CIRPC
CONSTRUCTION INDUSTRY RESEARCH AND POLICY CENTER
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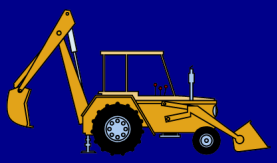
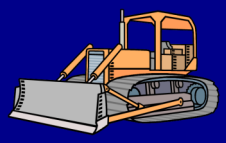
Construction Fatality Digest





JANUARY—MARCH 2016 QUARTERLY REPORT

Topics of Interest:

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

INSIDE THIS ISSUE:

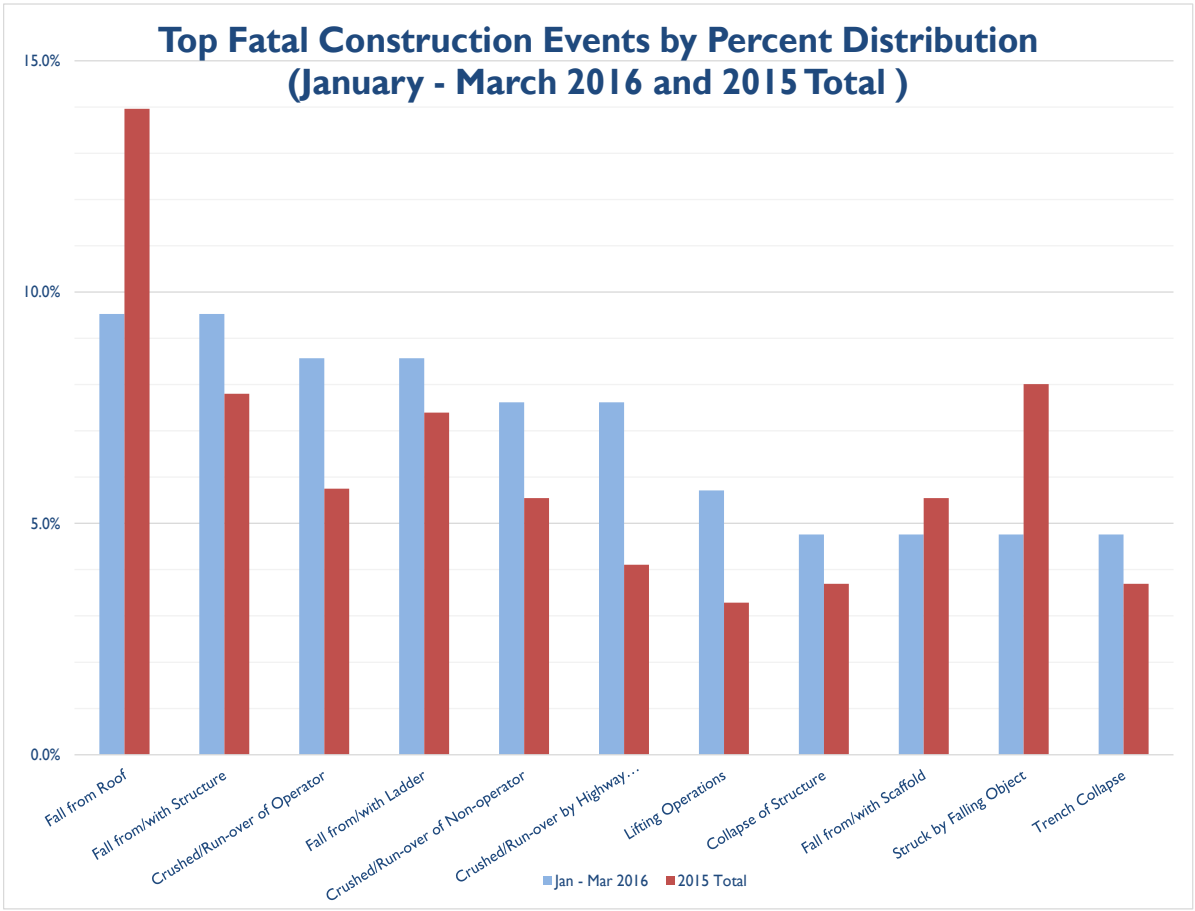
Roof and Structure Falls Led Fatal Construction Events

"Fall from Roof" and "Fall from/with Structure" led all categories with each having 9.5% of the 105 events. This is the lowest percentage of the total events for "Fall from Roofs" over the past year, 19.3% (2015 4th Q), 11.7% (3rd Q), 12.7% (2nd Q), and 13.3% (1st Q).

All types of falls (roof, ladder, structure, opening, etc.) accounted for 37.1% (39 events) in the first quarter of 2016. This is down from the previous four quarters (38.5%, 46.1%, 37.3%, and 43.9%).

"Crushed/Run-over of Operator" and "Fall from/with Ladder" were the next most common causes each with 9 events (8.6%). "Crushed/Run-over of Non-operator" and "Crushed/Run-over by Highway Vehicle" each accounted for 7.6%, and rounding out the leading causes for the quarter was "Lifting Operations" with 5.7%.

Two areas reflected significant differences in reported percentages from 2015: "Fall from/ Roofs" decreased from 14.0% to 9.5% and "Struck by Falling Object" decreased from 8.0% to 4.9%.



Regional Breakdown

"Of the 105 fatal events 61% (64 events) were reported from Federal OSHA states, while 39% (41 events) were in State Plan States."

A total of 105 events were reported from the regions in the first quarter of 2016. Of these, 25.7% came from region 4 (27 events), 21 came from region 6, and 13 from region 9.

Of the 105 fatal events 61% (64 events) were reported from Federal OSHA states, while 39% (41 events) were in State Plan States.

The breakdown by state shows Texas and California with the greatest number of reports, 12 (11.45%), followed by Florida with 8 7.6%), and New York with 6 (5.7%).

Fatal Events Reported by Region

January to March 2016

Region	# of Cases	Percent
1	1	1.0%
2	10	9.5%
3	8	7.6%
4	27	25.7%
5	8	7.6%
6	21	20.0%
7	11	10.5%
8	2	1.9%
9	13	12.4%
10	4	3.8%
Total	105	100.0%

Fatal Events by NAICS Code

A breakdown of reported fatal events by NAICS code shows "Commercial and Institutional Building Construction" contractors, "Highway, Street, and Bridge Construction" contractors, and "Roofing Contractors" at the top, each with 8.6% (9 events) of the 105 events. Other top codes are "Framing Contractors" with 7.6% (8 events), followed by a four-way tie (Water and Sewer Line, Other Heavy, Site Prep, and All Other Specialty trades) each with 5.7% (6 events).

Fatal Events by NAICS Code

Code	Description	# of Cases	Percent
236220	Commercial and Institutional Building Construction	9	8.6%
237310	Highway, Street, and Bridge Construction	9	8.6%
238160	Roofing Contractors	9	8.6%
238130	Framing Contractors	8	7.6%
237110	Water and Sewer Line and Related Structures Construction	6	5.7%
237990	Other Heavy and Civil Engineering	6	5.7%
238910	Site Preparation Contractors	6	5.7%
238990	All Other Specialty Trade Contractors	6	5.7%
236115	New Single-Family Housing Construction	5	4.8%
236210	Industrial Building Construction	5	4.8%
238120	Structural Steel and Precast Concrete Contractors	5	4.8%
238320	Painting and Wall Covering Contractors	5	4.8%
238220	Plumbing, Heating, and Air-Conditioning Contractors	4	3.8%
238310	Drywall and Insulation Contractors	4	3.8%
238210	Electrical Contractors	3	2.9%
237120	Oil and Gas Pipeline and Related Structures Construction	2	1.9%
237130	Power and Communication Line and Related Structures Construction	2	1.9%
238110	Poured Concrete Foundation and Structure Contractors	2	1.9%
238140	Masonry Contractors	2	1.9%
238290	Other Building Equipment Contractors	2	1.9%
236116	New Multifamily Housing Construction	1	1.0%
236117	New Housing For-Sale Builders	1	1.0%
236118	Residential Remodelers	1	1.0%
238170	Siding Contractors	1	1.0%
238390	Other Building Finishing Contractors	1	1.0%
		105	100.0%

Top Construction Standard Violations

Of the 105 cases for the calendar year examined by CIRPC, 9 reported citations issued*. In the 9 cases there were 23 violations of OSHA standards. The average number of violations per case with citations issued was 2.56. For the three previous calendar years, 2013, 2014, and 2015 the average number of violations per case was 3.38, 3.86, and 3.24 respectively.

The "Head Protection" and "Occupational Foot Protection" standard are the top violated standard for the year with 3 occurrences each.

When comparing the running total of 2016 calendar year violations with OSHA's Top 10 standards violated in FY2015 (per www.osha.gov), there are similarities. "Fall Protection", "Respiratory Protection", and "Ladders" appear on both CIRPC's and OSHA's list.

Top Standard Violations Reported

(During Calendar Year 2016)

Rank	Std #	Description	# of Occurrences
T1	1926.100	Head Protection	3
T1	1926.96	Occupational Foot Protection	3
T3	1926.1053	Ladders	2
T3	1926.1428	Signal Person Qualifications	2
T3	1926.404	Wiring Design and Protection	2
T3	1926.652	Excavation, General Requirements for Protection Systems	2
T7	1910.134	Respiratory Protection	1
T7	1926.102	Eye and Face Protection	1
T7	1926.21	Safety Training and Education	1
T7	1926.403	Electrical - General Requirements	1
T7	1926.405	Wiring Methods, Components, and Equipment for General Use	1
T7	1926.454	Scaffold Training	1
T7	1926.501	Fall Protection	1
T7	1926.602	Material Handling Equipment	1
T7	1926.651	Excavation	1

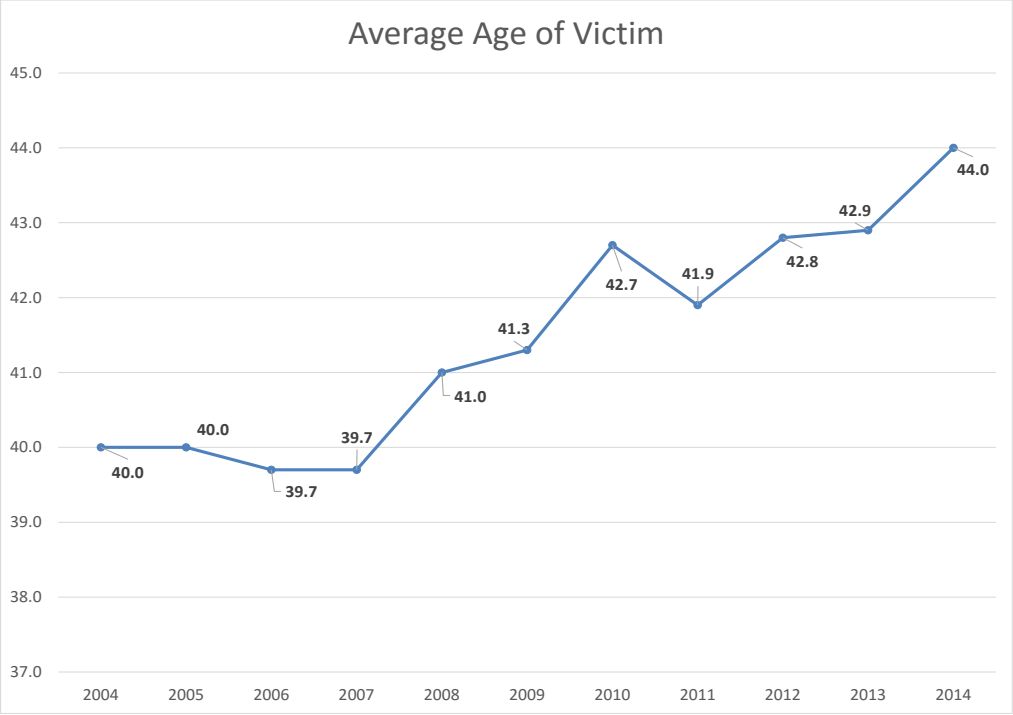
* - Inspectors have up to six months to issue citations on a fatality. As a result citations may not yet have been issued for these cases.

The Age of the Construction Worker

"The (Construction) labor force in the United States is aging. Between 1985 and 2010, the average age of all U.S. workers increased from 37.3 to 41.8 years old, and the average age of construction workers jumped from 36.0 to 41.5 years old..." (BLS: Chart Book 2014).

The figure to the right shows the average age of the victim in fatal construction events*. The age has increased from a low of 39.7 in 2006 to the current high of 44.0.

The average age had been relatively consistent until the down turn in construction activity in 2008. Many of the younger and less experienced construction workers left the industry to find jobs in other sectors.



* - Average age of the victim was pulled from the fatal events in OSHA's IMIS and OIS data systems.

Summary of Fatal Events

Below is a random selection of the fatal event summaries from the 105 cases reported for the quarter. These narratives are taken directly from the reports filed by the CSHO's with only minor editing.

CATEGORY: ROOF FALLS

Inspection Number: 1067398
An employee went up onto the roof to retrieve box of nails. The employee was wearing body harness. Short time later he was found lying on the ground. He had not tied off and had fallen from the roof. There were no witnesses to the incident.

Inspection Number: 1074613
An employee fell approximately 27 feet to the ground while throwing roofing shingles from the roof of a vacant home into a dumpster.

CATEGORY: OTHER FALL EVENTS

Inspection Number: 1066981
The employee had just climbed to the top of an extension ladder. He was standing at the top section of the ladder, slipped or lost his balance, and fell to the ground below.

Inspection Number: 1074153
An employee and home owner went into the attic to look at building a spare room up there. As the employee was coming down the attic stairwell ladder, the employee slipped and fell. He hit his head on the tile floor in the laundry room and was transported to a local hospital where he passed away.

Inspection Number: 1075129
Employees were moving 5 gallon buckets of paint from a box, located on the raised forks of a forklift, to a fifth story balcony. The elevated box shifted and one employee fell to the ground below.

Inspection Number: 1078227
Two employees were in the attic of a funeral home repairing a HVAC system. The victim lost his footing and fell through the ceiling approximately 11 feet to the floor below fatally injuring him.

Inspection Number: 1070962
An employee of a subcontractor was working on installing scaffolding. It is assumed that the victim was transitioning from one location to another and had unhooked his lanyard to transition and fell approximately 38 feet.

Inspection Number: 1076690
A framing employee was working on the third floor of an apartment building under construction. The exterior walls were in place and the employee was working inside the building installing/bracing interior wall panels that arrive onsite fabricated. It appears he fell from a window opening approximately 30 feet on to a concrete floor.

Inspection Number: 1068306
An employee fell from a ladder while descending to the ground level. The employee was conducting pressure washing at a private residence.

Inspection Number: 1074367
The victim was working as a ground man for a two man residential insulation spray foaming operation. The victim was complaining of stomach pain and went home early from the jobsite. Two days later, the employer was notified the victim had been in ICU and died. The employer received notification from the coroner that the victim died from blunt force trauma to the abdomen. Employer noted that the victim had requested another ladder be delivered to the site the day the abdomen pain started. It is believe the victim fell an unknown distance from a ladder.

Summary of Fatal Events (Continued)

CATEGORY: OTHER FALL EVENTS (Continued)

Inspection Number: 1073120

It is believed the victim was beginning to construct an exterior wall by moving 2 X 10s manually on the second floor. A spiral staircase was to be installed in the house from the first floor to the second. A circular hole was cut into the first floor measuring 64 inches in diameter. The hole opening had a 10 foot fiberglass Werner step ladder laying across it, with a piece of plywood laying on top of the ladder (described by the crew). On the second floor, the circular hole measured the same, 64 inch diameter. This hole opening had three 2 x 4s nailed across the hole. A piece of plywood cut in a circular shape was placed under the 2 x 4s and nailed from the bottom up. There was no indication of nailing from the top. For whatever reason, the victim stepped onto the plywood covering the opening on the second floor. The plywood gave way. He fell through the first floor opening. The Werner ladder fell with him to the basement concrete floor. The fall distance was estimated to be 30 feet.

Inspection Number: 1070454

Victim fell from the third floor (27 feet) down an elevator shaft of a residential construction site.

Inspection Number: 1053886

A construction worker was killed after falling three stories through a stairwell opening. The company was cutting floor openings in an existing warehouse, to install stairwells. The general contractor onsite was conducting Radon tests and had covered the stairway openings with plastic and painted the floor surrounding the plastic to make the plastic more visible. As the worker was walking through the area he stepped onto the plastic and fell through the opening.

CATEGORY: STRUCK BY, RUN OVER, CRUSHED BY OPERATING CONSTRUCTION EQUIPMENT/ VEHICLE

Inspection Number: 1057701

Four employees were walking and surveying a highway lane widening project. The victim knelt down to write on a pad. A dump truck was backing into the area to unload sand and backed over the kneeling victim causing fatal injuries.

Inspection Number: 1067986

An employee was walking approximately 12 feet away from a motor grader and had previously made eye contact with the operator of the motor grader. The operator was driving in reverse when the employee was struck by the motor grader.

Inspection Number: 1077349

The project superintendent was marking the road for future milling work and he was struck and killed by a dump truck.

Inspection Number: 1068175

An employee was filling a milling machine with water from a water truck. The water truck jumped/rolled and pinned the employee between the milling machine and the truck.

Inspection Number: 1076815

The employee was working from a scissor lift welding I-beams, when he needed to move the lift over to the next area to continue tack welding the beam. It appears he was looking over the railing when he started the move; instead of moving the scissor lift down or horizontal the lift went up trapping his head between the rail of the scissor lift and the I-beam in which he had been tacking.

Inspection Number: 1075528

While driving a forklift with a large metal plate on its forks, the victim got out to check the front of the load. The forklift moved forward and crushed him.

Inspection Number: 1075535

An employee was between a 256 ton crane and a crane boom dolly. The employee attached an air line to the dolly. The dolly rolled toward the employee over a chock and crushed the employee between the crane and dolly.

Summary of Fatal Events (Continued)

CATEGORY: STRUCK BY, RUN OVER, CRUSHED BY OPERATING CONSTRUCTION EQUIPMENT/ VEHICLE (continued)

Inspection Number: 1073499

A company was working road construction and on this job they were reinforcing a guard railing. They installed it approximately 1500 feet east of where two roads intersect. The company had an employee serving as the flagger for this construction zone, standing on the road 2-3 feet from the curb and approximately 75 feet west of that intersection. The company had warning construction signs set up for the east bound lane for the approach into the construction zone. An automobile operated by a private citizen entered the zone (impaired per the state patrol) and struck the employee, sending the employee through the air 50-74 feet bouncing along the way and partially dragged by the automobile driven by the private citizen.

CATEGORY: ELECTROCUTIONS

Inspection Number: 1058673

An employee was ascending the fixed ladder of a four tier scaffold to a height of thirty-three feet. The employee was carrying a thirty-six inch spray painting wand over his shoulder while climbing the ladder. The outer edge of the fixed scaffold ladder was measured to be thirty-one inches away from a 12.47kV distribution line. When the employee reached the top of the scaffold, the wand contacted the power line, where the employee received an electrical shock and fell approximately thirty-three feet to the ground below. The employee was transferred to a nearby hospital where he died as a result of his injuries.

Inspection Number: 1070021

Two employees were setting up pump jack poles and the pole came in contact with an overhead energized power line. One employee was electrocuted and the other hospitalized.

Inspection Number: 1054923

An electrical lineman was electrocuted while attempting to hang a fuse barrel onto an electrical cutout when the lineman contacted a live electrical line.

CATEGORY: OTHER FATALITY CAUSES

Inspection Number: 1059790

An employee was crushed when he was cleaning a conveyor belt. The belt had gotten stuck and the employee was attempting to clean it to get it unstuck. He was pinned between the belt winder and the guardrail of the conveyor tower.

Inspection Number: 1060241

Employee was working on a closure strip at floor level and cleaning rebar when a temporary joist from the roof grid line fell and struck him in the back of the head.

Inspection Number: 1074439

Two employees entered a process tank, under construction, to check on an argon purge. Both employees were overcome by an oxygen deficient atmosphere. Rescuers were able to pull one employee out of the vessel alive. The body of the second employee was later recovered.

Inspection Number: 1077032

The victim and others were prepping bridge work by installing containment tarps for sandblasting and painting. The victim fell from the top of the bridge into approximately 6-8 feet of water and drowned. He did not know how to swim and was not provided fall protection, personal floatation device, ring buoys and/or a skiff for rescue.

Inspection Number: 1059183

An employee was inspecting an elevator. As he was working on it, he was crushed between the elevator car's door and the elevator's shaft wall/elevator door.

Inspection Number: 1064688

During the crane lift of a 5 ton generator from a low-boy trailer to a concrete pad, two synthetic web slings failed resulting in the generator flipping over on its side crushing and killing two workers, one a rigger and the other an electrician.

Summary of Fatal Events (Continued)

CATEGORY: OTHER FATALITY CAUSES (continued)

Inspection Number: 1064190
An employee was fatally struck by an off-road fork truck. He was assisting in the transportation of floating dock sections to the installation point.

Inspection Number: 1051555
A worker sustained fatal injuries from a trench collapse. The supervisor stated that a worker was down in an excavation approximately 12 to 16 feet with near vertical side walls and no cave-in protection. The previously disturbed type "C" soil failed to retain its cohesive strength allowing a collapse to occur and partially burying the worker. An excavator operator at ground level had the digging arm and bucket down in the excavation at the same time and had swung the bucket over to assist the worker in dislodging from the collapse. The operator struck the worker in the head with the bucket which combined with the trench collapse led to fatal injuries being sustained.

Inspection Number: 1057305
A plumbing contractor was sent to replace a sewer line at a residential home. An employee of plumbing contractor was in a trench when it collapsed. The employer and fire department attempted rescue but could not reach the employee. After approximately 30 minutes the fire department changed from rescue to recovery. The employee was found at approximately 7ft deep. The trench was 21 inches wide by 6 feet long and dug in sandy/loam soil between a sidewalk and the house foundation. There was some shoring on one side of the trench. There was no shoring at either end.

Inspection Number: 1057431
An employee was fatally struck-by the bucket of an excavator during pipeline construction. The employee was struck when the excavator boom was being lowered.

Inspection Number: 1065742
An employee was working on a 5/12 sloped roof helping other employees install step flashing on a new addition. Witnesses indicated that a small piece of plywood was caught by the wind and struck the employee. He lost his balance and fell from the North side eave which was 9.83 feet in elevation. He suffered a fatal wound as a result of the fall.

Inspection Number: 1074489
An operator of an excavator was clearing trees from a drainage ditch. The operator accidently disturbed the root system of an oak tree and the tree fell on the cab of the excavator killing him.

Inspection Number: 1055206
The employer was laying 36-48 inch storm water drain pipe using an excavator bucket with a chain attached to lift the concrete drain pipes and place into the trench. The concrete pipe came loose while the excavator operator was attempting to lay the pipe into the trench crushing the employee who was in the trench.

Inspection Number: 1074172
The victim was working from the deck of a barge and assisting with the installation of boat dock pylons, when he was struck in the head by a crane's overhaul (headache) ball assembly. It was reported he went home and while at home he complained of a headache as a result of the strike to his head. The victim was found the next day in his home unresponsive and transported to the hospital where he was pronounced dead.

Inspection Number: 1063040
An employee was standing on twenty-eight sheets of plywood supported by the elevated forks of a rough terrain forklift and was attempting to nail a section of sheathing on the outside wall of second floor. The plywood he was standing on slid toward the house and he fell to the ground. The employee landed on the first sheet of plywood and the other 27 sheets slid down the wall and fell on top of the employee. Each sheet of plywood weighed between 45 to 50 pounds a weight of approximately 1,350 pounds.

Notes from CIRPC

CIRPC's Annual Fatality Report has been released!

The annual fatality report contains 20 years of fatal cause event comparisons. It includes tables and figures of breakdowns of occupations, end use, construction operations, NAICS, and project values of fatal events. It also contains highway and road construction section highlighting certain struck-by fatal event characteristics.

The report can be found at : **http://cirpc.bus.utk.edu/FatalityReports.asp**

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We would like to thank OSHA's Dave Schmidt for help in obtaining the data used in this newsletter. Comments and suggestions can be directed to John Wagner (jpwagner@utk.edu) as we work together to reduce fatal construction events.