

**Case 442. 50-year-old iron worker fell 22 feet while working from and relocating a 24-foot fiberglass extension ladder positioned across an open shaftway.**

A 50-year-old male iron worker fell 22 feet while working from and relocating a 24-foot fiberglass extension ladder positioned across a 6-foot wide by 8-foot deep open shaftway. The extension ladder was set at the immediate edge of elevator shaftway on the second floor of the building and was not secured. The ladder was extended to approximately 18 feet 4 inches and positioned across the shaftway to operate a chainfall to hoist a section of equipment. A new 18” by 18” hole had been cut into the ceiling to allow the rigging to be better positioned over the top of the next equipment section to be placed. The decedent, while wearing his fall harness/retractable lifeline tied off to an overhead attachment point, stepped over a mid-rail that had been left in position across the shaftway opening and ascended the ladder to move the chain fall. After moving the rigging, the decedent descended the ladder and unhooked his retractable lifeline and hooked it to nearby attachment point on the wall. To remove the ladder, the decedent (still in his harness) stepped over the mid-rail and ascended a few rungs on the ladder. While lifting/bumping the top section to unlock the rung hooks and allow the ladder to compress in order to get it out of the opening, the ladder base slipped into the opening and the decedent and ladder fell 22 feet to the concrete first floor.

MIOSHA Construction Safety Division issued the following Serious citations and a Notice of a Potential Safety or Health Hazard to the employer at the conclusion of its investigation.

**SERIOUS: FIXED AND PORTABLE LADDERS, CS PART 11**

- **RULE 408.41111(3):** A manufactured portable plastic ladder shall be constructed and maintained as prescribed in the ANSI standard A14.5-1982 and supplement 1985, which is adopted by reference in this rule and may be inspected at the Lansing office of the Department of Licensing and Regulatory Affairs. This standard may be purchased at a cost as of the time of adoption of this rule of \$42.00 from Global Engineering Documents, 15 Inverness Way East, Englewood, Colorado, 80112, telephone number 1-800-854-7179, website: [www.global.ihs.com](http://www.global.ihs.com), or from the Michigan Department of Licensing and Regulatory Affairs, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909.

The fiberglass two-section extension ladder was not properly maintained; It was missing the manufacturer supplied rope or equivalent to raise or lower top section of ladder from the base section.

- **RULE 408.41122(2):** A ladder shall be placed on a substantial and stable base unless it is secured to prevent accidental displacement. The area around the top and bottom of the ladder shall be kept clear.

An extension ladder set at the edge of an elevator shaft was not secured, and the wooden mid-rail presented a tripping hazard while climbing on and off the ladder.

- RULE 408.41122(8): A ladder shall not be moved, shifted, or extended while occupied by an employee.

The extension ladder was being moved by an employee who was standing on the lower ladder section.

- RULE 408.41124(1): A portable ladder shall be used at such a pitch that the horizontal projected distance from the top support to the base is not more than  $\frac{1}{4}$  of the vertical distance between these points.

A fiberglass extension ladder set across the elevator shaft opening with a horizontal projected distance of approximately 8 feet and a vertical distance approximately 16 feet. The pitch exceeded the allowable  $\frac{1}{4}$  ratio. Employees using the ladder were exposed to a 22-foot fall to interior of the elevator shaft.

**SERIOUS: STEEL ERECTION, CS PART 26, RULE 408.42645(1):**

Except as provided by sub-rule (3) of this rule, each employee engaged in a steel erection activity who is on a walking/working surface with an unprotected side or edge more than 15 feet (4.6 m) above a lower level shall be protected from fall hazards by guardrail systems, safety net systems, personal fall arrest systems, positioning device systems, or fall restraint systems.

The top rail of the guardrail system was removed while employees were at the edge of the elevator shaft working with a chain fall and moving the ladder. Refer to rule 1926.502(b)(1), Part 45 Fall Protection standard.

**NOTICE: POTENTIAL SAFETY OR HEALTH HAZARD:** An inspection/investigation of your premises or worksite revealed the following conditions which may constitute a threat to the safety or health of your employees:

- 1) Retractable steel cable lifeline attached above ceiling at *incident* plant may have been attached to hook of employees PFAS, either to end of nylon retractable hook or to D ring on employees back while nylon retractable was also still attached to D ring. See Part 45: 1926.502(d)(6) Unless the snaphook is a locking type and designed for the following connections, snaphooks shall not be engaged:  
1926.502(d)(6)(i) directly to webbing, rope or wire rope;  
1926.502(d)(6)(ii) to each other  
1926.502(d)(6)(iii) to a dee-ring to which another snaphook or other connector is attached

2) Guardrails installed across 2<sup>nd</sup> level opening at *incident* plant were wedge fit into opening with cardboard on ends to protect wall surface. Not overlapped beyond opening or mechanically fastened. No way to determine slip and friction resistance would meet minimum outward and downward loading criteria required by the standard. See Part 45: 1926.502(b)(3) Guardrail systems shall be capable of withstanding, without failure, a force of at least 200 pounds (890 N) applied within 2 inches (5.1cm) of the top edge, in any outward or downward direction at any point along the top edge.

1926.502(b)(5) Midrails, screens, mesh, intermediate vertical members, solid panels and equivalent structural members shall be capable of withstanding, without failure a force of at least 200 pounds (890 N) applied within 2 inches (5.1cm) of the top edge, in any outward or downward direction at any point along the top edge.

***MIFACE revised the Notice by removing the name of the plant where the fatality occurred.***