

Hyatt Regency Walkways: The Ethical Issues

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Team 3

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Overview

- Ethical Issues in Engineering
- Summary of the Events
- Technical Issues
- Stakeholders
- Consequences of the Tragedy
- What About Software Engineering?

Ethical Issues in Engineering

- Responsibilities
 - ★ Public
 - ★ Engineering Profession and Colleagues
 - ★ Ourselves as Human Beings
- Quality
- Reliability
- Safety

The Hyatt Regency Tragedy

- Hyatt Regency Hotel
- Kansas City
- Suspended Walkways
- 2nd, 3rd and 4th Floors
- 2nd and 4th Connected

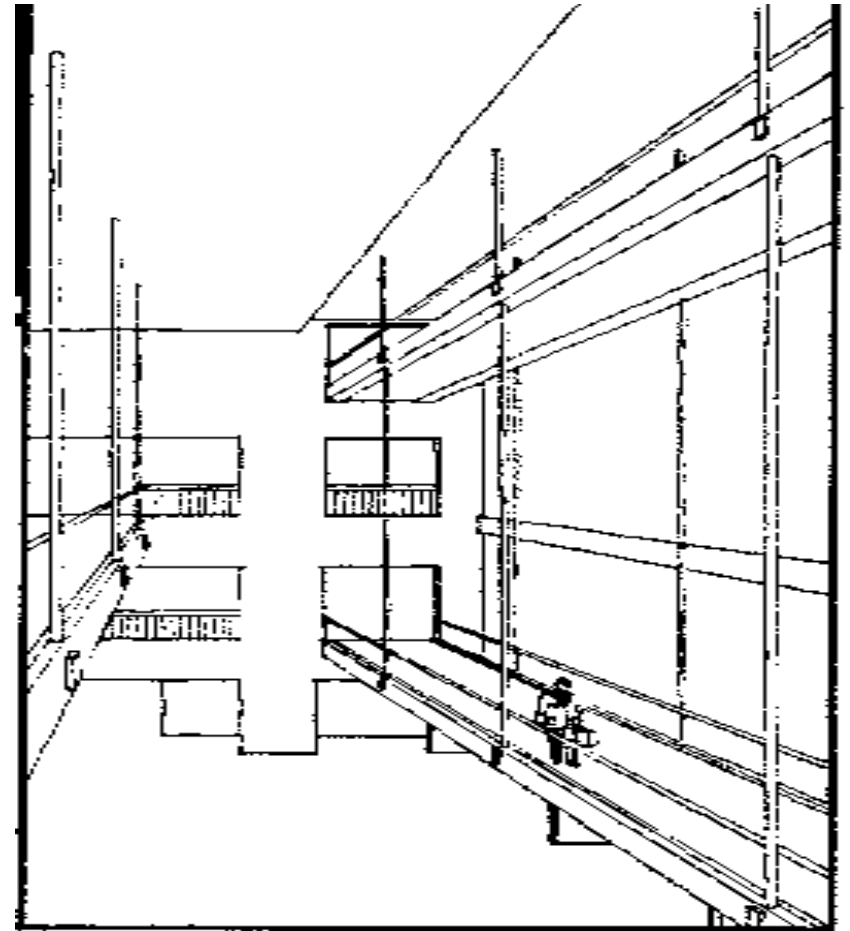


Figure 1: Hyatt Walkways Before Collapse [8]

Main Figures

- Crown Center Redevelopment Corp.
- Jack D. Gillum & Associates, Ltd. (G.C.E.)
- Patty Berkebile Nelson Duncan Monroe Lefebvre (PBNDML)
- Eldridge Construction & Havens Steel Co.
- H&R Inspection, QA Officials
- Jack D. Gillum
- Daniel M. Duncan
- Seiden-Page

Project Birth

- Summer 1977: First plans
- April 1978: Contracts signed for design
- December 1978: Contracts for construction
- Duncan in charge of design drawings
- Rod design changed by Havens
- Duncan Approves

Project Evolution

- January 1979: Architect notified of change
- February: Shop drawings sent to G.C.E.
- October: Roof collapses during construction
- Seiden-Page Investigates Failure
- J. Gillum and D. Duncan Report
- July 1980: Construction Completed

Failure

- July 17, 1981: Tea-dance party
- Walkways collapse

Technical Causes

- Design and shop drawings inconsistencies
- Change in suspending rods design
- Wrong load calculations

Technical Causes (cont'd)

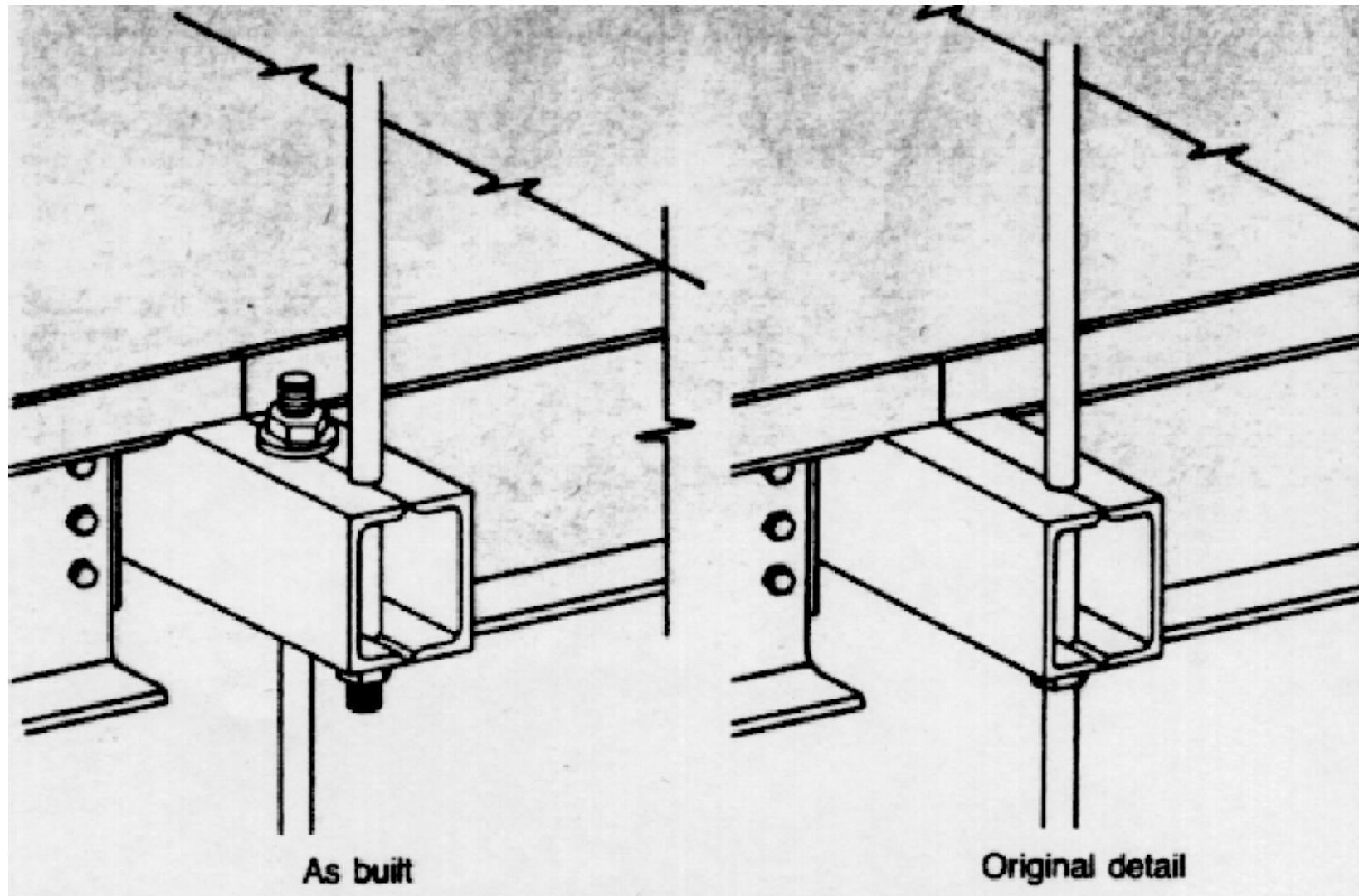


Figure 2: Support Rod Design Change [8]

Technical Causes (cont'd)



Figure 3: Ceiling rods after [6]

Technical Causes (cont'd)



Figure 4: Collapsed walkways and 3rd floor still hanging [6]

Technical Causes (cont'd)



Figure 5: Connection box deformation [6]

Human Causes

- No verification of changes
- Improper Communication
- Too much trust in Duncan

Stakeholders

- Crown Center Redevelopment Corp: Owner
 - ★ Interested in lowest cost
 - ★ No on-site inspection
 - ★ Should have had inspections
- Jack Gillum, Principal of G.C.E.
 - ★ Design and build the Hyatt Regency Hotel
 - ★ Too much responsibility to junior engineer
 - ★ Insufficient supervision
 - ★ Fulfilled Interests?

Stakeholders (con't)

- Daniel Duncan: Junior engineer at G.C.E.
 - ★ Project Success
 - ★ Flawed Design
 - ★ Impromptu Decisions
 - ★ Overconfidence in his Design
- Society
 - ★ Lives of victims
 - ★ Families of lost ones
 - ★ Witness traumatised
 - ★ Engineering Profession

Aftermath

- 114 people died
- 200 others injured
- Kansas City investigations
 - ☆ Technical Team
 - ☆ Ethical Team

Aftermath (cont'd)

- Duncan, Gillum and G.C.E. found guilty
- Licenses Revoked
- Fair sentence? To who?
- Was the sentence hard enough?

What about Software Engineering?

- New profession
- Same responsibilities
- No change is a small change
- Differences?
 - ☆ Problem definition
 - ☆ Mathematical tools
 - ☆ Formal verification methods

References

- [1] Akin, Omer. *Kansas City Hyatt*. 1999. February 20, 2003. <<http://caae.phil.cmu.edu/edm/architecture/sample01.asp?PageRequested=H009>>
- [2] Conn, Randy et al. *The Hyatt-Regency Walkway Collapse*. 1997. February 20, 2003. <<http://www.rose-hulman.edu/Class/ce/HTML/publications/momentold/winter96-97/hyatt.html>>
- [3] Fain, Romy. "The Kansas City Hyatt Regency Walkways Collapse." *Engineering Ethics*. 2002. February 20, 2003. <<http://ethics.tamu.edu/ethics/hyatt/hyatt1.htm>>
- [4] Jensen, James N. *Civil Engineering Case Study*. 2000. February 20, 2003. <<http://www.acsu.buffalo.edu/~jjensen/cie.htm>>
- [5] Leonards, G. H. "Forum: Collapse of the Hyatt Regency walkways – Implications." *Civ. Engrg.*, ASCE. 1983. 53(3), 6.
- [6] Lowery, Lee. "The Kansas City Hyatt Regency Collapse". *Engineering Ethics*. 2002. March 1, 2003. <<http://ethics.tamu.edu/ethics/hyatt/hyatt2.htm>>
- [7] Parnas, David L. "Software Aspects of Strategic Defense Systems". *American Scientist*, Vol. 73, No. 5. Sept.-Oct. 1985. pp. 432-440.
- [8] Pfrang, Edward, Richard Marshall, "Collapse of the Kansas City Hyatt Regency Walkways," *Civil Engineering-ASCE*. July 1982. pp. 65-68.
- [9] Robinson, John. *NYC college of Alfred*. 1998. February 20, 2003. <<http://cems.alfred.edu/students98/robinsjd/NYS%20College%20of%20Alfred.htm>>
- [10] Roddis, W. M. Kim. "Structural Failures and Engineering Ethics". *Journal of Structural Engineering*, Vol. 119, No. 5, May 1993, pp. 1539-55.
- [11] Rubin, Robert A., Banick, Lisa A. "The Hyatt Regency Decision: One View." *Journal of Performance of Constructed Facilities*, Vol. 1, No. 3. August 1987, pp. 161-7.