



A rallying cry often serves to unite people behind a particular cause, especially in a time of war. Texans urged each other to “Remember the Alamo!” During the Spanish-American War, it was “Remember the Maine!” For World War II, the exhortation was to “Remember Pearl Harbor!” The objective in such cases was to highlight a particularly egregious offense committed by the enemy – often whatever it was that provoked the conflict in the first place.

Structural engineers should remind each other of certain past events for a different reason – we need to invoke occasions when our predecessors, our colleagues, and we ourselves have made mistakes, so that hopefully we can avoid similar errors in the future. One such case study is the collapse of the skywalks at the Hyatt Regency hotel in Kansas City, Missouri. This year will mark the 30th anniversary of the deadliest structural engineering failure in United States history, which happened on July 17, 1981.

The details should be familiar to most of us already. The architect wanted the walkways that traversed the main lobby to look as light and airy as possible, suspended by thin rods hanging down from the structural steel framing above. The preliminary drawings showed each rod supporting the end of a box member formed by welding two channels together at the flange tips. The fourth floor walkway was directly above the second floor walkway, and the rods were depicted as continuous, with nuts and washers at both levels.

As the fast-track project proceeded, the fabricator notified the engineering team that continuous rods would not be practical and suggested, as an alternative, providing two separate rods – one to hang the fourth floor from the roof, and the other to hang the second floor from the fourth floor. The engineers approved this modification, but never performed any calculations to verify its structural adequacy. They did not realize that this arrangement would double the bearing load from the upper rod’s nut and washer on the bottom of the box member at the fourth floor level.

On that fateful Friday night, during a popular tea dance event, this nut and washer pulled through the built-up box member, sending the second and fourth floor walkways crashing down to the floor below. The subsequent forensic investigation revealed that even the original connection was not adequate for the loads specified by the governing building code – a situation that was greatly exacerbated by the revised configuration, which was barely able to support just the weight of the walkways. Based on these findings, the structural engineers in responsible charge were stripped of their licenses by the Missouri board.

What should “Remember the Hyatt” bring to mind? The most important thing is that structural engineers have a uniquely significant responsibility to hold paramount the safety, health, and welfare of the public. Architectural, mechanical, and electrical system failures usually result in unattractiveness, poor functionality, discomfort, and/or inconvenience. A structural system failure almost always has more serious consequences; even in the best cases, there are often substantial costs associated with correcting what is or could become a life-threatening situation.

There is a more specific lesson to be learned as well. The fundamental mistake in the case of the Hyatt failure was the design of the skywalk hanger rod connections – or, rather, the fact that these connections were never truly designed at all. The engineering team did not take any steps to ascertain the load capacity of the conceptual arrangement, and then overlooked it again when the fabricator proposed changing it during submittal review. In what we do for a living, the devil really is in the details.

What specific steps can we take to “Remember the Hyatt”? For one thing, a non-profit organization, the Skywalk Memorial Foundation, is currently raising funds for a permanent memorial to honor the 114 people who perished and the 216 people who were injured by the collapse – many of whom were permanently disabled – and to recognize the emergency and medical personnel, firefighters, police officers, public servants, and others who bravely responded immediately afterwards. The site is a small tract of land donated by the City of Kansas City in Hospital Hill Park, just east of the Hyatt facility itself.

The preliminary design, prepared by local architect Lorie Bowman, includes a series of concentric circles in an outdoor gathering space. The concrete plaza will have 114 LED pinlights in the inner circle and 216 pinlights in the next ring. The remaining bands of colored concrete will have hundreds of additional lights in a more dispersed formation, to represent the families, the rescue workers, and those who suffered psychological trauma as a result of the tragedy. The objective is to provide a place for quiet contemplation and small gatherings, with lots of colorful landscaping; to celebrate the lives, but remember the loss.

I think that our profession would do well to take up this cause. We are widely (and wrongly) perceived as mere number-crunchers, rather than front-line preservers of human life, liberty, and happiness. Creation of the Skywalk Memorial, with generous financial assistance from the nation’s structural engineering community, would highlight the crucial role that we play in modern society and the importance of taking further steps – like separate licensure – to reduce the likelihood of a similar disaster in the future. Please join me in supporting this worthy endeavor.■

How to Contribute

The Skywalk Memorial Foundation needs roughly \$400,000 to cover design and construction. This translates to only about \$12 per recipient of *STRUCTURE* magazine. To make your tax-deductible donation, or to learn more about the project, please visit www.skywalkmemorial.org.

Jon A. Schmidt, P.E., SECB (chair@STRUCTUREmag.org) is an associate structural engineer at Burns & McDonnell in Kansas City, Missouri, and chairs the STRUCTURE magazine Editorial Board.