

DATE: May 31, 1995

FROM: Minnesota Fatality Assessment and Control Evaluation (MN FACE)
Program
Minnesota Department of Health

SUBJECT: MN FACE Investigation 95MN01101
Carpenter Dies From Injuries Sustained After Falling 14 Feet When
Scaffold Collapsed

SUMMARY

The victim was working alone at the time that the unwitnessed incident occurred. As a result, this report is based upon information obtained during the site investigation interview and an inspection of the incident site.

A 39-year-old male independent contractor (victim) died of injuries sustained when he fell 14 feet after the scaffold he was standing on collapsed. The victim was doing general carpentry work on a room that was being added onto an existing home. Triangular scaffold brackets were fastened with nails to the exterior side of the room walls. A piece of lumber, 2 inches by 12 inches by 10 feet long, was laid on the brackets to provide a scaffold platform from which the victim worked. Roof trusses for the room extended approximately 2 feet beyond the exterior surface or side of the room walls. As a result, the 2 inch by 12 inch scaffold platform board was positioned approximately 2 feet from the room wall to enable the victim to walk on the scaffold platform. Either while the victim stood on the platform near one end of the scaffold board, or when he stepped from the roof onto the platform, one of the triangular brackets pulled free from the room wall. The scaffold collapsed and the victim fell approximately 14 feet to the ground. The triangular bracket fell and stuck in the sod. The victim fell on the bracket and sustained severe lacerations of the groin. He was transported within minutes to a local hospital where he died approximately 40 minutes after the incident. MN FACE investigators concluded that to reduce the likelihood of similar occurrences, employers should:

- ensure that triangular scaffold brackets are securely fastened with bolts;
- utilize contract language that requires subcontractors to implement a site-

specific safety and health program prior to the initiation of work;

- routinely conduct scheduled and unscheduled work place safety inspections;
- and
- develop, implement, and enforce a comprehensive written safety program.

INTRODUCTION

On April 5, 1995, MN FACE investigators were notified of a work-related fall fatality that occurred on March 29, 1995. A site investigation was conducted by a MN FACE investigator on April 19, 1995. During the site investigation, information concerning the incident was provided by a general contractor that subcontracted carpentry work to the victim.

INVESTIGATION

The victim was working alone at the time that the unwitnessed incident occurred. As a result, this report is based upon information obtained during the site investigation interview and an inspection of the incident site.

During the site investigation, information concerning this incident was provided by a general contractor. The general contractor and his brother were owners of a home building/remodeling business. The general contractor stated that the victim was not an employee but was an independent contractor. The victim was performing carpentry work associated with building a room onto an existing single family home.

The general contractors had been in business for 17 years. Periodically over the past seven years, they subcontracted the carpentry aspects of various projects to the victim. The general contractors did not provide safety training for independent contractors. The extent of fall hazard training received by the victim was unknown. Safety issues were considered the responsibility of each independent contractor.

The victim was working on constructing the roof of a 20- by 24-foot room that was being added to an existing home. The room was being built directly above an existing garage that had a flat roof. The sides of the garage were approximately 8 feet high and the walls of the new addition were also approximately 8 feet high. After the walls of the room were framed and put in place, steel triangular scaffold brackets (see Figure 1) were fastened with nails to the exterior side of

the room walls. The brackets consisted of three pieces of 1.5 inch angle iron welded together to form a right triangle. The horizontal arm of the brackets was 4 feet long and the vertical arm was 44 inches long. The brackets were spaced 8 feet apart and were secured to the wall with three nails near the top and one nail near the bottom of the bracket's vertical arm. The brackets were secured by driving the nails into the wall studs of the room. The scaffold brackets were positioned such that the top (or horizontal arm) of the brackets was approximately 3 feet below the top sill plate of the room walls.

A piece of lumber , 2 inches by 12 inches by 10 feet long, was laid on the brackets to provide a scaffold platform from which the victim worked. The scaffold brackets were installed approximately five working days before the incident occurred.

The roof trusses for the addition were installed and the victim may have been installing plywood or similar material to the roof. The trusses extended approximately 2 feet beyond the exterior surface or side of the room walls. As a result, the 2 inch by 12 inch scaffold board was positioned at least 2 feet from the room wall to enable the victim to walk on the scaffold platform. Either while the victim stood on the platform near one end of the scaffold board, or when he stepped from the roof onto the scaffold platform, one of the triangular brackets pulled free from the room wall. The scaffold collapsed and the victim fell approximately 14 feet to the ground. The triangular bracket fell and stuck in the soft sod and the victim fell on the bracket. He sustained severe lacerations to the groin. The victim was transported within minutes to a local hospital where he died approximately 40 minutes after the incident.

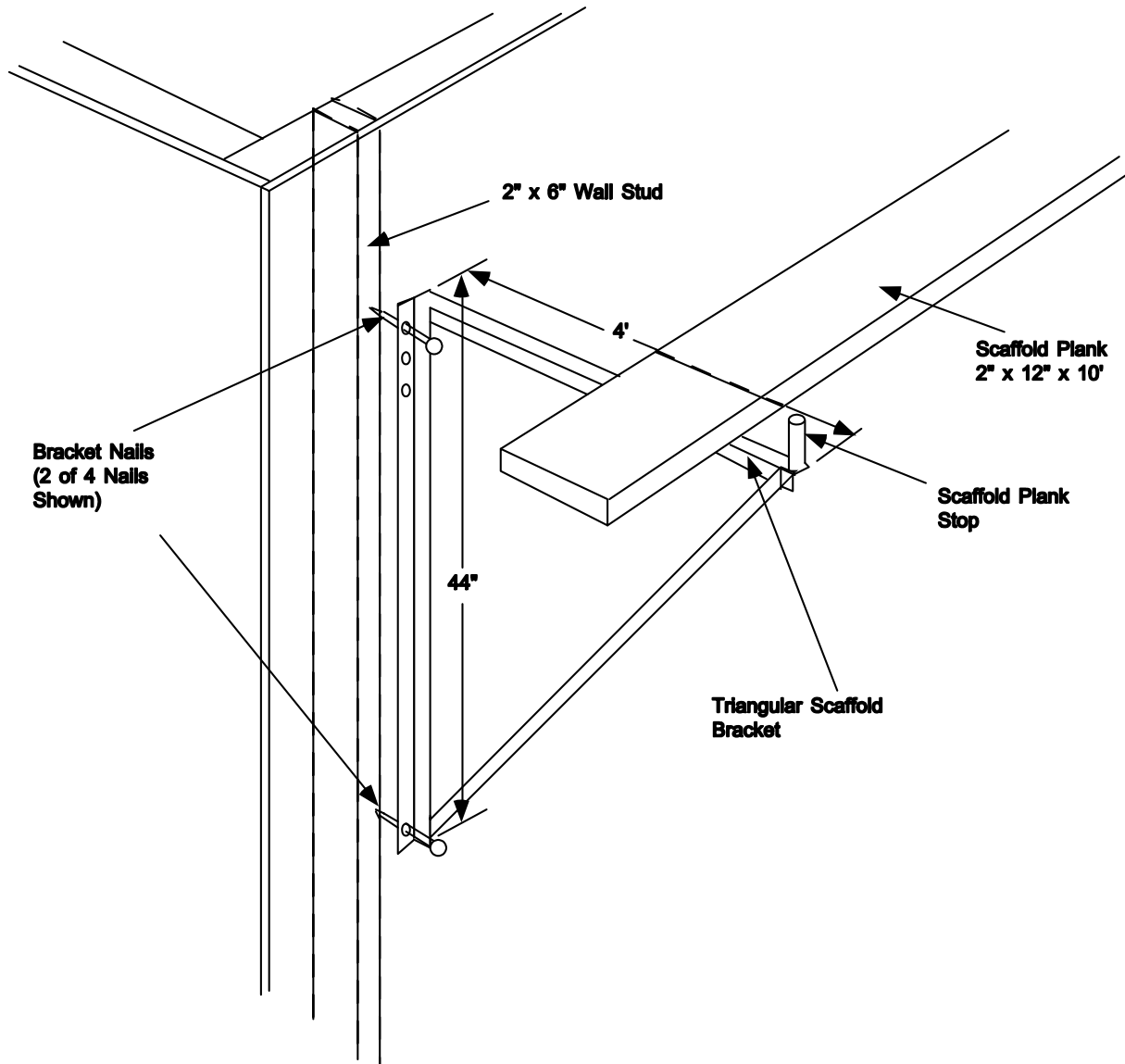


Figure 1. Scaffold Bracket Nailed To Corner Of Room
Not To Scale

CAUSE OF DEATH

The cause of death listed on the death certificate was exsanguination due to traumatic laceration of groin with disruption of left femoral vessels.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should ensure that triangular scaffold brackets are securely fastened with bolts.

Discussion: Triangular scaffold brackets are often secured with four large general construction nails. General construction nails have a smooth shaft and can be more easily pulled out of wood than nails with a rough or ribbed shaft such as a ring shank nail. The weight of workers and tools on scaffold brackets exert a large amount of force on the nails which secure the brackets in place. During use, as workers climb onto and off of the scaffold platform, the bracket nails are repeatedly subjected to forces which act to pull the nails from the wood.

Alternative methods of attaching scaffold brackets, including the use of bolts, are recommended in OSHA Standard 29 CFR 1926.451 (m)(2)(i). Employers should ensure that scaffold brackets are secured with at least one 5/8-inch bolt to significantly reduce the likelihood of the brackets pulling free and causing the scaffold to collapse. If a single bolt is used, it should be placed in the upper most hole of the vertical arm of triangular scaffold brackets. If the brackets involved in this incident had been secured with at least one bolt instead of with only nails, this fatality might have been prevented.

Recommendation #2: Employers should utilize contract language that requires subcontractors to implement a site-specific safety and health program prior to the initiation of work.

Discussion: General and subcontractors should use contract language that requires all subcontractors to identify how they intend to implement a site-specific safety and health program prior to the initiation of work. Subcontractor's safety programs should be consistent and compatible with the general contractor's safety program. The contract should contain clear and concise language as to which party is responsible for a given safety or health issue. Any differences should be negotiated before work begins. Once the provisions for these responsibilities have been established, the respective parties should ensure that the provisions of the contract regarding safety and health are upheld.

Recommendation #3: Employers should routinely conduct scheduled and unscheduled work place safety inspections.

Discussion: Employers, general contractors, and subcontractors should be aware of hazardous conditions at work sites and take an active role to protect workers from them. Scheduled and

unscheduled safety inspections should be conducted by a person who is capable of identifying existing and predictable hazardous working conditions and who has the authority to take prompt corrective measures to eliminate them. A comprehensive safety program cannot be effective unless it is implemented in the work place. Although safety inspections do not guarantee the elimination of occupational injury, they do demonstrate the employer's commitment to the enforcement of established safety programs and to the prevention of occupational injury.

Recommendation #4: Employers should develop, implement, and enforce a comprehensive written safety program.

Discussion: The development, implementation, and enforcement of a comprehensive safety program should reduce and/or eliminate worker exposure to hazardous situations. Safety programs should include, but not be limited to, the recognition and avoidance of fall hazards, and the use of appropriate safety equipment.

REFERENCES

1. Office of the Federal Register: Code of Federal Regulations, Labor, 29 CFR Part 1926.451 (m)(2)(i), U.S. Department of Labor, Occupational Safety and Health Administration, Washington, D.C., July 1, 1994.
2. Division of Safety Research, National Institute for Occupational Safety and Health, 944 Chestnut Ridge Road, Morgantown, West Virginia 26505, Fatality Assessment and Control Evaluation (FACE) Report 94-13, June 17, 1994.

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