of the studio.

Craft Services

Personnel who are responsible for cleaning up and doing small chores. They usually handle the refreshments.

Day Box

A portable (Type 3) magazine used for immediate storage of special effects materials.

Director

The person with the overall responsibility for all the creative aspects of the production. This person holds ultimate control on the set.

Electrician

Technicians responsible for connecting lights to power supplies. They work for the gaffer who is the chief electrician.

Engine Company

A three or four man fire department operated fire truck or pumper.

Explosive

A substance, or combination of substances, the primary and common purpose of which is detonation or rapid combustion and which is capable of relatively instantaneous or rapid release of gas and heat. (T19)

Exterior

A film production company shooting outside buildings and structures.

Episodic Television

Cast and crew size is similar to feature films, however, because of the tight shooting schedule and budget these shows generally allow only 7 days of preparation and 7 days to shoot.

Feature Film

The average feature film involves a crew of 65 people or more and a cast of 10 principal actors and extras. Normally two months of the shooting schedule is spent in the studio with approximately two weeks spent out on location (this can vary).

Feature Stage

A stage in which a live audience is not present.

Film Commissioner

A governmental official who is responsible for the promotion, development and facilitating of all filming within their municipality.

Fire Chief

The chief administrative officer of a fire department.

Fire Captain

A first level supervisor of firefighters. A Captain is always the leader of an engine company.

Fire Inspection

Periodic site inspection by the fire department.

Fire Inspector

A member of the fire department responsible for day-to-day inspections and code enforcement.

Fire Lane

That portion of a street, parking lot, or other driving surface designated to provide rapid and unobstructed access to a building or other area by fire apparatus. Fire lanes shall maintain a 20' clear width.

Fire Marshal

The head of a fire prevention bureau.

Fire Safety Advisor

A term used by some fire departments to define a member of that department (active or retired) who is hired temporarily by the film industry in an advisory capacity.

FSO (Fire Safety Officer)

A sworn fire official responsible for the enforcement and compliance of fire protection laws and regulations on a filming set.

Fire Suppression Crew

Two or more persons provided with protective clothing and trained to attack, control, and extinguish hostile fires using fire extinguishers, hose lines, and related fire service equipment.

Firewatch

A designated person charged to standby with fire extinguishing equipment during welding, cutting or pyrotechnic special effects operations.

Firework

Any device containing chemical elements and compounds capable of burning independently of the oxygen of the atmosphere and producing audible, visual, mechanical, or thermal effects which are useful as pyrotechnic devices or for entertainment.

Fireworks, Dangerous

That class of fireworks defined as dangerous by 12505 of the Health and Safety Code.

First Assistant Director

See Assistant Director.

Fog Effect

Usually a type of fog, smoke or mist produced from a variety of fog producing machines and/or equipment.

Flat

A section of a studio set, usually 8 to 10 feet high, varying greatly in width, made from plywood and covered with paint, wallpaper, fabric, or metal.

Flame Retardant

Is an approved chemical, chemical compound or mixture which, when applied in an approved manner to any fabric or other material, will render such fabric or material incapable of supporting combustion.

Four Foot Aisle

A four-foot wide clear and unobstructed aisle maintained around the perimeter of a sound stage which leads to an exit.

Gaffer

Chief electrician, responsible for all set lighting and power.

Gaffer's Tape

A wide, strong adhesive tape used to secure lighting instruments, stands, cables, etc. on a set. Duct tape.

Gag

A stunt or physical special effect.

Generator

A portable or mobile electric power supply. Either tractor or trailer mounted.

Grip

A crew member whose responsibility is the placement of the camera, the setting of diffusion between the lights and the set, and the removal of parts of the set to accommodate camera position.

Handlers

See Wranglers.

Header

A high fall in which the stunt person falls head first and tucks their head just before landing, which places them on their back in the air bag.

High Fall

A leap off a building or structure onto a airbag. High falls shall be performed by only professionally trained stunt performer.

Honey Wagon

A portable dressing room and bathroom.

Interior

A film production shooting inside a building or structure.

Jerk Off

Any stunt requiring a performer to be pulled from a moving object, using a dead man (cable) or ratchet.

John Wayne

An exaggerated punch.

Key Grip

The head of the Grip Department. See Grip.

Lay Down

A stunt which requires the stunt person to lay a moving vehicle down on its side.

License, Pyrotechnic

Any nontransferable authorization granted by the State Fire Marshal to engage in specific activities involving certain types of fireworks.

Loads: Full, Half, Quarter

Terms used to determine the amount of gun powder used in blank cartridges.

Location

Any site away from a studio used as a background for filming.

Location Manager

Responsible for all location details which included finding, selecting, and finalizing the locations needed for the script. working with governmental agencies (i.e. police, fire, park rangers, life guards, permitting agencies...). The location manager, assistant location manager or the 1st AD is primary contact for the FSO.

Magazines, Types 1-5

A permanent or temporary structure, container or box for the storage of explosives, fireworks or special effects and constructed to standards set forth in Title 19, California Code of Regulations.

Mortar

A tube or pot-like device used to direct the explosion and debris into camera/s view. Mortars also prevent the explosives from throwing fly-rock.

NFPA

National Fire Protection Association.

On a bell

A term used on the set when the camera is rolling or about to roll. It is a signal to inform production personnel to be quiet and to stop all activity not associated with the scene.

Open Burning

Is the burning of a bonfire, rubbish fire or other fire in an outdoor location where fuel being burned is not contained in an incinerator, outdoor fireplace or barbecue pit.

Permit, Filming

Authorization by the local authority having jurisdiction, allowing for filming in their community. Filming permits do not authorize the use of fireworks of special effects pyrotechnics.

Permit, Special Effect

A non-transferable document, issued by the local authority having jurisdiction, granting permission for a pyrotechnic licensee to establish and maintain a place where fireworks are manufactured, constructed, produced, packaged, stored, sold, exchanged, discharged, or used.

Pipe Ramp

A ramp designed to send the vehicle into the air in a spiraling trajectory.

Pick Up

Any stunt requiring a performer to be picked up by another performer who is on a moving object.

Pick-up Shot

The re-shooting of a portion of a scene.

Plugging Box

See Spider.

Powder Card

The traditional industry term for pyrotechnic licenses issued by the State Fire Marshal. See Pyrotechnic Operators.

Powder Man

A California State Licensed Pyrotechnic Special Effects Operator.

Post Production

All activity subsequent to filming on location or within the sound stage. Usually without cast or crew. Typically involves editing, foley, music, sound, looping, cutting, computer generated effects, miniature effects...

Pre-Production

All activity prior to the first day of filming. This generally includes script writing, set design, budgeting, major casting, and selection of major locations.

Producer

The person who develops the project from start to finish including financing. This individual is responsible for the business decisions on the production, including hiring the Director, actors, writers...They are usually involved in the distribution of the film as well.

Production Manager

See Unit Production Manager.

Property (Prop)

Movable objects used by actors or placed on a set.

Propmaster

The person responsible for all the small objects used by actors.

Pyrotechnic Composition

Any combination of chemical elements or compounds capable of burning independently of the oxygen in the atmosphere.

Pyrotechnic Device

Any combination of materials, including pyrotechnic compositions, which, by the agency of fire, produce an audible, visual, mechanical, or thermal effect designed and intended to be useful for industrial, agricultural, personal safety, or educational purposes.

Quartz Light

Popular name for tungsten-halogen lamps, which are tungsten filament and halogen gas sealed within quartz. Bulb temperatures may exceed 500N C (930NF).

Red Light

A light activated to indicate that filming is in progress within a building or area. Also to warn personnel not to enter or exit

Refueler

A truck used to transport and deliver flammable or combustible liquids to individual internal combustion engines or portable tanks containing flammable or combustible liquids.

Reverse 180

A type of vehicle slide requiring the vehicle to be moving in reverse and then perform a 180 degree spin.

Runaway Production

Film production companies leaving the State because of governmental restrictions and other difficulties in doing business.

Rigger

Crew members responsible for the construction of scaffolding (rigging) on a set and the placement of lights on the rigging. The use of cables, mechanical devices and safety equipment for flying performers through the air.

Roll

A method of landing used by stunt people to reduce forward momentum and the risk of injury.

Ritter

See Wind Machine

Saddle Fall

A stunt which requires the stunt person to fall from a horse.

Safety

A person responsible for assisting stunt performers in all aspects of production life safety. Usually another stunt performer.

Safety Can

Is an approved container of not over 5-gallon capacity having a spring-closing lid and spout cover.

Safety Fuse

A flexible cord containing an internal burning medium by which fire or flame is conveyed at a constant and relatively uniform rate from the point of ignition to the point of use, usually a detonator.

Scene

A unit of action in filming consisting of one or more takes (shots).

Screenplay

The script of a motion picture containing dialogue and description of the action involved.

Scrim

Any device placed over lighting to soften the lighting effect.

Set

A temporary and artificial structure or facade used for filming. Such buildings are exempt from building code provisions.

Serpentine

A zig-zag or snake-like pattern that a vehicle or performer follows.

Set Decorating

Furnishings used on a set. Set dressing used on the set to characterize a particular period or time when the film or scene was set.

Set Decorator

Person responsible for set decorating.

Second Unit

A production crew which films scenes not involving the principal actors. Most often used for action sequences, remote locations, and background for process shots or matte shots.

Shot

The point where a camera begins taking pictures ("rolling") to the point where it stops makes up a single shot. May include "marker" (information on the camera set-up written in chalk on the "clapperboard") and other material. See also Take.

Shoot

To film a motion picture scene.

Special Effect

Any effect produced to create an illusion on film, ranging from pyrotechnic effects to wind, rain, snow or fog.

Special Effects Coordinator

The licensed special effects operator in charge of the set.

Special Effects

Articles containing any pyrotechnic composition manufactured and assembled, designed, or discharged in connection with television, theater, or motion picture productions, which may or may not be presented before live audiences and any other articles containing any pyrotechnic composition.

Speed

A cue given when camera and recorder have reached their proper operation. The signal where the Director can say "Action!" Also refers to the sensitivity of the film stock to light.

Spin

Making a vehicle spin past 180 degrees.

Spider Box

A portable electrical junction or plugging box used for connecting set lighting cables.

Standby FSO

A full time employee or designee of the fire department who assures compliance with fire and life safety requirements on location.

Studio Lot

A permanent facility designed for the production of motion picture and television filming.

Stunt

A calculated performance of dangerous act or action usually performed by an actor who is a specially trained stuntman or woman.

Stunt Coordinator

An experienced stunt performer responsible for the choreography, set up and carrying out of the stunts.

Stunt Performer

A performer who is trained and experienced to carry out and perform dangerous, or calculated risks (ie. high falls, jumps, leaps, fighting scenes, stunt driving and acts which involve fire and/or pyrotechnic special effects).

Take

A shot made by a camera, more particularly the part of the shot made up of the action and/or dialogue which will ultimately go into the final production.

Tent, Large

A tent designed for use by 10 or more persons. (T19)

Tent, Small

A tent designed for use by fewer than 10 persons. (T19)

Transportation Captain

Coordinates vehicle movement, parking of trucks, cast and crew cars, stunt cars, car carriers...Reports to the UPM or 1st AD. This is one of the first people to arrive on location. All drivers report to the transportation captain.

Unit Production Mgr. (UPM)

The executive in charge of all financial, administrative, and physical details of the production.

V.T.O.L.

Vertical Take Off and Landing. Refers to any vehicle that is capable of taking off and landing vertically.

Wet Down

Wetting of pavement, streets, sidewalks, alleys, driveways for filming. Also, used for fire protection in grassy areas.

Wind Machine

Also known as a Ritter. Large aircraft propellers driven by engines to create wind effects.

Wrangler

Also known as handlers. Specialists who train animals to perform on command and have the ability to provide animal action during filming.

Wrap

The end of the day/s work.

TECHNICAL ASSISTANCE

GOVERNMENTAL OFFICES

Office of the State Fire Marshal
Motion Picture & Entertainment Unit
602 Huntington Drive # A
Monrovia, Ca. 91016
Ph. (626) 305-1908

California Film Commission
7080 Hollywood Blvd., Suite 900
Hollywood, CA 90028
Ph. (323) 860-2960

Burbank Fire Dept.
311 E. Orange Grove Ave.
Burbank, CA 91502
Ph. (818) 238-3473

Culver City Fire Dept.
9770 Culver Blvd.
Culver City, CA 90232
Ph. (310) 253-5900

FilmLA
Los Angeles City Film Permits
1201 West 5th Street, Suite T-800
Los Angeles, CA 90017
Ph. (213) 977-8600

FilmLA
Los Angeles County Film Office
1201 West 5th Street, Suite T-800
Los Angeles, CA 90017
Ph. (213) 977-8600

Los Angeles City Fire Department Film Desk
200 N. Main St., Suite 1050
Los Angeles, CA 90028
Ph. (213) 485-3697

Los Angeles County Fire Department
Public Safety & Film Unit
14425 Olive View Dr.
Sylmar, Ca. 91342
Ph. (818) 364-8240

ASSOCIATIONS/GUILDS/COALITIONS

Academy of Motion Picture Arts & Sciences
8949 Wilshire Blvd.
Beverly Hills, CA 90211
Ph. (310) 247-3000

Academy of Television Arts & Sciences
5220 Lankershim Blvd.
North Hollywood, CA 91601
Ph. (818) 754-2800

Alliance of Motion Picture and Television Producers
15301 Ventura Boulevard Building #E
Sherman Oak, CA 91403
Ph. (818) 995-3600

American Film Institute
2021 N. Western Ave.
Los Angeles, CA 90027
Ph. (323) 856-7600

Motion Picture Association of America
15301 Ventura Blvd. Building #E
Sherman Oaks, CA 91403
Ph. (818) 995-3600

Association of Independent Commercial Producers
650 North Bronson
Hollywood, CA 90004
Ph. (323) 960-4763

Directors Guild of America
7920 Sunset Blvd.
Hollywood, CA 90046
Ph. (310) 289-2000

Screen Actors Guild
5757 Wilshire Blvd.
Los Angeles, CA 90028
Ph. (323) 954-1600

Writers Guild of America, West
7000 West 3rd Street
Los Angeles, CA
Ph. (323) 951-4000

STUNT ORGANIZATIONS

Stunts Unlimited
3518 Cahuenga Blvd.
Hollywood, CA 90068
Ph.(213)874-0050

Stuntmen's Assoc. of Motion Pictures
10660 Riverside 2nd Fl.
Tuloua Lake CA. 91602
Ph. (818) 766-4334

International Stunt Association
11331 Ventura Blvd. # 205
Studio City, Ca. 91604
Ph. (323) 874-3174

United Stuntwomen's Association
4741 Laura Canyon Blvd #103
Valley Village CA 90068
Ph. (818) 508-4651

SPECIAL EFFECTS

Alliance of Special Effects and Pyrotechnic Operators
12522 Moorpark Ave.
Studio City, CA 91604
Ph. (818) 506-8173

A&A Special Effects, Inc.
7021 Hayvenhurst Ave.
Van Nuys, CA 91406
Ph. (818) 909-6999

Roger George Special Effects
14525 Bessemer St.
Van Nuys, CA 91411
Ph. (818) 994-3049

De La Mare Engineering
1910 First St.
San Fernando, CA 91340
Ph. (818) 365-9208

MP Associates, Inc.
P.O. Box 546
Ione, CA 95640
Ph. (209) 274-4715

Ultimate Effects
642 Sonora Ave.
Glendale, CA 91201
Ph. (818) 547-4743

UNIONS

Affiliated Property Craftsman
Local 44, IATSE
12021 Riverside Ave
North Hollywood, CA 91607
Ph. (818) 769-2500

Theatrical Stage Employees
Local 33, IATSE
1720 W. Magnolia Blvd.
Burbank, CA 91506
Ph. (818) 841-9233

Studio Transportation Drivers
Local 399, IATSE
4747 Vineland Ave
North Hollywood, CA 91602
Ph. (818) 985-7374

STUDIOS

ABC Television Center Studios
4151 Prospect Ave.
Los Angeles, CA 90027
Ph. (310) 557-7777

Buena Vista Television
500 S. Buena Vista St.
Burbank, CA 91521
Ph. (818) 560-5000

CBS Studio Center
4024 Radford Ave.
Studio City, CA 91604
Ph. (818) 760-5000

Culver Studios
9336 W. Washington Blvd.
Culver City, CA 90230
Ph. (310) 836-5537

Disney Studios
500 S. Buena Vista St.
Burbank, CA 91521
Ph. (818) 560-1000

Hollywood Center Studios
1040 Las Palmas
Hollywood, CA 90038
Ph. (323) 469-5000

NBC Studios
4000 W. Alameda
Burbank, CA 91521
Ph. (818) 840-4444

Paramount Pictures Corp.
5555 Melrose Ave.
Hollywood, CA 90038
Ph. (323) 956-5000

Raleigh Studios
650 N. Bronson Ave.
Los Angeles, CA 90004
Ph. (323) 466-3111

Santa Clarita Studios
25135 Anza Dr.
Santa Clarita, CA 91355
Ph. (661) 294-2000

Sony Pictures
10202 W. Washington Blvd.
Culver City, CA 90232
Ph. (310) 244-4000

Sunset Gower Studios
1438 N. Gower St.
Hollywood, CA 90028
Ph. (323) 467-1001

Twentieth Century Fox Film Studios
10201 W. Pico Blvd.
Los Angeles, CA 90035
Ph. (310) 369-1000

Universal Studios
100 Universal City Plaza
Universal City, CA 91608
Ph. (818) 777-1000

Warner Bros., Inc.
4000 Warner Blvd.
Burbank, CA 91522
Ph. (818) 954-6000

PRODUCTION COMPANIES

Tristar Pictures
10202 W. Washington Blvd.
Culver City, CA 90232
Ph. (310) 244-4000

Lorimar Television/WB
300 S. Lorimar Plaza
Burbank, CA 91505
Ph. (818) 954-6000

New Line Cinema
116 N. Robertson Blvd.
Los Angeles, CA 90048
Ph. (310) 854-5811

Metro Goldwyn Mayer
10000 W. Washington Blvd.
Culver City, CA 90232
Ph. (310) 244-4000

RENTAL COMPANIES

Production Equipment Rental Association (PERA)
P.O. Box 55515
Sherman Oaks, CA 91413
Ph. (818) 906-2467

Alan Gordon Enterprises
Camera/Sound/lighting/Grip
5625 Melrose
Hollywood, CA 91638
Ph. (323) 466-3561

Bexel Corp.
801 S. Main St.
Burbank, CA 91506
Ph. (818) 841-5051

Cineworks, Inc.
Lighting/Grip/Trucks
1120 Seward
Hollywood, CA 90038
Ph. (323) 464-0296

Lighting Strikes
Lighting Equipment
6601 Santa Monica Blvd.
Hollywood, CA 90038
Ph. (323) 461-6361

Otto Nemenz Intl. Inc.
Camera Equipment
870 N. Vine St.
Hollywood, CA 90038
Ph. (323) 469-2774

Paskal Lighting
6820 Romaine St.
Hollywood, CA 90038
Ph. (323) 466-5233

Preston Cinema Systems
Aerial Cameras
1659 Eleventh St.
Santa Monica, CA 90404
Ph. (310) 453-1852

Concept Lighting/Grip
11274 Goss St.
Sun Valley, CA 91352
Ph. (818) 767-1122

Chapman Studio Equipment
Cranes & Dollies
12950 Raymer St.
North Hollywood, CA 91605
Ph. (323) 877-5309

Foam Mart
628 N. Victory Blvd.
Burbank, CA 91502
Ph. (818) 848-3626

Kino Flo Inc.
Lighting Systems
10848 Canliera
Sun Valley, CA 91352
Ph. (818) 767-6528

Tyler Camera Systems
Aerial Mount Equipment
14218 Aetna St.
Van Nuys, CA 91401
Ph. (818) 989-4420

Matthews Studio Equipment Group
Lighting/Grip/Camera
2405 Empire Ave.
Burbank, CA 91504
Ph. (818) 843-6715

Clairmont Camera Inc.
4343 Lanlershim Blvd.
North Hollywood, CA 91602
Ph. (818) 761-4440

Musco Mobile Lighting, LTD
Hwy 63 South
P.O. Box 73
Oskaloosa, IA 52577
Ph. (800) 354-4448

Mole Richardson Co.
Lighting Equipment
937 No. Sycamore
Hollywood, CA 90028
Ph. (323) 851-0111

Stembridge Gun Rentals
431 Magnolia Ave.
Glendale, CA 91204
Ph. (818) 246-4333

Deist Safety Equipment
641 Sonora Ave.
Glendale, CA
Ph. (818) 240-7866

California Flameproofing
170 N. Halstead St.
Pasadena, CA 91107
Ph. (626) 792-6981

INSURANCE COMPANIES

Entertainment Brokers Intl.
10940 Wilshire Blvd., Suite 2010
Los Angeles, CA 90024
Ph. (310) 824-0111

Fireman's Fund Insurance, Ent. Div.
10 Universal City Plaza
Universal City, CA 91608
Ph. (800) 761-2024