No One's Ghost Should Ever Say

I once had a plaque on the wall in my training division that read: "let no man's ghost ever say, that I wished my training officer had shown me the way".

This admonition clearly identifies the fact that the training of fire fighters and their officers is one of the top priorities of any fire organization. It also implies that this training is a lifetime undertaking for the very simple reason that "the way" changes all of the time.

The built environment in which firefighters are asked to carry out their duties is a complex and convoluted world that ranges all the way from buildings that are on historical registers all the way up to ones constructed with space age technology that firefighters have never been inside of.

There is a constant need in the fire service to learn, unlearn and relearn the nature of that built environment. Failure to do so exposes firefighters to dangers they don't even know about.

There are many examples of this phenomenon. Who would have suspected that the fire service needed to be trained on communicable diseases fifty years ago? Who would have anticipated that firefighters must deal with hydrogen or electrical powered vehicles? These examples provide an opportunity to make another observation.

In the firefighting profession it is not what you don't know that will get you in a lot of trouble, it is what you know for sure that ain't so that will get you into serious trouble. One area of concern for firefighters in the built environment is that construction technology is at the heart of firefighter safety. The way buildings are put together is a significant clue to how they are going to behave when they are under stress. Firefighters legitimately have reason to be concerned about how a building reacts to fire regardless whether it is an ancient Victorian or brownstone or a modern condominium. The potential for building collapse exists for almost all buildings when a structural fire occurs. There are no hard and fast rules about when it is going to happen nor are there any magic indicators that individual firefighters can use as clues. This phenomenon is real. Firefighters have fallen through roofs. Roofs have fallen on firefighters. Firefighters have fallen through floors and floors have fallen on firefighters.

Construction and fire behavior are mutually important as contributing factors in the death and injury of firefighters. If we add time to the discussion, based upon the fact that firefighters often do not know how long the fire has been burning prior to their arrival, the decisions made to deploy personnel is not just a matter of choosing tools and using them, it is a matter of assessing the risk versus the benefit of controlling the fire. For example, going onto a roof to conduct ventilation is not just an evolution; it is a commitment that carries a great deal of risk to those that are directed to perform that task.

All of this places a continued emphasis on a fire departments training program remaining current with respect to building construction and the potential for structural collapse. This is not a luxury item. It is a necessity. Those departments that do not remain current are exposing themselves to danger in direct relationship to how long it has been since they have updated the department's knowledge base on building construction.

Over the last decade, we have had a number of firefighters injured or killed in structural collapse. But that is not a new phenomenon. On December 23, 1910 a structural collapse in Chicago Illinois resulted in the deaths of 35 firefighters. The occupancy was a cold storage warehouse. From what I can determine that was the single largest loss of life by firefighters due to structural collapse prior to 9-11.

The current events are often more shocking because there are many reasons why it shouldn't be happening at all. We have better equipment than then, we have a better system for controlling the incidents that happen. But we still have the potential for our firefighters being placed somewhere whey they do not belong.

This was recently highlighted in NIOSH Publication 2005-132 and was recently reinforced by NIOSH Firefighter Fatality Investigation Reports F2006-24 and F2006-26. The IAFC's Safety Health and Survival Section have produced information. Firefighter Close Calls has produced a Weekly Fire Drill (Volume 4-Number 11). If your department has not distributed any of these publications, or if you as an individual firefighter have not reviewed any of them, the clock is ticking for potential disaster for you or your department.

The real issue that needs to be addressed here is obscured frequently by the discussion that centers on prohibiting products or outlawing specific configurations in hopes that we will go back to the old way of building buildings. That strategy is not working for the simple reason that society and the technology of the building industry are undergoing changes driven by economic factors that are irreversible. Not unlike what is going on with alternative fueled vehicles, the installation of solar energy as part of roofing assemblies and the creation of new hazardous materials that complicate our lives, the fire service are on the receiving end of technological change. Unless the fire services adapt they will be continually be vulnerable.

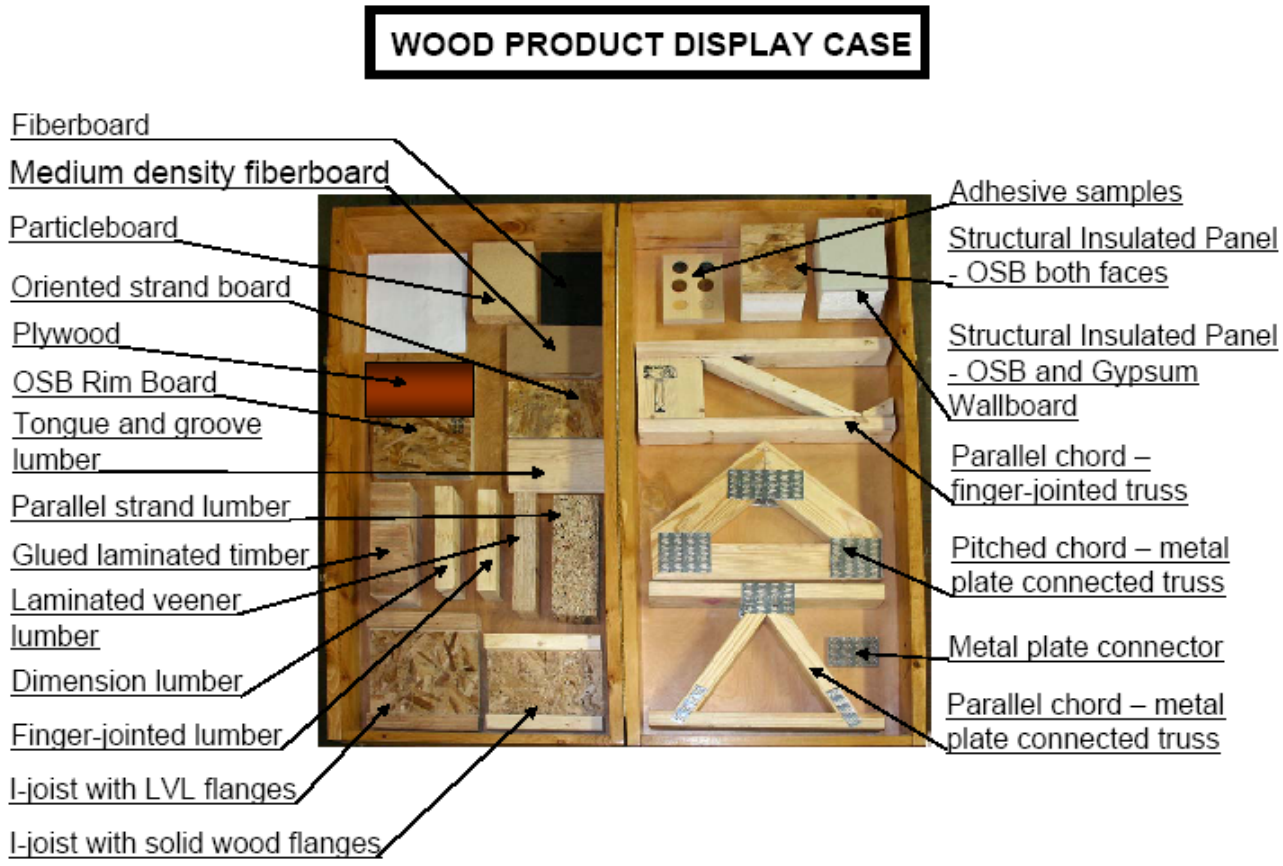
There are two immediate responses to this phenomenon that fire professionals need to pursue. The first of these is to become increasingly aware of changes in building technology that affect both tactics and strategy decision making. The second is to be more engaged with the testing and evaluation and adoption process of how these products enter the built environment through the building code process.

An interesting aspect of these two needs is that operations divisions are primarily focused on the former and our fire prevention bureaus are primarily responsible for the latter. Sometimes the two divisions do not communicate effectively. One of the inherent problems in coping with change is how to build a better bridge between the two perspectives represented by the fire prevention and building code world and the reality of the day to day operations of a fire agency.

In response to the need for increasing awareness, training divisions should be increasing emphasis on building construction at every level of training within the department. Starting at the rookie firefighter level through company officer training on tactics and strategy and finally ending up in the arena of incident command for top level chief officers, knowledge of modern building construction should be a top priority.

The Illinois Fire Service Institute in cooperation with the American Forest and Paper Association (AF&PA) has produced a DVD entitled "Awareness Level Firefighter Training for Modern Wood Products". Copies of this DVD can be obtained by requesting them from the AF&PA.

Furthermore, the AF&PA has produced a training prop that is designed for use in basic fire academies that illustrates the composition of all of these products. Parties interesting in acquiring one of these props should submit a request to the AF&PA and they will be placed on a priority list as the props are produced.



The second component of this strategy is to become more involved in understanding the approval process and the test criteria for modern construction products. The process by which a material is allowed to be put into the stream is based upon the code adoption process. Unfortunately, the linkage between the code adoption process and the operational fire service is weak if not outright nonexistent in some organizations.

Lacking understanding of that approval process many departments have responded to these building materials by pursuing the strategy of outlawing them locally based upon demonstrations that are dramatic. However, these demonstrations are not valid tests and may in fact create problems of their own. A test is something that is done to a standardized format. A demonstration is designed to make a point. Demonstrations are not tests.

Recognizing the significance of this, the National Institute of Standards and Technology (NIST) have started conducting experiments to establish testing protocols regarding modern building technology. A

recent example of this approach occurred in Sharon Hill Pennsylvania where test burns carried out in cooperation with the Delaware County (PA.) Emergency Services Training Center has initiated a project to investigate potential tools and techniques for predicting structural collapse.

What is important for fire professional to understand is that fire test protocols are standardized methods of examining assemblies under test conditions. Fire tests are not intended to represent all conditions or to establish any sort of guideline for how a fire officer is supposed to treat a material when it is on fire in the real world.

The NIST studies focused on what sorts of technologies might be useful by fire officers in predicting structural collapse. Devices such as thermal imagers and acoustic devices are currently being considered as part of the approach to reduce risk of firefighter exposure to collapse.

In this case NIST fire engineers built and burned a series of 16' x 16' wood framed two story structures. NIST scientists instrumented the buildings recording both time and temperature data until the structure collapsed. The results of that test have not been published yet. But informal observation at the scene of these tests demonstrates again that there are no clear cut rules of thumb that will allow a fire officer to continue operational activity with the assumption that the building is safe.

The one strategy that all of these reports continues to support is the absolute necessity of fire department prefire planning. Without pre-fire planning going onto a roof, operating under an attic, or entering a building with a basement is not just risky, it is cause for concern by everyone on the fireground.

Many fire departments have cut back on prefire planning because of extensive workload in other fields. This creates a gap of knowledge that must be closed. Some of the activities that are taking us away from pre-fire planning are not that important.

Much of the literature describing the current concerns about structural collapse, implies that the new generation of building technology is much more dangerous than in the past. Fires in buildings are dangerous no matter when they were built or how they were built. If that wasn't true who do we blame for those fatalities? Firefighters have been killed by falling roofs, fireplaces, falling overhangs and marquees since the beginning of modern civilization.

In summary, the challenge of the fire service today is to maintain awareness and competency in coping with the changes that are occurring within the fire environment. It is essential that fire department training programs provide new and updated information to all ranks in the fire service so that fire officers are aware of the conditions that can cause collapse. Everyone on the fire ground from the newest rookie all the way to the incident commander need to be looking for the signs and symptoms that fire has encroached upon the structure itself. Policies and procedures need to be instituted wherein observations about that scenario should go up and down the chain of command with rapidity, so that safety will be maintained at the same time you are gaining control of the situation.

Dave Murphy, writing for the Fire Department Safety Officers Association recently stated that Ignorance and apathy and a poor safety record have high degree of correlation. I agree entirely. What do you think? We can overcome ignorance with training, but we can only overcome apathy with leadership. What are you and your department doing to overcome the former, while exercising the latter?

Anything less than being totally aware of the possibility that a person is only minutes away from a dangerous situation is not acceptable in this business. When a firefighter enters any burning building they are in mortal danger. Now, let's make sure they come back out of it alive.