



Structural Building Components Association

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March 11, 2015

Honorable Vincent Prieto
Assembly Speaker
New Jersey Legislature, District 32
1 Harmon Plaza Suite 205
Secaucus, NJ 07094

Dear Speaker Prieto:

The fire at the Avalon at Edgewater apartment complex was a terrible tragedy. While there were no fatalities, a number of residents have been displaced, and it is understandable for there to be a public outcry over the speed at which this building was consumed by fire. Beyond the emotive response by residents, witnesses and the fire service, a look at several facts surrounding the spread of the fire found in the [Avalon Fire Chief's report](#) should be cause of concern:

Authorities said the fire at the 408-unit apartment complex was accidentally caused by unlicensed maintenance workers using a blowtorch while doing plumbing work. One of the workers told emergency responders at the scene that he had been welding pipes, the fire chief's report noted.

Police Chief William Skidmore said earlier this month that the maintenance workers called their supervisor when the fire broke out, but it does not appear they ever dialed 911. Emergency responders learned that fire alarms had sounded at Avalon from an alert from the alarm company, he said.

"When [the workers] realized there was a problem, they called their supervisor," Skidmore said. "Their supervisor came over. In the interim, the fire alarm had triggered."

"At this point, we found nothing to indicate that they made a call" to 911, he added.

Not being notified immediately resulted in an approximately 15-minute delay in emergency response time, authorities have said.

The Edgewater Fire Department received a call of an activated fire alarm at 4:21 p.m., and the first firefighter arrived a minute later, according to the report. One of the first responders reported an activated sprinkler in the hallway and smoke, and by 4:42 p.m. or shortly after, "I was getting reports from inside crews that the smoke was getting worse and the floors were getting soft on the 2nd floor," Jacobson wrote.

Tenants were still being evacuated about 20 minutes later, the chief wrote. "The conditions on the 2nd and 3rd floors were getting worse. ... Fire crews were still opening walls and ceilings, chasing fire through the walls and floor."

SBCA Councils



Partnering with SBCRI for confidential research and testing.

In summary, the Fire Chief's report indicates the building fire grew and became fully developed in less than 45 minutes, between roughly 4:06 p.m. and 4:42 p.m. The vital question is how could this have happened so quickly? We ask you to consider the following:

- In order for a fire to start and spread in the Edgewater building, it needed three conditions: fuel (something that will burn), heat (enough to make the fuel burn), and air (oxygen).
- The maintenance workers provided the heat source with the welding torch; the flammable building materials and contents of the apartments provided the fuel; but, where did the flow of oxygen come from?
- A good illustration here is starting a fire in a fireplace. If there isn't a sufficient draft (flow of oxygen), the fire will not stay lit for long despite the heat and fuel provided.
- Barring an unknown and uninhibited source of heat or fuel (i.e., a broken natural gas pipe) not currently identified in the public record, an unimpeded flow of oxygen must have been present to allow the fire to spread so quickly.

This means a significant chimney effect had to be present from the origin of the fire upward through the walls, into the floors and all the way to the roof. This should be cause of great concern because the building code requires draft stops throughout the building to prevent this kind of air flow. These draft stops, along with the application of gypsum wallboard, have traditionally proven effective at containing a fire for at least one-hour periods of time into compartmentalized areas. If the building was inspected and approved as being built to the code, how could the Avalon at Edgewater fire have become fully developed in less than 45 minutes?

Also troubling is the fact that sprinklers were located throughout the building, yet they seemed to have little effect. If the building had been properly compartmentalized per the requirements of the building code, at least a few of the sprinklers should have gone off within the path of the spreading fire, slowing its progress. This does not appear to have happened either, again suggesting something was not right.

What is disappointing is the fire service has been [quick to blame lightweight construction](#) for the rapid spread of the fire:

In a telephone interview following the devastating Jan. 28 fire in Edgewater, Edgewater Fire Department Chief Thomas Jacobson said the main reasons for the intensity of the fire was the lightwood construction of the building, and that there were no water sprinklers in the trusses. He said there also were no water sprinklers in the wall spaces.

"I'm not telling anyone how to build a building, but there should be concrete firewalls," Jacobson said. "There were none. Just the elevator shaft and the stairwells were concrete."

Jacobson said the building that was recently destroyed had no concrete firewalls or metal studs. The studs they had, he said, were made of wood, two-by-fours, with metal plates. "They were just stapled together," he said. And the only fire doors were in the stairwells, he added.

The focus above is on the fuel, in this case the wood-framed construction of the building. However, the facts, science, physics and the building code suggest something entirely different caused the fire to burn so quickly.

To place responsibility on lightweight construction materials, which includes 2x10s, wood stud walls, wood I-joists, wood trusses, and cold formed steel joists and trusses has limited basis in fact, based on past building fires, research and testing.

There are hundreds of millions of square feet of lightweight and engineered construction built in this country (both Type V protected and Type V unprotected), along with a myriad of combinations of protected and unprotected construction types. A vast amount of buildings are constructed this way not because the products are cheaper than 'traditional products,' but because they provide great value to the public, and in many cases are used because they are the only products that can do the job for the given application.

Again, the building code is intended to compartmentalize fires of this type and block the fire from spreading as quickly as this fire obviously did. It's a shame there isn't equal media coverage of all the annual instances when the compartmentalization process and sprinklers save the day. While the Avalon fire was dramatic and should be reported to the public, this fire has to be placed into historical context and with a common sense perspective.

Based on unprotected (non-compartmentalized) ASTM E119 fire endurance testing of 2x10s, wood stud walls, wood I-joists, wood trusses, and cold formed steel joists and trusses, all of these products last less than 10 minutes under fire conditions. That is why, in high occupancy conditions, the building code requires an ASTM E119 1-hour rated compartmentalization. The details of historical performance and recommendations for improving performance can be found on the National Fire Protection Association's (NFPA) website in the [1992 National Fire Protection Research Foundation Technical Report](#) entitled, "National Engineered Lightweight Construction Fire Research Project." A more recent example is a 2009 report published by the Underwriters Laboratory entitled, "[NIST ARRA Appendix C - Full-Scale Floor System Field and Laboratory Fire Experiments](#)."

For the long term, the Structural Building Components Association (SBCA) has consistently taken positions that support fire fighter safety through the application of smoke detectors, a [uniformly applied ½" gypsum wallboard membrane](#) and/or [uniformly applied sprinkler systems](#) such as NFPA 13R, 13D and 13. SBCA seeks to continue collaborating with those who desire to take the long-term public policy approach, and assess all the pros and cons of public policy actions based on historical data, sound science and the laws of physics and the need for public safety. SBCA believes this approach will lead to the development of recommended solutions that are fair, responsive to public need and still allow for economically engineered construction to take place at a reasonable risk of accidents.

We would love to have a more in depth discussion with you about our organization's positions and policies regarding fire fighter safety and the building code, and share with you the considerable data we have collected on the fire performance of structural building components. Thank you for your time and consideration.

Sincerely,



Kirk Grundahl, P.E.
Executive Director