

# An Evaluation of Supported Scaffold Safety

(Presented at the 12<sup>th</sup> Annual  
Construction Safety Conference,  
Rosemont, IL, May 2002)

Ken Halperin, PhD

Consultant

E-mail: [ken@boo.net](mailto:ken@boo.net)

Michael McCann, PhD, CIH

Director of Safety and Ergonomics

Center to Protect Workers' Rights

E-mail: [mmcann@cpwr.com](mailto:mmcann@cpwr.com)





# Fatal Falls from Supported Scaffolds, 1992-98

---

- Total # of deaths = 267 (38/year)
  - 217 falls (81%)
  - 47 collapses (18%)
- 15 deaths (6%) dismantling scaffolds
- 6 deaths (2%) assembling scaffolds

Source: U.S. Bureau of Labor Statistics data



# Research Methods

---

- Used a 150-point checklist to evaluate scaffold safety practice
  - Rated scaffolds as acceptable or unacceptable
- Evaluated 113 scaffolds in 9 areas of Eastern U.S.
- Also evaluated information on worksite, workforce, and scaffold competent person.



# Results

---

- 36 of the 113 scaffolds (32%) were unacceptable and posed imminent hazards:
  - danger of collapse
  - missing planking, guardrails, and/or
  - inadequate access
- 77 scaffolds (68%) were acceptable and posed no imminent danger to the workers.

# 30 Scaffolds (27%) Had Structural Flaws

- Missing or improperly supported base plates 17
- Scaffold not tied properly to building 13
- Platform not level 6
- Some runners missing 3
- Some jacks overextended 2
- Severe overloading 2
- Some posts incorrect 1
- Some braces not tight 1



# 36 Scaffolds (32%) Had Fall Hazards

	<u># fall hazards</u>
■ Missing mid guardrails	33
■ Missing top guardrails	28*
* Also missing midrails	
■ Improper access	
■ Climbing scaffold frame	23
■ Other severe access problems	5
■ Partially planked platforms	26
■ Substandard planks	3





# Correlation between Structural Flaws and Fall Hazards

---

- 36 scaffolds were unacceptable
- 23 had both structural flaws and fall hazards
- 10 had fall hazards only
- 3 had structural flaws only



# Problems of Unacceptable Scaffolds

---

- 36 scaffolds were unacceptable
  - 92% were missing guardrails
  - 83% had structural flaws
  - 78% had poor access
  - 72% were insufficiently planked





# Scaffold Competent Person

---

- Required by OSHA
  - 29 CFR 1926.451(f)(3) requires inspections by competent person before each work shift and after occurrences which could affect scaffold structural integrity
- Competent person
  - Recognize hazards
  - Authorized to take corrective action



# Competent Persons on Scaffold Sites

---

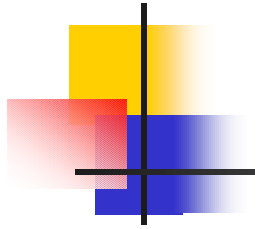
- 104 sites had workers present
- 82 (79%) had competent persons
- 10 sites (10%) said competent person was not present
- 72 competent persons were interviewed
  - Only 32 (44%) had scaffold safety training



# Need for Competent Person Scaffold Safety Training

---

- 32 sites had competent persons who had scaffold safety training
  - 25 scaffolds (78%) were acceptable
- 62 sites had no competent person or had one without scaffold safety training
  - 24 scaffolds (39%) were acceptable



# Importance of Scaffold Erector

---

- 72 scaffolds erected by scaffold user
  - 43 (60%) were acceptable
- 41 scaffolds erected by scaffold erection contractor
  - 34 (83%) were acceptable



# Effect of Union Status of Scaffold Erector

---

- 49 scaffolds erected by union contractors
  - 38 (78%) were acceptable
- 64 scaffolds erected by non-union contractors
  - 39 (61%) were acceptable



# Effect of Type of Supported Scaffold

---

- 86/113 scaffolds (76%) were frame scaffolds
  - 54 frame scaffolds (63%) were acceptable
- 27 scaffolds (24%) were other types of scaffolds
  - 23 other scaffolds (85%) were acceptable



# Summary of Proper Scaffold Safety Practice -1

---

- Unacceptable scaffolds have both:
  - Structural flaws
    - Missing or improperly supported base plates
    - Improper tying off to building
    - Uneven platform slope
  - Fall protection hazards
    - Missing planking and/or guardrails
    - Inadequate access



# Summary of Proper Scaffold Safety Practice - 2

---

- Strong correlations with:
  - Presence of competent person with scaffold safety training
  - Use of non-frame scaffolds
  - Scaffold erected by scaffold erection company
- Slightly weaker correlation with union status of scaffold erector





# Summary of Proper Scaffold Safety Practice - 3

---

- No correlation with:
  - Location
  - Site size
  - Number of workers on the scaffold
  - Trade of scaffold workers



# Recommendations

---

- Hire an outside scaffold erector
- Have competent person on site who has had scaffold safety training
- Consider whether frame scaffolds are the best choice
- Perform regular inspections



# Quick Scaffold Inspection Checklist

---

- Check for missing planks on platforms
  - Check for missing guardrails
  - Check for proper access
  - Check for proper tying off to buildings
- 
- Note: The first 3 points find 92% of unacceptable scaffolds

# Missing Planks





# Missing Guardrails

---



# Improper Access





# Further Information on Construction Safety and Health

---

Electronic Library of Construction Safety  
and Health (eLCOSH):

**[www.elcosh.org](http://www.elcosh.org)**

The Center to Protect Workers' Rights

**[www.cpwr.com](http://www.cpwr.com)**

This presentation was funded by research grant U60 CCU 317202 from the National Institute for Occupational Safety and Health (NIOSH) through The Center to Protect Workers' Rights, Silver Spring, Md. The contents are solely the responsibility of the authors and do not necessarily represent the official views of NIOSH.