# TRAINING AND SAFETY NEWSLETTER

#### October 2016

### 50TH ANNIVERSARY OF THE 23RD STREET COLLAPSE

Prior to the events of September 11<sup>th</sup>, 2001, the greatest life loss at a single incident in the history of the New York City Fire Department (FDNY) was the 23<sup>rd</sup> Street Collapse. The fire occurred on October 17, 1966. 12 Firefighters were killed at this fire. Every rank except for the rank of Captain was touched by this tragedy: 1 Deputy Chief, 1 Battalion Chief, 2 Lieutenants, and 8 Firefighters were killed, one of which was a Probationary Firefighter. The scourge of "renovated buildings" played a major role in this cataclysmic event.

## The Buildings:

**7 EAST 22 STREET:** This was a 4 story, brick and wood joist, brownstone-like structure. The

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building was 20 feet x 100 feet. There was a 2-story extension in the rear to allow this building connect to the rear of the building at 6 East 23 Street. The cellar and first floors were used as art framing and preservation. Artists would send their canvasses to this business where they would

tack them to rough frames and spray them with lacquer. They were then mounted on decorative frames and sold or shipped.

This business operation was extended into the cellar of 6 East 23 Street by 35 feet. The new rear wall of this cellar was constructed to separate the cellar from the cellar of 6 East 23<sup>rd</sup> Street. It was a cinder block partition wall. This occupancy was contrary to the Certificate of Occupancy. There were ten people employed at this business.

Inside the cellar as part of the process of the business, there were drums of lacquer.

The fourth floor was used as a residence by the Brown family. This residence on the fourth floor was contrary to the Certificate of Occupancy.

At the time of the fire, the Department of Buildings considered 7 E. 22 Street and 6 East 23 Street to be one building due to the interconnections. **6 EAST 23 STREET:** This was a 5-story, brick and wood joist building. It was 50 feet x 100 feet. The first floor was divided into three occupancies: The Wonder Drug Store, the Fans Lingerie Store, and Barton's Candy Store.

The Wonder Drug store was "L-shaped".

There were two cinder block partitions erected in the cellar under the Wonder Drug Store. The only occupancy on the first floor to have access to the cellar was the Wonder Drug Store. One partition had an arched opening, leading to the other cinder block partition. It was only about 65 feet from the front of the building. This was deceiving. It appeared

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- 14

as if the cinder block wall was the end of the building. The cinder block partition went from the concrete floor to the underside of the floor above. The other side of the cinder block wall connected to 7 East 22 Street. The Department of Buildings had no record of approving these cinder block partitions.

A- STAIRS FROM FISHERS 5- STORAGE AREA FOR BUILDING 7- STORAGE AREA

On the first floor, there was a terrazzo floor installed on top of the wood floor joists. These wood joists were

3"x 14" covered with ¾ inch planking. These wood joists were attached to the bearing walls in joist pockets. This alteration was not approved by the Buildings Department. The terrazzo floor consisted of 5 inches of concrete poured on top of the wood joists. Due to the interconnections, the Department of Buildings considered 7 E. 22 Street and 6 E. 23 Street to be one building.

**2 EAST 23 STREET:** This was considered to be exposure 2 of 6 East 23<sup>rd</sup> Street. In 1922, this structure was interconnected with 7 East 22<sup>nd</sup> Street and 6

East 23<sup>rd</sup> Street to form an space for a restaurant. In 1949, the interconnection was closed off. This building was a brick and wood joist structure. It was a 7-story building and it was being used as a commercial building.



On the night of October 17, 1966, the Brown family was relaxing in their apartment on the fourth floor of 7 East 22<sup>nd</sup> Street. At around 2130 hours, Marion Brown smelled smoke. She told her husband Herbert. He started to investigate the odor. He could not find anything in their apartment so he went downstairs to the third floor. He found nothing again. He

went onto the roof of the roof of the setback on the third floor and he spotted smoke coming from the roof and skylight of the extension that connected 7 East 22<sup>nd</sup> Street and 6 East 23<sup>rd</sup> Street. He ran back to the apartment on the 4<sup>th</sup> floor and told his wife to call the Fire Department. This call was received at the Manhattan Fire Dispatcher's office at 2136 hours. At this time there was no visible smoke in their apartment. Mr. and Mrs. Brown decided to evacuate their four children and themselves to the street. By the time they had aroused their children from their slumber and dressed them, the apartment had filled with smoke.

At this time, there was no indication of a fire at 6 East 23<sup>rd</sup> Street. However, an automatic alarm was transmitted to the Holmes Protective Company at 2146 hours.

The Manhattan Fire Dispatcher transmitted Box 598 for a reported fire at 7 East 22<sup>nd</sup> Street at 2136 hours. Engines 14, 3, 16, Ladders 3, 12, Battalion 6 and Division 3 responded. Battalion Chief Frederick White was in the 6<sup>th</sup> Battalion and Deputy Chief Thomas Reilly was in the 3<sup>rd</sup> Division.

Engine 14 arrived and they began their advance down the cellar stairs of 7 East 22<sup>nd</sup> Street. They encountered extreme heat and smoke as they advanced their 2 ½ inch hand line down the cellar stairs. Engine 3 stretched the second hose line to the second floor of 7 East 22<sup>nd</sup> Street. They performed a primary search on this floor. It was filled with heavy smoke and heat, particularly in the rear near the setback which connected 7 East 22<sup>nd</sup> Street and 6 East 23<sup>rd</sup> Street.

Due to the extreme conditions in the cellar, Engine 14's hose line was told to leave the cellar and set up a hose line at the sidewalk cellar entrance and operate it from a





portable ladder. (This can be seen later in the article in one of the collapse photos.) At 2158 hours, Deputy Chief Thomas Reilly transmitted the "All-Hands" operating at box 598. This sent Rescue 1 and Battalion 7 to the fire.

Battalion 7 was manned by Battalion Chief Walter Higgins. Upon his arrival, he was directed to supervise efforts on the 23<sup>rd</sup> Street side of the fire. Deputy Chief Reilly was beginning to suspect that these buildings were interconnected. Ladder Company 3 was directed to go to the 23<sup>rd</sup> Street side to work under Battalion Chief Higgins.

At 2203 hours, Deputy Chief Reilly special called another ladder company to respond to the fire. Ladder 7 would be dispatched. The Mask Service Unit would be dispatched at 2206 hours.

Rescue 1 and Engine 14 stretched another 2  $\frac{1}{2}$  inch hose line and attempted to advance it to the cellar along the west wall of the building on East  $22^{nd}$  Street. They encountered extreme heat coming from the cellar but no visible flame.

At 2008 hours, Deputy Chief Tom Reilly transmitted a second alarm for Manhattan Box 598. Engines 1, 5, 18, and 33 would respond. Also, the Super Pumper system would be dispatched along with Searchlight 21. Deputy Assistant

Chief Harry Goebel would also respond.

Deputy Chief Al Hay of the 1<sup>st</sup> Division was dispatched to the fire. He was directed to the 23<sup>rd</sup> Street side of the fire to supervise efforts on that street with Battalion Chief Walter Higgins of the 7<sup>th</sup> Battalion.



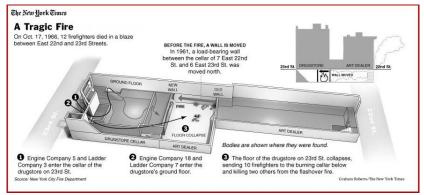
Engine 5 and Ladder 3 were directed to go into the cellar of 6 East 23<sup>rd</sup> Street. They made entrance to the cellar of the Wonder Drug Store. Commanding Ladder 3 is Lieutenant Royal Fox. This was Lieutenant Fox's first fire as a Lieutenant.



Engine 33 was commanded by Lieutenant Vincent Dunn. He witnessed Engine 14 and Rescue 1 valiantly trying to advance their hose line down the cellar stairs on the 22<sup>nd</sup> Street side. He was ordered by Deputy Assistant Chief Goebel to take Engine 33 to the 23<sup>rd</sup> Street side and operate under Deputy Chief Reilly. Once at the 23<sup>rd</sup> Street side, Lieutenant Dunn looked in the Wonder Drug Store and saw a light smoke condition. Standing next to Lieutenant Dunn was Lieutenant Joe Priore of Engine 18. Deputy Chief Reilly ordered Engine 33 to go to Exposure 2 (2 East 23<sup>rd</sup> Street). He then ordered Engine 18 and Ladder 7 to the Wonder Drug Store (6 East 23<sup>rd</sup> Street). Ladder 7 was commanded by Lieutenant John Finley. Battalion Chief Walter Higgins of Battalion 7 was supervising the units in the Drug Store.

The two units in the cellar of 6 East 23<sup>rd</sup> Street (Engine 5 and Ladder 3) had made their way to the cinder block wall at the rear of the cellar. They were finding little extension from the other side of the wall. They poked a hole in the ceiling near the cinder block wall and found a little fire at this location. They mistakenly thought that this cinder block wall was the rear wall of the store. They did detect an odor in the cellar that was similar to a gas leak. A search for a gas leak came up empty.

Deputy Chief Thomas Reilly of the 3<sup>rd</sup> Division was making an examination of the buildings on the 23<sup>rd</sup> Street side of the fire. He saw fire in the shaft between 7 East 22<sup>nd</sup> Street, 6 East 23<sup>rd</sup> Street and



940 Broadway. He radioed Deputy Assistant Chief Goebel and suggested that he transmit a third alarm. He transmitted the third alarm at 2237 hours, 59 minutes after the alarm was transmitted by the Manhattan Fire Dispatchers.

Engine 18, Ladder 7, Battalion 7 and Division 3 were all in the Wonder Drug Store on the 23<sup>rd</sup> Street Side. They found a light smoke condition and no heat. The units made their way to the rear to look for extension. There was a small hole in the wall eight feet above the floor. There was some smoke coming from that hole. Battalion Chief Higgins sent his Aide to the cellar of the Drug Store to keep him apprised of conditions. Battalion Chief Higgins of Battalion 7 ordered Ladder 12 to send its firefighters to the upper floors of 6 East 23<sup>rd</sup> Street to check for extension and to



make a search. Lieutenant Finley of Ladder 7 also sent two firefighters to the upper floors to help Ladder 12 is this task.

Firefighter Nicholas Cicero of Engine 5 was positioned at the top of the interior cellar stairs which were at the front of the store. While observing conditions at the top of the stairs, he noticed sudden violent air movement into the drug store. Firefighter Cicero attempted to alert his Captain to what he just observed. Once his Captain came to the bottom of the cellar stairs, Firefighter Cicero felt a blast of heat coming from the store. The conditions were changing rapidly and dramatically. Firefighter Cicero started shouting "Get Out! Get Out!" Firefighter Breetveld of Ladder 3 was ten feet inside the Wonder Drug Store. He too felt a strong blast of heat and the interior lights were suddenly obscured by a heavy smoke condition.

As a result of Firefighter Nicholas Cicero's warning and a sudden expansion of fire at the cellar ceiling, the firefighters from Engine 5 and Ladder 3 started an urgent evacuation from the cellar of the Wonder Drug Store. As seven of the firefighters climbed up to the top of the stairs where the ceiling level of



the cellar was, they were getting burned just prior to their escape. Lieutenant Royal Fox disregarded his own safety to make sure that everyone was evacuated from the cellar. Eventually, there were two firefighters left in the cellar. One of them was Lieutenant Royal Fox. The other firefighter attempted to climb the cellar stairs to escape the fire, but was burned by the rapidly intensifying fire and had to back down the stairway. Lieutenant Fox was a survivor of another horrific cellar fire at 463 Broadway (See the March 2016 Issue of the Division 7 Training

and Safety Newsletter) where three firefighters were killed on November 18, 1960. He knew that they had to make it up through the wall of fire to make it to safety. Lieutenant Fox pushed and carried the injured firefighter up through the fire at the top of the stairs. Once they made it to the top of the stairs, firefighters at the street level grabbed them and pulled them to the sidewalk. Their gear was so hot that it



burned members that didn't have gloves on.

back, fireman gasps for air. (Photo by NY Daily News Archive via Getty Images)

Lieutenant Vincent Dunn of Engine 33 was in exposure 2 (the left of 6 East 23<sup>rd</sup> Street). Deputy Chief Al Hay of the 1<sup>st</sup> Division was in the lingerie store. They both heard a "whoosh" sound. The time was 2239 hours, 61 minutes after the alarm was transmitted. The terrazzo floor in the rear of the Wonder Drug Store collapsed.

The terrazzo floor in the Wonder Drug Store had sealed the first floor from heat and



smoke being generated in the cellar. However, the wooden beams supporting it were being eaten away. The heavy dead load of the 5 inch terrazzo floor created a dangerous scenario. The combination of the added weight and the extreme fire conditions weakening the floor beams caused the sudden collapse of the floor at the rear of the store, where the cellar extension from 7 East 22<sup>nd</sup> Street was



constructed. There was no warning. The floor did not seem weak. The Firefighters from Engine 18, Ladder 7, the Chief from Battalion 7 and the Chief from Division 3 were hurled into the inferno as the floor collapsed. The following members plummeted into the cellar: Deputy Chief Thomas Reilly Division 3, Battalion Chief Walter Higgins Battalion 7, Lieutenant Joseph Priore Engine 18, Fr. Bernard A. Tepper Engine 18, Fr. James V. Galanaugh Engine 18, Fr. Joseph Kelly Engine 18, Probationary Fr. Daniel L. Rey Engine 18, Lieutenant Joseph Finley Ladder 7, Fr. Carl Lee Ladder 7, and Fr. John G. Berry Ladder 7.





Firefighter William McCarron, the 3<sup>rd</sup> Division Aide and Firefighter Rudolph Kaminsky of Ladder 7 saw the changing conditions at the front of the store. They made their way to the rear of the store to warn the firefighters from Engine 18 and Ladder 7 of the rapidly deteriorating conditions. They got to the rear of the store when the floor collapsed. They had made it to the edge of the collapse area and they could not escape the fire. They did not fall into the hole, but they succumbed to the heat and received fatal burns.

Immediately, Deputy Chief Al Hay of the 1<sup>st</sup> Division organized remaining firefighters in front of the Wonder Drug Store. They attempted to pull up the two hose lines from the store to use them to drive back the fire. They could not be pulled up. Another hose line was stretched and the fire was attacked. The heat conditions were extreme and the rescuing firefighters were at their limits of

endurance. Suddenly, fire appeared behind them and cut off their escape. A second hose line was stretched to extinguish that danger.

Firefighter John Donovan of Engine 18 was detailed to write summonses for the tour. Upon hearing that Engine 18 went to the scene of a fire, he grabbed his gear and went to the fire. He



arrived shortly after his unit was trapped by the fire and collapse. He was part of the effort to work their way to the rear of the store to save their fallen



firefighters. In the darkness, he made his way to the edge of the collapsed floor and fell into the hole. He was holding on to the hose line and the nozzle as he dangled into the blazing hole. Lieutenant Rudolph Alberda Ladder 24 and Firefighter Vincent Lambert Ladder 24

leaned over the hole and grabbed Fr. John Donovan and pulled him up and out of the fire-filled hole.

The collapse caused an eruption of fire. The drums of lacquer in the cellar had ignited when the collapse occurred. Fire was now extending throughout 7 East 22<sup>nd</sup> Street, 6 East 23<sup>rd</sup> Street, and 940 Broadway. Deputy Assistant Chief Goebel transmitted a 4<sup>th</sup> alarm at 2247 hours and a 5<sup>th</sup> alarm at 2328 hours.



Rescue attempts were being forged not only from the front of the store but also from the lingerie store to the right of the Wonder Drug Store. As they were working, several collapses of the first floor and the upper floors occurred.

Fire Patrolman Edward Popisil of Fire Patrol 1 was operating in the second floor of an adjoining building just prior to the floor collapse on 23<sup>rd</sup> Street. He came out to the street and saw Firefighters stumbling out of the Wonder Drug Store, some of them were on fire. Firefighters and members of Fire Patrol 1 assisted 7 firefighters out of the drug store. Fire Patrolman Popisil told his officer that he had a good idea where the trapped firefighters were in the store. He



drew a diagram. This greatly assisted searching firefighters in locating their rescue efforts.

Rescuing firefighters kept working their way toward the rear of the Wonder Drug Store. Finally, they found the bodies of Firefighter William McCarron from Division 3 and Firefighter Rudolph Kaminsky of Ladder 7 on the first floor. They were removed from the building at 0130 hours on October 18<sup>th</sup>.

Rescue efforts were still being conducted for the other ten missing firefighters as the fire was being fought. The eastern wall of 6 East 23<sup>rd</sup> Street was breached in two places from the adjoining building by using jack hammers.



9 Mayor Lindsay reaches into auto to console Mrs. James Galanaugh,.
(Photo by NY Daily News Archive via Getty Images)



(Photo by NY Daily News Archive via Getty)

News of the horrific fire spread quickly. Thousands of on-lookers showed up at the scene and watched from across the street at Madison Square Park. One of the people coming to the scene of the fire was Ginnie Galanaugh. Her husband was working in Engine 18 and was trapped in the cellar. She asked Fr. Tony Liotta, one of the other firefighters from Engine 18, if her husband was alright. He didn't answer; he just went over to her and held her. She cried out "Oh, no, not again." Her father was a Firefighter and was killed in the line of duty in Brooklyn in 1955.

At the change of tours at 0900 on October 18, 1966, twelve hundred

firefighters arrived at the scene of the fire. The total number of firefighters on the scene was now 2,000. They were looking to help in any way they could. The firefighters already on the scene didn't leave when the newly arriving firefighters showed up.

> (Original Caption) 18/18/1966-New York, New York- Firemen bow their heads and place their helmets to their hearts as the body of one of their comrades is carried by them, October 18, after rescue crews braved intense heat to reach the victims trapped in a flaming row of stores here. Twelve firemen were killed in what Mayor John Lindsay called 'the worst tragedy in Fire Department history.



(Photo by NY Daily News Archive via Getty

The rescuing firefighters reached the area of the fallen firefighters. Their bodies were placed in Stokes Basket stretchers and removed to the street. The time was 1100 hours on October 18, 1966. The last body was removed from the smoldering rubble. It was the body of Fr. Carl Lee of Ladder 7.





One of the victims being carried from the rubble in the 1966 Madison Square fire. Firemen carry the body of a dead comrade one of 12 out of ruins of building on Broadway at 23rd St. October 22, 1966. (Photo by Barney Stein/New York Post Archives / (c) NYP Holdings, Inc. via Getty Images)



Mayor Lindsay and Fire Commissioner Lower at the scene of the fire. NY Daily News Archive via Gettv Images)

Firemen in Madison Square Park listen to Chief of Department O'Hagan who spoke of the Saddest day in the 100year history of the fire Dept October 19, 1966. (Photo by Arty Pomerantz/New York Post Archives / (c) NYP Holdings, Inc. via Getty Images)

Chief of Department John T. O'Hagan was in Chicago on the night of October 17<sup>th</sup>. He arrived at the fire in the morning and was horrified at what he saw. He witnessed the body of Fr. Carl Lee being removed



from the building. He ordered all firefighters to the Madison Square Park across the street. He had all firefighters remove their helmets and bow their heads. Chief O'Hagan spoke: "This is the saddest day in the one-hundred year history of the Fire Department. They never had a chance. I know that we all died a little in there." He thanked everyone for their superhuman efforts and then they all observed a moment of silent prayer.

There were twelve widows as a result of this fire. There were 36 children that were left fatherless. On the morning of October 18, 1966, signal 5-5-5-5 was tapped out in every firehouse in New York City signifying a line-of-duty death.







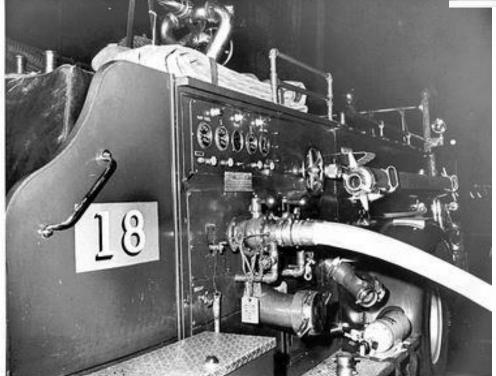




Mute Testimony to Tragedy -- Extra gear left behind by five of the 12 men who died fighting Monday night's fire at Broadway and East 23rd St. Stories and more Photo. October 19, 1966. (Photo by William N. Jacobellis/New York Post Archives / (c) NYP



Fireman Emanuel Fernandez, one of two survivors of Company 18, at the blaze scene. October 18, 1966. (Photo by Anthony Calvacca/New York Post Archives / (c) NYP Holdings, Inc. via Getty Images)





There was a massive funeral that was held on October 21, 1966. The funeral mass would be held at



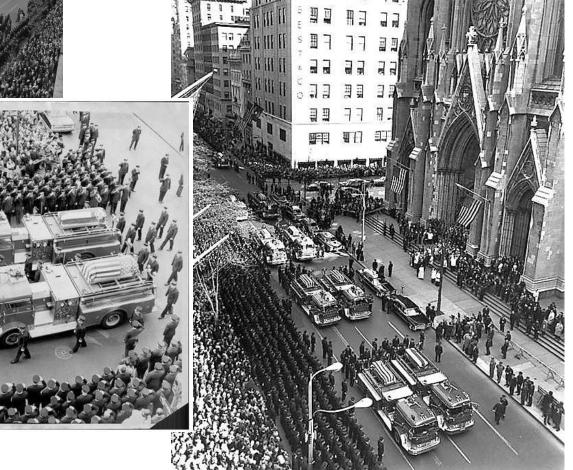
St. Patrick's Cathedral. There were 20,000 firefighters from all over the world standing at attention on Fifth Avenue in Manhattan to pay their respects. Ten of the twelve firefighters that were killed were laid to rest in

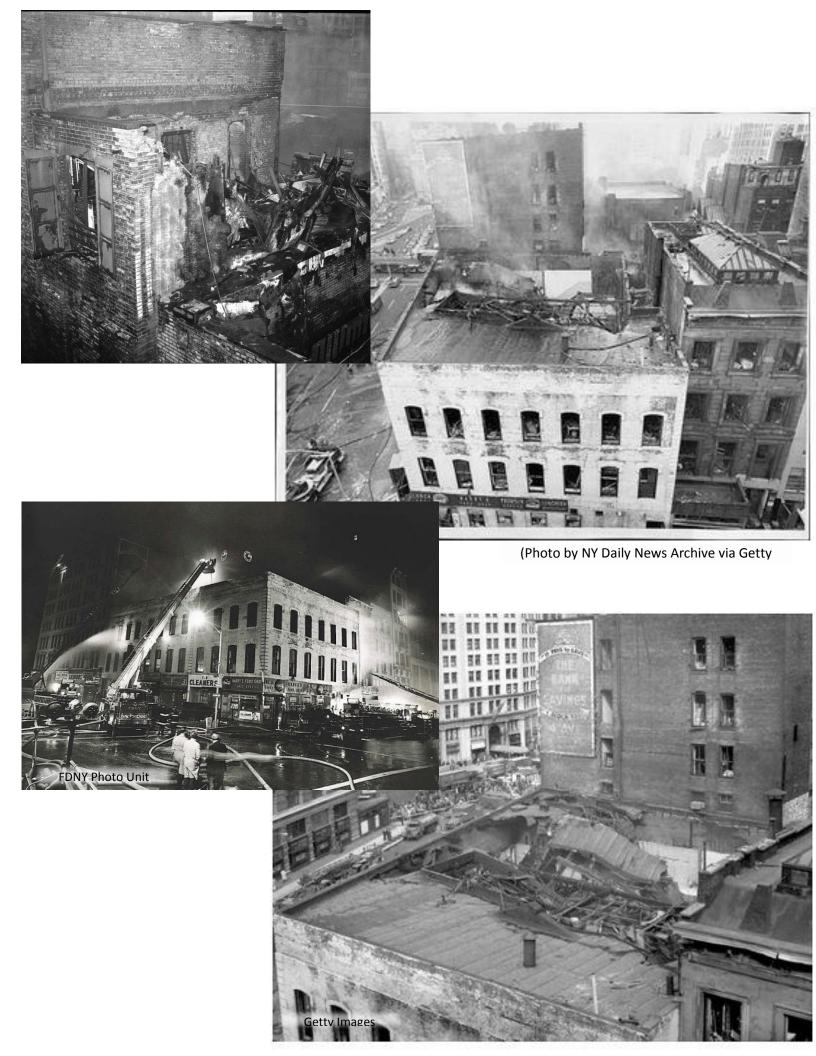
this funeral. Firefighter William McCarron's

funeral was held at St. Boniface Church in Elmont, Long Island. Deputy Chief Thomas Reilly's funeral was held at St. Brigid's Church in Westbury, Long Island.











The steel rim of fireman's helmet keeps the outline of the brim but much of its leather body has been consumed by the searing heat in which its owner died. Fireman Ronald Foote looks it over after it was found in the rubble of the building. "Daily News"

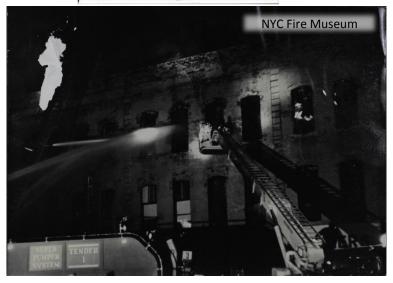


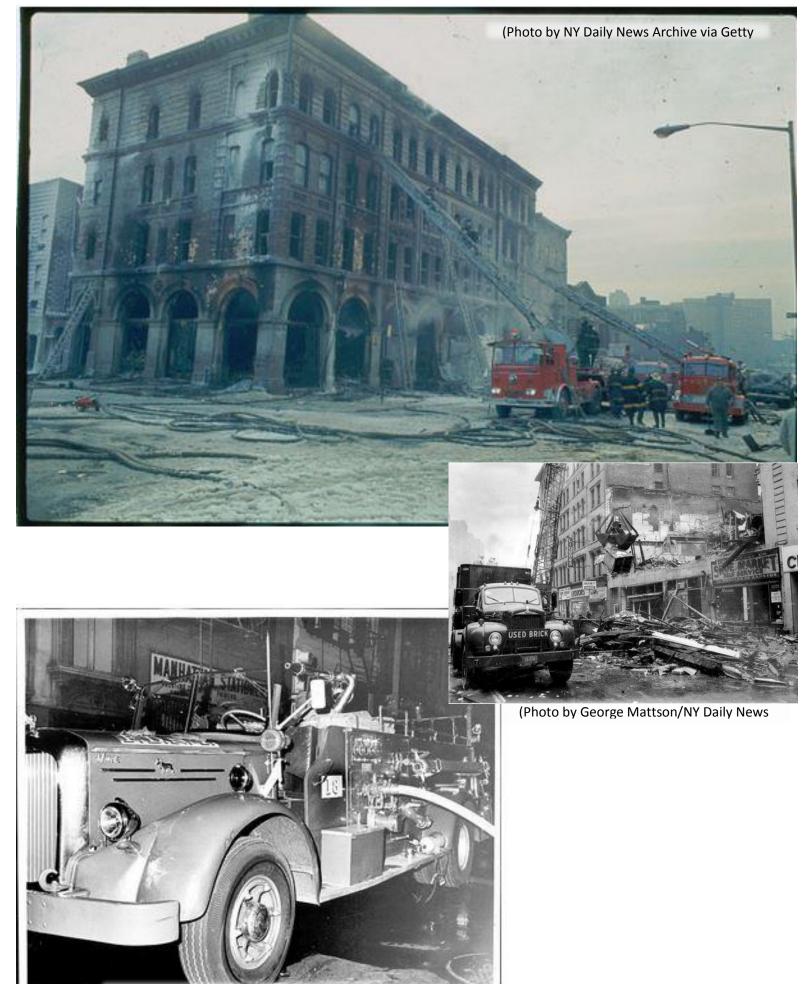






NOTE: All NYC Fire Museum photos were taken by photographer Arthur J. Weisberger. 1966





(Photo by NY Daily News Archive via Getty

The current Fire Academy was constructed in 1977. It was decided to name all the streets around the Fire Academy after the fallen firefighters of the 23<sup>rd</sup> Street Collapse.

**Deputy Chief Thomas A. Reilly, Division 3** 

Battalion Chief Walter J. Higgins, Battalion 7

Lieutenant Joseph Priore, Battalion 4 (Engine 18 Cov.)

Lieutenant John J. Finley, Ladder 7

Fireman William F. McCarron, Division 3

Fireman Joseph Kelly, Engine 18

Fireman Bernard Tepper, Engine 18

Probationary Fireman Daniel L. Rey, Engine 18



NYC Fire Museum Battalion Chief Higgins recovered helmet

Fireman James V. Galanaugh, Engine 18

Fireman John G. Berry, Ladder 7

Fireman Carl Lee, Ladder 7

**Fireman Rudolph** F. Kaminsky, Ladder 7

May they all rest in peace.

Never forget!

WNYF 1966







Daniel L. Rey Prob. Fr., Regize Co. 19



Carl Lee Fr. Let Grade, Ladder Co. 7



Themas A. Reilly only Caled. 3rd Distance

Walter J. Higgins



James V. Galanaugh Fr. lat Cents, Enclos Co. 10



William F. McCarron Fr. 1st Grade, 3rd Division





Rudolph F. Kaminsky Fr. 1st Grade, Ledder Co. 7



As has been shown time and time again, renovations to buildings are generally bad for the fire service. Unless the renovation is the installation of a sprinkler system, it is probably a danger to operating firefighters.

Any time a masonry wall is breached by a building owner or occupant to enlarge occupancy, an automatic fire door should be installed on both sides of the opening. Any kind of alteration that increases the square footage of a building must be approved by the Department of Buildings.

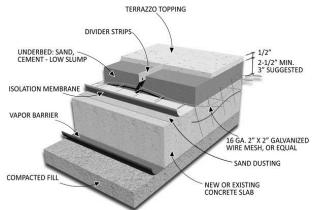
Locate the fire, Confine the fire, and extinguish the fire. This basic firefighting strategy applies to all our fires. The firefighters



operating at the 23<sup>rd</sup> Street Fire could not locate the fire due to the unknown alteration and interconnection to the buildings on 22<sup>nd</sup> Street and 23<sup>rd</sup> Street.

The longer a structural fire is burning, the greater the likelihood that there will be a collapse. There is never a stalemate. Wooden beams get eaten away. Steel weakens. If we are not winning the firefighting battle, we are losing the battle.

When a concrete (or terrazzo) floor is installed on top of wood floor joists, it greatly increases the dead load to the floor. It also seals off the floor from heat coming from below at a fire. The floor joists could be dangerously weakened without it being detected over the fire.



While on Building Inspection Safety Program (BISP), be inquisitive. Ask yourself what is supporting the floor we are on. Look at the underside of floors to see how this floor is resisting the forces of gravity. Anything other than the

original construction should be entered into the Critical Information Dispatch System (CIDS). The CIDS program is only as effective as the quality of entries into the dispatch system.



There is a structural hierarchy. It is progressive. It is listed here in the least dangerous collapse to the most serious:

Floor deck, 2. Floor beams, 3. Girders (a beam that holds up other beams),
 4. Columns, 5. Bearing walls.

There are three ways to protect yourself against floor collapse:

- "Floor deck collapse: Sound the floor. When searching in smoke, use a tool to probe the floor in front as you move forward or when advancing and directing a hose line, keep one leg outstretched to feel for floor openings or weakening. Sounding the floor can protect a firefighter from floor deck collapse.
- Floor beam collapse: Use the reach of the hose stream. When encountering a weakened section of floor, use the reach of the hose stream to avoid the danger area. Using the reach of a hose stream can protect firefighters from a floor beam collapse.
- 3. Multi-Level floor collapse: Withdraw firefighters. When there is a danger of multilevel (progressive or disproportionate) floor collapse, withdraw firefighters from inside the burning building and set up defensive master streams around the building outside a collapse zone. When floors collapse they can sometimes cause a secondary enclosing wall collapse. So firefighters must be withdrawn outside the collapse zone or positioned to flank the fire, away from all four walls. When there is a multilevel floor collapse, firefighters outside the building can be killed by the secondary wall collapse." "Collapse of Burning Buildings, 2<sup>nd</sup> Ed.", by Vincent Dunn, pp. 85"

### Deputy Chief Jay Jonas, Division 7

Resources: "The 23<sup>rd</sup> Street Fire As It Happened" by Frank Cull; The report of the FDNY "Board of Inquiry of the 23<sup>rd</sup> Street Fire and Building Collapse"; Revisiting the 23<sup>rd</sup> Street Fire, WNYF 3<sup>rd</sup> Issue 2006, by Assistant Chief Howard J. Hill; "The Fires" by Joe Flood; "Building Construction for the Fire Service, 3<sup>rd</sup> Edition" by Francis L. Brannigan; "Collapse of Burning Buildings, 2<sup>nd</sup> Edition", by Vincent Dunn.

Thanks to the following people who contributed to this essay: Deputy Chief Vincent Dunn (Ret.); Battalion Chief Royal Fox (Ret.); FM Daniel Maye (Mand Library); Katy Clements (FDNY Photo Unit); Leslie Ifill (FDNY Fire Records Unit); Amanda Pietrzykowski (NYC Fire Museum); Fr. Chris Roberto.

NYC Fire Museum

