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An evaluation of scaffold safety at construction sites

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Abstract

Problem: This study evaluated common scaffold safety practices in construction. **Method:** A 150-point checklist was used to evaluate supported scaffold safety practices at 113 scaffolds in nine areas of the eastern United States. **Results:** Thirty-six scaffolds (31.9%) were either in danger of collapse or were missing planking, guardrails, or adequate access. There was a strong statistical correlation between structural flaws and fall protection hazards, and between proper scaffold safety practice and (a) competent persons with scaffold safety training, (b) use of separate scaffold erection contractors, and (c) scaffolds that were not simple frame types. A slightly weaker correlation was found with union status of the scaffold erector, and no correlation was found with geography, site size, number of scaffold users, and trade working on the scaffold. **Discussion:** Recommendations are made for safer scaffold practice, including a simple 4-factor scaffold inspection method. **Impact on Industry:** Implementation of the 4-factor method could result in a cost-effective way to identify unsafe scaffolds.

Keywords: supported scaffolds; competent person; falls; collapses; construction

1. Problem

Falls from heights are the leading cause of death for construction workers (Center to Protect Workers' Rights, 2002; National Institute for Occupational Safety and Health [NIOSH], 2000). Scaffold-related falls – by collapse or fall from scaffold – are the second leading cause of falls, averaging 52 deaths per year (18% of all falls). Another estimate shows that more than 9,500 workers are injured and 80 killed annually in the United States in scaffold mishaps (U.S. Bureau of Labor Statistics, 1996). In 2000, approximately 12% (734 of 5,915) of fatal occupational injuries were falls; of those, 12% (85) involved scaffolds or staging (http://www.bls.gov/iif/oshwc/cfoi/cftb139.pdf).

A recent literature review by Advanced Technologies and Laboratories (ATL) International for NIOSH (ATL International, 2002) shows 12 studies on scaffold safety factors (Cattledge et al., 1996; Chaffin & Stobbe, 1979; Faergemann & Larsen, 2000; Hinze & Russell, 1995; Holden, 2002; International Union of Operating Engineers National HazMat Program, 2001; Kreisfeld & Bordeaux, 1997; Lipscomb et al., 2000; Masonry Contractors' Association of America, 2001; McCann & Chowdhury, 2000; Occupational Safety and Health Administration [OSHA], 1979; Scaffold Industry Association, 1979; Shepherd, 2000; U.S. Bureau of Labor Statistics, 1983; Webster, 2000). None of these studies, however, involved field research to examine what factors are related to good scaffolding.

A research project was undertaken to measure the degree of safety in the use of scaffolds in the eastern United States, and to correlate safe scaffold practice to other variables present on construction sites. One hundred and thirteen scaffold sites in nine cities in the eastern United States were visited between April 2001 and February 2002. The study was limited to sites where there was a supported scaffold – one based on the ground – with construction workers working on the scaffold. Scaffolds under erection were excluded from the study.

2. Methods

Nine geographic regions or cities were included in the study: Baltimore, MD; Birmingham, AL; Central Connecticut; Jacksonville, FL; New Orleans, LA; Philadelphia, PA; Providence, RI; South Florida; and Washington, DC. A 150-point checklist was developed, with questions about the

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scaffold, site size, type of work, presence and training of scaffold competent persons, general site safety, workforce, and many others. The checklist is included in Appendix 1.

Researchers visited sites on which there was a supported scaffold and collected information about the scaffold, the site, the workforce, and the competent person. Whenever possible, the competent person was interviewed.

There were two criteria for inclusion of a site into the survey:

1. There had to be a supported scaffold on the site – one which was built from sections starting at the ground or some other level surface and built up from there.
2. This scaffold had to be in use for a construction task other than scaffold building itself.

Every effort was made to find only scaffolds on which someone was actually performing construction work when observed. One hundred and four of the 113 scaffolds had at least one worker on the scaffold. Where possible, repeat visits were made to find workers on the scaffold. The other nine scaffolds were ones at which the scaffold appeared to be in use, even if no one was actually present at the time of the visit.

Any construction task was acceptable – carpentry, masonry, painting, ironwork, or any other. Both union and non-union sites were included. Three scaffolds at one power plant were included; all other sites were commercial or residential.

Scaffold sites were a convenience sample. They were identified by a number of methods:

(a) Business agents for the unions that work most closely with scaffolds – carpenters, laborers, masons, ironworkers and painters – identified both union and non-union sites. This method was used in Baltimore, Providence, Jacksonville, and Miami.
(b) Government officials in the building permits departments of various cities identified scaffolds. This method was the main method used in Philadelphia, New Orleans, and Birmingham.
(c) Other contacts, including personal friends and coworkers on other projects, identified scaffold sites in Washington and in Hartford.

In all cases, an attempt was made to be thorough – any scaffold site that met the inclusion criteria was added to the list. Thus in each city, sites identified when traveling to other sites were added to the list.

3. Results

3.1. Descriptive analysis

One hundred and thirteen scaffolds were evaluated between April 2001 and February 2002 that had construction workers at work and scaffolds present that appeared to be in use. The number of workers on the construction sites ranged from 1 to 1,000, with a mean of 70.6 (SD = 151) and a median of 20. The number of workers on the scaffold ranged from 0 to 360, with a mean of 9 (SD = 35). Scaffold sizes ranged from a single buck 10 ft high to a scaffold 500 feet long, 8 ft wide and 280 feet high. Work ranged over the spectrum of construction tasks with the most common activities being masonry (44 sites, 39% of sites), carpentry (33 sites, 29%), and painting (14, 12%). Other types of work performed from scaffolds included plastering, tuckpointing, sheetmetal work, welding, pipefitting, roofing, glazing, and decorative painting. None of these were represented on more than three scaffolds. Five scaffolds were at single-family residences, three at an industrial site (a power plant), and the rest were at commercial construction sites, both new construction and renovation.

In order to classify scaffold safety, scaffolds were rated as unacceptable or acceptable by the researchers based on the danger to the worker on the scaffold. If there was a risk of serious injury or death, the scaffold was classified as unacceptable. This could include both imminent hazards and serious hazards. Examples of imminent hazards are workers on a single plank where a slip could result in a fall, workers on scaffolds without railings or fall arrest systems, and severely overloaded or scaffolds without ties. An example of a serious but not imminent hazard would be missing railings, on the same platform as the workers, but more than 10 feet away from them.

If there were no hazards of any kind on a scaffold, the scaffold was rated as acceptable. If the scaffold had various errors, but they were not obviously fatal to the worker (e.g., a ladder egress was not three feet above its platform, or there were missing toe-boards or only a couple of improper baseplates) the scaffold was also rated as acceptable.

Of 113 scaffolds, 77 (68.1%) were rated as acceptable and 36 (31.9%) were rated as unacceptable. Almost three quarters of the unacceptable scaffolds involved imminent hazards.

3.2. Statistical analysis

Scaffold sites in nine locations in the eastern United States were visited. These were classified into three geographic regions: (a) central Connecticut, Philadelphia, and Providence were classified as the Northern geographic region; (b) Birmingham, Jacksonville, New Orleans, and south Florida were classified as the Southern region; and (c) Baltimore and Washington, DC were classified as the middle region. There was no statistically significant difference in scaffold safety by geographic region. All statistical tests were simple 2x2 contingency table chi-square tests unless noted otherwise. Table 1 shows the results by geographic region.

Table 2 presents the geographic distribution by individual site location. The percentage of unacceptable scaffolds by location varies widely, from 10% to 50%.

Scaffold injury incidents occur in two ways - **falls from scaffolds**, or **scaffold collapses**. Of the 113 scaffolds, 30 (27%) had one or more structural flaws (e.g., the scaffold

Table 1
Scaffold Safety Practice by Geographic Region of the Eastern U.S.

	Rating of scaffolds		Total # scaffolds	%
	# acceptable	# unacceptable		
North	24	11	35	31
Mid	22	13	35	37
South	31	12	43	28
Total	**77**	**36**	**113**	**32**

was out of square, not properly tied to the building, or had one or more missing or improper base plates). Some flaws, such as a few improper baseplates, were considered acceptable unless some other factor such as overloading was present. Other flaws, such as lack of proper ties to the building where required, were always unacceptable. Table 3 lists the structural flaws identified.

The second major category of scaffold safety problems are defined as fall protection problems (e.g., errors in planking, guardrails, or access that could result in the worker falling off the structure). Table 4 shows the distribution of fall protection problems on the 36 scaffolds that were rated unacceptable.

Of the 30 sites with structural flaws, 7 had no other imminent hazard problems, and 23 also had serious fall protection problems. Of the 7 sites with only structural flaws, 4 were missing base plates or had improper mudsills, and only 3 had other, more serious flaws – all of them involving missing ties to the building. There is a strong correlation between the presence of structural flaws and fall protection problems (chi-square = 47.7, 99.9% significance). Of the 36 scaffolds that were rated unacceptable, 23 had both structural flaws and fall protection problems, 10 had no structural flaws, and 3 had structural flaws only.

Overall, of the 36 scaffolds that were rated unacceptable, 92% were missing guardrails, 83% had structural flaws, 78% had poor access, and 72% were insufficiently planked.

3.3. Statistically significant factors in scaffold safety practice

Four factors were found to be highly statistically significant in correlation to a high overall scaffold safety rating.

Table 2
Scaffold Site Visits by Location

Location	Rating of scaffolds		Total # scaffolds	%
	# acceptable	# unacceptable		
Baltimore, MD	9	4	13	31
Birmingham, AL	2	2	4	50
Central Connecticut	2	2	4	50
Jacksonville, FL	12	4	16	25
New Orleans, LA	9	1	10	10
Philadelphia, PA	8	7	15	47
Providence, RI	14	2	16	13
South Florida	8	5	13	38
Washington, DC	13	9	22	41
Total	**77**	**36**	**113**	**32**

Table 3
Scaffold Structural Flaws and Overloading of Scaffolds

Distribution of Scaffold Design Flaws	# observed*
Some baseplates missing or improperly supported**	17
Scaffold improperly/not tied to building***	13
Platform slope greater than 0 degrees**	6
Some runners (horizontal supports) missing	3
Some jacks overextended	2
Severe overloading	2
Some posts incorrect	1
Some braces not tight	1

*The numbers add to more than 30 because scaffolds could have more than one of these flaws.

**These were not considered serious by themselves, unless some other flaw was present.

***For scaffolds with a height-to-base ratio greater than 4.

These were: (a) the scaffold safety training of the competent person present on the site; (b) who erected the scaffold; (c) the type of scaffold; and (d) the number of workers present on the site. Union status of the scaffold erection contractor was less strongly correlated with scaffold safety. There was no correlation between the trade working on the scaffold and scaffold safety.

Of the 104 scaffolds where workers were present, 82 claimed to have a competent person present. There was no statistically significant relationship between presence of a competent person and an acceptable scaffold safety rating. Ten of the 104 scaffolds claimed to have a competent person, who happened not to be present during the site visit. Overall, 92 scaffold sites claimed to have a competent person. Again, there was no correlation between the claim of a competent person and a satisfactory scaffold safety rating.

At 72 of the 82 scaffolds it was possible to interview the "competent" person regarding their scaffold safety training. Of these 72 competent people, 32 of them (44%) claimed to have either an OSHA scaffold user card, an OSHA scaffold erector card, or both. There was a strong correlation between the presence of a competent person who claimed OSHA scaffold safety training and an acceptable rating on overall scaffold safety. A comparison group consisted of the 62 scaffolds where there was no competent person present, or where there was a competent person without scaffold safety training (excluding the 10 scaffolds with a competent person

Table 4
Serious Fall Protection Problems—Planking, Guardrails, and Access

Distribution of Fall Protection Flaws	#observed*
At least some middle guard rails missing	33
At least some top guard rails missing	28**
Improperly climbing frame for access	23
Other serious improper access problems	5
Improper access total	28
At least some platforms partially planked	26
Plank condition, substandard	3***

*The numbers add to more than 36 because most unacceptable scaffolds had more than one major fall protection problem.

**All also missing midrails.

***All also partially planked.

who could not be interviewed). Twenty-five of the 32 scaffolds with a trained competent person (78%) received an acceptable overall score, while only 24 of the 62 without a trained competent person (39%) received an acceptable rating. The chi-square value for this relationship was 11.6, statistically significant at the 99.9% level.

Data were gathered on contractors or subcontractors responsible for erection of the scaffold, and on what contractors were working on it. At 72 of the 113 scaffolds (64%), the scaffold was erected by one of the contractors working on it, and at 41 (36%), the scaffold was erected by a separate scaffold erector contractor. It was found that hiring a separate scaffold erector contractor was correlated to an acceptable overall scaffold safety rating. Thirty-four of the 41 scaffolds (83%) erected by separate erectors were acceptable, and only 43 of the 72 scaffolds (60%) erected by one of the companies performing construction work were acceptable. Chi-square for this correlation was 5.45, which is significant at the 95% level.

Frame scaffolds (including what OSHA terms bricklayers square) were by far the most common type of scaffold encountered, comprising 86 of the 113 scaffolds (76%). Other types of scaffolding encountered in this supported scaffold study are discussed in Table 5. Mast-climbing and suspended scaffolds were not studied, and small rigged scaffolds including pump jack and ladder jack scaffolds were not encountered. All of these types, other than the 86 frame-only scaffolds, were grouped together as an "other" category for the purposes of this analysis.

Table 5
Types of Supported Scaffolds Found on Sites Visited

Type of scaffold	# of scaffolds	Description
Frame scaffold	86	Consists of two welded end pieces, which are set in place and connected by crosspieces on the front and back faces. Further sections are set on top of this frame, or connected to it laterally by additional crosspieces.
System scaffold	10	Patented systems of pieces that fit together in limited and easy-to-assemble ways.
System frame scaffold	3	Patented systems of frame-like pieces that are of different dimensions than existing frame scaffolds and contain built-in access methods and guardrails.
Tower adjustable scaffold	2	Patented systems of tower units with platforms that are jacked up to adjustable levels (Masonry Contractors Association).
Wood scaffold	1	Made of wood and nailed together at the site.
Tube and coupler scaffold	1	Consists of a platform(s) supported by tubing, erected with coupling devices connecting uprights, braces, bearers, and runners.
Mixed scaffolds	10	Tube and coupler mixed with frame, and tube and coupler mixed with system scaffolds.

Table 6
Summary of Contingency Table Result

Positive Factor	*n*	Chi-squared	Significance Level (%)
Presence of Scaffold-Trained Competent Person	94	11.6	99.9
Site Size, 10 or More Workers	113	7.25	99
Non-Frame Scaffold Type	113	5.83	95
Separate Scaffold Erection Contractor	113	5.45	95
Unionized Scaffold Erector	113	2.80	90
Nunmber of Workers on Scaffold Greater than 1	104	1.09	
Masons or Carpenters At Work	113	0.39 or 0.35	
Scaffold Site in North as Opposed to South	113	0.34	

There was a statistically significant correlation between other scaffolds (non-frame) and an acceptable overall scaffold safety rating. Twenty-three of the 27 scaffolds (85%) in the "other" category were rated acceptable, while only 54 of the 86 frame scaffolds (63%) were rated acceptable. Chi-square was 5.83, statistically significant at the 95% level.

A regression analysis revealed no correlation between site size (total number of workers on the construction site, not just the scaffold) and scaffold safety practice. Less than 2% of the difference between scaffold safety ratings can be explained by overall site size. Nevertheless, when the sites were stratified into those with fewer than 10 workers on the site and those with 10 or more workers, there was found to be a strong difference in scaffold safety between the two site sizes. Of the 25 sites with fewer than 10 workers, only 12 of the scaffolds (48%) received an acceptable scaffold rating. Of the 88 larger sites, 65 of the scaffolds (74%) were acceptable. The result is a chi-square value of 7.25, for statistical significance at the 99% level.

Of the 49 scaffolds where the scaffold erector was a union firm, 38 (78%) received an acceptable rating. Of the 64 scaffolds where the erector was non-union, 39 (61%) received an acceptable rating. The chi-square test for association between union status and scaffold safety was 2.80, significant at the 90% level.

There was no statistically significant difference between scaffolds being used by one or by many workers. A contingency test of one worker on the scaffold versus 2 or more workers gave a chi-square value of 1.09. When the test is performed between 1 or 2 workers versus 3 or more workers on the scaffold, the chi-square value falls to 0.006.

There were no statistically significant differences between scaffolds used by different trades. Scaffolds were most commonly used during masonry work (bricklaying, stone masonry, concrete block) and carpentry work. Forty-four (39%) of all scaffolds were used by masons, and 33 (29%) used by carpenters. One site had both carpenters and masons on the same scaffold. A simple contingency table for masons versus all other workers gives a chi-square of 0.39. For carpenters versus all other workers, the value of chi-square is 0.35. The same result holds for the trade that erected the scaffold.

Table 6 summarizes the results of the various contingency tests.

4. Discussion

This study evaluated the safety of 113 scaffolds and factors affecting their safety. On the one hand, more than two thirds of the scaffolds were acceptable. On the other hand, almost a third of the scaffolds were unacceptable, and 23% – almost one scaffold in every four – had errors that could result in immediate tragedy.

The most remarkable result relating to Tables 3 and 4 is the number of scaffolds with structural flaws that had other problems that also would result in an unacceptable rating.

The correlation between the presence of a competent person who has scaffold safety training and scaffold safety is crucial. OSHA defines a competent person as one who is "capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous or dangerous to employees, and who has authority to take prompt corrective measures to eliminate them." The results of this study show that most scaffold competent persons do not have adequate training to allow them to ascertain when a scaffold is unsafe. This study clearly indicates a need for OSHA to specify what training is required for competent persons.

Another important finding is that outside scaffold erection contractors manufacture safer scaffolds. Some large contractors maintain special crews who specialize in erecting scaffolds for that contractor. Such trained crews would likely erect safer scaffolds than workers who do not have much experience. Our study could not identify such experienced crews.

4.1. Correlation among the major findings

It is important to discern if there is an interrelationship between the factors found to be correlated with safe scaffold practice.

None of the 25 construction sites with under 10 workers had a scaffold-trained competent person. Of the total number of scaffold sites, there were 62 without a trained competent person. Of these, 25 had 9 or fewer workers, and 37 had 10 or more. Twelve of the 25 small scaffold sites (48%) and 12 of the 37 larger sites (32%) had an acceptable scaffold safety rating, and 13 of the small sites and 25 of the larger sites had an unacceptable rating. Chi-square for this test is 0.93. Excluding scaffolds with trained competent persons, there was no discernible difference in scaffold safety between sites with fewer than 10 workers and sites with 10 or more. When this result is coupled with the failure of the regression analysis to find an overall correlation between site size and scaffold safety, it appears that the correlation of a site size of 10 or more workers to scaffold safety practice is spurious. The absence of a trained competent person on small sites may explain the spurious result, or it could be due to some other, unexplained, factor that correlates to the competent person result.

The one result that does appear to hold across all stratifications is the result for outside erector. For example, on small sites and on larger sites, the erection of the scaffold by a separate scaffold erection contractor continued to make a difference. For the 25 sites with fewer than 10 workers, a separate scaffold erector was correlated with an acceptable scaffold safety rating compared with erection by the trade using the scaffold (chi-square = 3.28), significant at the 90% level. For the 88 scaffold sites with 10 or more workers, a separate scaffold erector correlated with an acceptable rating (chi-square = 3.96), significant at the 95% level. Consequently, it appears that a separate scaffold erector is important at any site size.

On scaffold sites without a trained competent person, an outside erector was also found to be important. On the 62 scaffold sites without a trained competent person, having an outside erector correlated with an acceptable scaffold safety rating (chi-square = 3.79), significant at the 90% level. This suggests that trained competent person and outside scaffold erector are independent results.

Of the 86 scaffolds with a frame type scaffold, having an outside erector was correlated with scaffold safety with a chi-square of 2.41, suggesting that if the common frame type is used, there is less evidence that having an outside erector is beneficial. At the same time, non-frame scaffolds were more likely to have an outside erector than were frame scaffolds. Almost half of the non-frame scaffolds (13 out of 27) were erected by outside erection firms, while only one-third (29 of 86) of the frame-type scaffolds were erected by outside contractors. One possible explanation is that a site looking for good safety might hire an outside erector contractor, who would be more likely to choose a scaffold type appropriate to the site, rather than use the most common frame type. Another possible explanation is that if the outside erector did use a frame scaffold, they were likely to do a better job of it. It is not possible to say that either the outside erector result or the non-frame scaffold type result is spurious from this analysis.

A limitation on this analysis is that there are only 113 data points. In most cases this is an insufficient amount of data to determine positive correlations for any one factor when stratified for another.

4.2. A proposed method for rapid determination of scaffold safety

Every relevant aspect of the OSHA scaffold regulations was included in the scaffold checklist. Many of the questions on the checklist had limited practical significance. For example, water and ice conditions, overhead power lines, and the presence of a protective mesh either were not problems or were never observed to be done incorrectly except on scaffolds that had problems with the more major factors. Serious structural flaws turned out to be highly correlated with a few, much more visible, problems.

All 36 of the scaffolds that were rated unacceptable had flaws in one or more of only four factors: (a) incompletely planked platforms, (b) insufficient access, (c) incomplete guardrails, and (d) a lack of ties to the building where required. If there are problems in obtaining access to the scaffold, the first three factors (a) incompletely planked platforms, (b) insufficient access, and (c) incomplete guardrails, account for 92% of the unacceptable scaffolds and can be observed from a distance.

Given the limited resources available in construction safety, a triage method for scaffold inspections should be developed, in which every scaffold is inspected using the rapid four-factor method (a) planking, (b) railings, (c) access, and (d) tying off to buildings. Those found to be perfect on these four factors could be waived for further inspection, and those found to be lacking in any of these areas could then be assessed for more serious inspection, with recommendations for repair.

4.3. Recommendations for safer scaffolding

Based on the findings of this study, several recommendations can be made that are practical measures leading to safer scaffolding.

1. Hire an outside scaffold erector.
2. Assure the presence of a competent person on the scaffold site who is trained with at least an OSHA scaffold user course.
3. Consider the appropriateness of frame scaffolding for the task. Using the most widely available scaffolding does not appear to lead to site safety.
4. Implement the rapid four-factor inspection method.

5. Impact on industry

Implementation of the above recommendations would result in safer scaffolds, reducing the number of deaths and injuries due to the use of scaffolds in construction. In particular, using the 4-factor method of scaffold inspections could result in a cost-effective way to identify one of the more dangerous problems in construction safety.

6. Summary

This study shows that the OSHA competent person requirement works at achieving a safer scaffold only if the competent person is trained in scaffold safety. The presence of a scaffold-trained competent person helps to further assure site safety. This study also shows that scaffold erection contractors build safer scaffolds than do scaffold users. The study appears to show that scaffolds adapted to particular sites are safer than just using the common frame scaffold. Further technological advances in scaffolding adapted to particular purposes should help further advance scaffold safety.

Further studies of this type, in which the factors important to an area of construction safety are identified, should occur. Simultaneously, a better injury record collection mechanism, which identifies what factors were present or missing on the scaffold, could show whether this type of analysis is related to injury prevention. With the lack of such injury records, it is still better to implement these scaffold safety recommendations than not to, because a scaffold that cannot collapse and one that the workers cannot fall off should prevent future injuries.

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Appendix A (Scaffold checklist)

Scaffold Checklist Mar. 20 Inspected by__________ Date__________

Part I: General

Site__________ City__________ State__________

GC/CM__________ City __________ State__________

Total Workers on Site__________ Trades on Site__________

Scaffold Erector Co.__________ City__________ State__________

Trade of Erector Co.__________

Part II: Using Scaffold

Contractor Responsible for Scaffold__________ City__________ State__________

Trades Using Scaffold__________ # of Workers by Trade__________

Other Contractors Using Scaffold__________

Work being Done__________

Items Loading Scaffold: Persons__________ Other __________

Scaffold Use Notes__________

Part III: Competent Person

Competent Person Title__________ Present at Site __________

Works For__________ OS 10 Yes__________ No__________

Years at trade__________ Years as competent Person__________

Scaffold Erector Card Yes__________ No__________ Scaffold User Card Yes__________ No__________

Inspects Scaffold How Often?__________

Competent Person Notes__________

Part IV: About the Scaffold

Type of Scaffold: Mobile__________ Frame__________ Tube/Coupler__________ Bricklayers Square__________

System__________ Manufacturer__________ Pump Jack__________ Other__________

Scaffold Length__________ Width__________ Height__________

Number of Stages__________ Ground Slope__________ Scaffold Slope__________

Length between Supports__________ Duty: Light__________ Medium__________ Heavy__________

Base Plates #Properly placed__________ #Improper__________ Explain__________

Count of Mud Sills Correct__________ Incorrect__________ Explain__________

Post Material__________ Runner/Bearer Material__________

Runners Correct?__________ Bearers Correct?__________

Clasps Correct?__________ Posts Correct?__________

End Braces Number__________ Where__________

Face Braces Number__________ Where__________

Ties Number Where

Appendix A (*continued*)

Guys Number______________________________ Where______________________________

Ice/Snow/Water Seen______________________________

Clearance of Power Cables Ft.______________________________Direction______________________________

Obviously Locked Out Yes___ No___ Power Notes______________________________

Scaffold Square, Stable Notes______________________________

Other Comments______________________________

V. Platforms

Working Platforms______________________________Total Length______________________________Width______________________________

Distance from Wall______________________________ Fully Planked Parts: Length______________________________ Width______________________________

Travel Platforms______________________________Total Length______________________________Width______________________________

Improperly Planked Parts: Length______________________________Width______________________________Notes______________________________

Partial Platforms Length______________________________ Number of Planks______________________________Notes______________________________

Planking Material______________________________Condition______________________________

Notes on planking______________________________

Top rail height______________________________Material______________________________ Any missing top rails______________________________

Mid rail height______________________________Material______________________________Any missing mid rails______________________________

Crosspieces as railing______________________________Proper/not notes______________________________

Toe board height______________________________Material______________________________Any missing boards______________________________

Notes on missing rails and boards______________________________

Mesh present______________________________Needed ______________________________Material______________________________

Lift pulley attached?______________________________ Load______________________________

Any makeshift methods used to increase height?______________________________

Further notes on platforms______________________________

VI: Access

Number of access of each type: Steps______________________________Ladders______________________________ From Building______________________________

Ladder Types: Built-in______________________________Attached______________________________Leaned______________________________

Steps and Ladders Heights______________________________

Midplatform required______________________________Present______________________________

Tied properly?______________________________ Ladder 3 ft above______________________________ Access from ladder______________________________

Using masonry frame______________________________Other improper______________________________

Access notes______________________________

VII: PPE

Harness required?______________________________

Harness Present______________________________Proper______________________________Notes______________________________

Lanyard tied off______________________________Tied to______________________________Notes______________________________

If Lifeline, proper______________________________ Orientation______________________________Notes______________________________

Appendix A (*continued*)

VIII: Other

Hardhats on Scaffold Count Yes____________________________No_________Notes____

Whole Site Count Yes__________________________No_________Notes____

Eye Protection on Scaffold Yes___________________________ No_________Notes____

Whole Site Count Yes__________________________No_________Notes____

Serious Health and Safety Problems on Scaffold____

Brought to Attention of?____

on Whole Site____

Brought to Attention of?____

General Safety on Site____

Other Comments____

How was site found?____

Local Unions ____ Non-U____________

Rating: Construction: Good________________________ Okay_________ Poor_________ Terrible__________

Use: Good___________________ Okay________ Poor_________ Terrible__________

Overall: Good____________________ Okay__________ Poor_________ Terrible__________