

HOTEL FIRE
Paterson, NJ
October 18, 1984



FIRE INVESTIGATIONS

NATIONAL FIRE PROTECTION ASSOCIATION

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Investigation Report
Alexander Hamilton Hotel Fire
Paterson, New Jersey
October 18, 1984

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This report is based on information gathered at the scene of the fire during a visit on October 23-24, 1984. Assisting the author at the scene and in reviewing the report, was Bruce Larcomb, Regional Staff Engineer for the Building Officials and Code Administrators International, Inc.

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ABSTRACT

On Thursday, October 18, 1984, an incendiary fire started on the third floor of the Alexander Hamilton Hotel in Paterson, New Jersey resulting in the deaths of 15 persons and injuries to over 50 persons. The fire was confined to the third floor of the eight story steel-frame fire resistive building, although products of combustion traveled to upper floors where the majority of the deaths occurred.

The hotel was a combination transient/residential hotel with 169 guest rooms or living suites on the upper six floors. Although equipped with 3 enclosed stairways and a smoke detection system, the stairway doors were not closed and allowed early failure of the exit system due to smoke and heat spread. Vertical ventilation shafts servicing the bathrooms of each guest room also spread smoke to upper story guest rooms.

BACKGROUND

The Alexander Hamilton Hotel is an eight story building located at the corner of Church and Market Streets in the downtown section of Paterson, New Jersey. The building was constructed in 1925 as a first class hotel. The first floor consisted of the lobby/registration area, a dining room with associated kitchen facilities and space leased to several small mercantile businesses. The second floor consisted of two ballroom areas and a large lobby area between them. There were also kitchen facilities to support banquets in the ballrooms. The third through eighth floors were guest rooms. In addition there were two basement levels used for service and storage.

The building above the second floor was an irregular "U" shaped, with 10,526 sq. ft per floor. The base of the "U" (along Church Street) was 123.5 ft in length with the leg along Market Street 75.5 ft long, and the other leg was 169 ft long. The width of the "U" was 48.5 ft.

The building was of structural steel framing. The horizontal steel members were encased in poured concrete which also formed the floor slabs. The vertical steel members were encased in fire resistive masonry block 3 inches thick with a 1-in. layer of cement plaster and a 1-in. layer of regular plaster over the block.

Corridor walls and walls between rooms were of the same construction, i.e. 3-in. fire resistive block with 2 layers of plaster on either side. The exterior walls were brick with plaster on the interior.

The roof of the building was flat with a tar and gravel roof covering. A machine house was located above stairway No. 2 and the two passenger elevators to house the elevator controls and ventilation exhaust fans. An unused wooden water tank was on the roof of the machine house.

The upper floors were served by three stairways. Two of the stairways, No. 1 and No. 3, ran from the basement to the roof while stairway No. 2 ran from the second floor ballroom lobby area to the roof (terminating in the machine house area). A wide staircase served the ballroom level from the hotel lobby level.

The stairways were 41 inches wide and were in enclosed shafts. The stairs themselves were steel with concrete treads. Each stairway had a small window to the outside at the landing level between floor. The doorways were 41 inches wide. The doors to stairways No. 2 and No. 3 were a panel style door which had a metal over wood style and a metal panel. The doors had self closers on them but no latching hardware.

The doors to stairway No. 1 were different. On the third floor a rolling steel door on an incline track served as the closure. The doors on the openings to this stairway above the third floor were a metal clad, wood stile panel door with a window in the door. The non-wired plate glass measured 9-in. by 29-in. and the doors did not have latching hardware.

An elevator shaft near stairway No. 2 contained two elevators. These serviced the basement through eighth floor. There was also a service elevator in the same shaft as stairway No. 1. This shaft also contained a laundry chute which ran from the basement to the top floor.

The corridor on the third floor was 66 inches wide and had a 108-in. ceiling. Doors to the guest rooms were 32 inches wide without self closures. The doors were 1/2-in. thick single wood panels in 1 3/4-in. in stiles. A 12-in. by 33 in. transom above each door had been covered on the corridor side with 1/2-in. plywood.

The bathroom in each guest room was vented through a combination utility/ventilation shaft about 2 ft by 6 ft in inside dimension. Typically, two baths vented to the same shaft on each floor. A 10-in. by 10-in. grilled opening in the bathroom wall led to a short piece of duct which protruded into

the shaft about 12 inches with an opening pointed upward. The medicine cabinet which was built into the same wall was hinged on one side and would swing outward to allow access to the shaft.

These shafts terminated in a plenum area 28 inches deep between the ceiling of the eighth floor and the roof. A large fan in the machinery room on the roof was designed to take suction from the plenum and exhaust the air to the outside. This fan had a belt drive from a separate electric motor but examination after the fire showed the belt was not in place and the fan had apparently not been used for some time.

Fire Protection and Life Safety Features

The building was not protected by an automatic sprinkler system. There was a standpipe system with a riser in each of the three stairways. A hose rack with 100-ft of unlined 1 1/2-in. hose and nozzle was located at each standpipe outlet. A few fire extinguishers of various types were located throughout the building.

The building was equipped with a local only fire detection and alarm system. The system was arranged with a pull station at the entrance to each of the three stairways and two vibrating bells on each floor. Smoke detectors were provided in the corridors and were arranged at 40-ft spacing intervals. There was no annunciation for this system. In addition to the corridor smoke detectors, a single station battery-powered detector was located on the ceiling in each guest room.

There were no illuminated exit signs. The word "EXIT" was painted on the wall above each stairway door and a red light bulb in a porcelain lampholder was located above the sign. In addition, the word "EXIT" with an arrow was painted on the wall in various locations in the corridors. There was no emergency lighting in the corridors or the stairways.

Third Floor Renovations

The third floor of the hotel had a unique history which appears to have been a big factor in this fire. When the hotel was originally constructed, this floor housed 30 guest rooms, a private dining room and an office for the hotel auditor. About 1970, Passaic County was building a new courthouse and needed additional courtrooms to use in the interim. The third floor was leased for use as courtrooms and judicial chambers. At that time several interior walls between guest rooms were removed to enlarge space for the courtrooms. Several doorways between the rooms and the corridor were sealed using a variety of construction techniques most of which did not have the same fire resistance as the remaining corridor walls.

At that time, 3/16-in. wood paneling on wood strapping was added to the corridor walls and a suspended ceiling of 12-in. by 12-in. cellulose fiber tile on wood framing was installed. The interiors of many of the rooms were paneled with wood paneling and a variety of suspended ceilings were installed.

When the area was no longer needed for judicial purposes, the larger rooms were not converted back to the single guest room configurations, which were present before the renovation, but were left as larger suites with some subdivision with frame walls within some of the suites.

THE FIRE INCIDENT

Shortly before midnight on October 17, 1984, a male resident of the hotel, who worked part time as a television repairman for the hotel, got into an argument with night manager. The night manager reportedly escorted the resident to his room (Room 123). Some time later the resident started a fire inside his room against the corridor door. He then pushed a window mounted air conditioner out of the exterior window and climbed out onto the roof over the ballroom level. He then re-entered the building through another room and exited the building uninjured.

Sometime later the night manager reportedly smelled smoke and went to the third floor to investigate. He found smoke coming from Room 123. He and another person apparently forced the door open, because they believed the occupant needed rescue.

The fire by this time was gaining headway, due to air entering through the open window, and it quickly began to expose the corridor. As the fire spread into the corridor, the wood paneling and combustible ceiling tile provided fuel which contributed to fire development.

The fire department received the alarm at 12:14 a.m. Arriving fire fighters found heavy fire conditions in the third floor corridor and smoke and heat building in the stairways. Occupants were starting to appear at windows to await rescue. A second alarm was ordered at 12:18 a.m. and a third alarm at 12:20 a.m., bringing 7 engines and 2 ladder trucks to the scene. Later special calls and mutual aid response summoned an additional 2 engine companies, 2 ladder trucks and 2 elevating platform apparatus.

Fire department operations were largely focused on search and rescue. Two 1 3/4-in. handlines were brought up the central stairway to the third floor where an attempt was made to attack the fire. The intense heat coupled with

the lack of coordinated ventilation made it extremely difficult for these firefighters to make much progress. Their efforts were, however, helping maintain conditions in the central stairway that allowed other fire fighters to reach upper floors.

Fire fighters did occasionally use 2 1/2-in. handlines from the street into third floor windows and a 50-ft "telesquirt" to prevent fire from hampering ladder rescues from upper stories.

It is estimated that 200-300 people were in the hotel at the time of the fire. It is not known how many persons were rescued over ladders; however, rescue operations continued for over 2 hours. Ground ladders were positioned on adjacent roofs to reach people in windows inaccessible to aerial apparatus. Fifteen persons were found on the roof of the hotel from where they were lead to the roof of an adjacent theatre and then down a series of outside fire escapes.

The fire in the third floor was reportedly knocked down at 2:52 a.m. (2 hours and 38 minutes after the first alarm). Overhaul continued for several more hours.

Fatalities

Thirteen persons died during the fire. Only one of these fatalities was on the floor of origin. Two were found on the top floor, one in the bedroom of a two room suite, the other in the corridor. Six were found in the seventh floor, four in their rooms and two in the corridor. Two were found in Room 433 on the sixth floor while one was found in the central stairway at the fifth floor level and another in Room 304 on the fifth floor. In addition, one person died 5 days later and another died almost 4 months later.

The fatalities ranged in age from 21 years old to 82 years old. Eleven of the victims were female, 4 were male.

There were numerous persons injured. Approximately 20 were hospitalized, but more than 50 were treated at hospitals or at the scene. Seven fire fighters were treated for injuries ranging from smoke inhalation and exhaustion to burns and sprains.

Discussion

The Alexander Hamilton Hotel is probably typical of many older hotels which were located in the center of cities. This hotel, built in 1925 was the focus of social events in the city for many years. As the city changed over the years, the demand for a first class hotel in the center of the city diminished, the hotel started a steady decline. At the time of the fire, the restaurant and kitchen on the first floor were not in use, and the entire second floor was not in use. Four stores occupied space on the first floor.

The occupancy of the hotel consisted of transient guests, persons temporarily housed by social agencies who lost their homes due to fire or were displaced from their homes and persons who were permanent residents of the hotel. There was a desk clerk and a manager on duty at all times.

This incendiary fire, which originated on the third floor (first guest floor) was probably in one of the worst locations since the renovation work described earlier had added considerable fire loading to the corridor. The other guest floors had plaster walls and ceilings in the corridor.

The hotel used 55-gallon steel drums for the collection of rubbish. A drum was located in the stairways at each floor level. These drums were often used to block open stairway doors as the corridors were dimly lit. On the night of the fire, the central stairway, (No. 2) which was adjacent to the room of origin, had the door blocked open by a drum. Also the door to stairway No. 1 did not close.

The fire had spread to the corridor when the fire department received the alarm. The first telephone call reporting the fire was from an off-duty fire

alarm operator who lived in Room 117. He called from across the street from the hotel after he became aware of the fire and left the building.

The operational readiness of the detection and alarm system is not known. It was supposedly in operation but the operational status was not verified. The single station smoke detectors in the guest rooms did operate in most cases.

Arriving fire fighters quickly became aware of the massive rescue effort they were facing. The three interior stairways were heavily charged with smoke and intense heat was experienced at the third floor level. Fire fighters had to split their efforts between search and rescue and establishing an interior fire attack on the third floor.

As the fire developed on the third floor, it extended into a number of rooms. This allowed smoke to penetrate the bathroom ventilation shafts. The smoke then spread into other rooms on upper floors from these shafts and also banked down from the plenum into the other shafts and from there into bathrooms.

There was no evidence of heavy sooting on upper stories. Some rooms showed heavier sooting than others. In some rooms cardboard was found taped over the bathroom vents. This was in place prior to the fire. In a few rooms face cloths or towels were found over the vents, apparently placed there by the occupants in an attempt to limit smoke penetration into the room.

The concern for rescue required a different approach to fire fighting. Fire fighters working on the third floor could not allow the fire to ventilate through exterior windows as that would jeopardize rescue operations above. Therefore, while attempts were being made to establish control with an interior attack, it was also necessary to occasionally use an exterior attack to maintain rescue paths over ladders.

All three stairways showed signs of heavy heat. Plastic smoke detector housings at the top of the stairways (six stories above the fire) were

melted. The glass lightbulbs in stairway lights had deformed. Hose on standpipe at the fire floor level was burned off the rack.

The fire department was not aware of the shaft/plenum arrangement. These various ventilation arrangements do exist in this type of occupancy and the fire service should evaluate their presence and operational readiness. In this fire, the blower system which exhausted the plenum space was not operational and as such could not be used to reduce the infiltration of smoke from the shafts into guest rooms or to assist in the ventilation of the fire.

There were several features in this building which affected the life safety of the occupants. The combustible interior finish in the third floor corridor walls and ceiling allowed the fire to develop and spread quickly through that corridor. Fortunately, the residents on the third floor became aware of the fire early enough to escape before the corridor became impassable. The one person who died in his room (Room 117) on the fire floor had access through his window to the roof over the ballroom level. It is not known why he did not utilize this avenue of escape.

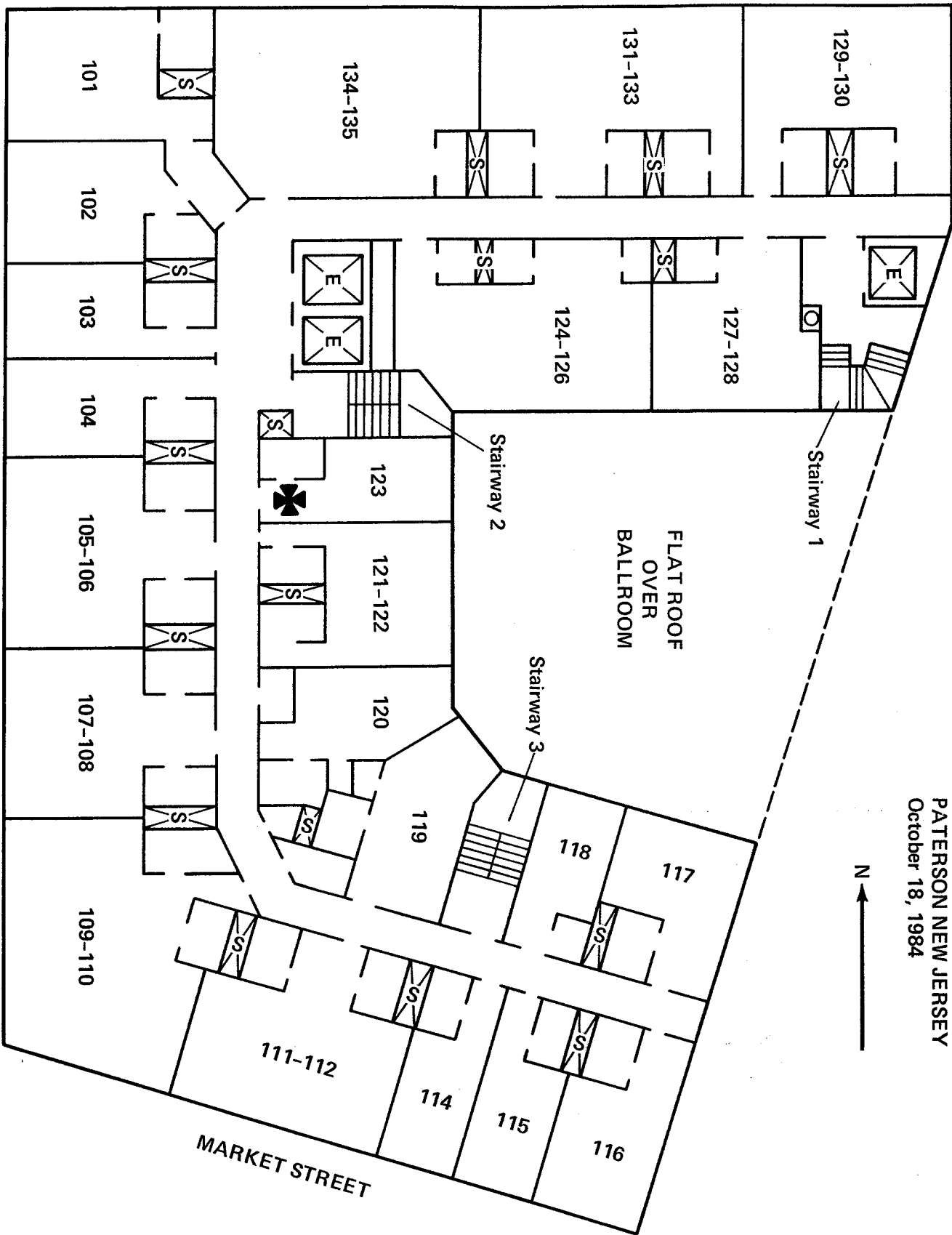
As the fire developed in the third floor corridor it exposed the stairways and rendered them useless as avenues of escape. This left the people on the 5 upper floors with no avenue of escape when they became aware of the fire. They were forced to wait at windows for rescue over ladders. There were no reports of persons killed while waiting at an open window. The people who died were found in corridors or in their rooms but away from windows.

The ventilation shafts also spread products of combustion to upper story rooms. Smoke traveling up these ventilation shafts as well as banking down other shafts from the plenum introduced the products of combustion through the bathroom vents into the upper story rooms.

As stated earlier, the operational readiness of the fire detection and alarm system could not be verified after the fire. The system by itself, however, cannot provide total life safety. In this fire, the early failure of the stairways left the persons in the hotel without an escape route when they did become aware of the fire.

The fire protection features of a building are designed to operate as a system. For that system to provide adequate life safety, all components must be properly installed and maintained.

ALEXANDER HAMILION HOTEL
PATERSON NEW JERSEY
October 18, 1984



CHURCH STREET

MARKET STREET

- Area of Origin
- Shaft
- Elevator