19 DIE IN CHICAGO HOTEL FIRE

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An early-morning fire in the first-floor laundry room area spread to a nearby stairway and trapped many of the 62 occupants of this four-story residential hotel on March 14, 1981. The fire resulted in the deaths of 19 tenants, injuries to 13 persons and the collapse of a major portion of the building.

The structural aspects of this building were factors contributing to both the fire spread and the number of fatalities. These structural aspects include:
- Lack of proper protection in hazardous areas;
- Penetration of corridor walls by floor joists;
- Improper enclosure of stairways; and
- Combustible construction of stairways.

Although the building was classified as a hotel, its occupants ranged in age from the very young (in their 20s) to the elderly (in their 60s), and the physical and mental condition of some of the tenants probably affected the number of fatalities.

Individual rooms of the tenants were protected by single-station, battery-operated smoke detectors; however, a postfire examination revealed that several of these detectors did not contain batteries.

This limited investigation was conducted by the NFPA under contract to the United States Fire Administration. It was jointly funded by the National Bureau of Standards, the US Fire Administration, and the NFPA. It may be freely reprinted with the customary crediting of the source.

The facts and conclusions contained herein were developed by the NFPA and do not necessarily represent the views of the US Fire Administration or the National Bureau of Standards.

This report is based on data gathered during a three-day investigation by the NFPA's Fire Investigation Department. Fire Analysis Specialist Steven Hill traveled to Chicago, Illinois, on March 14, 1981, returning on March 16.

The cooperation and assistance of Commissioner William Blair and Deputy District Chief Edward Altman of the Chicago Fire Department and Commander Edward Nickels of the Chicago Police Department Bomb and Arson Squad is acknowledged and greatly appreciated.
The Royal Beach Hotel in Chicago, Illinois, was a residential occupancy (as defined in the 1981 edition of NFPA 101, the Life Safety Code®, Chapter 17, "Existing Hotels"), located on the north side of the city, near the more fashionable North Shore section. The hotel served as home for both long- and short-term tenants and, reportedly, many of the occupants were also frequent outpatients of area alcohol and drug detoxification programs. Guest rooms within the structure were found to contain portable cooking equipment, indicating that the guests had a more permanent residential status.

The hotel was built in the early 1900s in an L-shaped design. It adjoined similar structures only along the front portion of the building; there were open spaces along each side of the building that provided light and ventilation for the guest rooms.

The 42-by-140-foot hotel was of ordinary construction, with masonry exterior walls and 2-by-12-inch wood joists. It incorporated twin load-bearing walls that served as corridor walls along the length of the building. These interior walls were of structural steel with terra-cotta tile block as fill. Guest-room separation was provided by wood studs with plaster on wood lath. Room and corridor ceilings were of ¾-inch plaster on wood lath applied to floor joists.

Interior finish throughout the hotel consisted of paint applied to the finished plaster, with wallpaper applied over painted plaster in some areas. The original glass transoms above each guest-room door had been replaced by plywood.

Egress was by way of corridors leading to two tile-block enclosed wooden stairways located one each near the front and rear of the structure. The front stairway discharged through the main lobby, while the rear stairway discharged through a rear exit (see Figure 1). Although the stairways were of tile-block on wood construction, fire-rated stairway door assemblies were not provided. In addition, the stairway discharge area on the first floor was not properly separated from the remainder of that floor.

The building contained a local fire alarm system that incorporated manual pull stations and rate-of-rise detectors in the main (east-west) corridor; it was arranged to sound evacuation alarms on each floor. Single-station, battery-operated smoke detectors were installed in each guest room, as required by local ordinance. These detec-
tors were located approximately one foot inside each
guest-room doorway.

THE FIRE

The Chicago Fire Department received a telephoned
report of smoke at 2:59 am. First-responding companies
found fire visible in the rear portion of the building when
they arrived at 3:02 am. Their initial fire suppression
actions were made through the front entrance and along
the central corridor to the area of the rear stairway. Fire
fighters found the rear stairway fully involved in fire and
made a direct attack in this area. First-floor fire involve-
ment also included the laundry room, which was approxi-
ately 15 feet beyond the rear stairway. The involve-
ment of the rear exit had caused the fire to move swiftly
to the upper floors and the collapse of part of the struc-
ture. As a result, the occupants in that area were cut off
from normal means of egress from the building. At 3:07
am, additional fire department companies were re-
quested, and at 3:22 am a third alarm was sounded.

Rescue of the trapped occupants was made more dif-
ficult by the extensive fire involvement of the rear por-
tion of the structure, thick black smoke, and the loss of
the building’s rear stairway. However, fire fighters suc-
sessfully rescued 20 occupants from the upper floors by
means of ground ladders. One rescue was made by using
a ground ladder as a bridge between the fire building
and the porch of a nearby structure. About 23 other
residents made their own way out of the building. The
failure of the hotel’s electrical power some time during
the fire added to the confusion.

Fire fighters eventually used master streams to extin-
guish the fire, which destroyed approximately one-third
of the hotel.

Chicago Bomb and Arson Squad investigators deter-
mined that the fire had originated in the first-floor laun-
dry room. Their investigation was continuing when this
report was written, and the cause of the fire is currently
undetermined.

CASUALTIES

The fire resulted in the deaths of 19 occupants and
injuries to 13 persons, including two police officers who
attempted to rescue victims during the early stages of
the fire. Preliminary reports from the Coroner’s Office
indicated that the majority of the fatalities resulted from
smoke inhalation.

Of the 19 fatalities, six bodies were recovered in the
relatively unburned areas at the front of the building,
while the remaining 13 victims were located in the col-
lapsed rear area. Because of the extent of structural dam-
age within the building, the exact locations of the victims
could not be determined.
received heavy fire damage, which resulted in the partial collapse of these floors plus the collapse of part of the roof assembly. Damage to the second floor was limited to the rooms above the area of fire origin and those that were adjacent to the rear stairway. Smoke damage was severe on all floors.

DISCUSSION

Lack of Adequate Corridor Fire Protection

The tile-block corridor walls were intended to provide adequate fire protection in that portion of the means of egress. However, these wall assemblies were penetrated in numerous locations by the wooden joists of the floor-ceiling assembly, allowing fire spread horizontally on the first floor. Examination of the structure after the fire was extinguished revealed various places where mortar had been used to fill wall voids caused by joist penetrations; however, this material had fallen out over a period of years or had never been applied in some areas.

Stairway Construction and Enclosure

The building's two stairways were equipped with nonfire-rated, glass-paneled doors. In the case of the fire-involved rear stairway, the doors failed (burned) early in the fire. The failure of these doors allowed rapid flame spread into corridors on the third and fourth floors, thus blocking egress from the rear of the structure on those floors. As a result, this lack of protection provided an unprotected vertical opening for fire spread. The wood materials used in the construction of the stairs provided fuel for the fire as it spread up the stairway.

Lack of Adequate Protection of Hazardous Areas

The room of fire origin was the first-floor laundry room, which also served as a general storage area. This room opened into the first-floor corridor at a point between the rear stairway and the rear exit. The door to this area was a nonfire-rated door that failed early in the fire. Failure of this door allowed the fire to spread into the corridor and blocked the rear exit.
Contributing Factors Related to Hotel’s Tenants

The Royal Beach Hotel reportedly served occasionally as a residence for a number of patients in area drug and alcohol detoxification programs. One such treatment center was located in a building adjoining the hotel. It must be considered as a possibility that at least some of the tenants living in the hotel differed from those who would normally be expected in a hotel occupancy. Also, the ages of the occupants ranged from the very young to the elderly. Persons with physical limitations often associated with the elderly and those who may be undergoing medical treatment may not be capable of self preservation during a fire emergency. In recent years, fires have occurred in many occupancies that, although classified as hotels or boarding homes, actually housed tenants more frequently found in nursing homes or in medical care facilities. These considerations must also be made when evaluating fire problems in residential hotels like the Royal Beach Hotel.

Performance of Detectors and Alarm Systems

The postfire examination of the building revealed that the building’s manual alarm pull stations had been activated; however, according to the reports of fire fighters and residents, the manual alarm system in the building did not sound an evacuation alarm at any time during the fire.

Chicago Fire Department personnel conducted an examination of the battery-operated, single-station smoke detectors after the fire. Of the 72 detectors reportedly installed in the building, 36 units were either heavily fire-damaged or missing, and therefore could not be tested. Of the 36 detectors recovered, 9 detectors did not contain batteries. It can be anticipated that an additional number of the 36 detectors that were not tested also did not contain batteries.

The battery-operated detectors had been installed to meet Chicago ordinances for updating fire protection features in existing residential occupancies. Although they were required by ordinance, no provisions had been made for the periodic inspection, testing, and certification of these devices. This is an area of concern in many jurisdictions, for communities have required installation of detection equipment, yet have no way to assure their continued maintenance or replacement. One such inspection program that was developed for Prince George County, Maryland, was very successful.

Another area for concern involves the installation of single-station detectors. As covered in NFPA 74-1980, Standard for the Installation, Maintenance and Use of Household Fire Warning Equipment, single-station smoke detectors are intended for life safety protection within family units. The Standard includes installation requirements and discusses life safety protection concepts for family living units such as single-family dwellings. The Royal Beach was a hotel occupancy with a life safety risk and a fire development potential well beyond those normally encountered in a typical family dwelling. The use of single-station smoke detectors in this type of occupancy was a misapplication of the use of such devices.

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