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Interior Window Sprinklers: Understanding the Risks and Rewards

Over the years, the feeling of openness within building designs has remained popular. Whether connecting occupants to a dramatic atrium design or providing visual access to an otherwise hazardous manufacturing process from the safety of an adjacent office environment, architects have been searching for ways to infuse connectivity into their designs.

In the 1980s, building codes provided some guidance to the design community with respect to atrium enclosures. These codes introduced language that permitted the use of ‘closely-spaced’ standard automatic sprinklers on both sides of glass surrounding atriums in lieu of the standard 1-hour fire resistance rated wall. This option was limited to certain occupancies and came with additional requirements regarding the type of glass, framing, and other details. Though initial development of this approach may originally have been linked to proprietary laboratory tests and associated code variances, public source engineering data that supports this equivalency is not readily available. We continue to see many design professionals mistakenly apply this glass and ‘closely-spaced-sprinkler’ design approach to non-atrium conditions, often applying it to situations requiring 2-hour or greater fire ratings. This may result in non-compliant and potentially unsafe building designs.

In the early 1990s, a sprinkler manufacturer developed a special application sprinkler specifically designed for glass wall installations. The design was demonstrated in laboratory testing to provide the equivalent of a 2-hour fire rated wall assembly when installed per manufacturer’s instructions. Implications of the distance between sprinklers and the glass, door openings, and window mullions are sometimes overlooked. Clearances between combustibles and the glass, are also often overlooked. Despite being

introduced to the building community almost 30-years ago, many design professionals remain unaware of these special application sprinklers or how to properly implement them into their building designs. Since their introduction, other sprinkler manufacturers have developed similar products, giving design professionals multiple options.

It is important to recognize that crucial design limitations can significantly affect the performance of these sprinklers. These limitations and design details are often missed by design professionals who do not fully understand the proper means of introducing these sprinklers into their designs. Experienced and knowledgeable fire protection engineers can assist design professionals in successfully implementing interior window sprinkler and glass installations into a building design project.

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