March 2008 Newsletter

Georgia Sugar Refinery Fire

Imagine this scenario: a major building explosion, a remote location, an unknown number of people missing, and a search area encompassing a 160-acre site. Oh, and you are expected to organize the entire rescue effort and ensure that each and every firefighter and rescue worker returns home safely and uninjured. Sound like a challenge?

That is the dilemma that Fire Chief Greg Long faced when a massive explosion occurred at the Imperial Sugar plant in Port Wentworth, Georgia, the evening of February 7, 2008.

Courtesy of Chief Greg Long
Port Wentworth Fire Rescue

What's it Going to Take?

On December 4, 2006, The International Association of Fire Chiefs (IAFC) issued a "Member Alert" notifying their membership about the hazards associated with the light-weight construction in residential occupancies.

"There have been several cases of firefighters falling through floors made of composite structural components and an even greater number of near-miss situations. This type of construction is being investigated as a contributing factor in a line-of-duty death..."

Know the Enemy - Building Construction and Fire Behavior

In 2007 there were over 19 firefighter fatalities due to structural collapse. The U.S. Fire Administration stated the following in a report entitled Trends in Firefighter Fatalities Due to Structural Collapse written in 2003, "Structural collapse is an insidious problem within the fire fighting community. It often occurs without warning and can easily cause multiple fatalities." Five years have gone by and not much has changed.

USFA Announces Video Version of Coffee Break Training

The U.S. Fire Administration announced today the release of Coffee Break training presentations in video format to enhance ongoing support of fire prevention efforts. Coffee Break training provides technical training in fire protection systems, building construction, codes and standards, inspection techniques, hazardous materials and administrative tips. The training is targeted toward fire and building inspectors with busy schedules who often don't have time to attend valuable skill-enhancing training sessions.

USFA Releases New Emergency Incident Rehabilitation Manual for

Firefighters and Other Emergency Responders

The U.S. Fire Administration (USFA), working with the International Association of Fire Fighters (IAFF), has issued an updated version of the manual Emergency Incident Rehabilitation. The revised manual examines critical topics related to emergency incident rehabilitation, including operational issues, human physiology, weather issues, and technology and addresses ways to better protect firefighters and other emergency responders through the use of proper protective clothing and improved tactical procedures.

Advocates Report

Regional Advocate Michael Petroff and Region II Regional Advocate Danny McDonough conducted a CTBS Train-the-Trainer in Ames, Iowa on February 9, 2008. State Advocates Kevin Wieser and Scott Lyon were in attendance as was State Training Director Randy Novak and members of the Iowa Fire Training staff. Coralville IA was presented with a Brian Hunton Seatbelt Pledge 100% compliance certificate by State Advocates Wieser and Lyon.

Firefighter Cancer Support Network Wellness Coordinator Loses 8 Year Battle with Cancer

On behalf of the entire Board of Directors and Staff I would like to express our great sadness and sorrow at the passing of Debbi Wood. Debbi lost her 8 year battle with cancer yesterday, March 12th 2008.

Spotlighting one of the 16 Firefighter Life Safety Initiatives each month

Initiative #8 - Utilize available technology wherever it can produce higher levels of health and safety.

- **Fire.gov:** Thermal Imaging
- **Fire.gov:** PASS Devices
- **Military.com:** Military Technology Fighting Fires
- **ABC News:** Wildfire firefighting goes high tech
- **NC Times:** Computer mapping technology aids firefighting efforts
- **NY Times:** Fighting High Rise Rires With Fans

More Information: 16 Firefighter Life Safety Initiatives

Online TRAINING

Coffee Break Video Training

» **Download:** Training Materials

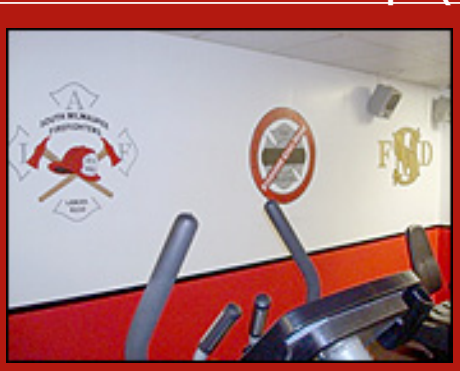
Fire Engineering Video Training

» **View:** Video Training

In the Spirit of SAFETY

Fire departments and organizations across the U. S. are proudly showing their support for the Everyone Goes Home ® Program.

Featured Department
South Milwaukee Fire Dept. (WI)



FEATURED Events

Courage to Be Safe Train-the-Trainer Course
Red Oak, Texas Fire Department
March 20, 2008
Read More: » About the Event

Courage to Be Safe Train-the-Trainer Course
Passaic County Fire Academy - New Jersey
April 3, 2008
Read More: » About the Event

Facilitators' Forum & Initiatives Workshop
SC Fire Academy
April 26 - 27, 2008
Read More: » About the Event

Courage to Be Safe Train-the-Trainer Course
Somerset County Fire Academy - New Jersey
June 3, 2008
Read More: » About the Event

Courage to Be Safe Train-the-Trainer Course
Gloucester County Fire Academy - New Jersey
June 7, 2008
Read More: » About the Event

Do you have an suggestion for the newsletter? Tell us about it! Please send your comments, articles, or news about what your department is doing to keep firefighters safe to editor@everyonegoeshome.com.

Georgia Sugar Refinery Fire

By Jen Underwood, Editor, Everyone Goes Home Newsletter

Imagine this scenario: a major building explosion, a remote location, an unknown number of people missing, and a search area encompassing a 160-acre site. Oh, and you are expected to organize the entire rescue effort and ensure that each and every firefighter and rescue worker returns home safely and uninjured. Sound like a challenge?

Courtesy of Chief Greg Long, Port Wentworth Fire Rescue

That is the dilemma that Fire Chief Greg Long faced when a massive explosion occurred at the Imperial Sugar plant in Port Wentworth, Georgia, the evening of February 7, 2008. When asked how he handled the daunting task, Long humbly and succinctly replied "we established a chain of command" and "followed the NIMS system.[1]"

Courtesy of Chief Greg Long, Port Wentworth Fire Rescue

Working with plant officials, Long reported that he, his firefighters, and the other rescue personnel, "divided the plant into controlled sectors and attacked each sector." Long explained that to keep radio communications as effective as possible, "each sector used a unique radio frequency" and that the "rescue workers in each sector communicated directly with the sector chief."

The sector chiefs then relayed information to the command staff using a main frequency. According to Long, that method of radio communication allowed the main frequency to remain relatively clear and free of excessive and jumbled voices.

The fire suppression and recovery efforts "lasted eight days" said Long, with the recovery efforts "taking place only during daylight hours" and "fire suppression taking place around the outside at night." The recovery efforts were hampered by 4000 degree molten sugar that burned continuously, with the runoff cooling to a concrete-like consistency.

Long was quick to praise the rescue personnel involved, and the Imperial Sugar officials, thanking them for their immense "cooperation and respect." By taking the time to follow NIMS procedures and

establishing a chain of command, Long helped to ensure the safety and wellbeing of everyone involved with the fire suppression and recovery efforts following the explosion.

With a great deal of pride, and a bit of awe, Long concluded the interview with one last remarkable comment..."not one injury, not even a sprained ankle, not even a hang nail."

"A major building explosion, a remote location, an unknown number of people missing, and a search area encompassing a 160-acre site"

AND EVERY FIREFIGHTER WENT HOME SAFELY!

» **Also:** Learn More About the National Incident Management System (NIMS)

1. NIMS identifies the requirements for a standardized framework for communications, information management, and information sharing support at all levels of incident management. IS-700 National Incident Management System (NIMS) Self Study Guide Page 1-6 August 2004

Courtesy of Chief Greg Long, Port Wentworth Fire Rescue

Courtesy of Chief Greg Long, Port Wentworth Fire Rescue

Courtesy of Chief Greg Long, Port Wentworth Fire Rescue

Courtesy of Chief Greg Long, Port Wentworth Fire Rescue

Courtesy of Chief Greg Long, Port Wentworth Fire Rescue

Courtesy of Chief Greg Long, Port Wentworth Fire Rescue

Courtesy of Chief Greg Long, Port Wentworth Fire Rescue

What's it going to take?

By: Azarang (Ozzie) Mirkhah, P.E., EFO, CBO
Courtesy of Firehouse.com

On December 4, 2006, the International Association of Fire Chiefs (IAFC) issued a "Member Alert" notifying their membership about the hazards associated with the lightweight construction in residential occupancies. In that Member Alert titled "Caution Urged with Composite Floors" it was stated:

> *"There have been several cases of firefighters falling through floors made of composite structural components and an even greater number of near-miss situations. This type of construction is being investigated as a contributing factor in a line-of-duty death... These components and systems are most often found in situations where applicable codes do not require any rated fire resistance between floor levels. They have much less inherent fire resistance than conventional wood joist floor systems and conventional wood decking. Remember - many codes do not require any fire resistance in residential floors! In the several cases of firefighters falling through floors, those floors had been exposed to fire from below for relatively short periods."*

Illustration by Paul Combs/ArtStudioSeven.Com
Courtesy of Firehouse.com

Then, on October 1, 2007, in a report that was indicative of a strong systematic effort by the fire service to take a more scientific and in-depth look at this structural failure, IAFC in an article titled "Underwriters Laboratories Receive DHS Grant" indicated:

> *"Earlier research by the National Engineered Lightweight Construction Fire Research Project indicated that unprotected lightweight wood truss assemblies can fail within 6 to 13 minutes of exposure to fire...Lightweight wooden trusses, made with engineered lumber, are commonly found in 65 percent of new residential and commercial developments, according to the Wood Truss Council of America. Allowing for faster, more cost-effective construction, recent anecdotal evidence has indicated that lightweight wood trusses may become unstable and collapse more quickly in fire situations than traditional trusses."*

The concern about the poor performance of the engineered lightweight wood construction under the fire conditions is nothing new. We have known about it for more than a couple of decades. Obviously, the very first name that comes to mind when talking about this subject is the legendary Francis Brannigan, and his famous Building Construction for the Fire Service book. There are many great reports, but just a handful of them are

mentioned here.

Back in 1992, United States Fire Administration (USFA) did a report, titled "Wood Truss Roof Collapse Claims Two Firefighters (December 26, 1992)"; National Institute for Occupational Safety and Health (NIOSH) did a report on April 2005 titled "Preventing Injuries and Deaths of Firefighters due to Truss System Failures"; National Institute of Standards and Technology (NIST) did a report on January 2007 titled "A Study of Metal Truss Plate Connectors When Exposed to Fire".

These reports basically indicate that the problem with these engineered lightweight wood structural members is that they are adversely affected by the fire much sooner than the denser building materials. And that typically, the metal truss connector plates (gusset plate - gang nail that penetrates the wood about a quarter of an inch) is the primary location of the structural failures in these wood trusses.

What contributing role does failure of these engineered lightweight wood structural members have on the national fire fatalities? Fact of the matter is that in the majority of the civilian fire fatality cases, the lethal products of the combustion (smoke and heat) are the main cause of death in the victims, and not the structural failures. Either the occupants were alerted and they evacuated the house safely; or in the most unfortunate cases, they fell victim to the smoke, and died of asphyxiation at the earlier stage of the fire. So, who are the real victims of such structural failures? Our own firefighters.

It was out of concerns for the firefighters' safety that many in the fire service have written numerous articles depicting concerns about the performance of these lightweight wood structural members under the fire conditions. But then, what have we been able to change thus far? Not much. If nothing else, the problem is probably even worse now, because as indicated by the IAFC, 65 percent of all construction around the country is now done with lightweight wood trusses.

Now the Underwriters Laboratory (UL) is involved in further evaluating the performance of the lightweight wood trusses under the fire conditions. Considering that UL is the most well-known and respected product testing laboratories in the nation, their report will undoubtedly be a great addition to our arsenal and provide us with more ammunition in proving our safety concerns. But then what? What do we expect to change after the UL report is published? Do we really believe that even if the UL report clearly show poor performance of these engineered lightweight wood trusses, that the construction world would immediately cease their usage of them and change their construction methods all together? No.

Then what specific steps and practical measures should be taken to bring about the positive changes that we have been striving for all along? Simply put, what's it going to take to address this significant hazard to the firefighters' safety?

I am an optimist, and deeply believe that we can and must successfully address this problem. However, I don't believe that just by telling the wood truss manufacturers, the homebuilders, and the building officials that there are serious problems with these types of construction methods, that we have advanced the ball by much. Let's face it, they have pretty much known about it already for the past quarter of a century. Instead, I believe that we must offer them options and solutions to enable them to successfully address our concerns. We must have win/win solutions that allow them ways that they can continue building with these engineered lightweight wood trusses; and yet, improve the structural integrity of the roof and floor assemblies under the fire conditions.

What's it going to take? That is the question that the truss manufacturers and the homebuilders should answer. How would they propose addressing the deficiencies associated with these engineered lightweight wood structural members and their methods of constructions?

They need to tell us their ideas on how to reach that win/win solution, to allow them to continue constructing with these engineered lightweight wood trusses, and yet enhance our firefighters' safety. Our friends in the construction industry need to open up a constructive dialogue with us and simply tell us how. Let's work together to get it done. However, they must also recognize that doing nothing at all is no longer acceptable.

Here is my two cents for whatever it is worth. I believe that there are several points of intervention in the overall process, from manufacturing of these trusses, all the way through completion of the construction, that should be focused on to address this problem. As described in the following paragraphs, simple proactive measures taken at any of those points in the overall process would yield positive results.

First, let's start with the manufacturers of these engineered lightweight wood structural members. Manufacturers could obviously utilize stronger metal connector plates that penetrate deeper into the wood. Or they could even invest in the development of a completely different type of joint connection mechanisms that could perform significantly better under the fire conditions. Couldn't they? Starting at the manufacturing process is a definite point of intervention to solve the problem, isn't it? But then, what have the wood-truss manufacturers done thus far to address this problem? Why not?

I want to make it quite clear to the wood truss manufacturers that we are not trying to impact their market adversely, or create restrictions and limitations for the use of their products. Not at all. All we are looking for is better and safer truss design and construction methods.

At the very least, the truss manufacturers could clearly specify protective means, such as providing additional fire resistive materials, or installation of fire sprinkler systems, to better protect their trusses and prevent structural failures under the fire conditions. At the very least that would shift their product liabilities to the end user, just as the labels do on most of the consumer products. Just, as simple as that. So what can the wood truss manufacturers do to address our concerns? Why don't they work with us to make it happen? What's it going to take?

The second major player in the overall construction process is our homebuilder friends, who build more than a million of these houses all across the country, every single year. The homebuilders have a couple of approaches available to them. Both of which are definitely acceptable in addressing the engineered lightweight wood constructions failures under the fire conditions. Homebuilders can choose either the passive fire resistance, or the active fire protection approach to address the problem.

With the passive fire resistance approach, the homebuilders could install additional layers of gypsum boards at the top and bottom of the engineered lightweight wood structural members. That would increase the overall structural integrity of the floor and roof assemblies in fire conditions for a longer period of time before the structural failure under the fire condition.

With the active fire protection approach though, even a higher degree of safety could be achieved. Installation of residential fire sprinkler system is the active fire protection approach.

By suppressing the fire in the inception stages, residential fire sprinkler systems would provide for the life safety of the occupants, and also better protect the floor and roof assemblies from prolonged fire exposure which could result in structural failures. Worst case is, once arriving at the scene of fire our firefighters would face a much more controlled fire, if not entirely extinguished.

From that perspective, this solution could enhance the safety of both the building occupants, and also our responding firefighters. The enhancement to the civilian safety and the reduction of fire fatalities makes the minimal construction cost increase (one to one and a half percent of the total construction cost) for the residential

fire sprinkler systems much more palatable to the society.

Despite recognizing that a major component of their product is a significant contributor to the structural failures under the fire conditions, what have the homebuilders done thus far to address the problem? Nothing. Neither the passive, nor the active fire protection approaches to address the problem have been implemented yet. Why not? Cost, they would say.

Let me clearly state that I agree with my homebuilder friends. Whatever solution they choose to solve this problem, is going to cost money; one way or another. Whether they chose the passive fire resistance approach by installing additional layers of gypsum boards to better protect the wood trusses; or installing a residential fire sprinkler system, there are additional costs involved. Remember though, that this additional cost would not come out of the homebuilders' pocket. Just like any other construction costs, such as price of land, materials, labors, fees, etc; homebuilders simply pass it along directly to the consumers.

Homebuilders need to recognize that besides the direct property fire loss, there are also indirect costs associated with the loss of civilian and firefighter lives. And these are the costs that they have ignored in their cost/benefit calculations for far too long.

Homebuilders are quite familiar with the construction defect and product liability issues. They have faced many construction defect litigations due to the product failures and/or installation quality, and have been held liable and have paid significant settlements for such cases. But then historically, they have never viewed engineered lightweight wood truss failures under fire conditions as a possible product liability issue. Therefore, they don't incorporate such negatives costs into their cost/benefit final analysis and in their decision making process.

And it is precisely from that perspective of invincibility that they have consistently opposed any proposed solutions in the building code development processes to address the lightweight wood truss failures, and consider them as unnecessary and expensive. It might be time for the homebuilders to reevaluate their position on the product liability issue.

Once again, the homebuilders need to tell us, how they believe that we could reach a win/win solution, to allow them to continue constructing with these lightweight construction materials, and yet enhance our firefighters' safety. They should open up a constructive dialogue with us, so that we can all work together to address this issue. And again, the homebuilders must recognize that doing nothing at all to address our concerns is no longer acceptable.

Quite correctly, our homebuilder friends will insist that they build these houses strictly based on the requirements of the adopted building construction codes. They will point out that they are not the ones who write the building codes. They will remind us that the building officials are the ones who write the building codes nationally, and then adopt them locally. Which then, that brings us then to the most significant player in this overall construction process; our very own fellow public servants, the building officials.

Building officials, through their control and involvement in the development and enforcement of the building construction codes; are undoubtedly the most important player in the overall construction process. Through their codes, the building officials are responsible for the fire and life safety protection for both the public, and the responding firefighters. Thus their role is the most crucial, and their building construction codes are the most instrumental point of intervention in this process. And their support could definitely yield positive results in addressing our firefighters' safety concerns.

The building officials, through their code development process, could implement any/all of those three previously mentioned solutions; enhancing structural integrity during the manufacturing of the wood trusses, improving the

fire resistive rating of the floor and roof assemblies, or requiring installation of the residential fire sprinklers. It is of importance to recognize that, none of these options; whether the passive fire protection enhancements approach by means of installing additional layers of gypsum board, or installation of the residential fire sprinkler in all new homes, would have any direct financial impact on the building officials at all.

So, if there is no dime coming out of their pocket, and if they don't have a horse in this race, then why would the building officials oppose these life safety and fire protection enhancements? After all, wouldn't those measures make for much safer communities? The building officials should tell us, how many more reports and how much more proof would they need to finally address our firefighters' safety concern with these lightweight trusses in their building codes. What's it going to take after all?

What is urgently needed, I believe, is the commitment of our fellow public servants, the building officials, to fulfill their commitment to safety of our public and our firefighters; by revising and enhancing the life safety and fire protection requirements in their building codes for the engineered lightweight wood construction.

By now, it should be clear that the building code is the most important document and the key to addressing any such construction flaws and deficiencies. Fire service must focus on changing the national building construction codes.

Recognize that just like anything else in our democratic ways in America, changing the building code will only be possible by our active participation in their established development process. We must heavily and actively participate in the International Code Council's code development process. The ICC Final Action Hearing for the 2009 edition of the building code is scheduled for September 17-23, 2008, in Minneapolis. To see any changes at all, fire prevention advocates and fire safety proponents must plan to participate in full force and with all their might.

I have discussed the various points of intervention, from the manufacturing of construction materials, through development of the codes, and then all the way through the construction of the buildings, where there other players involved, that could take measures to decrease the probability of lightweight construction failures under the fire conditions resulting in firefighter fatalities. Recognize that these proposed measures would only apply to new houses being built, and will not have any impact at all on the exiting homes. The important point though, is that we must start somewhere to put an end to this problem; and no there is better time than now.

Up to this point in the article I have discussed others' responsibilities in addressing the lightweight construction failure problems. But, enough of pointing fingers at others. Now let's take a deep look inside to see what we in the fire service can and must do, to reduce our firefighter fatalities. That is especially important, when you consider that there is an inventory of more than one hundred million existing homes around our country, majority of which, were constructed with those lightweight wood trusses.

Then the question to be asked from the fire service leadership is what can we do to reduce our firefighter fatalities resulting from such structural failures?

Obviously, looking at it from the firefighters' safety perspective, we in the fire service do have the option of staying out, and do the exposure protection in a defensive mode of operation. This concept, even though contrary to our current aggressive "interior attack" mode of operations, is a very viable option that fire service should seriously consider. Simply stated, when it comes to the lightweight wood truss construction, it might be best to stay out from the get go, and protect our own firefighters.

Considering our professional obligation and deep commitment in the fire service to saving lives, this might be a lot easier said than done. And I don't have the slightest ambiguity that we would still be charging in full force, if

we believe that someone might be trapped inside and a life could be saved. But then, we should also remember our commitment is to save lives, and that also includes our own.

Simply stated, since these houses are built without much fire resistive rating and no active fire protection systems at all; then we should not be risking firefighters' lives and must stay out, if there are no civilian lives to be saved in the first place. Buildings are disposable, lives aren't; and that goes the same for our firefighters' lives too.

What's it going to take? The resolve of the International Association of the Fire Chiefs (IAFC) and the other national fire service leadership organizations; not to tolerate any further firefighters injuries and fatalities resulting from the structural failure of these engineered lightweight wood constructions under the fire conditions. We should indeed risk a lot to save lives; but then that includes our firefighters too. Houses are being built with very minimal fire resistive features, and no fire protection systems at all; simply stated they are built as disposable. Saving such structures, is not worth risking the lives of our own firefighters; especially since they would demolish and tear them down to rebuild anyway. In most other countries around the world, fire departments don't go offensive and rush inside immediately. It is time that we take note of that. That is a big paradigm shift that must come down from the top leadership of the fire service.

What's it going to take? The might of the International Association of Fire Fighters (IAFF) and their membership, to take appropriate political and legal measures, both nationally and locally, not to allow the construction industry to view firefighters fatalities as "an acceptable risk" or as "collateral losses". Firefighters must recognize that just as important as their PPE, the best way to protect them in their interior firefighting operations, is to enhance the fire protection features of the building, to afford them more time and a safer environment for accomplishing their tasks. But then, that could only be done by the full force and active participation of our firefighters in the building code development process. Their voices must be heard load and clear.

What's it going to take? Certainly, a heck of a lot more than just writing reports alone. Then, why am I writing yet another article? Because we still have a chance to make a difference in the 2009 edition of the building codes. And we don't have much time to waste. We must actively participate in the ICC Final Action Hearing for the 2009 edition of the building code that is scheduled for September 17-23, 2008, in Minneapolis.

Sure, the homebuilders will be there putting all their efforts behind defeating the residential fire sprinkler proposal for the 2009 edition of the codes. Then, we must greet them cordially and be there in full force to vote for the adoption of the residential fire sprinkler proposal. Installing residential fire sprinkler systems could address our lightweight construction concerns. **Remember "Fire Sprinklers Save Firefighters' Lives too".** It's time to act.

Also In This Issue:

» Know the Enemy - Building Construction and Fire Behavior

Related Fire Industry Resources:

» **USFA:** *Wood Truss Roof Collapse Claims Two Firefighters* (December 26, 1992)
» **NIOSH:** Preventing Injuries and Deaths of Firefighters due to Truss System Failures
» **NIST:** A Study of Metal Truss Plate Connectors When Exposed to Fire
» International Code Council
» Underwriters Laboratories Receives DHS Grant to Enhance Firefighter Safety in Modern Fire Situations

Related Construction Industry Resources for Firefighters:

» Wood Truss Resources for Fire Professionals
» Fire Rated Cold-Formed Steel Truss Assemblies - Resources for Fire Professionals
» Continuing Education for the Fire Service

Know the Enemy

Building Construction and Fire Behavior

By Chief Michael D. Chiaramonte CFO, MIFireE

The ABC Fire Department received a call for a working fire in a local, newly constructed, pharmacy. When they arrived there was heavy smoke throughout and fire showing in the rear of the building. Lines were charged and two hand lines were committed to the interior. After several minutes of firefighting the roof collapsed trapping four firefighters inside. Fortunately, in this scenario all four firefighters were rescued. Upon investigation it was found that the building used truss construction and the department did not have a preplan of the building. The incident commander had a hard time dealing with his decisions that night and kept thinking, "If I had only known." It is increasingly important for all firefighters and officers to have a good knowledge of building construction and its relationship to fire behavior. It is also essential that every fire department know the type and methods of construction of each structure in that department's response area.

In 2007 there were over 19 firefighter fatalities due to structural collapse. The U.S. Fire Administration stated the following in a report entitled Trends in Firefighter Fatalities Due to Structural Collapse written in 2003, "Structural collapse is an insidious problem within the fire fighting community. It often occurs without warning and can easily cause multiple fatalities." Five years have gone by and not much has changed. It is a shame that in this day and age, with the technology we have and the major advances in equipment and gear, that we are **STILL** killing firefighters, many of which are in structural situations. Studies show that:

- The percentage of collapse fatalities that occurred in residential properties has increased.
- Collapse fatalities are generally caused in two ways:
    - By being caught or trapped in the structure or
    - By being struck by an object
    - The percentage of collapse fatalities caused by being caught or trapped in the structure has increased.
- A majority (over 65%) of collapse fatalities occurred during fire attack.

Is it as simple as pausing, slowing down and looking up once in a while?

It is the purpose of this article to reexamine the issue of firefighter fatalities resulting from structural collapse. It will look at some specific fire service incidents resulting in multiple firefighter deaths related to structural collapse. The information presented is based on the individual incident reports written by the U.S. Fire Administration. It is recommended that these reports are studied in their entirety by each and every fire department in the nation for the purposes of ascertaining the lessons learned and to develop policies and procedures for safe and effective firefighting.

Case #1 - 2 Firefighters lost in Memphis Church Fire

Critical Factors:

- The church had a lightweight wood truss roof system.

- The attic was involved above and beyond the area where most of the crews were operating.

Deaths resulted from roof collapse.

Lessons Learned:

- Awareness and concern about the hazards of lightweight construction need to be increased throughout the fire service.
- All firefighters must recognize that this type of structure can collapse suddenly and without warning after a relatively short period of fire involvement.
- The only reliable way to be aware of lightweight wood truss construction is to pre-fire plan all structures and make sure that these plans are available to all responding companies.
- There must be a system in place to ensure that the appropriate officers are made aware of the key structural information on dispatch or while en route to the scene of the fire.
- A policy needs to be adopted requiring buildings with this type of construction to be marked with a distinctive symbol that is visible from the street.
- City Ordinances that mandate advance notice to firefighters of any building within corporate limits with truss features must be aggressively pursued.
- Building construction and fire behavior should be actively taught to all firefighters and especially to officers.
- SOP's and SOG's should be developed concerning various construction methods and types.
- An aggressive and functional company level inspection program should be initiated and the information gathered should be documented and maintained by each fire company.

Case #2 - 2 Firefighters lost in Pittston, PA Store Fire

Critical Factors:

- The four original structures appeared to be more than 100 years old and had been altered many times over the years.
- The buildings had thick outer walls and a pair of back-to-back double course brick walls extending from front to rear.
- The roof was supported by heavy wood joists.
- 3x10 wood joists supported the floor.
- Death resulted from floor collapse

Lessons Learned:

- Officers must track the passage of time and assume a fire that cannot be located may be a moving threat.
- Buildings that are old and have been renovated numerous times are often exceptionally dangerous to firefighters.
- Thermal imaging cameras are a valuable tool and must be used to detect hidden structural damage that may endanger firefighters.
- Age and structural types of buildings as well as renovation information must be noted on pre-fire plans.

Case #3 - 4 Firefighters lost in Brakenridge, PA industrial building

Critical Factors:

- The building was renovated several times for various occupancies.
- There were no exterior stairs or fire escapes.
- The basement foundation walls were concrete, and the exterior walls above were brick over terracotta tile construction. A portion of the basement was separated from the main area by brick walls.
- The floors were concrete; the first floor surface was finished with terrazzo and tile in different areas and the upper floor surface had been covered with wood.

Death resulted from being trapped from a partial floor collapse.

Lessons Learned:

- Unprotected steel construction is extremely vulnerable to rapid failure under fire exposure. This needs to be clearly understood by firefighters.
- Access and exit conditions of buildings should be noted in all pre-fire plans.
- Serious fire prevention code violations in various buildings that are identified as risks in the department's response area should be known by firefighters and fire officers.
- Analysis of fire conditions must be done constantly during a fire operation (Hot floor, increasing smoke and heat in the basement, smoke pushing out between the wall and the sidewalk, cracking and popping noises).
- The "20 minute rule"* should be used as a guideline in making an assessment of structural conditions. In the case of unprotected steel, this "rule" can be an overly generous time allowance, while it would be extremely conservative for fire resistive construction.
    - * The "20 Minute rule" is based on the body of experience which suggests that an "ordinary construction" building (non-fire resistive) should be considered vulnerable to structural collapse after 20 minutes of fire involvement.

As one can see by the case studies above, there is a great deal that needs to be learned about the relationship of building construction and fire behavior. This type of knowledge will save firefighters lives. It is essential that more emphasis be placed on this type of education in every fire academy across the nation and that it be reinforced on a constant basis in frequent drills and seminars in every fire station in America. This is just another way to make sure that **Everyone Goes Home**.

Just think, if the fire officer mentioned in the introduction to this article had a good knowledge of building construction and its relationship to fire behavior, he might not be kicking himself. He would not be wishing he knew about truss construction and that the fire building was, in fact, that type of construction. **REMEMBER KNOW YOUR ENEMY!!!**

Also In This Issue:
» What's it Going to Take?

Related:
» **USFA Technical Report Series:** Wood Truss Roof Collapse Claims Two Firefighters (Memphis, TN)
» **USFA Technical Report Series:** Floor Collapse Claims Two Firefighters (Pittston, PA)
» **USFA Technical Report Series:** Four Firefighters Killed, Trapped by Floor Collapse (Brackenridge, PA)

USFA Announces Video Coffee Break Training

USFA News Release

View: Coffee Break Training Materials

EMMITSBURG, MD. - The U.S. Fire Administration announced today the release of Coffee Break training presentations in video format to enhance ongoing support of fire prevention efforts. Coffee Break training provides technical training in fire protection systems, building construction, codes and standards, inspection techniques, hazardous materials and administrative tips. The training is targeted toward fire and building inspectors with busy schedules who often don't have time to attend valuable skill-enhancing training sessions.

Since November 25, 2005, USFA has provided weekly Coffee Break bulletins on its Web site in Portable Document Format (PDF). The popularity of Coffee Break training encouraged USFA to produce an alternative video version that is now available on the USFA Web site and YouTube. Additionally, a Coffee Break podcast can be subscribed to through iTunes. The titles of the first two video training presentations are Fire Sprinkler Inspectors Test and Fire Sprinkler Main Drain Tests. These video presentations are a co-production of the USFA's National Fire Programs Division and the National Preparedness Network (PREPnet).

"As a former Metropolitan Fire Chief, I have come to know first hand the value of this simple training support tool for all firefighters in bringing fire prevention examples to life and illustrating important lessons," said U.S. Fire Administrator Greg Cade. "The video presentation of Coffee Break training will provide an additional opportunity to support the dedicated prevention individuals working throughout the nation to ensure a fire-safe community."

"The video presentation of Coffee Break training will provide an additional opportunity to support the dedicated prevention individuals working throughout the nation to ensure a fire-safe community..."

Coffee Break training bulletins have proven to be enjoyable to read and shared during a typical coffee break. One page in length, each bulletin contains a photograph or drawing that illustrates the point of the training lesson. Over 100 Coffee Break bulletins can be downloaded from the USFA Web site. Emergent issues that require urgent or special coverage and focus are issued as Hot Coffee! bulletins. Every three months, the USFA provides a self-assessment tool for students to evaluate how much information they have retained. Continuing Education Units (CEUs) soon will be offered for the quarterly exams.

USFA will continue the weekly PDF versions and as time and budgets allow, plans an additional two video presentations each month. For further information regarding Coffee Break training or other USFA programs, visit www.usfa.dhs.gov.

Advocates Report

Regional Advocate Michael Petroff and Region II Regional Advocate Danny McDonough conducted a CTBS Train-the-Trainer in Ames, Iowa on February 9, 2008. State Advocates Kevin Wieser and Scott Lyon were in attendance as was State Training Director Randy Novak and members of the Iowa Fire Training staff. Coralville IA was presented with a Brian Hunton Seatbelt Pledge 100% compliance certificate by State Advocates Wieser and Lyon.

Regional Advocate Michael Petroff delivers a CTBS Train-the-Trainer in Ames, Iowa.
Photo by Danny McDonough

The regional monthly phone call was held with one advocate on the call with the regional advocate. Three or four state advocates plan to attend the IPASS. Two state mailing lists have been submitted to the regional advocate to bring to IPASS.

The CTBS class was delivered at Missouri Winter Fire School by Vicki Schulte and Todd Farley. Advocate Steve Arnold was teaching another class at WFS but assisted at the EGH booth. Lead Advocate for MO Kate Moore has been "off duty" having a baby. No word on when, what or how big.

Other states plan on CTBS deliveries including KS and IA.

Respectfully,
Mike Petroff

Firefighter Cancer Support Network Wellness Coordinator Loses 8 Year Battle with Cancer

On behalf of the entire Board of Directors and Staff I would like to express our great sadness and sorrow at the passing of Debbi Wood. Debbi lost her 8 year battle with cancer yesterday, March 12th 2008.

Debbi had been the FCSN's Wellness Coordinator since this programs inception. Debbi was a pioneer. She not only served the FCSN, she established the "Wellness Coordinator" position and through exceptionally hard work, served to provide the fire service with the vision and mission of the Firefighter Cancer Support Network.

I have learned through Debbi's commitment that "love is when another person's needs are more important to you than your own." Debbi loved what she did, reaching out to fire service members who were facing cancer just like she was. She did it with passion, dedication and never did she share her own difficulties, rather remained focused, continuing to support others with her compassion. Truly a testimony to her efforts are the numerous stories of Debbi's ability to touch many FCSN members in their hour of need; she would persist with phone calls and emails when members had follow up doctor appointments just to check in and see how they were doing.

Debbi has a beautiful family to whom we must now reach out in the hopes of giving back some of the very ideals Debbi promoted: "comfort, strength and hope." Her husband Steve, (a Battalion Chief with Brea F.D. California), her son Daniel (age 21), her daughters Kelli and Nikki (ages 18 and 10 respectively), her parents George and Barbara, and brother Jerry are now are faced with the loss of a wife, mother, daughter and sister.

The entire board of directors (Vice President Pete Trapani, Treasurer Tom Knerl, Secretary Carol Ramnarine, Director of Information Technology Paul Soteropoulos and Executive Assistant Lori Harris) continued our weekly conference call last night in memory of Debbi knowing that she would want us to continue our mission. We shared some wonderful moments, including more than a fair share of tears. Though we no longer have Debbi with us, her spirit and memory will always provide the FCSN direction and energy to reach out and provide assistance and education.

As we spent time together in her final hours in her home where she was at peace, her legacy was displayed on her fireplace mantle; the "Founders Award." This award was given to distinguish an FCSN member who displayed above and beyond the vision and mission of the FCSN. She was the premier recipient of this award and has set the standard by which future aspirants will be considered. There are no words that can describe the difficulty associated with those final hours; however the memories and love for her and her entire family will always bring a special feeling to our hearts and a smile on our faces.

Services will be held on Friday March 28th, 2008 and I encourage all FCSN members to attend this celebration of Debbi's life. Final details will be provided when they are available.

In honor of Debbi I encourage FCSN members to remember Debbi's passion as they carry out their duties within the fire service and as active members of the FCSN by encouraging fellow firefighters to sign up and become members on the FCSN website, or by participating in special events, volunteering as a regional director or simply taking time out of your day to give back to others who face cancer.

Debbi will be missed. Her legacy will live forever in all those she has touched and those who will be touched by

what she has done. Please send your thoughts to Steve and the family at either SWood@FCSN.net or by mail to: The Wood Family 720 E. Bellgrove St. La Verne, CA. 91750. Your kind thoughts and prayers will be appreciated as we navigate through this difficult time.

"Together We Can Make A Difference."

Respectfully,

Michael Dubron
President and Founder
Firefighter Cancer Support Network