

Fire survival may depend on building's construction

By Kathryn Reed

Houses have holes in them that owners don't always think about, but which fire seems to know exist. That is one of the conundrums when it comes to fire prevention.

Building codes continually change to help suppress fire. Vegetation through defensible space has been a help for years.

Windows and vents are likely the next areas where fire prevention is headed.

"The next iteration is the shuttering concept," South Lake Tahoe Fire Chief Jeff Meston told *Lake Tahoe News*. "I think this is where we are going. It will take a while. Then we will have a fire-proof house."

Shutters over windows have existed for decades in Europe. They were instituted a century ago to protect buildings during the wars because of the fire bombings.



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Most are made of aluminum or steel. They can drop automatically based on temperature, then gravity brings them down.

Murray Milne, a research professor of architecture at UCLA in a paper about designing a home to survive a wildfire, wrote, "Windows are the weakest link in defending your building, but there are clever ways to protect them. Radiant heat alone from the fire can shatter glass or ignite combustibles inside your living room, without the flames actually reaching your house. Single glazing is particularly vulnerable; a better choice is double glazing with tempered glass on the exterior. However, the safest solutions are roll-down metal fire doors built into the roof overhangs or side recesses, and released automatically by fusible links."

Meston also recommends using tempered glass instead of plate glass because it can withstand higher temperatures.

Other holes, so to speak, are the outside vents on a building. If an ember enters this way, it's easy to ignite insulation or some other combustible source. It could smolder for a while, without anyone knowing what is going on until the flames erupt in the attic or crawl space.

"Continuous roof ridge and soffit vents are very effective as attic ventilators, which makes them extremely difficult to protect from wind-driven sparks and embers," Milne wrote in his paper.

While the vents are necessary to prevent wood decay, Meston suggests screens that prevent objects larger than one-quarter

inch from entering.

With devastating fires becoming more the norm, especially in the West, people are looking at ways to keep structures standing.

Money will always be an issue. The more rules, the more expensive construction becomes. Retrofitting might not even be possible depending on what the regulations are.

Then there are those who would argue not everything is supposed to be saved. And firefighters know that not everything can be saved.

“When the wind blows hard there is not much we can do,” Meston said. “We can’t legislate Mother Nature. She wins every time.”

He pointed to how even when everything is done correctly, there are no guarantees a building will still be standing after the fire is suppressed. A Kmart in Santa Rosa that had sprinklers was reduced to ashes last fall.

That’s one of the conundrums – best practices aren’t always enough.

But what Meston, who is the president-elect of the California Fire Chief’s Association, and his peers are talking about is how to keep the fire from entering a house.



Ultimately 254 houses burned in the Angora Fire in 2007.
Photo/LVFPD

South Lake Tahoe prepares

Meston is in the process of putting together a study called the Standards of Cover. The 18-month project is expected to culminate this summer. It is an in depth look at all the safety issues in the city. Every dwelling in the city is being recorded – including the type of siding, construction materials and vegetation.

Firefighters go into as many buildings as they can to see what they would encounter in an emergency. It's called pre-incident planning.

Socio-economics play a role in all of this. Squalor is one way to describe some of the hotel rooms in town, even traditional residences. A match could torch these places; it wouldn't need

to be a horrific fire like those that ravaged the Wine Country and Southern California last year.

“Usually in a wildland fire you decide which you can save and which you can’t,” Meston said. Firefighters know which roads to bring rigs onto based on how easily they can exit.

When smoke is thick it’s hard to see obstacles, like trees in the middle of the road – which exist in the Al Tahoe area. And if firefighters are coming from out of town to provide aid, detailed data will help them be safe as they work to control whatever disaster is unfolding.

Once the report is complete it will be presented to the City Council and to the public.