Colorado FACE Investigation 92CO001

SUBJECT:

Two workers die when a structural steel beam collapses in Colorado.

SUMMARY:

Two iron workers were fatally injured when the tack welds on a structural steel vertical column broke. The workers were attempting to connect a cross beam to the vertical column at the time of the incident. The vertical column was tack welded to a base plate that was set in a prefabricated concrete wall. This base plate was determined to be out of level by approximately one inch; this caused the column to lean inward toward the next column to which the cross beam was to be connected. The cross beam would not fit between the two columns.

Employee #1 was tied off to the vertical column and standing on the cross beam. Employee #2 was sitting on the cross beam with his both ends of his safety lanyard attached to his safety belt and the lanyard looped under the cross beam. The cross beam was supported by steel cables and was being moved by an overhead crane equipped with a controlled descent device (retractor reel). Neither employee was attached to that system.

The fatally injured employees had attached a steel cable to another vertical column and were attempting to pull the upper end of the misaligned column to allow the cross beam to fit into place. The welds on the column separated and employee #1 was pulled off the cross beam by the falling column. Employee #2 attempted to grab emplyee #1 as he fell and was also pulled off the cross beam. Both employees fell 41 feet and landed on a lower level concrete floor.

The Colorado Department of Health (CDH) investigator concluded that to prevent future similar occurrences, employers should:

- Ensure that adequate fall protection is provided and used.

- Develop, implement, and enforce a comprehensive written safety program that includes an adequate fall protection policy.

- Ensure that materials utilized meet all specifications before they are incorporated into the structure.

- Conduct a job-site survey on a regular basis to identify potential hazards, implement appropriate control measures, and provide subsequent training to employees that specifically addresses all identified hazards.

INVESTIGATIVE AUTHORITY:

The Colorado Department of Health (CDH) performs investigations of occupational fatalities under the authority of the Colorado Revised Statutes and Board of Health Regulations. CDH is required to establish and operate a program to monitor and investigate those conditions which affect public health and are preventable. The goal of the workplace investigation is to prevent work-related injuries in the future by study of the working environment, the worker, the task the worker was performing, the tools the worker was using, and the role of management in controlling how these factors interact.

This report is generated and distributed to fulfill the Department's duty to provide relevant education to the community on methods to prevent severe occupational injuries.

INVESTIGATION:

The investigation of this work-related fatality was prompted by a report of the incident from Occupational Safety and Health Administration (OSHA) Area Office. The CDH investigator conducted an investigation that included interviews with coworkers's, on-site safety personnel, architects, and quality control personnel. The incident site was photographed and autopsy reports were obtained from the county coroner. The employer was not interviewed because they did not return to the site for several days.

The company employs sixty people. The company was a sub-contractor on a major construction project that had a full time safety staff on site and written safety programs and policies. Safety training was not conducted by the company.

CAUSE OF DEATH:

The cause of death as determined by autopsy and listed on the death certificates as multiple fractures and internal injuries caused by blunt force trauma.

RECOMMENDATIONS/DISCUSSION:

Recommendation #1:Whenever work is performed from an elevation

where the potential for a fall exists, employers should ensure that adequate fall protection is provided and utilized by their employees.

Discussion: The use of a "traditional safety belt/lanyard combination as required by 29 CFR 1926.104(d) is sometimes not practical during construction operations, particularly where worker mobility is required. Use of a retracting lifeline equipped with a locking device, and attached to a support line can provide sufficient mobility in some cases. Connecting the safety lanyard to the existing controlled descent (retractor reel) secured to the overhead crane and to the worker's safety belt would have prevented these fatalities.

Recommendation #2: The employer should develop, implement, and enforce a comprehensive safety program.

Discussion: Employers should emphasize safety of their employees by designing, developing, implementing and enforcing a comprehensive safety program to prevent incidents such as this. The safety program should include, but not be limited to, the recognition and avoidance of fall hazards and the use of appropriate fall protection.

Recommendation #3: Ensure that materials utilized meet all specifications before they are incorporated into the structure.

Discussion: In this incident, the prefabricated concrete wall with the misaligned base plate was discovered prior to the inclusion of this wall into the structure. The project was behind schedule for completion and the wall was placed into the structure before the base plate could be properly aligned.

Recommendation #4: Conduct a job-site survey on a regular basis to identify potential hazards, implement appropriate control measures, and provide subsequent training to employees that specifically addresses all identified hazards.

Discussion: According to 29 CFR 1926.21(b)(2), employers are required to instruct each employee in the recognition and avoidance of unsafe conditions, and to control or eliminate any hazards or other exposure to illness or injury. In this and similar situations the employer may need to provide additional training to ensure that these employees understand the hazards and how to properly use safety equipment to protect themselves.

Recommendation #5: Develop, implement, and enforce a comprehensive written safety program.

Discussion: This employer did not have a written comprehensive safety program. All employers should evaluate work tasks to identify potential hazards. The employer should then develop and implement a safety program addressing these hazards, provide worker training in safe work procedures, and implement appropriate control measures.

Recommendation #6: Employers should conduct a job-site survey on a regular basis to identify potential hazards, implement appropriate control measures, and provide subsequent training to employees that specifically addresses all identified hazards.

Discussion: A thorough inspection of the equipment would have revealed the hazards and potential corrections discussed above.

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