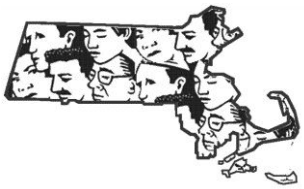
MA FACE
Occupational Fatality Report



Arborist Dies in Fall from a Tree after being Hoisted by a Crane to the Tree - Massachusetts

Release Date: September 25, 2013
Investigation: # 11-MA-031-01

Massachusetts Department of Public Health
Occupational Health Surveillance Program

SUMMARY

On September 26, 2011 a 43-year-old male arborist (victim) was fatally injured when he fell approximately 70 feet from a pine tree. The victim was wearing a harness and had been hoisted into the tree by a crane's load line. After attaching the crane's sling to a section of tree being removed, the victim fell approximately 70 feet to the ground below. A co-worker placed a call for emergency medical services (EMS). Personnel from the local fire and police departments arrived within minutes of the call. The victim was transported to a local hospital where he was pronounced dead. The Massachusetts FACE Program concluded that to prevent similar occurrences in the future, employers should:

- **Ensure that when employees are located within a tree, they use a minimum of two means of being tied in the tree at all times;**
- **Ensure that climbing/personal fall protection equipment, both supplied by the employer and owned by the employee, is in good condition by performing routine inspections, including an inspection before each use;**
- **Ensure that employees are never hoisted into a work position in a tree by a crane's hook or load line, except in uncommon situations as outlined by OSHA; and**
- **Develop, implement, and enforce a written safety and health policy and written company operational policies as recommended in ANSI Z133.**

INTRODUCTION

On September 27, 2011, the Massachusetts FACE Program was alerted by the local media that on September 26, 2011, a male tree worker was fatally injured when he fell from a tree that he was cutting down. An investigation was initiated and on November 21, 2011, the Massachusetts FACE Program Director traveled to the company's office location and met with the company owner to discuss the incident. The police department report, death certificate, company information, and the OSHA fatality and catastrophe report were reviewed during the course of the investigation.

The employer was a tree service and garden design company, and the company owner is a certified arborist and certified landscape professional. The company had been in business for 11 years and had six employees. The company's tree services included evaluations, pruning and removal of trees. The company used skilled climbers, aerial lifts and cranes for the pruning and removal of trees. The company owned an aerial lift truck and a chipper, but did not own a crane. A crane service company would be hired when needed to complete tasks. The victim had 25 years of experience as a tree service professional and had been employed with the company for one month at the time of the incident.

The company reported that they did not have a comprehensive written health and safety program and typically only hire experienced workers. Recent hires who had less experience were provided on-the-job training by more experienced employees. The company had workers' compensation insurance as required by law in Massachusetts (G.L. c. 152, Sec. 25A). There was no union representation at the company.

INVESTIGATION

The job scheduled for the victim's work crew on the day of the incident was the removal of a few trees, including a large pine, located at a private residence. The large pine was the tree being removed at the time of the incident. Prior to the incident, the company owner met with the property owner and discussed tree removal options. For this job, the aerial lift truck was not going to be an option because the trees were located behind the house. The company owner and the owner of the residence decided that the best option would be to use a crane as part of the removal process to limit damage to the lawn and other vegetation.

The company owner reported that they had previously used the crane service hired for this job several times. The crane contractor was an experienced crane operator and owned the crane that was being used at the time of the incident and the crane service company for six years. The crane was a telescopic boom crane with a lifting capacity of 40 tons. The crane contractor had a current Massachusetts Hoisting License issued by the Massachusetts Department of Public Safety, which is required in Massachusetts to operate cranes.

On the morning of the incident, the victim and the work crew had arrived at the private residence worksite at around 7:45 a.m. and met the crane contractor. The property is located in a rural suburban area. The property consisted of a two story residential colonial structure with an attached garage. The property's driveway was made of asphalt and was the location where the crane was positioned for the tree removal tasks (Figure #1). The crew and the crane operator reviewed the job tasks and then started removing other trees on the property. The last tree on the property to be removed was the large pine tree, the tree the victim was working in at the time of the incident. The pine tree was approximately 70 feet high, with a canopy 20 feet wide at its widest point and a trunk diameter of 20 inches.

Communication between the crane operator and the victim was visual via hand signals. The company owner reported that the technique the crew was using to remove the pine tree was the same technique that they used to remove other trees earlier that same day. This technique included the climber wearing a harness (climbing saddle) connected to the crane's load line to

hoist the climber into position at the top of the tree. The climber would attach the crane's load line and sling near the top of the tree piece to be removed, referred to as the 'pick". The climber would then descend to the bottom section of the pick to the location where the cut would be made. Once at the bottom section of the pick, the climber would place their lanyard around the tree at a location below the cut point as their first tie-in point. The climber would then remove his climbing line from the crane and reattach it around the tree trunk to be used as his second tie-in point. The crane operator would then put tension on the crane's load line and sling and the climber would make the cut. When the cut is complete, the pick would be lifted up and moved away by the crane either directly to the chipper or to a location where it could be cut into smaller pieces. Once the first pick is made the climber is now located at the top of the remaining section of tree and is in position to attach the sling for the next pick. This same process continues for the next pick(s) until the entire tree is on the ground.

At the time of the incident, approximately 9:45 a.m., the victim had been hoisted into the pine tree by the crane. The victim was wearing a climbing saddle with a butt strap and had two lanyards (flip lines) attached to the saddle. Also he was wearing boots, gloves and a helmet. Because the victim was alone in the tree at the time of the incident, it could not be determined what exactly happened. It does appear that after being hoisted by the crane to the top of the tree, the victim descended into the tree and unhooked from the crane and possibly did not tie-in to the tree. The victim then removed some tree limbs and attached the crane's load line and sling to the tree. It was at this point, before cutting the tree's trunk, the victim fell from the tree approximately 70 feet to the ground below. The harness, which was inspected by both the local police and Occupational Safety and Health Administration (OSHA), reportedly appeared to be worn and not in well maintained condition (Figure #2).

A co-worker placed a called for emergency medical services (EMS). Personnel from the local fire and police departments arrived within minutes of the call. The victim was transported to a local hospital where he was pronounced dead. After the incident occurred, the tree company owner, who was not on site, was notified about the incident. The company owner went to the incident location and had to climb the pine tree to unhook the crane from the tree.

CAUSE OF DEATH

The medical examiner listed the cause of death as blunt force trauma of torso with injuries to ribs, spine and lungs.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should ensure that when employees are located within a tree, they use a minimum of two means of being tied in the tree at all times.

Discussion: Employers should prohibit free climbing (climbing without fall protection) and ensure arborists are tied in at all times while climbing and working within a tree. This would require employees to have two means to tie-in so they can move past obstacles and always maintain protection from a fall.

According to ANSI Z133 – Safety Requirements for Arboriculture Operations, arborists must have a climbing line and at least one other means of being secured while working aloft (i.e. a climbing line and a work positioning lanyard).[1] The practice of having "two means of being secured" provides the arborist the ability to be tied in at all times. Once in the work position and before the work begins, the arborist must be tied in and remain tied in until the work has been completed and they have returned to the ground. When the climbing line needs to be repositioned, it should be ensured that the arborist is secured by the positioning lanyard. When the work position in a tree has been accessed by a means other than climbing the tree, such as by using an aerial device, the arborist must be secured to the tree, typically using the personal lanyard, before releasing the original tie-in on the aerial device.

Recommendation #2: Employers should ensure that climbing/personal fall protection equipment, both supplied by the employer and owned by the employee, is in good condition by performing routine inspections, including an inspection before each use.

Discussion: Both OSHA and the local police inspected the climbing gear, including the fall protection used by the victim, and reported that the equipment showed signs of being worn and was not in well maintained condition. OSHA standard, 29 CFR 1910.132, requires that the employer ensures that personal protective equipment, both supplied by the employer and owned by the employee, is maintained in reliable condition.[2] To help ensure that all climbing equipment and personal fall protection is in good condition it should be inspected before each use. Also all climbing equipment and personal fall protection should be stored and transported in a place where it will not be damaged.

It appears that in this case the equipment did not fail, but was not in good repair and could have failed at some point. If equipment is found to be in poor condition or defective and is being removed from service, it is a good idea to immediately destroy the equipment. Destroying the equipment will ensure that the equipment will not be picked up by another employee or someone else to be used.

Recommendation #3: Employers should ensure that employees are never hoisted into a work position in a tree by a crane's hook or load line, except in uncommon situations as outlined by OSHA.

Discussion: The OSHA general industry crane standard 29 CFR 1910.180 prohibits hoisting individuals with a crane hook or along with a load.[3] This does not mean that cranes can not be used in tree care tasks such as making a pick – removing a section of a tree to the ground, as long the tasks are being performed in accordance with the OSHA standard and that the employee either climbs the tree or is lifted by an aerial lift into the work position. In this case, climbing the tree to get into the work position was a reasonable option.

In some uncommon situations, OSHA will allow an employee to be hoisted by a crane into a work position. In order for the task of hoisting a worker into a work position to be acceptable by

OSHA, it is the employer's responsibility to provide proof that complying with the OSHA standard is either impossible/infeasible or less safe for workers.[4] According to OSHA's Citation Guidance Related to Tree Care and Tree Removal Operations Directive Number CPL 02-01-045 (www.osha.gov/OshDoc/Directive_pdf/CPL_02-01-045.pdf) OSHA would allow an employer to hoist a worker into position using a crane if the employer can prove that complying with the OSHA standard is impossible or would prevent performance of required work and the employer took reasonable alternative steps to protect employees or there are no alternative means of employee protection available. Also if the employer can prove that complying with the OSHA standard would result in a greater hazard(s) to employees than would noncompliance and the employer took reasonable alternative protective measures, or there are no alternative means of employee protection.[5]

Recommendation #4: Employers should develop, implement, and enforce a written safety and health policy and written company operational policies as recommended in ANSI Z133.

Discussion: When developing a written safety and health program, all tasks performed by employees should be evaluated for potential hazards. Health and safety information for the tree care industry is available on OSHA's Tree Care Industry topic page (www.osha.gov/SLTC/treecare), which was developed with the Tree Care Industry Association (TCIA). Specific guidance for this industry can also be found in the ANSI Z133 – Safety Requirements for Arboriculture Operations.

The safety and health program should outline safe work practices and procedures for tree removal tasks, including what tools, equipment and personal protective equipment (PPE) are needed and how to properly use them during tasks. The program should also outline how to inspect and maintain all tools, equipment and PPE and how to conduct a hazard assessment at the beginning of each job. All aspects of the program should be supported with proper employee training.

During development of the safety and health program, employers should utilize their employees' expertise during task evaluation. Once the program is developed the employer should provide employees training on the program's content. The program should be updated when safety concerns arise and when new equipment and new tasks are introduced into the workplace and the employer should continue to seek employees' input during the routine updating of the program.

The Massachusetts Department of Labor Standards (DLS) offers free consultation services to help small employers improve their safety and health programs, identify hazards, and train employees. DLS can be contacted at 617-969-7177. More information about DLS can be found on their Web site at www.mass.gov/dos/consult.

The Massachusetts Department of Industrial Accidents (DIA) has grants available for providing workplace health and safety training to employers and employees. Any company covered by the Massachusetts Workers' Compensation Insurance Law is eligible to apply for these grants. More information about these DIA grants can be found on their Web site at www.mass.gov/dia/safety.

REFERENCES

1. American National Standards Institute ANSI Z133-2012, American National Standard for Arboriculture Operations – Safety Requirements.

2. Code of Federal Regulations, 29 CFR 1910.132, General requirements. Washington DC: U.S. Government Printing Office, Office of the Federal Register.

3. Code of Federal Regulations, 29 CFR 1910.180, Crawler locomotive and truck cranes. Washington DC: U.S. Government Printing Office, Office of the Federal Register.

4. Tree Care Industry Association, CTSP-REV1-05/11, Guidance for Crane Practices in Arboriculture.

5. OSHA Instruction, CPL 02-01-045, Citation Guidance Related to Tree Care and Tree Removal, 8/21/2008.

Figure 1 – Crane positioned in the driveway of the home

Figure 2 – Climbing gear that was in poor condition.

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FATALITY ASSESSMENT AND CONTROL EVALUATION PROGRAM

The Massachusetts Department of Public Health, in cooperation with the National Institute for Occupational Safety and Health (NIOSH), conducts investigations on the causes of work-related fatalities. The goal of this program, known as Massachusetts Fatality Assessment and Control Evaluation (Massachusetts FACE) is to prevent future fatal workplace injuries. Massachusetts FACE aims to achieve this goal by identifying and studying the risk factors that contribute to workplace fatalities, by recommending intervention strategies, and by disseminating prevention information to employers and employees.

Massachusetts FACE also collaborates with engineering and work environment faculty at the University of Massachusetts at Lowell to identify technological solutions to the hazards associated with workplace fatalities.

NIOSH funded state-based FACE Programs currently include: California, Iowa, Kentucky, Massachusetts, Michigan, New Jersey, New York, Oregon, and Washington.

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Additional information regarding this report is available from:

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Evaluate this report

We would appreciate your feedback on these reports so we may continue to improve the MA FACE project and our investigation reports. A feedback form can be found at:
www.mass.gov/eohhs/docs/dph/occupational-health/report-evaluation.doc
The completed form may be returned by fax to (617) 624-5676, by mail to FACE, 250 Washington Street, 6th Floor, Boston, MA 02108, or by email to ma.face@state.ma.us.