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The Pilgrimage

People who believe in a particular religion often take a journey to some holy place that is considered the ground zero of their religious experience. In the case of Christians it is often characterized as going to the Holy Land. In the case of Islamic believers they go to Mecca. A variety of other religions have other locations in which they take a journey.

The pilgrimage is a long arduous journey that often involves sacrifices and definitely is linked to commitment. That same term might be applied to the concept of seeing built-in fire protection technology as an integral part of the arsenal of fire protection in the United States. It has been a journey, not necessarily an event.

If you are a fire marshal or a chief officer who is involved in developing public policy you may not see the extent of that journey. Most people examine events in the context of their own life spans. They can only see the present. On the other hand there are those with vision and insight that often start projecting their beliefs into the future. One of the things that we fail to do from time to time is to turn around and look backwards. While the past may seem irrelevant to today, it was at once the future itself. And, it was definitely the present.

Perhaps it is time for us to remember how far we have come in the period of time in which this technology has been available by looking at all three perspectives.

Why was built-in fire protection “invented” anyway? In fact, I don’t think that it was really invented as much as it was innovated. If you examine the early writings of those involved in fire protection you will see some rather bizarre ideas that were being applied to solve specific fire problems.

One of the most imaginative ones that I have reviewed was a scheme of putting large barrels of water upon the beams and warehouses and then having explosives sit atop the bucket with fuses dangling off to the side. The theory was simple. When the fire got hot enough and ignited the fuse, the fuse set off the explosives, the buckets were blown apart and the water was discharged on the fire. Admittedly it was a short term solution and if it didn’t work the first time you were out of luck. That migrated into the theme of having perforated pipes that were displayed throughout an entire building with a single valve that had to be turned on manually to provide water supply. The obvious disadvantage to the perforated pipe approach was no matter where the fire was everything got soaked. One might consider that to be the first “deluge system”.

The real invention became of the design of the sprinkler head itself. In other columns in I have written about the historical perspective of that sprinkler head design. Too summarize it would be to place focus



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upon the work of Grinnell and Parmalee. Probably the most significant impact of the sprinkler head was that it began to set the stage for the technological solution that had a wide variety of design features.

Understandably the concept of automatic fire protection first saw its application in the business environment. The sprinkler protection concept was a derivative of the industrial age. Robber Barons, notwithstanding the industrial leaders of the 1800's wanted to protect their investments. There was no reason to worry about putting sprinkler systems in the modest workshop and factories prior to the industrial age because they were not concentrated in large areas for the most part. The first thing that the sprinkler concept focused on was business continuity. If you owned a mill you could not afford to be out of business for two years while your mill was being rebuilt. The financial motivation behind sprinkler technology was a corporate decision not an individual decision.

The idea that sprinkler technology actually had been accepted into the world of fire protection was manifest with the creation of the National Fire Protection Association and the creation of the first standard for the installation of these systems. While I have never had an opportunity to review NFPA Standard 1 that was published at that time, you can be reasonably sure that its creation was a function of a consensus process amongst the few individuals who understood sprinkler technology at the time. The date of the creation of that standard was in the late 1870's. Here are the coincidences. This was about the same time that the fire service in this country was being converted from a volunteer force to a full time profession.

Many of the pioneers of the American Fire Service were not only sprinkler advocates but were intimately involved in the creation of the concept itself. Not uncommonly those who migrated to the top of many of the metropolitan fire departments were those who had an engineering type background. One should not have to look any further than the fact that the first meeting in 1873 hosted at the Baltimore Fire Department, the group chose to call itself the National Association of Fire Engineers.

If one continues the pilgrimage from those humble days of creation, it is easy to see that there were some stopping points along the way. For example, there is evidence that many of the major industries embraced the sprinkler concept at the turn of the century in an attempt to restrict their losses and to keep major businesses operating in spite of economic setbacks. It is also in evidence that there were people who thought at that time that sprinkler systems could serve other purposes. There is advertising information that indicates that sprinklers were advocated for the basements of buildings even if the remainder of the building was not sprinklered. This concept of partial sprinklering probably sends shivers down the spine of a contemporary designer of a sprinkler system but at the time it seemed to make a lot of sense. How many firefighters have died in basement fires we might say!

One must remember that there were very few true codes in existence at that time that sprinkler were gaining a foothold. The very concept of a building code and a fire code was undergoing genesis at the



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same time that these standards were being created. John Damrell, the first President of the NAFE was a strong advocate of the sprinkler. The idea of mandating these in a wide range of occupancies was the furthest thing away from the thought process of early sprinkler designers. They were providing a solution to a specific problem and perhaps did not even believe that the solution applied to problems outside of industry.

Nonetheless the fire and building codes both came into existence with some incipient work in the late 1880's and then the formalization of fire and building codes in the 1920's. According to the first volume of the fire codes, sprinklers were not a significant issue.

One thing that gave a boost to the concept of sprinklers, believe it or not was the war. A lot of major industries had to be put on line that required a lot of large area buildings. Sprinkler systems were bought off on by the federal government as part of the national defense strategy. Many facilities such as aircraft hangers, assembly areas, logistical warehouses and other forms of governmental and institutional buildings were sprinklered with technology that was essentially sixty years old. Any visit to a military facility built before 1940 was the examples of such technology.

With the creation of national code groups, i.e., the Uniform Building Code, the Southern Building Code Congress and the Building Officials Congress of America, sprinklers began to make an appearance through the process of amendments that are in the code cycle. According to Steve David Hart of the National Fire Sprinkler Association the adoption of sprinkler technology into these codes was an incremental process that occurred over a twenty year time frame.

The concept of residential sprinklers was initiated with a series of discussions in the early 1970's. Los Angeles City Fire Department, did a research project supervised by soon to be Fire Chief Don Manning, the idea of coming up with a sprinkler system that goes into residential application was considered. The City of San Clemente, soon to undergo major land development chose to embrace a residential sprinkler concept in the early 1970's even prior to the creation of another set of standards that would apply only to residential occupancies.

The original NFPA document had morphed into what was called NFPA 13. This standard for the installation of fire protection systems had been standby for most fire departments since the early 1990's. As a result of work being done by Chief David Hilton in Cobb County Georgia discussion was generated about creating a standard for apartment complexes. Based on activities in California the idea to create a standard for single family dwellings merged into a concept called 13D.

The evolution of 13 had been relatively stable and without controversy. The creation of 13D and 13R however were not exempt from debate. There was a contention by many in the field of sprinklers that



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some of the ideas being incorporated for the particular use in residential applications were not appropriate and that the engineering criteria for a 13 system should continue to prevail.

With the creation of the San Clemente ordinance followed in a very short time frame by the proliferation of residential ordinances and was adopted in places such as Cobb County Georgia, Prince Georges County, Scottsdale Arizona and other locations, there was continued pressure to introduce the concept of residential sprinklers as an amendment to the fire code.

To state that there was controversy associated with this decision is an understatement. While it was difficult enough to obtain acceptance of local amendments that required sprinklers, the idea of getting it into the fire code has been heavily charged with advocacy and adversity.

Meanwhile, there was a track record of applying sprinklers to buildings of smaller and smaller size through the fire and building codes. In a series of amendments over a period of time the use of NFPA 13 systems began to be required in buildings of smaller and smaller square footage. This evolution while it was of significance in terms of changing the nature of the fire problem was relatively unnoticeable to the political process because it emerged through testimony and hearings that were predominately conducted among advocates of the system. There were few naysayers in the code adoption process.

Currently there are several proposals to add an amendment to the building code that would require single family dwellings to include sprinklers. It is a question of time as to whether or not this idea will reach fruition. What is significant to note however, is the fact that it has now occurred. If anyone would have anticipated that that would be advocated by the year 2007, as late as 1980 they probably would have been laughed at.

The interesting thing about this revolutionary process is that there has been a generational change of individuals in the fire service. There has also been a generational change in those who stood to benefit or are impacted by these ordinances in the field of design and development. Each new generation in this case is considering the same pilgrimage that started out by the early pioneers.

Harry Marriott, the Australian Fire Protection Engineer, who wrote the history of sprinklers for that nation and then lived to be close to 100 years old, once told me that the journey would never be over. I am reminded that those who follow religious pilgrimages often go back to the site of their devotion more than once. Perhaps that is the fate of the sprinkler movement of this country is that many people will choose to make this pilgrimage over a period of time. Some can be seen going in the direction of the concept and some might be seen going away from the direction of the concept. Regardless of which direction the individuals are trekking the site chosen for the quest remains the same; the protection of life and property is in your own home town- or the place you serve. It may not be Mecca, but it is a place where you can make a difference.



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The journey is not over – it has just barely begun.