

**Case 348. 58-year-old millwright died when he fell 60 feet through an opening in a catwalk floor while disassembling and removing conveyor equipment from a grain elevator.**

A 58-year-old male millwright died when he fell 60 feet through an opening in a catwalk floor while disassembling and removing conveyor equipment from a grain elevator. The work crew arrived and took down the grain leg in 10-foot sections. The grain leg removal created a 60-inch by 28-inch inch hole that was not covered or protected with guardrails. The decedent's coworkers went to lunch, but the decedent kept working. He was not wearing fall protection. When his coworkers returned from lunch, he requested a crow bar be sent up to him. He lowered a rope and the company owner attached a crow bar to it. The decedent pulled the crowbar up to him and continued working on the conveyor system dismantling. A coworker observed him fall through the opening. The decedent fell 60 feet to the concrete pavement below. Emergency response was called and the decedent was declared dead at the scene.

MIOSHA Construction Safety and Health Division issued the following alleged Serious citations and made Safety Recommendations to the employer at the conclusion of its investigation.

**SERIOUS:** GENERAL RULES, PART 1, RULE 114(1):

An accident prevention program was not developed, maintained, and coordinated with employees ---

The following were not performed:

- A. Coordinate and maintain an accident prevention program. Employer did not designate the qualified employee or person who is responsible for administering the program.
- B. A copy of the accident prevention program was not maintained at the job site.
- C. No instructions provided to each employee regarding operating procedures, hazards, and safeguards of tools and equipment when necessary to perform the job.
- D. Inspections of the construction site, tools, materials, and equipment to assure that unsafe conditions which could create a hazard are eliminated were not conducted.
- E. Instructions were not provided in the steps or procedures to be followed in case of an injury or accident or other emergency.

Employees engaged in grain elevator disassembly/demolition operations were utilizing hand tools, crane, and ladders on a construction site. One employee fell approximately 60 feet to concrete through an unguarded hole.

**SERIOUS: DEMOLITION, PART 20**

- **RULE 2032:**

The provisions of Part 45, Fall Protection, being R408.44501 et seq. of the Michigan Administrative Code, were not complied with for all portions of the structure where there is employee exposure to the conditions covered by that part.---

- Employer did not assure that the employee working next to an approximate 60 X 28 inch hole in the work platform was protected by personal fall arrest systems, covers or guardrail systems erected around such hole.
- Employer did not cover the approximate 60 X 28 inch hole in the work platform that he created when he removed the elevator.
- Employer did not assure that the employees working below were protected from objects falling through hole by a cover.

Employees engaged in grain elevator disassembly/demolition operations were utilizing hand tools, crane and ladders on a construction site. One employee fell approximately 60 feet to concrete below.

- **RULE 2033(2):**

The means of egress were not free of hazards. During manual demolition, the means of egress were not supplied with an illumination intensity of not less than 10 candlepower.---

Employee working approximately 60 feet above the ground was not provided with a safe means of access and egress after the permanent ladder had been removed during the disassembly/demolition of a grain elevator. Employee was working on the conveyor system and fell through an unguarded open hole (approximately 60 inches by 28 inches) to the concrete below.

**SAFETY RECOMMENDATIONS:**

An inspection/investigation of your worksite revealed the following conditions which may constitute a threat to the safety or health of your employees. It is recommended that your firm:

1. Rule 1021a.(1) The requirements of this rule are in addition to the other requirements in this standard and apply when 1 or more employees are hoisted. The use of equipment to hoist employees shall be prohibited except where the employer demonstrates that the erection, use, and dismantling of conventional means of reaching the work area, such as a personnel hoist, ladder, stairway, aerial lift, elevating work platform, or scaffold, would

be more hazardous, or is not possible because of the project's structural design or worksite conditions.

2. Rule 1021a.(5)(d) An employer shall ensure that a crane that has a telescoping boom is equipped with a device to indicate clearly to the operator, at all times, the boom's extended length, or shall ensure that an accurate determination of the load radius to be used during the lift is made before hoisting personnel.
3. Rule 1021a.(6) Personal platform criteria. A work platform shall comply with all fo the following requirements:
  - a. The system used to connect the personnel platform to the equipment shall allow the platform to remain within 10 degrees of level regardless of boom angle.
  - b. The suspension system shall be designed to minimize tipping of the platform due to movement of employees occupying the platform
  - c. Be designed and constructed by qualified personnel who are designated by and responsible to the employer
  - d. A welder who welds work platforms shall comply with the requirements of the American Welding Society (AWS) standards AWS Standard "HIS A WSC Structural Welding Code" 2000 edition, AWS Standard D14.1 "Welding of Industrial and Mill Cranes and Other Material Handling Equipment" 1997 Edition, AWS standard B1.10 "Guide for the Nondestructive Inspection of Welds", 1986 edition and AWS Standard D14.4 "Class and Application of Welded Joints for Machinery Equipment", 1997 edition. These standards are adopted by reference in R408.41003a.
  - e. The personnel platform, excluding the guardrail system and personal fall arrest system anchorages shall be capable of supporting without failure its own weight and at least 5 times the maximum intended load.
  - f. The personnel platform shall be equipped with a guardrail system that meets the requirements of construction safety standard part 45 "Fall Protection" as referenced in R 408.41003a and shall be enclosed at least from the toeboard to mid-rail with either solid construction material or expanded metal that have openings not greater than ½ inch (1.27)cm. Points to which personal fall arrest systems are attached shall meet the anchorage requirements in construction safety standard part 45 "Fall Protection"
  - g. A grab rail shall be installed inside the entire perimeter of the personnel platform except for access gates/doors.
  - h. Access gates or doors. If installed, access gates or doors of all types, including swinging, sliding, folding, or other types shall not swing outward. If due to the size of the personnel platform, such as a 1-person platform, it is infeasible for the door to swing inward and allow safe entry for the platform occupant, then the access gate or door may swing outward. Access gates and doors shall be equipped with a device that prevents accidental opening.

- i. A platform gate shall be securely fastened during all travel, and shall be opened only during egress from or access to the work platform. The platform shall be used only for positioning employees at otherwise inaccessible locations to perform work and shall not be used as an elevator.
  - j. Headroom shall be sufficient to allow employees to stand upright in the platform.
  - k. In addition to the use of hard hats, employees shall be protected by overhead protection on the personnel platform when employees are exposed to falling objects. The platform overhead protection shall not obscure the view of the operator or platform occupants, such as mire mesh that has openings up to ½ inch, unless full protection is necessary.
  - l. The employer shall ensure that all rough edges exposed to contact by employees are surfaced or smoothed to prevent injury to employees from puncture or lacerations.
  - m. Have a permanently affixed sign that shall specify all of the following information:
    - i. Maximum number of passengers
    - ii. Work platform identification number
    - iii. Maximum rated load
    - iv. Weight of the platform
  - n. Be easily identifiable by high-visibility color or marking.
4. (9) The following apply to trial lift and inspection:
- a. A trial lift of an unoccupied personnel platform that is loaded at least to the anticipated lift weight shall be made from ground level or any other location where employees will enter the platform, to each location to which the personnel platform is to be hoisted and positioned. The trial lift shall be performed immediately before placing personnel on the platform. The competent person shall determine that all systems, controls, and safety devices are activated and functioning properly, that interferences do not exist, and that all configurations necessary to reach the work locations will allow the operator to remain under 50% limit of the hoist's rated capacity. Materials and tools to be used during the actual lift can be loaded in the platform as provided in subrule (7)(c) of this rule for the trial lift. A single trial lift may be performed at one time for all locations that are to be reached from a single setup position.
  - b. The trial lift shall be repeated before hoisting employees when the crane or derrick is moved and set up in a new location or returned to a previously used location. The trial lift shall be repeated when the lift route is changes, unless the competent person determines that the route change is not significant and the route change would not affect the safety of the hoisted employees.
  - c. The competent person shall comply with all the following:

- i. Determine that the lift will not exceed 50% of the equipment's rated capacity at any time during the lift.
    - ii. Confirm that the load radius to be used during the lift has been accurately determined
    - iii. Conduct a visual inspection of the crane or derrick, rigging, personnel platform, and the crane or derrick base support or ground immediately after the trial lift to determine whether the testing has exposed a defect or produced an adverse effect upon a component or structure.
    - iv. Confirm that, upon the completion of the trial lift process, the test weight had been removed.
  - d. Immediately prior to each lift the platform shall be hoisted a few inches with the personnel, materials, and tools on board and inspected by a competent person to ensure that it is secure and properly balanced. The following conditions shall be determined by a competent person to exist before the lift of personnel proceeds:
    - i. Multiple part lines are not twisted around each other
    - ii. The primary attachment is centered over the platform.
    - iii. The hoisting system shall be inspected if the load rope is slack to ensure that all ropes are properly seated on drums and in sheaves.
    - iv. Hoist ropes shall be free of deficiencies in accordance with R408.41013a.(1).
  - e. Any condition found during the trial lift and subsequent inspection that fails to meet a requirement of this standard or otherwise creates a safety hazard shall be corrected before hoisting personnel. See R408.41019b for tag-out and related requirements.