SPRINKLERS:
Not a Matter of Sole Reliance

In Dallas, TX, the Move to Rely on Sprinkler For Fire Protection as an Acceptable “Trade Off” Comes Under Question

The November 1983 Dallas Morning News carried an article by Mr. George Rodrigue informing the citizens of Dallas that the Building Code Advisory and Appeals Board had, by unanimous vote, capped “two years of struggle to improve the city’s building and fire codes.” Improved for whom, the public, the firefighters, or the builders and developers?

The “improved” building code allows “trading-off” of protective features in building construction that have traditionally provided safety from fire for both building occupants and firefighters in exchange for a sprinkler system. This trade-off action benefits the builders and developers in reduced construction costs, but by reducing the level of safety from fire, it does not benefit the public or the firefighter.

In February of 1981, the Wall Street Journal ran an article concerning this threat to life from fire resulting from building code waivers in the Dallas Plaza of Americas building. The ironic twist—these waivers, or trade-offs—were granted for a sprinkler system that was not approved by the State Insurance Rating Agency due to deficiencies, and as a result the building was subsequently rated as “unsprinklered.”

How did this trade-off scenario become so heavily integrated into the “improved” Dallas building code? What is being traded-off, and how do trade-offs affect your safety-to-life?

Before these questions are answered (and in all fairness), it should be explained that Dallas is certainly not unique in establishing an “improved,” trade-off riddled, building code.

Trade-offs to encourage construction through cost savings have become a national epidemic. Dallas is unique in the extent to which the Board accepted this life threatening action. As a professional fire protection engineer and life safety consultant, I see this tragic “damn-the-public-full-speed-ahead” trade-off concept in every major city, and within the framework of respected building code departments.

One reason for acceptance of trade-offs is the misconception that fire protection and life safety are synonymous—a misconception that is not only accepted by the general public, but also by many of the professionals involved in the design of public use buildings, and the fire protection codes that govern their design.

The sprinkler industry has promoted this misconception so intensely and successfully that property protection sprinklers have assumed all the rights and privileges of life safety protection in the minds of those individuals who are delegated and obligated to produce codes that protect the general public.

What builder is going to dispute a concept that will save him construction dollars, or what architect or developer is going to challenge this unprofessional sprinkler industry promotion if he can make a client happy with a less expensive building or development?

Most of the Dallas Building Code Advisory and Appeals Board members, according to Mr. Rodrigue, belong to the building industry, and member Mr. Dan Mallow is a “cer-

( Editor’s Note: As every professional wall and ceiling contractor is aware, fire protection in commercial buildings—particularly high rise—is a matter of greatest priority. The question always is: how best can maximum protection be provided.

The city of Dallas (TX) recently voted to change that city’s building and fire codes, opting for heavy reliance on a sprinkler system over the traditional approaches offered by fire rated wall assemblies. This “trade-off” was attacked by Professional Engineer J. Walter Coon in a Letter to the Editor of the Dallas Morning News.

Because Coon’s observations are so germane to the problem and wall and ceiling contractors have such a huge stake in effective fire protection, Coon’s letter is reprinted here. He doesn’t favor one system over the other so much as he argues for a balanced response to the challenge. Reliance on the sprinkler—or any other kind of system—to the detriment of other useful techniques can be dangerous, Coon says, and “trade-offs” may contribute to economics of construction-more than contribution to safety.)
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tified designer and installer of sprinkler systems.” I am certain that the Board acted in good conscience, but it must be admitted that they could not be considered to be the most unbiased group.

What are trade-offs, and why the concern over their popularity? Let’s examine but a few trade-offs in exchange for a sprinkler system that will offer a life threatening potential in the new Dallas building code.

Exit corridors have traditionally been required to have walls that are resistant to fire penetration for one hour—the new code allows non-fire resistant, non-rated, construction of exit corridor walls.

A “dead end” corridor is one that provides only one way to exit. These potential fire traps have, by life safety codes and building codes, traditionally been required to be as short as possible (20 feet) to prevent trapping occupants in areas at the far end of the corridor in a fire condition—the improved code will permit 50-foot long dead end corridors.

It is a matter of record that smoke and the products of combustion are the real documented killers in a fire. But disregarding this, the improved code goes on to eliminate smoke detection in vertical air ducts serving two or more stories, and smoke detectors in mechanical, electrical, equipment rooms, and air handling units. Air handling units will be shut down and dampers closed when a sprinkler system operates, or, more realistically, when a fire creates sufficient heat to fuse a sprinkler head—hopefully it is not low heat producing, smoky, combustion.

These are but a few of the trade-offs from the new Dallas code, and only a handful from the list of 20 or more safety-to-life features the sprinkler industry is promoting to be exchanged for a sprinkler system. Here are several from a brochure published by a national sprinkler company: Increased building height, increased exit distance, fewer fire walls, decreased exit widths, open floor plans allowed, fire-proofing requirements modified or eliminated, stairtowers not pressurized to keep smoke from entering, increased hazardous material storage allowed, elimination of compartmentation, number of required exits reduced, etc., etc.

Let’s examine what is being substituted for these safety-to-life features that afford the public safe exiting time and a chance of survival in a smoke filled building, or the added safety of a fire fighter in performing his dangerous rescue and firefighting activities.

Justification of this sprinkler system substitution is virtually impossible since a sprinkler system is a mechanical system, and as such is subject to failure. Several recorded reasons for sprinkler failure are: a water supply valve left closed, a system shut down for remodeling or repair, a change of occupancy creating a fire so intense that it overpowers the original design of the sprinkler heads installed below the ceiling, and last, but certainly not least, the arsonist who shuts off the sprinkler system. There are many, many more—always unexpected and unanticipated events caused by human error or mechanical failure.

Even with a functioning sprinkler system, trade-offs are not justified. Sprinklers are not early warning devices to alert occupants to a fire condition before smoke makes an exit corridor several stories above the fire floor impassable. Unopened sprinkler heads on an exit corridor ceiling, not visible through the thick smoke, certainly don’t justify that extra distance an occupant must crawl to a stairtower—only to find the stairtower filled with smoke because the pressurizing system in the stairtower to keep smoke from entering the tower was also traded-off. Couple this extended travel distance to the relative safety of the stairtower...
with corridor walls constructed with no resistance to fire passage, room doors with no fire rating and no self closing device—all traded-off for that line of sprinklers on the corridor ceiling that must reach approximately 165 degrees F° to function.

Automatic sprinklers have an exceptional record of property protection, but they are not the panacea of safety to life the sprinkler industry has led many to believe, and many do want to believe for economic considerations. I feel that the citizens of Dallas deserve to be made aware of how their life safety from fire is being compromised by commercial interests. Exaggeration? I quote from Mr. Rodrigue's November 16 article:

“In return for installing sprinklers, builders can install cheaper, less fire-resistant walls and take fewer measures to provide access to their building by firefighters.”

He also stated in his article that since the new code will require sprinklers in buildings larger than 7,500 square feet, representatives of Dallas home and apartment builders complained that the trade-offs had not gone far enough in compensating them for the sprinkler requirement. “Board members . . . agreed and passed a separate resolution asking the City Council to give builders other trade-offs for the sprinkler requirement—such as exemptions to allow more apartments per acre than the zoning allows.”

Certainly economics is an important consideration in construction, but the protection of life and the prevention of injury definitely take precedence. The philosophy of combining good fire-resistive construction compartmentation, adequate enclosed and protected escape routes, and a sprinkler system is the only really effective way to provide maximum protection to occupants, fire fighters and buildings. Sprinklers have a proven record of fire protection, and for this reason, it should be mandatory that sprinklers be included in the construction cost of high rise buildings and assembly facilities for the fire protection benefits they provide.

The sprinkler industry has the opinion that all anti-trade-off professionals are against sprinklers—this is absolutely wrong. We know the fire protection value of sprinklers, and we would be violating our professional code of ethics to be opposed to this protection.

What we strongly and vehemently object to is the sprinkler industry promoting sprinkler protection as the absolute and only solution. Trade-offs of life safety features for economic reasons are not justified if public welfare is a consideration, nor are they justified to promote a sprinkler installation that can stand alone on its own fire protection merits.

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