



CHIEF'S FILE CABINET

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The Three Little Pigs

The three little pigs and the big bad wolf were experts on building construction. In the first case one of the pigs built his house out of straw. Another one built it out of wood and the third one built his out of brick. If you recall the outcome of that fairy tale the wolf got to eat two of the pigs because the building materials did not withstand the assault by the windy wolf. As he huffed and he puffed he was totally unable to knock down the brick wall and therefore had to be satisfied with two wins and one loss.

Now let's translate that into fire service jargon. Would you believe it if I told you that here are houses now being built out of straw? There are houses being built out of wood. And there are houses built out of brick. Which one is the easiest for a firefighter to fight a fire in? And, more importantly which one is the most dangerous for a firefighter to fight a fire in?

The answer may not be as simple as comparing straw against wood against mortar and brick. It may have more to do with the fact that each building construction technology creates an environment in which fire behaves and interacts with the building in a specific fashion.

It behooves every fire fighter to know as much about building construction as they possibly can. Moreover, it is a body of knowledge that an individual can never take for granted. By the time a person has reached the fire officer rank they should be very familiar with building construction under fire conditions. What you learn about building construction during the recruit academy course – follow that by maybe a community college course is absolutely nothing compared to what you will learn and need to know in the street.

One of the best examples of this being brought to my attention was when the fire service first became familiar with the gang nailing problem. That was over 25 or 30 years ago. When the building code people approved the use of gang nails they did not foresee what they would do under fire conditions. Before the fire service began to see that the construction of trusses like this was a serious problem we had firefighters get injured. Trusses that were held together by metallic cleats that collapsed quite abruptly created a very tough lesson. In Orange County California an engine company fighting a fire in a common single family dwelling suddenly found themselves confronted with a ball of fire when the gang nails came loose and the building came tumbling down. The technology is still in use. In spite of the danger to firefighters it has remained in the codes. You might say it survived a very serious incident better than the firefighters did. And you know what else. It is probably going to stay in the codes

From the firefighters perspective merely knowing what the building codes require and being able to identify building type might get you through a written examination but it will not necessarily keep you safe on the fire ground. Other authors such as the Brannigan family and fire science instructors in



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building design and construction can provide an entire body of knowledge about the basics of building construction. I do not wish to dwell on that.

What I would like to dwell upon is the fact about what you know may not be that way at all. I will give you three specific examples. The first of these is in straw bale house construction. Have you ever seen one? It may well be authorized by your building code right now? If you had a fire in one in the middle of the night tonight, what kinds of problems would you expect to run up against?

One of the more interested aspects of these buildings is they have an incredibly high "R" Factor. This is a rating of a material in terms of the insulation power of the materials. A common residence might have a wall that has thickness of only 2 x 4 with the dry wall on both side and panels of insulation stuck in between, whereas, a rice straw building may have a wall that is 18" thick. Just wait until you begin the overhaul by going into a wall like that.

But there is even a newer trick in town. How many of you have seen an SIP? This is a new concept for the construction of buildings that is based upon structurally insulating particleboard, i.e. SIP's. SIP looks like a giant ice cream sandwich. It is fabricated with solid veneer panels on both sides and the interior area is packed with semi rigid foam. This particular construction technique is being advocated as a method for rapidly building single-family dwellings. And when I say rapid, I mean rapid. These panels have been tested under conditions where buildings are constructed within days versus weeks.

If you would like to know more about SIP's don't look in a fire protection manual. You are not going to find much about it. Instead go to a magazine called This Old House. In the November issue, on page 17 there is an article about how this material is revolutionizing the construction of developments in some parts of the country. It might even be in your own community right now.

I have two questions for you. First off, were you aware of SIP's? Secondly, do you know what you are going to do when you have your first fire in an SIP building? If the answer is no and no then the big bad wolf is going to win. You can huff and puff, but the building may not act like we think it should when it is on fire.

Innovators in the building construction game are trying to find ways of building that are cheaper. In many cases, this translates into lighter. This is so that builders and developers can meet increasing demands in the field of housing by building faster and more inexpensively. Hardly any of these innovations are desirable from a fire protection point of view. When they are incorporated without fire service involvement they become potentially dangerous.

If you believe that firefighter safety is a top priority then it is virtually impossible to ignore some of these building techniques. I am not suggesting that any of these techniques are inherently unsafe. What I am



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suggesting is that they are significantly different than what you have reason to believe is the way a building has been put together in the past.

The one area of concern that I have is that the fire service always seems to be on the trailing edge of the information on these technological changes. More often than not the way we find out about something is to have a catastrophic event. This is a trend that should not be allowed to continue.

One of the strategies that you might try in your department is to stay as closely aligned with the building department as you possibly can with regard to updates and the codes. However, I am not talking about fire prevention. What I am talking about is information on what is authorized and the codes that have been adopted. Besides the obvious fact that these types of technologies must be adopted there is the not so obvious fact that they may be installed without the consensus or concurrence with the fire community. Unless your fire marshal happens to be very savvy on the building code it is conceivable that things such as straw buildings and SIP's were already approved and you have not even been informed.

The second strategy is to not wait for the fire service to tell you about these types of challenges. I personally believe that fire service publications are rather limited in their perspective of identifying problems looming in the future. We tend to report on the problems that we already have or the ones that we know about – rather than anticipating the next wave of difficulty. I have utilized Popular Mechanics, Popular Science and This Old House as an early warning device to me for many years to try and avoid that limitation.

Another example of how these kinds of documents will identify specifics is a recent article in a non-fire publication about the development of home AED's (automatic electronic defibrillators). Now citizens that will not pay for \$100 a year increase in fire protection will have the opportunity to spend \$2,000 to buy and automatic defibrillator to be installed right in their bedroom. Many of them will do it. This will give them a feeling of security.

Our system ought to be more receptive to receiving input from third party contributors like this that are trying to convince the world they can make the world safer.

Who knows what is going to emerge next. I have read articles on what they have referred to as tire houses. I have seen articles on what they call ram construction. This is a technique of constructing buildings from tires that have been compressed. It is not bad enough that we have fires that ravage what we know but we also have the potential of fires contained within buildings that are complete mysteries to us.

Granted these kinds of situations are few and far between. If you drive down the street in almost any



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community in the United States today most of the houses look an awful lot alike. This doesn't make the problem go away. To the contrary it may enhance it just a little. For the very fact that you take a lot of things for common may create an ambivalence or indifference towards the unique.

Personally I have never had a fire in a straw building nor is it likely that I will go to one in the near future. But I know that there are firefighters out there who will eventually face that problem. I have a personal friend that lives in one right now.

There is an old saying in firefighting that goes something like this: "It's not what you don't know that will get you hurt it is what you think you know for darn sure that is not true that will get you into difficulty." As building technology changes what we know to be true maybe changing in front of our very eyes. And like the big bad wolf the longer we huff and puff without knowledge of how buildings are put together the fire is going to win.