

What is the cost for masonry fire containment walls?

Actual costs will vary depending on building design, but let's look at a conservative example.

1201 Covell Village Apartments

Edmond, Oklahoma

141 units

Destroyed in October, 2009 (Originally Enclave Apts)

Estimated Damages: \$14.5 million³ +

The complete destruction of this apartment complex by fire spurred the City of Edmond to include masonry firewalls as a requirement when they adopted the 2012 IBC.

For our conservative cost illustration we will use the published "damages" of the original complex as the *construction cost* and *tax value* of the new structure which re-opened in 2014.

The inclusion of two masonry firewalls are apparent in the photo of the rebuilt complex. Each firewall is approximately 75' wide by 60' high – a total of 4,500 sq ft. Assuming a \$4.00 per sq ft increase in construction cost over a gypsum firewall system, the **two masonry firewalls should add approximately \$36,000 to the cost of construction – or 1/4 of 1% or \$255 per door** (unit).

What is the cost for not having masonry fire containment walls?

If this same apartment complex were located in Houston and suffered the same turn of events, what would the cost be to the citizens of Houston? Besides the direct costs to



the city in responding to the fire and subsequent litigation, consider the loss of property tax revenue over the five-year period the property was off the tax rolls:

\$14.5 million Taxable Value	
Property Tax @ .631080 per \$100	\$91,506.60
HISD Tax @ 1.196700 per \$100	173,521.50
HCC Tax @ .106890 per \$100	15,499.05
Annual Tax Revenue Loss	\$280,527.15

Total Tax Loss Over 5 Years (\$1,402,635.75)

"The City of Houston has the power and responsibility to safeguard its citizens by strengthening building codes. (The City) should require masonry fire walls...in all new multi-family residential construction."

– Mukaddes Darwish, PhD, Texas Tech University, Department of Engineering

You're Building A Legacy.



Multi-unit residential fires can develop more aggressively and potentially pose more dangers than just a few decades ago.



Newly introduced lightweight construction materials – including particle board – can fail much faster under fire conditions than materials of the past. And, today's furniture is largely constructed with synthetic materials, including energy-rich, highly combustible polyethylene foam. Taken together, modern residences and their contents can burn eight times faster than those of decades ago, according to Underwriters Laboratories (UL).

just 3 minutes, 40 seconds. The average response time for the Houston Fire Department is about 6 minutes and it's likely that firefighters will encounter a fuel-rich load when they arrive on the scene.

Knowing that we are building with modern materials that add fuel to fires, we must take special measures to reduce the risks of today's faster moving, hotter residential fires. A multi-pronged strategy is warranted.

"The sprinklers were working and went off, but they were no match for these flames."

– Fire Chief Thomas Jacobson commenting on the massive fire that consumed the *Avalon at Edgewater* complex (pictured above) in Edgewater, New Jersey.

For instance, tests show that furniture in the modern room burns very aggressively, and the room reaches flashover in

Effective fire protection must have all three.



Endorsed By

"The Houston Professional Firefighters Association voted unanimously to support the requirement for Masonry Firewalls in all new multi-family construction in Houston. We call upon the Houston City Council to adopt fire protection standards that actually save lives and property and not settle for half-measures." – Alvin White, President, HPFFA Local 341



¹NFPA, 02/2015; ²NorthJersey.com, "Opinion: A preventable blaze" 02/01/2015; ³The Edmond Sun, May 16, 2012

Why Masonry Fire Containment Walls?

First and foremost – Safety. Safety for the occupants, firefighters and for the public at large.

Of all possible construction systems, no other material offers the utmost protection from fire. Masonry materials do not burn. They do not contribute fuel to a fire nor do they emit toxins. Masonry maintains its structural integrity at extremely high temperatures and can contain a fire for hours. These unique properties make masonry the ideal solution for fire-rated walls required by building codes. Masonry fire walls protect people and property from the fast-moving intense fires fed by today's lighter construction materials and the synthetic materials that fill our homes.

“Fires move faster today because of construction materials and even experienced firefighters can be victims...”

– Terry Garrison, Fire Chief, Houston Fire Department

A firefighters' primary responsibility is to save lives. They are trained to be aggressive when they suspect there may be occupants inside a burning building. A fast moving fire through a maze of apartments creates an unacceptable level of risk for firefighters and victims; a risk that can be mitigated and checked with the implementation of masonry fire containment walls.



The fire above engulfed two-thirds of the Los Angeles Da Vinci's 1.3 million square foot structure. "It was the perfect storm, if you will, for fire spread. There were no dividing firewalls between the different components of it," says LAFD spokesperson David Ortiz. "So we had five stories of a wood frame without any type of fire protection." he added. – 12/08/14, Washington Post

Cities are adopting local building code amendments that further protects its firefighters and its citizens.

The International Building Code has become weaker over the years and actually represents a reduction in fire and life safety protections. Here are a few examples of local municipal amendments to strengthen IBC 706.3: *Firewalls shall be constructed with "masonry materials" or "concrete or masonry materials."*

Responsible cities adopting this enhanced code amendment include: Edmond, Oklahoma; Steamboat Springs, Colorado; Geneva and St. Charles, Illinois and the entire state of Kentucky.



March 25, 2014
Axis Apartments
Houston, TX
200 Firefighters at Risk



December 8, 2014
DaVinci Apartments
Los Angeles, CA
200 Firefighters at Risk



December 29, 2014
Wedgewood Apartments
Castle Hills, TX
150 Firefighters at Risk



January 22, 2015
Avalon Apartments
Edgewater, NJ
250 Firefighters at Risk

Masonry Fire Walls

- offer the utmost protection to lives and property against a spreading fire
- can maintain structural integrity when exposed to extreme heat
- do not contribute fuel to a fire
- can contain a raging fire for hours
- do not emit lethal toxins
- have the unanimous support of HPFFA Local 341.

Glenn P. Corbett, author of "Brannigan's Building Construction for the Fire Service," 5th Edition is currently Associate Professor of Fire Science & Chair of the Department of Protection Management at John Jay College of Criminal Justice. Among his many professional accomplishments he has served as Technical Director of Fire and Safety magazine and is a licensed firefighter in Texas and New Jersey. He makes these points about fire safety using today's construction methods:

- “Ask most firefighters and they will cite three potential factors (contributing to multi-alarm apartment fires)– lightweight wood frame construction, a partial fire sprinkler system and lack of effective fire barriers.”
- “Firefighters nationwide know that lightweight wood trusses collapse easily and quickly under fire attack. In addition, the triangle form of the trusses with large openings between its small components allows fire to spread quickly within and through them, spreading throughout floors and attics with incredible speed. Once the fire has taken possession of a portion of a truss floor or attic, it is an unstoppable situation for any fire department.”²
- **“The solution to the problem is very clear...if we are to continue with wood-frame construction, masonry fire walls (should be required) that run from the foundation through the roof...”**

Gypsum walls can't take the heat.

The difference between a material's fire rating and actual performance in a fire can literally mean life or death. In independent laboratory tests conducted on common gypsum walls and AAC block walls under the two-phased (furnace and water application) protocol of ASTM E-119, the AAC block wall assembly emerged unscathed, while both gypsum walls disintegrated. Yet, both walls could still “earn” a 2-hour fire rating under E-119. Videos of the tests are on www.imiweb.org.

For gypsum wallboard to be effective at all in even slowing down a fire, the system of walls, ceilings and doors must remain completely intact – no holes, cracks or gaps. Otherwise the barrier is compromised and the flames will spread.



“Avalon at Edgewater was built in accordance with the fire and safety codes applicable at the time,” said Michael Feigin, Avalon Bay's chief construction officer.

As he surveyed the damage in Edgewater David Kurasz, executive director of the New Jersey Fire Sprinkler Advisory Board said, “it might be time to re-look at the codes.”



In the Axis apartment fire in Houston, as in most multi-unit residential fires, the only walls left standing were the masonry walls – stair wells and the adjacent parking garage.

Firewall ratings are not the same as true fire performance. Masonry firewalls contain fires where they start. Period.

