



Property Risk Consulting Guidelines

XL Risk Consulting

A Publication of AXA XL Risk Consulting

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PARKING STRUCTURES

INTRODUCTION

National Fire Protection Association (NFPA) documents describe a level of fire protection agreed on by persons representing a variety of interests. The guidance in these documents does not reflect unique conditions or special considerations, such as system performance under adverse or unusual conditions. Nor does NFPA guidance reflect the increased system reliability that AXA XL Risk Consulting recommends for high valued properties.

This PRC Guideline states AXA XL Risk Consulting position on provisions of NFPA 88A because AXA XL Risk Consulting believes they require clarification or changes. To understand AXA XL Risk Consulting's position, this PRC Guideline must be read with a copy of NFPA 88A. The provisions of the NFPA document are not repeated.

In recent years the number of multi-car fires in open parking structures has increased. In the first quarter 2018 in the US, there were 5 separate fires in the news where between 2 and 10 vehicles were destroyed and caused damage to the structure and disruption to the businesses associated with them, one being a medical center. In 2017 there were 10 separate fires in the news where between 2 and 14,000 vehicles were destroyed. The most costly fire was on December 31, 2017 at the King's Dock parking garage in Liverpool, England causing an estimated £20M (\$28M) in damages. The concrete parking structure received serious damage; sections of the ramps were destroyed. The 8 vehicle fire at Disneyland caused an estimated \$180,000 in damage.

One reason for the increase in multiple vehicle fires in parking garages and subsequent damage to the structure is the increase in the fuel loading of the vehicles including the increased use of plastic car bodies.

In the BRANZ Study Report SR 255, a report by the New Zealand research group, they indicate the number one cause of car fires in in New Zealand and England is an intentionally set fire. In the US intentionally set fires is the number two cause behind mechanical or equipment failures. In New Zealand and England, electrical failures are the number two cause of fires.

Recharging of electric vehicles is now happening inside open and enclosed parking structures. "On-Demand Mobile Fueling," as covered on NFPA 30A, while at present is excluded from "covered" parking garages, people will still want their vehicle refueled no matter where they are parked. These activities will increase the risk of a vehicle fire while recharging or refueling takes place, increase the chance additional vehicles will be involved and increased damage to the structure.

POSITION

For a parking structure to be considered a true “Open Parking Structure” there must not be any obstructions to the flow of air through the structure. If there are walls within close proximity to the structure on two or more sides, a natural ventilation rate of 3 cfm/ft² (914 L/min/m²) of floor area must be proven in order to consider the structure an open parking structure. If this rate can not be proven, consider the structure an enclosed parking structure.

AXA XL Risk Consulting does not recommend automatic fire detection and mechanical ventilation systems in lieu of an automatic sprinkler system.

Provide sprinklers in open parking structure:

- that are in close proximity to buildings or critical for business,
- that are constructed of material other than concrete regardless of the height,
- where “On-Demand Mobile Fueling” is allowed.

Design the sprinkler for an Ordinary Hazard Group 1 occupancy.