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STEPHEN D. COAN  
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**MEMORANDUM**

**TO:** Heads of Fire Departments

**FROM:** Stephen D. Coan  
State Fire Marshal

**DATE:** September 1, 2013

**SUBJECT:** **Special Amusement Buildings for Halloween and Other Special Events**

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I am reissuing this memo as a reminder that Massachusetts has moved into the Halloween season. This memo was originally a communication that was sent to all the fire officials and building departments in the Commonwealth.

The Halloween season is a fun time of the year but as fire officials and building officials, the Halloween season generates common Life Safety issues, particularly where “haunted houses” and/or “fun houses” are operated and open to the public, regardless of occupant load (i.e., either ASSEMBLY USE or BUSINESS USE buildings or portions thereof). This updated memorandum contains information from that original memo referencing current relevant sections of both the fire and building codes. We strongly recommend that both local fire and building officials work together when addressing these life safety issues.

Such Life Safety issues become glaringly apparent when one reviews the history of the tragic 1984 “Haunted Castle” fire at the Six Flags Great Adventure Park in New Jersey, in which 8 visitors died when they were unable to immediately exit the amusement structure or the 1973 Washington Reid School PTA “haunted house” fire, in which a PTA-built “haunted house” maze caught fire 30 minutes before opening, killing one PTA volunteer members helping to construct the maze (see synopsis at the end).

In the case of the Six Flags fire, major factors<sup>1</sup> contributing to this loss of life included:

- The failure to detect and extinguish the fire at its incipient stage by means of fixed fire

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detection and suppression systems;

- The ignition of synthetic foam materials and subsequent fire and smoke spread involving combustible interior finishes; and
- The difficulty of escape by occupants based on fire conditions in the “haunted-house” type of environment.

1 BOCA National Building Code / 1993 Commentary, Section 413 SPECIAL AMUSEMENT BUILDINGS

In order to assist local Building Officials and Fire Officials, as well as the regulated community, included in this letter are:

- an overview of the requirements of the current 7<sup>th</sup> or 8<sup>th</sup> Edition of the Massachusetts State Building Code (780 CMR) regarding these Code-classified SPECIAL AMUSEMENT BUILDINGS;
- an overview of requirements of the Massachusetts Fire Prevention Regulations (527 CMR) for such building operation and maintenance; and
- an overview of the two (2) fatal fires.

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**SPECIAL REQUIREMENTS OF CHAPTER 4, SECTION 411 of 7<sup>th</sup> or 8<sup>th</sup> Edition  
Massachusetts Basic Building Code**

**NOTE: REQUIREMENTS OF THE STATE BUILDING CODE ARE LEGALLY ENFORCED  
BY BUILDING OFFICIALS**

The SPECIAL AMUSEMENT BUILDING requirements of Chapter 4, Section 411 of the ICC International Building Code-2009 evolved as a direct result of the subject Six Flags “Haunted Castle” fire and have been directly adopted into the 7<sup>th</sup> and 8<sup>th</sup> Editions of the Massachusetts Basic Building Code and thus form the basis for Special Occupancy Life-Safety design and construction requirements for such amusement buildings or portions thereof.

Essentially the same requirements with some updating was captured in the ICC International Building Code and adopted into the Massachusetts Basic Building Code, Chapter 4, Section 411.

A SPECIAL AMUSEMENT BUILDING, as defined by the Massachusetts 7<sup>th</sup> or 8<sup>th</sup> Edition Basic Building Code, Chapter 4, Section 411 is defined as:

1. any temporary, or permanent building or portion thereof which is occupied for amusement, entertainment or educational purposes, and;

2. which contains a device or system which conveys passengers or provides a walkway along, around or over a course in any direction so arranged that the means of egress path is not readily apparent due to visual or audio distractions or is intentionally confounded or not readily available due to the nature of the attraction or mode of conveyance through the building or structure.
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When buildings or portions thereof are classified as SPECIAL AMUSEMENT BUILDINGS, Section 411 of the 7<sup>th</sup> or 8<sup>th</sup> Edition Massachusetts Basic Building Code (780 CMR) requires:

1. **Fire detection in accordance with Chapter 9, Section 907 of the 7<sup>th</sup> or 8<sup>th</sup> Edition Code.**

Note, however that a building or portion thereof, if not heated during cold weather, could inadvertently allow for permanently mounted smoke detection devices to be exposed to temperature extremes in violation of their ambient temperature listing and could preclude the use of certain fire detection devices and therefore either replacement of such devices or the use of approved alternative types of automatic detection could be required.

2. **Automatic sprinklers in accordance with Chapter 9, Section 903 of the 7<sup>th</sup> or 8<sup>th</sup> Edition Code or otherwise impacted by requirements of MGL c.148 § 26G.**

- with a Building Code-only exception that does not require automatic sprinklers where the floor area of a temporary special amusement building is less than 1000 sq. feet and the travel distance from any point to an exit is less than 50 feet.

3. **Response requirements to fire protection system activation, should include:**

- immediate illumination of the means of egress with light of not less than 1 foot-candle at the walking surface level;
- the shutting off or otherwise stopping of any conflicting or confusing sounds and visual distractions;
- the activation of an approved directional exit marking that will become apparent in an emergency, and;
- Upon activation of a smoke detector or the activation of the automatic sprinkler system or activation of any other approved fire detection device, such shall immediately sound an alarm at the building at location from which emergency action can be initiated.

4. **An Emergency voice/alarm communication system, which can also serve as a public address system and audible throughout the entire special amusement building.**

5. **Exit signs and Exit markings are required.**

- Where mirrors, mazes or other designs are used to confound the means of egress paths, approved low-level exit signs and directional path markings shall be provided and located not more than 8 inches above the walking surface and on or near the means of egress path.

**6. The interior finish shall be of Class A materials only, per Chapter 8, Section 803.**

**7. Where Chapter 4, Section 411 is silent, the main body Code requirements shall otherwise apply for ASSEMBLY USE and BUSINESS USE buildings or portions thereof and with consideration of MIXED USE separation, if applicable.**

**REQUIREMENTS OF THE FIRE PREVENTION REGULATIONS OF  
MASSACHUSETTS (527 CMR)**

NOTE: REQUIREMENTS OF 527 CMR, AS NOTED BELOW, ARE ENFORCED BY THE  
HEAD OF THE FIRE DEPARTMENT OR HIS DESIGNEE

**1. 527 CMR 1.00: ADMINISTRATION AND ENFORCEMENT**

1.06: Orders to Eliminate Dangerous or Hazardous Conditions

(1) Fire Code Violations. Whenever the marshal, the head of the fire department or any person to whom the marshal or head of the fire department has delegated is authority in writing, finds in any building or upon any premises a violation of 527 CMR or any condition likely to cause fire or any obstacle to easy ingress or egress from such building, they shall, in writing, order the same to remedied. Notice of the violation shall be served in accordance with the provisions of M.G.L. c. 148, § 5, including, but not limited to the following:

(k) The use of any machine, devise or chemical to create fog, foam or a haze-like visual effect which could become an obstacle to ingress or egress from any place of assembly.

**2. 527 CMR 21 – Decorations, Curtains, Draperies, Blinds and Other Window Treatments**

**Definitions:**

Decorations – All materials such as scenery, plastic shields, streamers, and also cloth, cotton batting, straw, vines, leaves, trees and moss used for decorative effect, bamboo and other wood fibers, cardboard and other paper products.

Public Spaces: – Those spaces within the occupancy accessible by the public while the building is occupied. This shall include all components of the means of egress such as exit accesses and exits.

Test requirements: Test completed per 527 CMR 21 or National Fire Protection Association (NFPA) 701.

## **7. 527 CMR 10 – Fire Prevention – General Provisions**

**10.02** – Fire Extinguishers – If the fire chief deems it necessary due to construction, location, character or occupancy – shall be provided per NFPA 10.

**10.03 (5)** – The storage of combustible or flammable material shall be confined to approved storage areas; storage in buildings and structures shall be orderly, shall not be within 2 feet of the ceiling and shall be located so as not to obstruct egress from the building.

**10.03 (6)** – Open flame devices shall comply with NFPA 101.

**10.03 (9)** – All required fire resistant rated doors or smoke barriers shall be maintained in good working order.

**10.03 (11)** – When any electrical hazards are identified, such conditions shall be abated. All identified hazardous electrical conditions in permanent wiring shall be brought to the attention of the electrical code official.

**10.03 (13)** --.... Egress shall at all times be maintained in a safe condition and shall be available for immediate use and free of all obstructions. Aisles, passageways, or stairways in any building shall not be obstructed with tables, showcases...or other obstructions during hours when the building is open to the public...

**10.07** --.... Where such structures are of a combustible construction, which may in the opinion of the head of the fire department, constitute a fire hazard.

**10.13** – Emergency Planning and Preparedness – The development of emergency plans, training, and conducting of fire exit drills shall comply with the applicable requirements of 527 CMR 10 and 527 CMR 10.13

**10.17** – Places of Assembly – The decorations, operation or use of places of assembly and education shall comply with the applicable requirements of 527 CMR 10 and 21 and 780 CMR. Permit required – A place of assembly or one for educational use shall not be maintained, operated or used as such without a Certificate of Inspection from the building code official. Occupant load shall be posted by the building official as determined by 780 CMR. In the event of overcrowding or obstructions to egress, the head of the fire department can cause the performance (etc.) to be stopped until the posted occupant load is re-established or the obstruction is removed.

If you have any questions contact the Technical Service Unit at the Office of the State Fire Marshal at (978) 567-3375 or in Western MA at (413) 587-3181. Building officials can contact the Department of Public Safety at (617) 727-3200.

**Synopsis:****Fire in Haunted Castle Kills Eight**

In May 1984, a rapidly spreading fire destroyed the Haunted Castle amusement facility at the 200 acre Six Flags Great Adventure Park in Jackson Township, New Jersey. At the time of the fire, there were 3 employees and an estimated 28-34 visitors. Eight of the visitors were unable to immediately exit from the structure and died in the fire. The haunted house was constructed of 17 commercial trailers (each about 8-ft. wide by 40 ft. long), which were connected by use of plywood. The interior of the Haunted Castle was constructed of plywood partitions that created a convoluted path of travel approximately 450 ft. long. Materials used for the interior included synthetic foam, various fabrics and plastics, plywood and tarpaper.

The structure had a total of 7 exits, including the main entrance. Fire protection features were emergency lighting and portable fire extinguishers. The cause of the fire was determined to be by ignition of a wall-mounted polyurethane foam pad by a cigarette lighter.

We would like to acknowledge the National Fire Protection Association (NFPA) for providing the information on these two fires. In both cases, combustible furnishings and lack of fire protection/detection and egress was related directly to the loss of life.

**Synopsis:****School's Haunted House Burns – One Killed, Two Injured**

In 1973, five members of the Washington Reid School PTA in Prince William County, Virginia built a "haunted house" in one of the elementary school classrooms for a Halloween Carnival. Approximately 30 minutes before 200 school children were scheduled to enter the highly combustible maze, fire broke out in the haunted house killing one of the PTA members and injuring two others.

The PTA members had created the effect of a haunted house in one of the classrooms by erecting eight-foot high panels of flannel cloth secured to one by three-inch wood strips. The flannel was then sprayed with a black lacquer-based paint. To reduce light, brown paper was taped over the windows and over the flannel panels directly in front of the windows. "Black lights" were also installed with temporary wiring at various locations. Power was supplied to test the lights prior to the start of the function, at which time one of the panels burst into flames. Two PTA members began to tear down the paper while three others went to get fire extinguishers. One member pulled the school fire alarm, which was not connected to the fire department by any means of notification. A PTA member broke into the principal's office in order to gain access to a phone to call the fire department.

As devastating as this fire was it is fortunate that the school children were not in the building.

If you have any further questions please contact the Code Compliance and Enforcement Unit at (978) 567-3375 or in Western MA at (413) 587-3181.