



Property Risk Consulting Guidelines

XL Risk Consulting

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PRC.17.14.5

CONVENTION CENTERS

INTRODUCTION

Convention centers are used for various events from circuses to yacht shows and from concerts to sporting events. The center has evolved into a large facility with sizable open spaces to handle these events. The center also can contain smaller exhibition rooms, meeting rooms, restaurants, shops, parking facilities and, in some cases, hotel accommodations.

Fire protection of these facilities has become a challenge because of the size and height of the buildings and the changeable occupancies. The center could be used for a political party meeting one day and a yacht show the next. The large open spaces present problems due to lack of cutoffs to create fire divisions. Ceiling heights can be over 50 ft (15.3 m), which requires a substantial sprinkler density.

Most exhibits in a convention center increase the hazards of the facility. Exhibits should be closely evaluated to both reduce their hazard and to determine the temporary fire protection is required. Protection may include detection and/or a fixed extinguishing system. Local management must closely monitor and evaluate these hazards.

Support areas must also be properly protected and cut off from the convention center floor. These support areas include restaurants/kitchens, HVAC equipment, maintenance shops, loading docks, boiler rooms, electrical equipment rooms and storage rooms.

POSITION

Management Programs

Develop loss prevention and control programs using *OVERVIEW* for guidance. Put the programs in writing and distribute them to all responsible for their use.

Involve AXA XL Risk Consulting in review of the exhibitions and trade shows planned for the convention center. Submit plans and descriptions of events and protection planned for them. Each show presents a different occupancy for the convention center which will need to be protected properly.

Construction

Construct the building with noncombustible material. Cut off support areas from the convention floor using 2 hr rated fire barrier walls. Cut off storage areas from the convention floor using 3 hr rated fire walls. Design and construct fire walls and fire barrier walls in accordance with NFPA 221 and PRC.2.2.1.

TABLE 1
Area of Application

Building Ceiling Height (ft)	Sprinkler Area of Application (ft ²)
Up to 40	4000
40 to 50	5000
Greater than 50	6000

SI Units: 1 ft = 0.305 m; 1 ft² = 0.093 m²

Arrange the HVAC system to provide smoke control. Design the smoke control system in accordance with NFPA 92B. Install smoke detection in ductwork or at the ceiling to activate the HVAC system into exhaust mode.

Design the building using the maximum anticipated live and dead loads. Dead loads include lighting, fixtures, banners, signs, acoustic equipment and other equipment. Monitor the installation of equipment being suspended from the ceiling or roof system.

Fire Protection

Install minimum 10 in. (250 mm) looped mains around the convention center supplied by a reliable water source. Provide hydrants and sectional control valves as necessary and meet guidelines in NFPA 24, PRC.14.0.1 and PRC.14.5.0.1. A second water supply might be required.

Install a wet pipe sprinkler protection system throughout the convention center, support areas and storage areas in accordance with NFPA 13 and PRC.12.1.1.0. The sprinkler density for the convention center floor should be 0.30 gpm/ft² (12.2 L/min/m²) with the area of application dependent on ceiling height as noted in Table 1.

Install a dry pipe system in all loading docks and indoors or enclosed parking areas subject to temperatures below 40°F (5°C). Design the protection for the parking area per NFPA 88A and PRC.17.14.3.

Protect cooking equipment with automatic fire extinguishing equipment in accordance with NFPA 96.

Surveillance

Due to large crowds in the facility and the potential for sabotage, a high level of security is needed to properly protect a convention center. To achieve this level of security, provide both guards and a UL certified alarm system. Provide a complete Central Station Alarm and supervisory service in accordance with NFPA 72, PRC.11.0.1 and PRC.11.1.1.0.

Develop and implement written procedures to ensure that an acceptable level of security is maintained at all times. Use additional guards as needed during exhibitions. Continue recorded rounds for a period of no less than 2 hr following the show or event. The guards should control the crowd during the exhibition and monitor incoming exhibits. Train guards to monitor crowds during politically sensitive events.

Special Hazards

Numerous special hazards could be brought into a convention center with each show or event. Involve AXA XL Risk Consulting in the planning stages of these shows to ensure a proper level of protection is maintained in the facility.

The following special hazards can be encountered:

- Temporary Structures: Some shows or events will have temporary structures, for example, small houses or greenhouses associated with home shows. Provide temporary sprinkler protection for all structures greater than 300 ft² (28 m²). Use flexible tubing for the sprinkler supply piping when a rigid pipe arrangement is impractical. Consider temporary smoke detection for the structures less than 300 ft² (28 m²).

- **Automobiles:** Cars are brought into convention centers for auto shows. Drain fuel in these vehicles to ¼ tank or less prior to entering the facility. Once the vehicles are in place, disconnect their batteries until the cars are to be removed.
- **Boats, Recreational Vehicles:** These vehicles should take the same consideration as cars. Drain fuel in these vehicles to ¼ tank or less prior to bring them into the facility. Once in place, disconnect their batteries until they are to be removed. Many RV's and yachts are large; consider temporary smoke detection in these vehicles.
- **B/M Exposures:** Implement proper maintenance procedures to reduce the potential for power and heating and cooling outages. Connect the power, heating and cooling equipment to an automated building management system which can be used to operate various building equipment. The power equipment can include emergency generators, transformers and switchgear. Heating equipment can include gas or oil fired boilers, sectional control valves and distribution fans. Cooling equipment can include the cooling towers, refrigerant system, sectional control valves and distribution fans.
- **Flammable/Combustible Liquids:** Limit the amount of flammable and combustible liquids introduced into the facility. If these liquids must be stored in the building, store them in approved cabinets or a properly arranged storage room in accordance with NFPA 30 and PRC.8.1.0.

Other special hazards may include stages, service equipment and pyrotechnic devices. The majority of these hazards are addressed in NFPA 101. This information should be used for guidance with some hazards requiring review on a case-by-case basis.