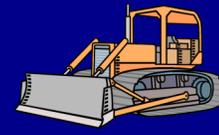




CONSTRUCTION
INDUSTRY RESEARCH
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Construction Fatality Digest



JULY — SEPTEMBER 2016

QUARTERLY REPORT

Topics of Interest:

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

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Electrocutions Increase in Fatal Events

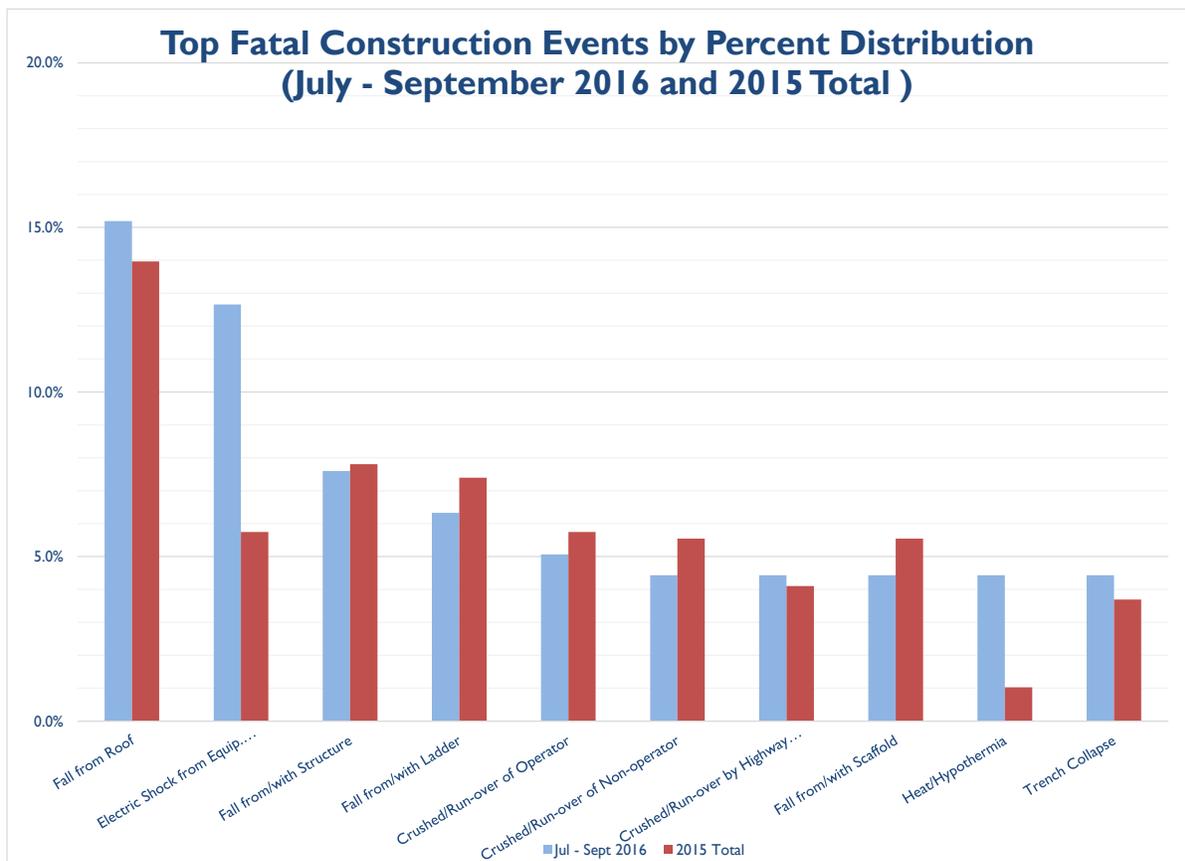
Electrocutions from equipment installation or tool use jumped to the second leading fatal cause for the 3rd quarter. This is an increase of 400% over the previous quarter and more than double the total events for the year to date.

“Fall from Roof” led all categories with 24 events (15.2%) of the 158 events. This is up from the previous quarter (13.5%). “Fall from Roof” for 2015 totaled 68 events (14.0%).

All types of falls (roof, ladder, structure, opening, etc.) accounted for 43.0% (68 events) in the third quarter of 2016. This is a similar percentage to 2015’s 41.7% (203 events)..

“Electric Shock from Equip. Install/Tool Use” was the next most common cause with 20 events (12.7%). “Fall from/with Structure” accounted for 12 events (7.6%), followed by “Fall from/with Ladder” with 10 events (6.3%). Rounding out the leading causes for the quarter was “Crushed/Run-over of Operator” with 8 events (5.1%).

One area reflected a significant difference in reported percentages from 2015: “Electric Shock from Equip. Install/Tool Use” and “Heat/Hypothermia” increased from 5.7% to 12.7% and 1.0% to 4.4%, respectively. Other areas were fairly consistent with 2015 percentages.



Regional Breakdown

“Of these fatal events 64% (101 events) were reported from Federal OSHA states, while 36% (57 events) occurred in State Plan States.”

A total of 158 events were reported from the regions in the third quarter of 2016. Of these, 30.4% came from region 4 (48 events), 32 came from region 6, and 18 from region 3.

Of these fatal events 64% (101 events) were reported from Federal OSHA states, while 36% (57 events) occurred in State Plan States.

The breakdown by state shows Texas with the greatest number of reports, 25 (15.8%), followed by Florida with 10 (6.3%), and Georgia with 9 (5.7%).

Fatal Events Reported by Region

July to September 2016		
Region	# of Cases	Percent
1	5	3.2%
2	9	5.7%
3	18	11.4%
4	48	30.4%
5	16	10.1%
6	32	20.3%
7	6	3.8%
8	7	4.4%
9	11	7.0%
10	6	3.8%
Total	158	100.0%

Fatal Events by NAICS Code

A breakdown of reported fatal events by NAICS code shows “Roofing Contractors” at the top with 12.7% (20 events) of the total events. Other top codes are “Highway, Street, and Bridge Construction” contractors with 9.5% (15 events), followed by “Electrical Contractors” with 8.9% (14 events), and “Site Preparation Contractors” with 7.6% (12 events).

Fatal Events by NAICS Code

Code	Description	# of Cases	Percent
238160	Roofing Contractors	20	12.7%
237310	Highway, Street, and Bridge Construction	15	9.5%
238210	Electrical Contractors	14	8.9%
238910	Site Preparation Contractors	12	7.6%
237110	Water and Sewer Line and Related Structures Construction	9	5.7%
238110	Poured Concrete Foundation and Structure Contractors	9	5.7%
238140	Masonry Contractors	9	5.7%
238990	All Other Specialty Trade Contractors	9	5.7%
238120	Structural Steel and Precast Concrete Contractors	8	5.1%
238130	Framing Contractors	8	5.1%
238220	Plumbing, Heating, and Air-Conditioning Contractors	8	5.1%
236220	Commercial and Institutional Building Construction	7	4.4%
238320	Painting and Wall Covering Contractors	6	3.8%
236118	Residential Remodelers	4	2.5%
238310	Drywall and Insulation Contractors	4	2.5%
236115	New Single-Family Housing Construction	3	1.9%
237990	Other Heavy and Civil Engineering	3	1.9%
236210	Industrial Building Construction	2	1.3%
237120	Oil and Gas Pipeline and Related Structures Construction	2	1.3%
237130	Power and Communication Line and Related Structures Construction	2	1.3%
238290	Other Building Equipment Contractors	2	1.3%
238170	Siding Contractors	1	0.6%
238390	Other Building Finishing Contractors	1	0.6%
		158	100.0%

Quick Fact:

OSHA received reports of **1,500 WORKER AMPUTATIONS** from January to July this year. This is **7 amputations** a day!



Top Construction Standard Violations During 2016

Of the 396 cases for the calendar year 2016 examined by CIRPC, 177 reported citations issued*. In the 177 cases there were 594 violations of OSHA standards. The average number of violations per case with citations issued was 3.36. 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 “Fall Protection” standard is the top violations for the year with 47 occurrences, followed by “Scaffolding” with 31 and “Ladders” with 25.

When comparing the running total of 2016 calendar year violations with OSHA’s Top 10 standards violated in Fiscal Year 2016 (per www.osha.gov), there are similarities. “Fall Protection”, “Scaffolding”, “Hazard Communication”, and “Ladders” appear on both CIRPC’s and OSHA’s list.

Top Standard Violations Reported

Rank	Std #	Description	# of Occurrences
1	1926.501	Fall Protection	47
2	1926.451	Scaffolding	31
3	1926.1053	Ladders	25
4	1904.39	Reporting Fatalities & Multiple Hospitalization Incidents	23
5	1926.502	Fall Protection Systems Criteria and Practices	22
T6	1926.21	Safety Training and Education	21
T6	5a1	General Duty Clause	21
8	1926.651	Excavation	19
9	1926.20	General Safety & Health Provisions	18
10	1926.503	Fall Protection Training	17
11	1926.454	Scaffold Training	15
12	1926.1412	Crane/Derrick Inspection	13
T13	1910.1200	Hazard Communication	11
T13	1926.100	Head Protection	11
T13	1926.1204	Confined Spaces in Construction	11
16	1926.652	Excavation, General Requirements for Protection Systems	10

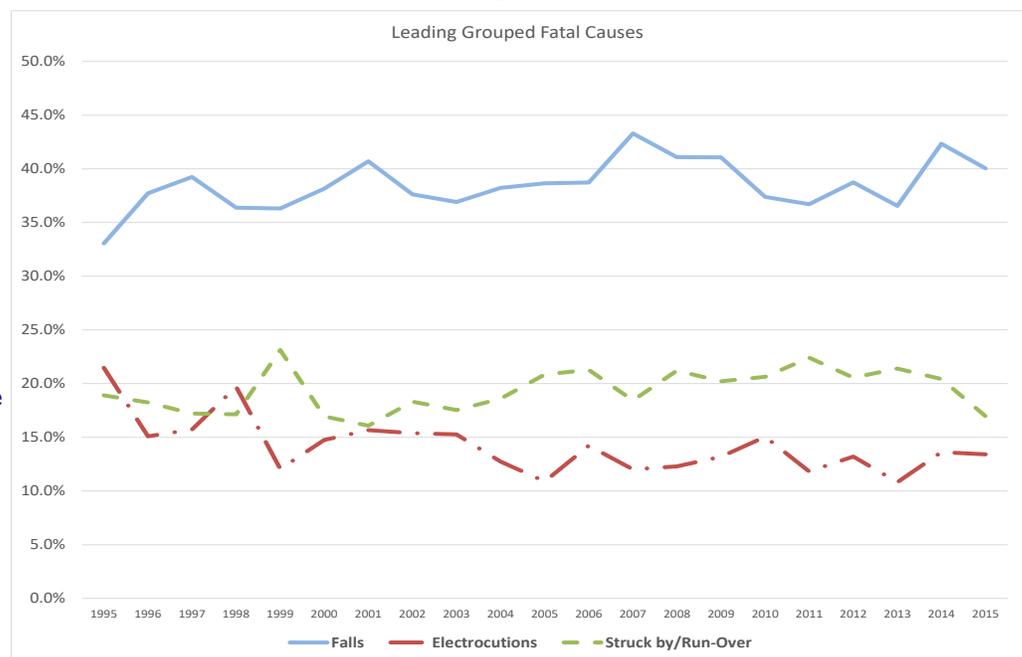
* - Inspectors have up to six months to issue citations on a fatality. As a result citations may not yet have been issued for some of these cases.

Trends in Fatalities - The Leading Causes

The leading fatal causes by grouped categories (All types of falls, all electrocutions, and all Struck by/Run-over events) reveal falls lead the way by a large margin.

The three grouped categories accounted for the majority of the fatal events for each year. They ranged from a low of 68.8% to a high of 76.4% of the events for a year.

The peak number of fall events occurred in 2007 with 310. The peak for electrocutions was 1995 (126 events) and struck by/Run-over 2006 (163 events).



* - The data is from CIRPC’s Annual Review of Fatal Events in Construction. The current and historical reviews can be found on CIRPC’s website (cirpc.haslam.utk.edu).

Summary of Fatal Events

Below is a random selection of 41 fatal event summaries from the 158 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: 1135189

Deceased had reached the roof and was in process of tying off when the tar paper he was standing on ripped, causing him to lose his balance and fall from the roof.

Inspection Number: 1116677

An employee working on the roof of a new, 3 story apartment building, without fall protection, stepped on a piece of metal (edging material) that was not secured. The metal and the employee slid off the roof to the ground below.

Inspection Number: 1117762

A construction company was replacing the metal roof and skylights of a building. There were four employees and the owner of the construction company. They were in the process of replacing the last skylight when the victim fell through the opening falling to the surface below.

Inspection Number: 1131331

The victim fell 20 feet to the ground while working on a roof. The victim was screwing down metal roofing sheets at the time of the fatal fall.

Inspection Number: 1128846

The employee was installing felt on the roof of the two-story section of a single family home. He lost his balance and attempted to jump from the roof. He caught his foot on the gutter and fell, head first, 22 - 25 feet, to concrete below.

Inspection Number: 1132672

An employee engaged in the cleaning of a roof in preparation for roof repair fell through a damaged section of the roof to the concrete floor below.

Inspection Number: 1118987

An employee working as a roofer was fatally injured when he fell approximately 29 feet through a skylight. The employer was performing roof vacuum activated as part of a roof replacement project. The employee was vacuuming the stone weather proofing material from the roof when he fell through an unprotected skylight. The employee was not wearing PPE at the time of the incident. The employee fell approximately 29 feet, 4 inches, to the floor on the inside of the building.

CATEGORY: OTHER FALL EVENTS

Inspection Number: 1138823

Employees were working on a pump jack scaffold with wooden poles. The wooden poles were constructed with 2x4's nailed together. One of the wooden poles snapped causing the employee to lose balance and fall 20 feet from the platform. No fall protection was being used resulting in the employee striking the paved driveway.

Inspection Number: 1136318

Employees were using scaffolding that moves up and down by crank. As they were lowering the scaffold, the sections were not lowered at the same speed. The decking, 2 x 10 lumber, became unlevel. One of the boards, most likely a toe board, was pushing the end guardrail out of its socket. An employee (the foreman) saw what was happening and turned to push the end guardrail back into the socket. A witness stated that he tripped on one of the boards and fell off of the scaffold.

Inspection Number: 1108834

Employee was hanging drywall on the ceiling of the 2nd floor with his brother. The victim was standing on a metal scaffolding (walk board) held up by a wooden 2X4. The wooden 2X4 broke which caused the victim to fall.

Summary of Fatal Events (Continued)

CATEGORY: OTHER FALL EVENTS (Continued)

Inspection Number: 1140413

The victim was working from a step ladder while utilizing a masonry drill. The victim lost his balance, fell, and struck his head on a rock below. He later passed away from the injuries from the fall.

Inspection Number: 1113169

The victim was working from a ladder on a two-tier scaffold platform. The ladder slid and the victim and ladder fell to the brick pavement below.

Inspection Number: 1126280

Two employees fell from ladders that were set-up on top of a welded frame scaffold platform 10 feet high. The employees were installing a light 24 feet above ground when the fall occurred.

Inspection Number: 1110148

A tree trimmer was performing tree trimming activities from an aerial lift. The hydraulic cylinder on the lift broke. The bucket crashed to the ground. The trimmer was reported as tied off, but still suffered serious injuries from the impact.

Inspection Number: 1108541

Two workers were in a boom supported elevated work platform working on the underside of a bridge and over an open roadway. The work platform was lowered into an oncoming lane of traffic and collided with a box truck. The victim, whose fall protection was not attached, was ejected from the work platform and was thrown approximately 50 feet horizontally landing on railroad tracks approximately 48 feet below. He died of his injuries at a local hospital.

Inspection Number: 1126809

An employee performing masonry work from a swing stage scaffold without a means of fall protection fell to his death. The scaffold was displaced when the roll of steel cable hoist line was caught in the wheels of a moving cement truck.

Inspection Number: 1117997

Employee was moving equipment to continue window blocking on an upper level of building, when he fell through an air duct chase hole approximately 15 feet to the basement level.

CATEGORY: ELECTROCUTIONS

Inspection Number: 1115725

An employee was found unresponsive in the water while performing marine/dock construction activities. It is believed the employee may have received an electric shock from an energized boat lift and then fell into the water.

Inspection Number: 1120030

The employees had set up the boom truck to service/replace the water pump at a residence. Adjacent to the truck was overhead distribution lines of an approximate 7,200 voltage. The employee had the boom raised in the air approximately 30 feet high. He then lowered the boom onto the energized power lines. The truck was electrified and the tires and the control module that he was holding caught fire. The employee was observed by bystanders to be stumbling as he was walking away from the truck and collapsed near the front tire of the truck.

Inspection Number: 1133046

Worker was guiding a load from a mobile crane by grasping the ball of the crane's hook when the crane contacted an energized overhead electrical line.

Inspection Number: 1124966

Employee was attempting to pull out a feathered piece of rebar on the bridge and the rebar accidentally made contact with electrical wire about 15 feet away.

Summary of Fatal Events (Continued)

CATEGORY: ELECTROCUTIONS (continued)

Inspection Number: 1119897

Employee was repairing a sump pump when he received an electrical shock of 240 volts. He was standing on an aluminum ladder that was standing in approximately 4 inches of water.

Inspection Number: 1122477

The victim was an electrician, removing conduit from the ceiling in a hallway. He was equipped with his electrical voltage meter, and his tool belt. As he removed the conduit, he handed it to his helper and the helper would walk approximately 50 feet, throw the conduit in the dumpster and come back. There were no witnesses to the event, but it is believed the victim came across an energize section of conduit and was electrocuted.

CATEGORY: HEAT RELATED

Inspection Number: 1115047

The victim was complaining that he was not feeling well. The foreman told the victim to take a rest in the air conditioned work trailer. Later, the foreman sent another employee to check on the victim. He was found unresponsive in a vehicle. Emergency services was contacted and he was transported to a local hospital where he passed away.

Inspection Number: 1126511

An employee was working on a roof and stated he was feeling dizzy. He left the roof and was walking the job site and dropped to the ground. He was taken to a local hospital for treatment and was transferred to a University Medical Center where he passed away. It is believed to be a heat related death.

Inspection Number: 1129835

An employee was conducting minor repairs on the tarp of his truck when he stopped and sat down on the steps. He reported to the supervisor that wasn't feeling well and wanted to go home. The employee was preparing to leave for the day when he stopped in front of the fan and laid down on the floor. An ambulance was called and he was transported to the hospital. He passed away at the hospital from what was believed to be heat related reasons.

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

Inspection Number: 1117058

The contractor was paving a road and had traffic control set up. Employees moved the barricades to allow wide-load trucks into the area and then placed barricades back in required positions and walked back to the paver. Another truck was backing up towards the paver and struck one of the employees. Employee was transported to hospital where he passed away.

Inspection Number: 1141710

Employee entered a barricaded area where a crane was operating. The victim was in the crane operator's blind spot. The crane operator began rotating the crane and the body of the crane pushed the victim and broke through the guardrail system. The victim fell approximately 21 ft. to the ground surface below.

Inspection Number: 1139176

Employee was operating an aerial lift when he became caught between the roof of the structure and the lift he was working from, fatally crushing him.

Inspection Number: 1117283

The employee was operating a tractor when he got too close to the bank and the tractor rolled over, pinning him under the tractor.

Summary of Fatal Events (Continued)

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

Inspection Number: 1124822

Victim was laying on the ground on his back in front of the right front tire of the dump truck, attempting to remove a tow strap from the front axle. The driver of the dump truck was not aware that the victim was under the dump truck when he drove over the victim.

Inspection Number: 1132562

A speeding vehicle being pursued by local police through multiple counties, entered the work zone at a high rate of speed, driving erratically. The driver left the roadway, entered the median, lost control of the vehicle and crossed into the construction area. The vehicle struck the victim in the work zone.

CATEGORY: OTHER FATALITY CAUSES

Inspection Number: 1133136

Employee climbed down into a 24 foot deep manhole and lost consciousness. A temporary employee at the site climbed down to assist and also lost consciousness. The first victim passed away. The second victim was hospitalized for observation.

Inspection Number: 1118192

The victim, along with two other employees were making repairs and modifications to a private boat dock. The victim was painting an angle iron frame that holds foam for the floating walkway of the dock. Two other employees saw paint in the water and started looking for the victim. He was found in approximately 10 feet of water below the edge of the dock.

Inspection Number: 1122222

An employee was attempting to remove an oxygen/acetylene tank/welding system from the bed of a pick-up truck. It appears as though the employee was attempting to adjust the chains on the tanks to get a better lift. The forklift slid off the dock into the bed of the truck, fatally pinning the employee between the forks/mast and the tanks.

Inspection Number: 1144621

Employee was cutting overhead heat/air duct work while standing on a 10 foot ladder. When the employee cut away a piece of ductwork, it swung down knocking the ladder from under the employee who then fell to the concrete floor striking his head.

Inspection Number: 1116261

Employee was operating a cut off saw and was cutting a ceramic drain pipe. While cutting, either the ceramic pipe, the saw blade, or a combination of both caused a kickback and he suffered a fatal laceration of the neck.

Inspection Number: 1123567

An employee had entered excavation to rig trench boxes that were in the work area. One box had been removed, and the crew was ready to remove the last one. The victim entered the work area to tie off the last box, when the walls of the excavation began to crumble and slide into the area where the employee was. The material struck the employee, causing him to stumble, and then be buried by the debris.

Inspection Number: 1138200

A construction worker was sent to the hospital after being stung by bees. He later passed away from his injuries.

Inspection Number: 1113480

An employee was working on top of a roof when he was struck by lighting. The employee died from this injury.

Inspection Number: 1142085

Two employees were in the process of demolishing wooden stairways leading into a quad-plex when the retaining wall to which the stairs were attached collapsed, killing one of the employees.

Notes from **CIRPC**

Join the
National Safety
Stand-Down
To Prevent Falls in Construction

MAY 8-12, 2017

For more information on the Stand-Down go to <https://www.osha.gov/StopFallsStandDown/>

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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.