Smoke Dampers and Fire Dampers Could Have Prevented This Event.
But, Were Not Part Of The Original Design Of This Building.

1634 Makiki st January 2005.

Condo Fire started in 1 apartment and spread to 4 apartments above.

The following photos were taken by Randy Trager (2007) as part of preparing the building permit plans for the owner.
Note the fire charred ceiling in the bath room.

Note the ceiling holes: no fire stop to fill the gap; required by today's codes.

The fire started in the bathroom after a fan sitting on the lavatory countertop fell into the sink bowl when it was filled with water…shorted out the fan causing an instant fire. The bathroom exhaust fan was operating and sucked up the smoke and flames which spread upwards through the common exhaust duct to the apartments above this apartment.

http://the.honoluluadvertiser.com/article/2005/Jan/28/ln/ln34p.html retrieved 5-18-20

Makiki fire destroys five apartments

By Peter Boylan

Advertiser Staff Writer

A fire at a Makiki apartment complex gutted five units yesterday in a blaze that Honolulu firefighters said illustrates the need to retrofit older apartment buildings with automatic sprinkler systems.

No one was injured, but a resident's cat perished, authorities said.

Five families — 11 adults and one child — were displaced by the fire, according to a statement released by the American Red Cross. Food and clothing were provided for those residents, and two of the families also were given temporary shelter because they had nowhere else to go, the agency said.

HFD received the call at 10:20 a.m. yesterday. By the time units responded 2 minutes later, the fire at 1634 Makiki Street was roaring. Firefighters believe the blaze started in Apartment 701, but said they will wait until investigators complete their inquiry before pinpointing the fire's origin. The fire burned apartments 701, 801, 901, 1001, and 1101.

"An automatic sprinkler system would have stopped the spread of the fire," said HFD Capt. Kennison Tejada. "That's the thing we really needed today."

Tejada said the building was in compliance with city building codes. No immediate damage estimate was available yesterday.

Mailelani Lee, a blind, elderly woman who lives with her sister in Apartment 301, four floors below the fire, was carried out of the building by two police officers. She said she was not alarmed by the smell of smoke or the alarms.

She was, however, upset about being forced to sit across the street while firefighters finished putting out the fire.

"It's no picnic," she said, shaking her head.

Firefighters work from a lanai as fire rages above them in the 11-story condominium. Five units were destroyed yesterday in the fire at 1634 Makiki St., displacing 12 residents.

Photos by Deborah Booker • The Honolulu Advertiser

Five apartments were left blackened shells by the fire, and debris rained down on the parking lot below, damaging a car. The building is one of many on O'ahu built before 1975, and therefore not required to have an automatic sprinkler system.

Darryl Oku, a 42-year-old sheriff, said he heard an alarm and saw smoke coming from the building while he was picking up branches at his family's apartment complex across the street. He said that after calling 911, he ran to the building and started yelling for occupants to get out.

"That's devastating for the families," he said as he watched flames consume the 11th-floor apartment.

At 10:45 a.m. yesterday, flames could be seen from H-1 Freeway leaping over the mauka side of the 11-story building. The structure, shaped like a shoebox turned on its side, was mostly unharmed save for those five units.

Thick black smoke billowed from the 9th, 10th, and 11th floors as flames framed each of the burning apartments' glass windows, which cracked and popped in the heat. Residents in the neighborhood, which is made up of a mix of low- and high-rise residential buildings, gathered in the streets behind police barriers to watch.

Prior to 1975, high-rise residential buildings were not required to include automatic sprinkler systems. In 1975, a law was passed requiring that all buildings taller than 75 feet be built with sprinkler systems. Firefighters and a city official estimate there are more than 200 residential high-rises on O'ahu that do not have sprinkler systems.

Richard Soo, a retired fire captain, said the majority of the buildings without sprinkler systems are in the Makiki and Salt Lake areas. He said yesterday's fire made him fear for the safety of firefighters working in buildings without sprinklers.

"As a retired firefighter, this is a firefighter's nightmare what I saw today," said Soo, who was at the scene. "It just brings to mind my wish to fully sprinkle high-rise buildings throughout O'ahu."

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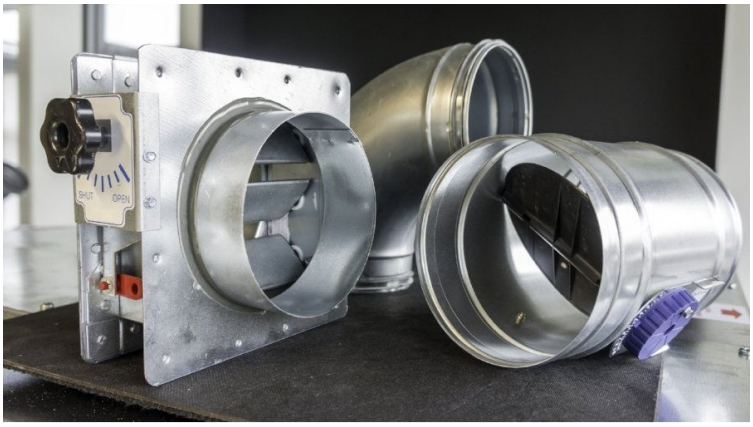
http://news.lifesafetyservices.com/blog/difference-between-fire-and-smoke-dampers
5-28-20



Difference Between Fire and Smoke Dampers

0 comments Damper Inspection, Life Safety Services 18.04.2018

Fire, smoke, and combination dampers have been and continue to be an important part of a facility's passive fire protection system. Each of these dampers have been designed to prevent the spread of fire and smoke through the ductwork of a facility. But do you know the difference between fire and smoke dampers?

FIRE DAMPERS:

Fire dampers prevent the spread of fire within the ductwork through fire-resistance rated walls and floors. They work when the heat from the fire causes the normal temperature of a room to rise to about 165 degrees Fahrenheit. That heat causes the fusible link, which is holding the damper open, to melt and allows the damper to be closed. There are two types of fire dampers:

- **Dynamic Fire Dampers** – Are installed in vertical barriers, where the HVAC system fan will continue to blow in the event of a fire. Because the fan will stay on, the spring loaded design helps the damper to spring shut against the air pressure.

- **Static Fire Dampers** – Are installed in barriers where the HVAC system fan will shut off in the event of a fire. Because the fan will turn off, these dampers are designed like a curtain, allowing the damper to fall and shut due to gravity.

SMOKE DAMPERS:

Smoke dampers resist the passage of air and smoke within the ductwork. They are typically operated by a smoke detector, which would also be located in the duct. Once smoke has been detected, the smoke detector sends a signal to the dampers actuator, which uses the jackshaft and linkage to open and close the blades of the smoke damper. There are two types of actuators:

- **Pneumatic Actuators –** Need air to function properly

- **Electrical Actuators –** Need power to function properly

To get the best of both worlds, combination dampers are used in areas where both fire and smoke barriers are located to prevent the passage of both fire and smoke between areas.

http://news.lifesafetyservices.com/blog/safe-from-flashover-thanks-to-passive-fire-protection
5-28-20

Safe From Flashover Thanks To Passive Fire Protection

1 comment Damper Inspection, Fire Door Inspection, Fire Stopping 27.03.2017

When passive fire protection is discussed it is usually in the context of compartmentalization, and keeping one area safe from the smoke and flames in a different area. The reason this is so important has to do with the different stages of a fire, and how the fire would be able to spread during those stages.

When the fire is first staring out it might be smaller and burn at lower temperatures. This may seem safer, but those low temperature flames cause significant amounts of smoke and toxic gases to be released. Considering that 70% of all fire victims actually suffocate, this smoke can be more hazardous than the actual flames.

The passive fire protection is in place to keep this smoke from being able to escape the compartment on fire, keeping occupants safe while they escape.

After the fire has been burning for a while, the smoke gas contained in the room will cause everything in the room to heat up significantly, and if this gets hot enough it can cause a flashover. A flashover occurs when every combustible element is simultaneously heated to a point that causes spontaneous ignition. This point can turn a slowly smoldering flame into a roaring fire within seconds, engulfing everything in intense heat that can be around one thousand degrees Fahrenheit.

During the flashover the gases and combustibles igniting is essentially an explosion, which creates an intense burst of pressure. Passive fire protection in place helps contain this pressure, and prevents it from being able to spread into other areas. This pressure has been known to blow open a closed fire door or shatter windows, and if the fire dampers and firestop are not properly installed the ventilation and holes in the wall can act like a chimney, with the super-heated air forcing its way into other areas.

This is likely how the fire spread from the apartment of origin to the four apartments above it. The value of smoke and fire dampers is to assist in keeping the remaining apartments above from being damaged.