

BUILDING FIRE PROTECTION AND THE RECESSION

By Richard Schulte

The recession in the United States is, of course, difficult, particularly for those in the building construction industry. While other sectors of the US economy affected by the recession have begun to show signs of life, the building construction industry is still mired in deep recession with little sign that conditions are improving.

While the building construction industry is an economic disaster, there is perhaps a “silver lining”. An economic slump provides us with an opportunity to review our construction codes to see whether or not code regulations are appropriate and necessary. While the economy is good, it is all too easy to ignore this issue, but when the economy goes south, particularly for an extended length of time, a review of building regulation almost becomes a necessity if we want to give the construction sector a boost.

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One way to address the question of whether or not our code regulations are appropriate and necessary is to take a look at fire safety statistics. Consider the following statistics collected by the National Fire Protection Association for the United States for 2008:

- An estimated 515,000 structure fires occurred.
- Roughly **78 percent** of the structure fires (403,000) occurred in residential occupancies.
- An estimated 20,500 structure fires occurred in office and retail occupancies.

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- An estimated 10,000 structure fires occurred in industrial and storage occupancies.
- An estimated 14,000 structure fires occurred in assembly occupancies.
- An estimated 6,000 structure fires occurred in schools, while an estimated 6,500 structure fires occurred in institutional occupancies (*i.e.*, hospitals and nursing homes).
- The **structure fires** caused an estimated **2,900** civilian fatalities.
- Roughly **83 percent** (2,755) of the civilian fire fatalities occurred in residential occupancies.
- Fires in **commercial (non-residential) occupancies** caused an estimated **120** civilian fatalities.

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Other fire safety statistics collected by the National Fire Protection Association include the following:

- Fires in **educational occupancies** caused an average of 88 civilian injuries and **no civilian fatalities annually** in the 4 year period between 2003 and 2006.
- In the 5 year period between 2003 and 2007, fires in **hotel/motels** caused an average of **11 civilian fatalities** and 151 civilian injuries annually.
- Fires in **mercantile occupancies** caused an average of **10 civilian fatalities** and 240 civilian injuries annually in the 4 year period between 2003 and 2006.
- In the 4 year period between 2003 and 2006, fires in **industrial occupancies** caused an average of **12 civilian fatalities** and 300 civilian injuries annually.
- Fires in **office occupancies** caused an average of **1 civilian fatality** and 33 civilian injuries annually in the 5 year period between 2000 and 2004.

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- In the 4 year period between 2002 and 2005, fires in **nursing homes** caused an average of 16 civilian fatalities and 130 civilian injuries annually.

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The following table summarizes the information above and also provides additional data on occupancies not discussed above:

OCCUPANCY	ANNUAL AVERAGE NUMBER OF FATALITIES	ANNUAL AVERAGE NUMBER OF INJURIES	TIME PERIOD
Assembly-Dining/ Drinking	3	113	2000-2004
Assembly-Religious/ Funeral	1	12	2004-2008
Assembly-All Other	1	52	2000-2004
Barns	2	10	2002-2005
Dormitories/Fraternities/ Sororities	7	54	2003-2006
Educational	0	88	2003-2006
Hotels/Motels	11	151	2003-2007
Industrial	12	300	2003-2006
Mercantile	10	240	2003-2006
Nursing Homes	16	130	2002-2005
Office	1	33	2000-2004
Storage (Warehouses)	5	21	2003-2006
Vacant Buildings	50	141	2003-2006
Lightning	47	242	2006

Although the statistics cited above are correct, these statistics are also misleading. How so? These statistics combine the fatality and injury data for both unsprinklered buildings and buildings protected throughout by a sprinkler system. For example, it is likely that the average annual number of fire fatalities which occurred in dormitories, fraternities and sororities and hotel/motels protected by a sprinkler system is close to zero, if not zero.

Several other things of interest regarding the statistics. One is that the average annual number of fire fatalities in office buildings is 1. This includes both low rise and high rise office buildings, as well as both unsprinklered and sprinklered office buildings. Also of interest is that the estimated average annual number of fire fatalities occurring in vacant buildings (both residential and non-residential combined) far exceeds

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the annual average number of fire fatalities in any occupancy. It should also be pointed out that the number of fatalities caused by lightning strikes in the United States far exceeds the number of fire fatalities in specific occupancies.

The only occupancy not listed in the table above is residential dwellings. As previously indicated, roughly 83 percent of the fire fatalities in the United States in 2008 ((2,755 fatalities) occurred in residential occupancies. What this statistic doesn't tell us is the number of fire fatalities which occurred in residential occupancies provided with sprinkler protection. That statistic is either zero, or very close to zero.

What can we make of the statistics cited above? It's my opinion that there is not really much of a structure fire problem in the United States, except in residential occupancies not protected by a sprinkler system. Given this, it would seem reasonable that many of the code provisions which apply to buildings protected by a sprinkler system can be relaxed and relaxing code provisions which apply to sprinklered buildings would certainly be a boost to the construction industry. Some specific ideas as to code provisions which can be modified (relaxed) are as follows:

- Requirements for smoke/heat vents in industrial and storage buildings protected by a sprinkler system can be eliminated.
- Many of the new provisions for high rise buildings based upon the recommendations contained in the NIST World Trade Center buildings collapse investigation recently adopted can be deleted.
- The area limitations applicable to buildings protected by a sprinkler system can be eliminated.

The implementation of all three of these recommendations would have a substantial impact on the cost of building construction. That is, the cost of building construction will significantly decrease, while the level of safety provided for building occupants and fire fighters will remain essentially the same, or perhaps even improve. In other words, the recommendations will implement the recession missive of “doing more (for safety) with less (regulation)”.

Is sprinkler protection reliable enough to justify deleting the area limitations for sprinklered buildings? To quote a former vice-presidential candidate from Alaska, “You bet ya.”

Let’s help the construction industry in the United States get back on its feet, while at the same time making America even more fire safe than it already is. Yes, it’s possible to do that using sprinkler protection. Is sprinkler protection reliable enough to justify deleting the area limitations for sprinklered buildings? To quote a former vice-presidential candidate from Alaska, “You bet ya.”

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Editor’s Note: Articles on the reliability of sprinkler systems can be found on the Commentary webpage of this website and also on the NFPA website (nfpa.org). The web address of the NFPA fact sheet on sprinkler system reliability is as follows:

http://www.nfpa.org/assets/files/PDF/Sprinkler_Fact_Sheet.pdf

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