Iron Worker Apprentice Dies in Fall of Fifty Feet on Massachusetts Construction Site

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SUMMARY

On June 5, 1995, a 47 year old male iron worker apprentice died of injuries sustained in a fifty foot fall on a Massachusetts construction site. The victim was assisting a co-worker to lay out and fasten metal decking to structural steel for a motor vehicle ramp when the incident occurred. The victim stepped on an unsecured piece of decking, and fell through the opening. A crane operator working beneath the motor vehicle ramp immediately yelled for help and aided the victim until police and emergency medical services arrived. The victim was transported to a nearby city hospital emergency room where he was officially pronounced dead less than twenty minutes following the incident. The MA FACE Program concluded that to prevent similar future occurrences, employers should:

provide anchor points for fall protection equipment and ensure their use by employees.

design, develop and implement a comprehensive site-specific fall protection plan.

INTRODUCTION

On June 6, 1995, the MA FACE Program learned through a newspaper clipping that a 47 year old iron worker had died of injuries received in a fall on the previous day. An investigation was immediately initiated. At the request of the US Department of Labor - OSHA office, the MA FACE Program investigation was delayed.

On July 14, 1995, the MA FACE Program Director and Field Investigator traveled to the incident site where a review of the scene took place and where the superintendent and project manager were interviewed. Numerous telephone interviews were also conducted with parties involved in both the incident and the investigation. The police report, death certificate, witness interviews and multiple photographs were obtained during the course of the investigation.

The company was a regional steel erection construction company in business for approximately four and one-half years at the time of the incident. It employed between ten and fifty workers at a time on as needed basis. At the time of the incident, there were twelve company employees on site including two foremen, eight iron workers and two iron worker apprentices, one of whom was the victim. There was not a designated safety person on the incident site although there were written company safety policies and procedures in place on the day of the incident. Some of these policies and procedures addressed the hazards associated with this fatality.

The victim was an union iron worker apprentice who had worked for the company for five months in 1994 and for two weeks in 1995 at the time of his death. His background included training in personal protective equipment use, hazard communication, machinery/equipment, hazard identification and iron industry work practices.

INVESTIGATION

On June 6, 1995, a steel erection company was working on an elevated steel and concrete motor vehicle ramp. The motor vehicle ramp was part of a multi-million dollar public transportation system upgrade project. The company was one of many subcontractors on the site. It been on and off the site for a period of months. Many delays had taken place over this period.

On the day of the incident, a crew comprised of two foremen, eight iron workers and two iron worker apprentices were on the jobsite. At approximately 2:30 p.m., the victim and a co-worker, were charged with affixing metal decking between structural steel box girders which were part of the motor vehicle ramp framework. Although each was wearing a safety harness and six foot lanyard, the co-worker stated that they did not tie off their lanyards because they were moving about the work area. They were also not provided an anchor point to which to tie their lanyards. A static line they had used earlier on site had been removed by another contractor.

The job consisted of welding bent aluminum flashing to structural steel beams and then using a screw gun to secure the metal decking to the flashing with screws. Each piece of metal decking was 22 gauge aluminum and measured twenty six inches wide by fifty eight inches long and was one thirty second of an inch in thickness. Each weighed approximately ten pounds. Eight screws held each sheet in place. To secure the decking, the victim would place it over the opening, hold it in place with his foot, then secure it along the flanges with the screw gun.

The victim had been watching as a co-worker was cutting a piece of flashing to secure the final piece of metal decking in place. The victim then placed the final piece of decking over the opening. Apparently losing his footing or stepping on the unsecured

sheet of decking, the piece buckled beneath him causing him and the piece of decking to fall through the opening. Falling approximately forty-five to fifty feet to the ground below, the victim landed on a pile of Nelson studs.

A crane operator working immediately beneath the ramp witnessed the victim and the decking fall onto the stockpiled materials below. Immediately yelling for help, the operator aided the victim until police and emergency medical services arrived moments later. Suffering multiple catastrophic injuries, the victim was soon transported to the local city hospital emergency room where he was officially pronounced dead less than twenty minutes following the incident.

CAUSE OF DEATH

The medical examiner listed the cause of death as multiple traumatic injuries.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should provide anchor points for fall protection equipment and ensure their use by employees.

Discussion: Aware of the fall hazard present, these ironworkers were wearing body harnesses and lanyards provided by the employer, yet they were not tied off to an anchor point. Establishing appropriate anchor points that provide sufficient strength and yet allow for worker mobility is a key aspect of fall protection. During the design phase of construction, consideration should be given to the location of anchor points which may become necessary during construction. Every attempt should be made to organize the work so that anchor points for fall protection may be established and used without interruptions to the job.

Anchorages must support at least 5000 lbs. per employee tied off to that anchorage. It is preferable to build-in an anchorage as part of the structure, but at times other solutions must be devised. Precautions should be taken when looping lanyards or ropes around beams that may have sharp or abrasive edges. Many building features are not nearly strong enough. Horizontal lifelines present increased problems particularly when used by more than one worker. Therefore, all anchorages should be designed or selected by a qualified person.

In the absence of providing a full individual fall arrest system, employers should provide another means of fall protection. Safety nets as outlined in 29 CFR 1926.105, should be provided as an alternative to the safety harness/anchor system.

Recommendation #2: Employers should design, develop and implement a

comprehensive site-specific fall protection plan.

Discussion: With the cooperation and involvement of employees, employers should develop and implement a comprehensive site-specific fall protection plan. This plan should begin with an analysis of the fall hazards likely to be encountered while performing all tasks necessary to the job. If a fall arrest system is deemed appropriate, consideration must be given to the mobility of workers while wearing body harnesses and lanyards, the location and suitability of anchorages and the type of work to be done. The plan should be updated when the work changes. Employees should be trained to recognize fall hazards and to use equipment as intended. Supervisors bear the responsibility of assuring that the fall protection plan is carried out by all employees.

On multi-employer sites, such as this, safety responsibilities must be coordinated among contractors and communicated to the responsible parties on the site. A good fall protection plan should take these organizational factors into consideration. The movement of the subcontractor on and off site and the removal of the static line by another contractor contributed to having no anchor point available on the day of the incident. The task of providing fall protection on this job was ultimately the responsibility of both the general contractor and the subcontractor. Where conflicts arise between contractor responsibility, the safety of all workers should be the overriding concern.

REFERENCES

Code of Federal Regulations, Labor 29 Parts 1926.28; 1926.500 - 503, Appendix C; 1029.104 - 107

Ellis, J. Nigel, Introduction to Fall Protection, American Society of Safety Engineers, Des Plaines, IL, 1993.