



UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

APS 1018: HISTORY AND PHILOSOPHY OF ENGINEERING & INNOVATION
PROFESSOR: STEPHEN ARMSTRONG

HYATT REGENCY WALKWAYS COLLAPSE

EXECUTIVE SUMMARY

On July 17, 1981, over 1500 people had gathered at the Hyatt Regency Hotel in downtown Kansas City, Missouri, to attend an evening tea dance party. The event was taking place in the atrium lobby on the first floor, however, many attendees had congregated on the suspended walkways. The connections supporting the ceiling rods which held up the second and fourth floor walkways failed, and both walkways collapsed onto the atrium. As a result, 114 individuals died and 216 individuals were injured. National Bureau of Standards performed the investigation for this disaster. The parties involved in the disaster were G.C.E International, PBNDML and Eldridge Construction & Havens Steel Co.

As originally designed, the two walkways would have been supported from long steel rod suspended from the ceiling. Each walkway would have had a box beam attached to the rod in order to support the weight. The box beams would be attached to the rods using nuts and the beam itself was welded together. Even as originally designed, the walkways would not have been built according to the Kansas City Building Code. During the construction process, the metal fabricator involved, Haven Steel, made the decision to change to a two rod design due to manufacturing difficulties. This design involves suspending the second rod along with the second walkway from the box beam of the fourth floor. This change in design meant that the fourth floor box beam would be forced to withstand the weight of both the second and fourth floor walkways. The design load should have been doubled to accompany this change, but due to serious miscommunications between the Engineers and the Fabricators, the load calculations were not performed. The Engineers provided approval and did not perform adequate on-site inspection. On the night of the tea dance party, the weight of the additional people on the walkways caused the welds on the fourth floor box beam to fail. This resulted in the second floor

walkway and the fourth floor walkway slipping off the steel rods and collapsing onto the party guests below.

After the incident, the metal fabricators claimed that they phoned the engineer's office to get approval for the change. The engineer's denied receiving any such phone call. The main issue that was brought up in this case was the issue of the engineering seal. The seal is supposed to be the symbol of the engineer's responsibility. In this case, the change was made and the updated drawings were submitted with the seal on them. Regardless of any phone call that occurred, due to the fact that the seal was present on the drawings, the engineer would take responsibility for the accuracy of the drawings.

Years leading up to the collapse, high employment, inflation, and interest rates caused high expectations for cost savings and lead times. This resulted in oversight of quality. The failure of the walkways was due to poor engineering design, and management. The design didn't meet the building codes, neither were there controls to ensure consistency with the codes. Poor change control process and misunderstanding of responsibility led to the collapse of the walkway. Jack D. Gillum and Daniel M. Duncan were found guilty of gross negligence, misconduct and unprofessional conduct in the practice of engineering. Additionally, G.C.E Internationals had its engineering license revoked.

The lessons learned from this incident are the importance of the engineering seal, the importance of effective communication, conducting a thorough impact analysis as per change control process, sticking to your expertise, have independent experts involved, and engaging in work based on references and experience.