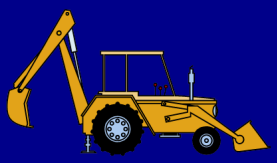
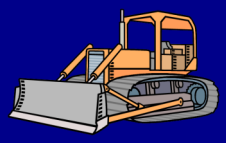
CIRPC
CONSTRUCTION INDUSTRY RESEARCH AND POLICY CENTER

Construction Fatality Digest





APRIL—JUNE 2012 QUARTERLY REPORT

Topics of Interest:

- Fatality Case File Statistics
- Case File Regional Report
- Top Standards Violated
- Fatal Construction Falls
- Summary of Fatal Events

INSIDE THIS ISSUE:

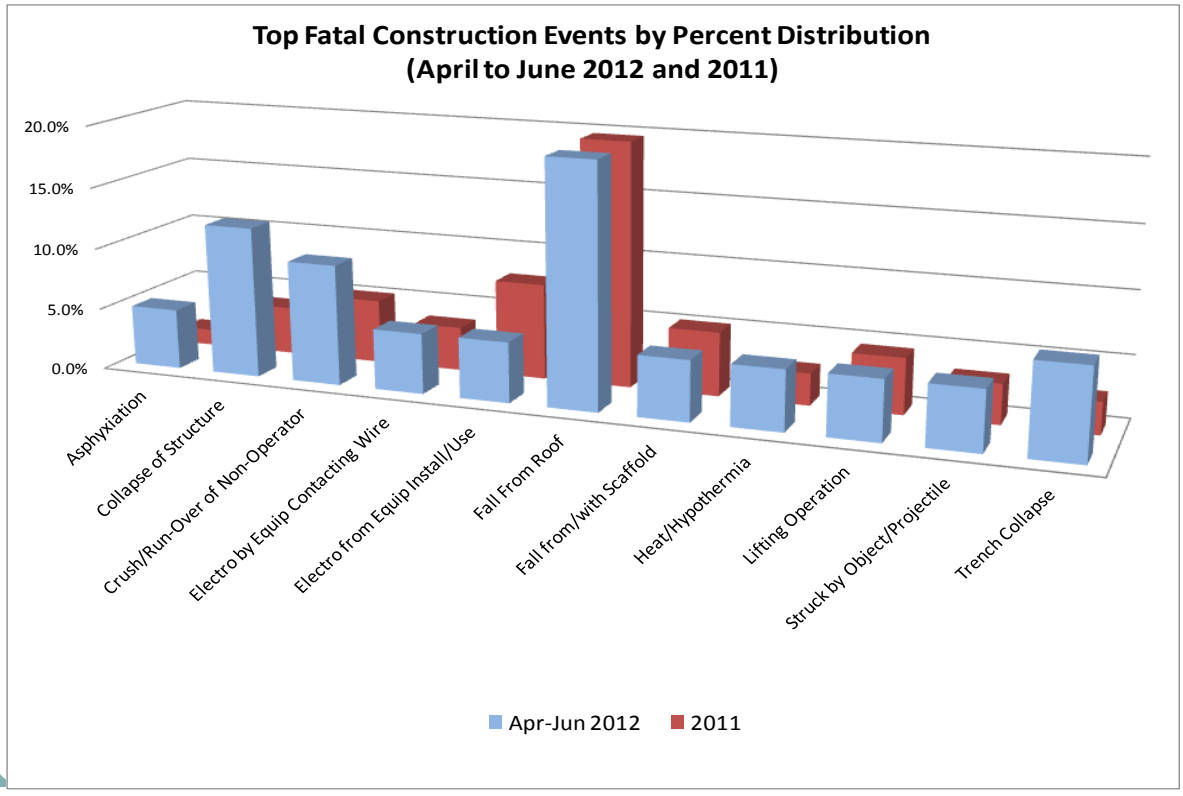
Roof Falls are the Top Fatal Event

It comes as no surprise, that roof falls continue to lead all fatal events in the fatal construction case files reported to CIRPC in both 2011 and the second quarter of 2012. There were 41 cases received in the second quarter of 2012 (April to June) and roof falls accounted for 19.5% (8 cases) of all the case files. Similarly in 2011 roof falls accounted for19.7% (61 cases) of all fatal events during that year. All types of falls (roof, scaffold, structure, etc.) accounted for 31.7% (13 cases) of the second quarter case reports. For 2011 fall events were 42.9% (133 cases) of the total.

Rounding out the leading fatality causes for the quarter are "Collapse of Structure" with 12.2% (5 cases) followed by "Crush/Run-over of Non-Operator" with 9.8% (4 cases), and "Trench Collapse" with 7.3% (3 cases).

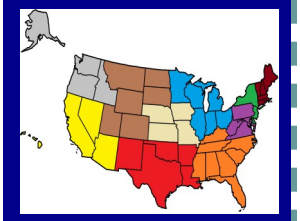
Roof falls may be the leading cause, but there were only 2 additional cases from the previous quarter. The fatality cause with the greatest increase was "Collapse of Structure." No cases were reported for the previous quarter, but 5 cases were reported for the current quarter. "Trench Collapse" also saw an increase of 2 cases (from 1 to 3).

Since relatively few cases are received each quarter, the quarterly statistics vary much more than annual statistics. The long-term trend is the important point of the focus of this digest.



Regional Breakdown

Regional Map



A total of 41 case reports were received from the regions in the second quarter of 2012. Of these 41 reports, more than a third came from region 4 (15 reports), 7 came from region 5, and 7 from region 8.

Of the 15 from region 4, 14 of them were received from the North Carolina State Plan Area.

The 7 from region 5 were spread out within the region with no office sending more than 2 cases. Six of the 7 cases from region 8 were from the Englewood Area Office.

Case Files by Region

	Apr to Jun 2012			2011	
Region	# of Cases	Percent	Region	# of Cases	Percent
1	1	2.4%	1	6	1.9%
2	2	4.9%	2	11	3.5%
3	3	7.3%	3	46	14.8%
4	15	36.6%	4	96	31.0%
5	7	17.1%	5	22	7.1%
6	4	9.8%	6	103	33.2%
7	2	4.9%	7	14	4.5%
8	7	17.1%	8	10	3.2%
9	0	0.0%	9	2	0.6%
10	0	0.0%	10	0	0.0%
Total	41	100.0%		310	100.0%

Top Construction Standard Violations

Cases averaged 2.28 violations for the second quarter of 2012.

The 41 cases reported to CIRPC included 125 violations of OSHA standards. Of the 41, 6 reported no violations. With the 6 cases without violations removed, the average number of violations per case with citations issued is 3.57.

The average number of violations was greatly skewed; one case had 34 violations, 27% of the total. If this case was removed, then the average would be 2.28. The previous quarter had an average of 3.53 for its cases. So there was a drop of 1.25 violations per case.

When comparing the quarterly violations with OSHA's Top 10 standards violated (per www.osha.gov), similarities can be found. The top 2 violated OSHA standards can be found on the quarterly report list (ranked 2nd and 7th).

One case (the case with 34 violations) had all 15 occurrences of the Lead Exposure standard violations and if this case was removed, the previous quarter's top violation (Fall Protection) would repeat, again this quarter.

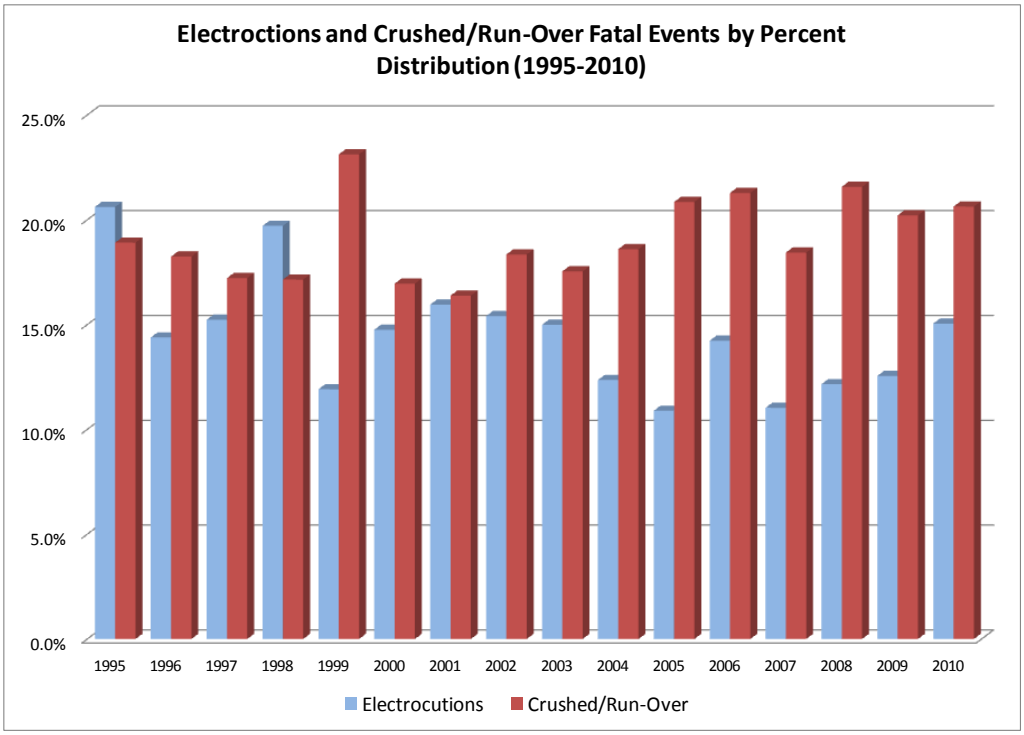
Top Standard Violations Reported During April to June 2012

Rank	Std #	Description	# of Occurrences
1	1926.62	Lead Exposure/Guidelines	15
2	1926.501	Fall Protection	14
3	1926.21	Safety Training and Education	11
T4	1904.39	Fatality and Multiple Hospitalization Reporting	7
T4	1926.20	General Safety and Health Provisions	7
T4	1926.503	Fall Protection Training	7
T7	1926.451	Scaffolding	6
T7	1926.651	Excavations	6
T7	5a1	General Duty Clause	6
10	1910.268	Telecommunications	5

Trends in Fatalities: Electrocutions and Crushed/Run-overs

While falls are clearly the leading cause in construction fatalities the second leading cause might be surprising. The 2010 Bureau of Labor Statistics (BLS) data[1] shows electrocutions as the second leading cause. Yet, in the data from CIRPC's 2010 annual fatality analysis[2], which uses data from IMIS, the second leading cause is Crushed/Run-over/Struck by construction equipment/private vehicles.

From the mid 1990's to the early 2000's, Electrocutions and Crushed/Run-overs had similar percentages of the overall fatalities. But since 2002, Crushed/Run-overs have averaged 19.7% of the annual fatality events compared to Electrocution's average of 13.2%.



Spotlight on Fall Fatalities

CIRPC's Annual Fatality Analysis[2] reported 412 construction fatalities in 2010; 154 were fall fatalities. Though alarming, these figures are down from earlier years because of reduced construction activity in the recession. Still, falls remain the single leading cause of construction deaths causing 1/3 of all construction fatalities. In fact, 13 of the 41 cases covered in this report are fall-related. It is notable that:

- Annual fall fatalities exceed a rate of 3 per 100,000 among all construction workers
- 3 fatalities per 100,000 workers is *six times greater* than the fatality rate from texting while driving[3]
- Roofers die from falls at a rate ten times higher than construction workers in general (more than 30 per 100,000)

Given the relative risk construction workers (especially roofers) face from falls, the efforts of the National Institute for Occupational Safety and Health (NIOSH), the Occupational Safety and Health Administration (OSHA), and the Construction Center for Research and Training (CPWR) involving a recent educational collaborative effort is most welcome. Called Preventing Falls in Construction, http://stopconstructionfalls.com/, this effort includes an interactive map designed to heighten awareness by showing that these accidents are tragically happening all around us and all too frequently.

We at the CIRPC hope that the data we provide and taken from the CSHO case file reports will also heighten awareness of the problem and contribute to meeting OSHA's strategic goal of reducing fatal falls in construction. With this in mind, in the following section the summaries involving falls will be marked with an asterisk.

[1]Bureau of Labor Statistics (BLS) uses a different data source which accounts for the difference in rankings.

[2] CIRPC's An Analysis of Fatal Events in the Construction Industry uses the data collected in IMIS from the fatal construction event case files. The report categorizes and ranks the fatality causes, project types, end uses, etc. Reports from 1991 to 2010 can be found on the CIRPC website: www.bus.utk.edu/cirpc.

[3]NHTSA Traffic Safety Facts, Distracted Driving 2009, http://www.distraction.gov/download/research-pdf/Distracted-Driving-2009.pdf September 2010; (there were approximately 1000 annual fatalities from texting and thus an inferred rate of 0.5 per 100,000 among 200 million licensed U.S. drivers)

Summary of Fatal Events

OSHA Inspection Number: 314381195
Employees were assigned to work in close proximity to dump trucks with audible back-up alarms that could not be distinguished from alarms used on other equipment in the area. A spotter was not used to warn of blind spot behind the truck and employee was struck and run over. The employer was cited for failure to have proper alarm or a spotter.

OSHA Inspection Number: 315109595
Employee was engaged in residential construction when he was fatally injured when a porch gable fell and struck him. Apparently the temporary supports gave way resulting in the collapse of the gable. Employer was not cited for any violations.

OSHA Inspection Number: 315453001
Victim was installing 45 foot wooden joint use pole (utility pole). Digger derrick truck was being operated by victim which made connect (or arced) with a 14.4 kV energized power line and he was electrocuted. The employer was cited for operation of equipment close to power line and lack of training in derrick operation.

OSHA Inspection Number: 315446385
Two employees entered an 11 foot deep by 8 foot wide concrete municipal drinking water butterfly manhole. Upon entering the employees lost consciousness due to an oxygen deficient atmosphere and suffered asphyxiation. The employer was cited for failure to provide hazard free environment and failure to provide respirators.

*OSHA Inspection Number: 315451336
Victim fell 50 feet from a cell phone tower being modified. He apparently failed to properly use the fall arrest system provided by the employer. The employer was cited for failure to ensure fall arrest was properly used and 8 hour notification of the fatality.

OSHA Inspection Number: 315505354
The victim, a day laborer, shoveling broken asphalt into the dump bed of a flat bed truck exhibited heat stress related symptoms and died of hypothermia. This was an asphalt patching operation in full sun with temperatures in the 80 degree range and humidity ranging from 31% to 94%. The employer was cited for failure to instruct and eliminate hazards and 8 hour notification of the fatality.

*OSHA Inspection Number: 315909788
Employees were working on a two-story family house without the use of fall protection and were exposed to a fall hazard of up to 24 feet. Victim fell 10.5 feet from the eave of roof to the driveway. The employer was cited for failure to provide fall protection.

OSHA Inspection Number: 315248112
Two employees were inside a water vault removing an air release valve, when the valve was released there was a rush of air which threw the victim backwards. Both employees were overcome and victim died due to complications of noxious gas exposure. The employer was cited for failure to instruct or provide emergency equipment to deal with confined spaces.

OSHA Inspection Number: 314875774
The victim was either inside or climbing out of a 6 foot diameter extended base manhole after removing some materials. An excavator operator inadvertently swung the bucket after releasing the safety lock and either struck the victim or the manhole causing the victim to fall inside the manhole with fatal injuries. The employer was not cited for any violations.

*OSHA Inspection Number: 315450023
The victim was conducting an inspection of a tornado damaged roof in a shopping center. As debris struck the roof during the tornado, it punctured the roof decking. On the roof, however, the fiberglass insulation covered up the holes in the decking. The victim apparently fell through a roof hole in the decking 20 feet to the concrete floor. The employer was not cited for any violations.

Summary of Fatal Events (Continued)

OSHA Inspection Number: 315685446
This was the first day on the job for the victim who was involved in a one story residential roofing project. Victim was not working on the roof, but working on the ground cleaning up roofing materials. The temperature during the day reached 100 or more and victim reported feeling tired and took frequent breaks. By mid-afternoon he appeared to be disoriented and subsequently died from heat stress. The employer was cited for failure to provide a hazard free environment.

OSHA Inspection Number: 315451450
Victim was installing metal conduit to the roof structure while on a scissor lift. While working approximately 20 feet from the ground, an overhead crane collided with the lift tipping it over and causing it to fall to the ground. The employer was cited for failure to provide safe conditions.

OSHA Inspection Number: 315453290
An excavator was used to push over an oak tree which then hit a pine tree, which fell and fatally struck the victim. No safety equipment was available on site. The employer was cited for failure to provide instruction on hazard recognition and failure to train on the use of hard hats.

OSHA Inspection Number: 315446526
An employee was fatally injured when he was installing a ten foot aluminum bar along a parapet wall. The bar contacted an energized power line approximately 49 inches from the parapet wall and the victim was electrocuted. The employer was cited for working less than 10 feet from an energized power line, lack of job site inspections, lack of fall protection, lack of fall hazard training, and failure to report the event within 8 hours.

OSHA Inspection Number: 109098
The accident occurred at a demolition site. The victim used a torch to cut two pieces of rebar leaving two remaining in the concrete beam approximately 10 feet above the floor. A bobcat operator signaled the victim to exit the area. Victim started to leave the area and then returned and was struck by the concrete beam which fell on his face and head. The employer was cited for failure to continually monitor for hazards at demolition site.

*OSHA Inspection Number: 108397
Victim stepped from an aerial lift onto roof and walked to an area where another employee had cut the decking material, but not removed it. Victim walked on the decking material which gave way allowing the employee to fall through the roof 17 feet to the floor below. The employer was cited for lack of fall protection.

*OSHA Inspection Number: 315540443
Employee was using an elevated work platform situated on the forks of a Lull to spray fire retardant material on steel beams. Victim was fatally injured when the platform shifted on the forks and the platform and the employee fell 31 feet to the ground. The employer was cited for failure to train employees and improper use of platform.

OSHA Inspection Number: 112668009
The foreman on a road job backed into and ran over a female flagger who was apparently placing stop/go paddles in the back of the truck. The workday was completed at the time of the event. The driver looked in his mirror and put the truck in reverse, striking and running over the victim. Driver put the truck in forward and ran over her again. She died of multiple trauma injuries. The employer was cited for failure to instruct on avoidance of hazardous conditions.

*OSHA Inspection Number: 110724
Employer was in the process of installing roofing on a new residential home. Roof pitch was 6/12 and eave height was 11 feet. The victim accessed the roof via a ladder and was walking up the roof toward the peak where 3 other employees were. The roof was bare composite material; no felt had been applied. The deceased lost his footing, slid backwards and fell from the roof 11 feet to the ground. No fall protection was being used by any of the workers. The employer was cited for failure to initiate a safety program, lack of fall protection, and failure to provide fall protection training.

Summary of Fatal Events (Continued)

*OSHA Inspection Number: 110793
Employee was performing plastering operations from a tubular welded frame scaffold. The working platform at approximately 21feet was not planked and safe access was not provided. While climbing onto the scaffold, the employee fell to the ground sustaining fatal head injuries. The employer was cited for failure to fully plank scaffold decking, failure to provide an access ladder, and failure to provide a top rail.

OSHA Inspection Number: 106715
The employee was digging out the toe of an excavation with a pick and shovel. A vertical wall of dirt (10 feet high, 10 feet long, 2 feet deep) collapsed trapping the employee. The wall had no support and the employee was crushed and died. The employer was cited for failure to design adequate cave-in protection, failure to inspect prior to work, and failure to provide training on trenching hazards.

OSHA Inspection Number: 092343
An employee working on a power line project was killed when he fell into a 16 foot hole and was covered by rock, wood, and dirt. He was standing atop a plywood board covering the hole when the lip gave way while he was attempting to measure the depth of the hole. The employer was cited for failure to instruct employees on hazard recognition, failure to remove employees from a hazardous area, failure to protect via guardrails, fences, etc., and failure to provide qualified emergency person on-site.

OSHA Inspection Number: 315019026
Employee was delivering a load of waste roofing material to a deposal site. To activate the dump truck bed, he climbed under the truck bed. When trying to engage the hydraulic control lever he reached for the control and his jacket was caught in the rotating PTO. The employee was asphyxiated at the site. The employer was cited for failure to provide a hazard free environment.

OSHA Inspection Number: 107768
Employee was involved in a highway construction job where a mountain face was sliding under the roadway. Extensive rock removal was required along with the construction of a reinforcing buttress wall. The fatality occurred during installation of the french drain at the bottom of the buttress. A granite stone weighing around 120 pounds rolled down the hill and struck and killed the victim. The employer was cited for competent person failed to remove employees from a hazardous area and adequate protection from loose materials falling from an excavation face not provided.

*OSHA Inspection Number: 092681
Employees were working on a scaffold platform 30 feet above ground which became overloaded. The support brackets failed causing three workers to fall to the ground. One was killed and two seriously injured. The scaffold was overloaded by combined weight of the workers, a full bucket of mud, a pallet of block, and a bundle of rebar. The employer was cited for failure to train employees on scaffolds and capacity limits of scaffolds.

*OSHA Inspection Number: 315562462
An employee was on a single family home's roof preparing to install shingles. The employee apparently slipped and fell from the roof 20 feet to the concrete below. There was no fall protection or slide guards in use on the 6:12 pitch roof. The employer was cited for failure to use fall protection, lack of fall protection training, failure to implement/maintain a safety program, and failed to report the fatality within 8 hours.

OSHA Inspection Number: 108561
Two employees were working in an unprotected trench which was approximately 220 feet long, six feet-seven inches deep, and two feet wide. No cave-in protection or acceptable means of egress was provided. After locating the existing waterline with a hand shovel, a 19 year old employee was fatally injured when a sidewall collapsed in and buried the employee at the end of the trench. The employer was cited for failure to train on excavation hazards, failure to provide protective helmets, failure to prevent material from entering excavation, failure to provide safe means of egress and failure to protect from cave-in.

Summary of Fatal Events (Continued)

OSHA Inspection Number: 311682926
The employee was working from a bucket truck installing cable when he was electrocuted. The employee was installing coax span cable between two utility poles in a residential community when he encountered a tree branch which needed to be removed. The line he was working on was approximately 17 to 18 feet from ground level and beneath a 19,900 volt "primary" line at 31 feet and a 120 volt "secondary" line at 21.5 feet from the ground. The truck driver provided pruning tools, heard a buzzing sound, looked out and saw the deceased lying inside the bucket which was located next to the primary power line. Citations were deleted in informal settlement.

OSHA Inspection Number: 315783852
Fatality occurred during repaving of a section of I-45. Employee , a mill operator, had completed the milling work and was helping by shoveling gravel on the roadway. An intoxicated motorist lost control of his vehicle while travelling through the lane enclosure, and struck the operator causing his death. No citations were issued.

OSHA Inspection Number: 314281569
The deceased employee was assigned to work the chute on a concrete bucket. The bucket held approximately 1.5 yards of concrete and was being lifted by crane. The bucket was lifted up to a casing and the employee would pull a rope to open the chute to release the concrete. The crane operator stopped the lift and as the bucket was suspended it fell striking the employee. The employer was cited for work permitted under buckets while being lifted, swung or lowered, failure to agree on voice signals and failure to recognize swing radius of equipment.

*OSHA Inspection Number: 316043959
Employees were exposed to an unprotected fall from an apartment complex re-roofing project to the concrete below. Victim was apparently fatally injured in a fall from the roof. No further details were given in the case file. The employer was cited for lack of fall protection and no fall protection training.

*OSHA Inspection Number: 315849372
Employee was framing a parapet wall on an existing fire station, when he fell from the roof 15 feet to the parking lot surface below. The employee fell from a flat roof and was not using any fall protection. The employer was cited for lack of fall protection.

OSHA Inspection Number: 311095160
During parking lot paving operation a 52 year old asphalt worker was laying a string line as a paving guide and was bent over in the front blind spot of a dump truck full of asphalt. The spotter walked from the front of the truck, tapped the worker to alert him to the impending vehicle movement and signaled, by eye contact through the passenger window, for the driver to back the truck up to the paving machine. Driver, unaware of the location of the worker in the blind spot, moved the truck forward rather than backward striking and crushing the worker with the right front tire. The employer was cited for general duty to provide safe workplace and lack of training on signaling procedures.

OSHA Inspection Number: 455894
Sixty-eight year old victim was operating a bi-directional wheeled packer and was packing asphalt behind a paver on a narrow two lane asphalt road with no shoulders. The road had an approximate 8% slope which transitioned to a road ditch with a nearly 23% slope There was no witness to the accident, but the CSHO observed that apparently the victim steered the packer back toward the road edge and struck loose asphalt along the road causing the packer to enter the ditch and turn over, crushing the victim. The employer was cited for failure to provide hazard free work place.

OSHA Inspection Number: 398702
Electrician had installed various components of 110v outlets on a light pole. The employee found there was no power at the light and called his employer to report the problem. The employer instructed the employee to take a break pending a check by the power company. The employee ignored the instructions and went back up the ladder and came in contact with the 7.2kV line. He was knocked off the ladder falling 20 to 25 feet below. He died as a result of the electric shock and subsequent fall. No citations were issued.

Summary of Fatal Events (Continued)

OSHA Inspection Number: 190153
Two employees were attempting to remove a 20 ton metal hopper contained inside an abandoned building. Both employees were positioned below and under the hopper. One employee cut two of the supporting columns which caused failure of all of the supporting columns and the collapse of the hopper and the section of the building containing the hopper. Both employees were killed. Earlier in the day an aborted attempt to pull the building down using a chain, a wire rope, and an excavator failed when the alloy steel chain was overloaded and snapped. The employer was cited for rigging equipment overload and structural members removed without removal of upper stories.

OSHA Inspection Number: 242829
Employee was engaged in a residential remodeling project which included, among other tasks, the removal of a brick wall built around a gas fireplace insert. Apparently the brick below the lintel and mantel had been removed when the majority of the wall above the mantel remained intact and fell and struck the victim who died of mechanical asphyxiation. The employer was cited for failure of competent person to monitor site and lack of hazard recognition training.

OSHA Inspection Number: 431151
An employee and a foreman were installing light fixtures in a building being remodeled. Foreman left and instructed employee to continue. Employee was on a ladder when he either intentionally or accidentally touched a live wire inside a junction box that was not covered and was electrocuted. Thirty-nine year old electrician apprentice fell to the floor and was fatally injured. The employer stated that the power was not de-energized because there were other offices on the floor being remodeled that were in use. The employer was cited for failure to de-energize and failure to train relative to ladder hazards.

*OSHA Inspection Number: 315516997
Laborer on second floor of residence under construction was handing a board to a framer. The laborer lost his balance and fell from the second floor to the basement and was fatally injured. The employer was cited for failure to protect from falling through holes and failure to protect in residential construction.

OSHA Inspection Number: 190146
Employees were performing demolition work on the interior of an office building. The victim was removing a section of ceiling molding with a pry bar when a 13 by 15 foot section of plaster ceiling broke free and fell, striking the employee in the head. The employer was cited for failure to train on hazard recognition, lack of competent person inspection, and 31 other apparently unrelated standard violations.

*OSHA Inspection Number: 190223
A crew of five was working on a club house roof performing sheathing work. Deceased slipped and fell from the roof 24 feet to his death. Roof pitch was 14:12. No fall protection was in use at the time. The employer was cited for failure to provide fall protection and failure to train and abate fall hazards.

CIRPC

We maintain, for OSHA, perhaps the most comprehensive collection of construction fatality case files. The efforts of OSHA area offices in submitting fatality case files are crucial to expanding our database and research capabilities. (For reference, you may send fatality case files to the address on the right.)

We would also like to thank all the Area Offices that continue to send in the case file reports. As well as welcome any of their suggestions and comments (they can be directed to John Wagner jpwagner@utk.edu) as we work together to reduce fatal construction events.

We're on the web!
bus.utk.edu/cirpc

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