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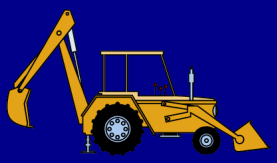
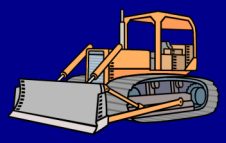
Construction Fatality Digest





JULY—SEPTEMBER 2015 QUARTERLY REPORT

Topics of Interest:

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

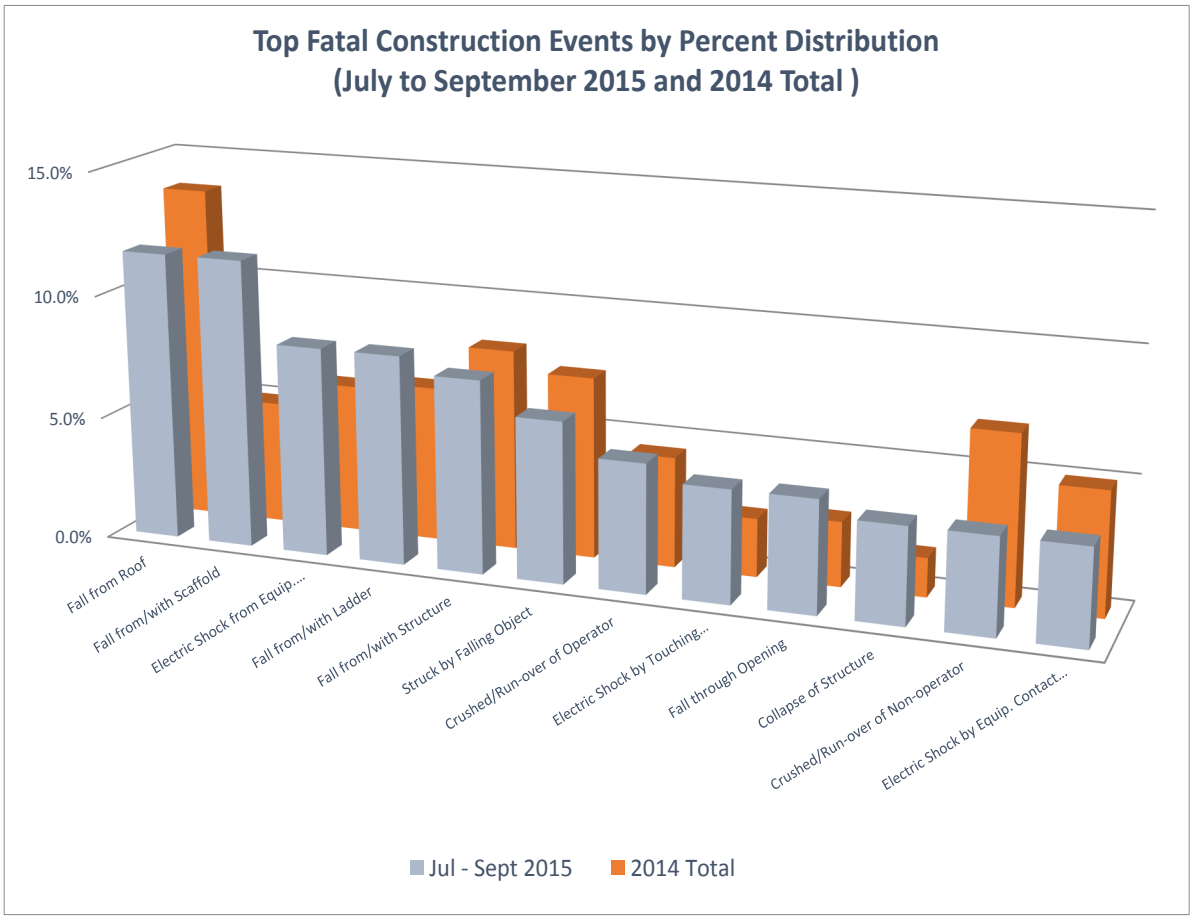
INSIDE THIS ISSUE:

Roof and Scaffold Falls Top Fatality Categories

The historically most significant fall category, "Fall from Roof", again led all categories with 11.7% of the 154 events and was similar to the 12.7% of these events recorded in the second quarter. In a departure from the norm, however, "Fall from/with Scaffold" tied Roof Falls as the top fatality cause with 18 events (11.7%). In the two previous quarters combined, Scaffold Falls constituted only 9 events (4.0%).

All types of falls (roof, ladder, structure, opening, etc.) accounted for 46.1% (71 events) in the third quarter of 2015. This is up from the previous quarter (37.3%) but only slightly up from the first quarter of 2015 (43.9%). "Electric Shock from Equipment Installation/Tool Use" and "Fall from/with Ladder" both with 8.4% round out the leading causes for the quarter followed by "Fall from/with Structure" with 7.8%.

Two areas reflected significant differences in reported percentages from 2014: "Fall from/with Scaffold" increased from 5.0% to 11.7% and and "Crushed Run-over of Non-operator" decreased from 6.8% to 3.9%.



Regional Breakdown

"Of the 154 fatal events 64.9% (100 events) were reported from Federal OSHA states, while 35.1% (54 events) were from State Plan States."

A total of 154 events were reported from the regions in the third quarter of 2015. Of these, 17.5% came from region 4 and 5 (27 events for each region), 23 came from region 6, and 22 from region 9.

Of the 154 fatal events 64.9% (100 events) were reported from Federal OSHA states, while 35.1% (54 events) were in State Plan States.

The breakdown by state has Texas with the greatest number of reports, 21 (13.6%), followed by California with 16 (10.4%), and 10 events (6.5%) for Illinois.

Fatal Events Reported by Region

July to September 2015

Region	# of Cases	Percent
1	6	3.9%
2	15	9.7%
3	14	9.1%
4	27	17.5%
5	27	17.5%
6	23	14.9%
7	4	2.6%
8	12	7.8%
9	22	14.3%
10	4	2.6%
Total	154	100.0%

Fatal Events by NAICS Code

A breakdown of reported fatal events by NAICS code shows "Electrical Contractors" at the top with 11.7% (18 events) of the 154 events. Other top codes are "Roofing Contractors" with 11.0% (17 events), "Commercial and Industrial Building Construction" contractors with 10.4% (16 events) and "Highway, Street, and Bridge Construction" contractors with 8.4% (13 events).

Fatal Events by NAICS Code

Code	Description	# of Cases	Percent
238210	Electrical Contractors	18	11.7%
238160	Roofing Contractors	17	11.0%
236220	Commercial and Institutional Building Construction	16	10.4%
237310	Highway, Street, and Bridge Construction	13	8.4%
236118	Residential Remodelers	10	6.5%
238220	Plumbing, Heating, and Air-Conditioning Contractors	9	5.8%
237110	Water and Sewer Line and Related Structures Construction	8	5.2%
238990	All Other Specialty Trade Contractors	8	5.2%
238910	Site Preparation Contractors	7	4.5%
238140	Masonry Contractors	6	3.9%
236115	New Single-Family Housing Construction	5	3.2%
238130	Framing Contractors	5	3.2%
238310	Drywall and Insulation Contractors	4	2.6%
238320	Painting and Wall Covering Contractors	4	2.6%
236116	New Multifamily Housing Construction	3	1.9%
238340	Tile and Terrazzo Contractors	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%
238110	Poured Concrete Foundation and Structure Contractors	2	1.3%
238120	Structural Steel and Precast Concrete Contractors	2	1.3%
238190	Other Foundation, Structure, and Building Exterior Contractors	2	1.3%
238290	Other Building Equipment Contractors	2	1.3%
238350	Finish Carpentry Contractors	2	1.3%
237210	Land Subdivision	1	0.6%
238390	Other Building Finishing Contractors	1	0.6%
		154	100.0%

Top Construction Standard Violations

Of the 378 cases for the first three quarters of 2015 examined by CIRPC, 108 reported citations issued*. In the 108 cases there were 350 violations of OSHA standards. The average number of violations per case with citations issued was 3.24. For the two previous calendar year (CY2013) and (CY2014) the average number of violations per case was 3.86 and 3.24.

The "Fall Protection" standard is the top violated standard for the year with 32 occurrences. "General Duty Clause" accounted for 21 violations followed by "Reporting Fatalities…" with 18 issued.

When comparing the running total of 2015 calendar year violations with OSHA's Top 10 standards violated in FY2015 (per www.osha.gov), there are similarities. "Fall Protection", "Hazard Communication", "Scaffolding", "Lockout/Tagout", and "Ladders" appear on both CIRPC's and OSHA's list.

Top Standard Violations Reported

(During Calendar Year 2015)

Rank	Std #	Description	# of Occurrences
1	1926.501	Fall Protection	32
2	5a1	General Duty Clause	21
3	1904.39	Reporting Fatalities & Multiple Hospitalization Incidents	18
T4	1910.147	The Control of Hazardous Energy (Lockout/Tagout)	16
T4	1926.20	General Safety & Health Provisions	16
6	1926.21	Safety Training and Education	16
7	1926.503	Fall Protection Training	14
8	1926.1053	Ladders	12
9	1926.451	Scaffolding	9
10	1910.269	Electric Power Generation, Transmission, Distribution	8
T11	1926.416	Electrical, General Requirements	7
T11	1926.454	Scaffold Training	7
T11	1926.651	Excavation	7
14	1926.100	Head Protection	6
T15	1910.1200	Hazard Communication	5
T15	1926.1060	Stairways and Ladders - Training Requirements	5
T15	1926.50	Medical Services and First Aid	5
t15	1926.502	Fall Protection Systems Criteria and Practices	5

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

Onboarding Construction Workers: Advantages in Retention and Safety

Smart firms look for every opportunity to improve safety. Learn more about how to create a safer jobsite and improve employee retention below.

How did you feel on the first day of your current job? Nervous, uncomfortable, unsure of the formal and informal norms. Despite the tough façade, construction workers have the same issues. Progressive firms provide a structured socialization process to help the 'outsiders' become 'insiders'. This organizational socialization, called 'onboarding', is proven and well-documented in the human resources literature to relieve anxiety, increase productivity, and increase retention (Bauer, 2010) (The Workforce Institute at Kronos, 2010). Increased retention produces a more experienced workforce that correlates with a safer workforce (Hinze, 1978) (Levitt & Samelson, 1993).

Sometimes reserved for salaried workers, onboarding can also benefit the hourly workforce and be implemented by even the smallest companies. Onboarding is more than basic job familiarization and receiving briefing on company policies on the first day. Best practices for a structured process revolve around the 'connection' process starting on day one and continuing for weeks or months. Once employees feel connected, they are more likely to understand their role, the firm's expectations, and the core organizational values. Best practices for onboarding involve an integrated approach including peers, supervisors, and management. Well-trained foremen with people skills are crucial to the process.

As construction continues to recover from the Great Recession, firms are reporting worker shortages that are expected to continue for the foreseeable future (Wilkins, 2014). This forecast makes improved retention through onboarding a smart business decision. The safety benefits accrued through onboarding make it an even smarter decision.

CIRPC's complete onboarding report can be found at http://cirpc.haslam.utk.edu/Research/documents/OnboardingConstrWorkers.pdf

Summary of Fatal Events

Below is a random selection of the fatal event summaries from the 154 cases reported for the quarter. These narratives are taken directly, with only minor editing, from the reports filed by the CSHO's.

CATEGORY: ROOF FALLS

Inspection Number: 1016441
An employee was working on a flat roof of new commercial construction. He was prepping the remaining 1/3 of roof for laying insulation and membrane. A sheet of 4 by 8 foot OSB was laying adjacent to the east building perimeter. The OSB covered an approximate 3.5 by 6 foot hole in the steel decking and was not secured or marked. No direct eye witness. It is believed he lifted the OSB and fell 15 feet through the hole.

Inspection Number: 1009129
While carrying three sheets of 4' x 8' x 3/8" fiber insulation board the victim fell from the roof. No fall protection system was in use in that area of the roof at the time and fall height is approximately 40' from eave to ground.

Inspection Number: 1007149
The victim was performing work on existing air conditioning units on the roof, when he fell through an existing skylight. The employee fell 15 feet to the surface below.

Inspection Number: 1002858
An employee appears to have fallen approximately 10 feet from a residential roof he was working on. There were no witnesses to the event. He was found by his supervisor on the patio.

Inspection Number: 1003401
A roofer fell from a 30 foot building while installing metal roofing. He was wearing fall protection, but had not tied off.

CATEGORY: OTHER FALL EVENTS

Inspection Number: 1024943
An employee was performing tie beam work (rough carpentry) while standing on the 2nd step of an A-frame ladder. The employee lost his balance while stripping a section of the beam's formwork and fell approximately 2 feet onto ground level fatally striking his head on the concrete.

Inspection Number: 1000221
The victim was nailing bracing to a wooden truss for a new chicken house. The victim lost his balance and fell about 15 feet. He was not using any fall protection.

Inspection Number: 1006955
The victim was hired by a subcontractor, to install the soffit and fascia on a newly constructed home. He was working on single staged, "V shaped" scaffolding, approximately 6 feet up when he backed off the scaffolding and fell to the concrete below.

Inspection Number: 1011333
An employee was fatally wounded when he struck his head on the pavement after being ejected from the basket of an aerial lift that tipped over backwards. The basket was approximately 45 feet above the ground when the machine tipped.

Inspection Number: 1006217
A worker was operating an aerial lift on uneven terrain. This caused the aerial lift to overturn and eject the worker from the basket.

Summary of Fatal Events (Continued)

CATEGORY: OTHER FALL EVENTS (Continued)

Inspection Number: 1015502
Employee was feeding a hose out of a fourth floor picture window opening. The employee slipped on trash that was piled up, due to poor housekeeping, near the opening. He broke through the guardrail and fell 39 feet.

Inspection Number: 1010747
Three employees were replacing the roof on a residential house. All of the employees were wearing fall protection. At approximately 11:00 am, one employee removed his harness and started walking across the roof to go talk to another employee. The roof gave way and the employee fell approximately 17 feet to the ground, struck his head on a 6-inch cinder block wall, and died due to sustained injuries.

Inspection Number: 1001978
Three employees were moving composite floor decking into position on top of support beams. Two employees were positioned at opposite ends of the decking and one was holding the decking in the middle. One of the employees at the end of the decking had to let go because he was getting too close to the edge. When he let go, the employee holding the middle of the decking sheet could not handle the weight by himself. He lost his balance and fell more than 13 feet from the sheet of decking he was standing on.

Inspection Number: 1004862
The victim was standing on a section of formwork that measured 29" by 59" preparing to install the safety cable. The formwork gave way when he was walking across it and he fell approximately 75 feet to the ground level.

Inspection Number: 1023821
At a new residential project, an employee working approximately 19 feet from ground level without fall protection equipment, was sitting on a tie-beam attempting to drill a hole on the interior side of the cement wall. As the employee reached over the trusses to have a better angle to drill the hole, he lost his balance and fell to the ground fatally striking truss members and his head on the cement slab.

Inspection Number: 1004455
The employee was cleaning/painting on top of a metal trellis when he fatally fell 30 feet to the ground below. The victim was wearing a harness with lanyard, but was not tied off.

Inspection Number: 998525
The victim fell from the 2nd floor to the 1st floor. He had fall protection (a harness), but it was not attached. The victim apparently lost his balance and fell through a hole in the flooring. There were no witnesses to the event.

Inspection Number: 1021614
An employee was working on his knees from a sidewalk while caulking large grates. He'd lift the grate, caulk, and then put the grate back in place. As he loosened the anchor bolts to slide another section of the grate back, the gate stuck in the existing caulking. When he pulled on it harder, it came loose suddenly. His fingers became stuck in the grate and he lost his balance and was pulled into the grate opening falling 25 – 30 feet.

Inspection Number: 1013942
A construction worker fell four stories while working at a hotel development site. The victim had reportedly been working without a harness on the fourth floor of the rising building when he fell through a hole designated as an elevator shaft. The victim was walking across wooden boards bridging the gap over the elevator shaft when they collapsed, according to witnesses.

Inspection Number: 1001379
The victim fell through an opening from an upper level to a lower level. The victim had been installing stairs on a multi-family residential structure.

Summary of Fatal Events (Continued)

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

Inspection Number: 1009738
An employee was assisting and spotting for dump truck deliveries that were occurring at the work site. The employee was struck from behind and backed over by a motor grader working in the same area.

Inspection Number: 1010174
Employee was stepping down off of a milling machine while it was in motion. Employee either slipped or fell to the ground and was run over by one of the tracks of the machine.

Inspection Number: 999537
The victim was working inside an excavation, when a backhoe slid/fell into the excavation. The victim was crushed by the excavator.

Inspection Number: 1007514
A dump truck driver was unloading asphalt debris. After dumping the asphalt debris, with the dump bed still tilted in the dump position, the driver walked to the back of the dump truck to visually check to ensure the bed was clear of all debris. The driver walked too close to the swinging tailgate and was fatally struck in the head.

Inspection Number: 1003426
The victim was working in an excavation installing a drainage system. A tractor operator was emptying a load of piping into the excavation, when the tractor slid/fell into the excavation. The tractor landed on the victim fatally injuring him.

Inspection Number: 1004498
A four man crew was riding inside a trailer loaded with highway barricade materials being towed by a signal board truck. The truck was driving on the side of the road when it came into contact with an abandoned car. The truck's left rear side made contact with the abandoned car as the driver swerved to the right causing the trailer to strike the abandoned car and jack knife. The force of the impact catapulted an employee out of the trailer fatality injuring him.

Inspection Number: 998025
Victim was driving an excavator along the bank of the river (not on a road), traveling to the location where he was to excavate. He drove too close to the edge and the excavator topped and rolled over submerging the cabin in the river.

Inspection Number: 1001830
The victim was operating a soil compactor on a decline when the machine tipped over and ejected him. The victim was fatally crushed by the machine.

Inspection Number: 1012835
The victim was doing repairs on a skid steer loader with the attachment boom elevated when the boom suddenly fell and pinned the victim. He was crushed between the boom and the body of the skid steer.

Inspection Number: 1001901
The victim was vacuuming steel grit off the deck of a suspended platform he had been painting a bridge from. A tow boat veered out of the navigational water zone and struck the suspended platform. The victim fell from the platform and was fatally injured.

CATEGORY: ELECTROCUTIONS

Inspection Number: 1010496
An employee of a waterproofing company was working from a scaffold 4 frames high. The victim was working alone. Witnesses stated they saw him accidently touch a power line with his head. He was shocked and fell from the scaffold.

Summary of Fatal Events (Continued)

CATEGORY: ELECTROCUTIONS (continued)

Inspection Number: 1015133
Three employees were lifting a 40 foot aluminum ladder to place it against an exterior wall of a building to gain access to the roof. The employees lost balance of the ladder, it fell backwards striking a 7,200 volt power line that allowed electrical current to flow through the three employees. Two employees received serious injuries and the third was electrocuted.

Inspection Number: 1009637
Two employees were at a residential site to pick up a laddervator (a ladder mounted hoisting device for raising shingle bundles to the roof). The laddervator was reportedly lent to a sub-contractor who installed the shingles. Witnesses stated that while moving the device they came within 5 feet from the power lines and the ladder was electrified by an arc. Both employees received injuries, one fatal.

Inspection Number: 1018227
An employee who was performing roadwork along a state route was electrocuted when the truck crane made contact with the overhead electrical wires. The deceased was guiding a steel casing pipe when contact with the power line was made.

Inspection Number: 1023951
Employees were operating an excavator when the boom of the excavator contacted a power line. The power line broke and fell to the ground. The employees working near the falling power line were electrocuted. Employees 1 and 2 were killed, and employee 3 was hospitalized.

CATEGORY: OTHER FATALITY CAUSES

Inspection Number: 1005751
The victim was deglazing a bathtub at a residence. He was using acids while deglazing, possibly hydrofluoric acid and methylene chloride. He was found later in the day hunched over the tub and unconscious. The victim asphyxiated from the gases.

Inspection Number: 998575
The victim and a co-worker were inside a horizontal pipeline. They traveled about 60 feet horizontally in the pipe. At this point, the victim was lowered into a vertical pipe, about 24 feet deep, by the co-worker. Co-worker heard the victim call for help as he was lowering him. He then tried to pull him back up, but he had asphyxiated.

Inspection Number: 318000692
Twenty two sheets of 4 x 8-foot plywood had been placed on the top floor trusses on the upper level of a garage addition. The victim and a helper had previously attached four trusses to top plates of the addition. According to the boom truck operator, after placing the sheets of plywood at a diagonal angle on the trusses he observed the trusses starting to lean inward into the addition. This caused the victim to fall from his scaffold and land on his back on the concrete floor. The plywood, 19 sheets in all, then began sliding off the collapsed trusses down onto the victim.

Inspection Number: 1017304
A construction worker died during a pour of an elevated concrete floor at a restaurant construction site. He was standing underneath the floor as other workers were pouring concrete when the floor collapsed from the weight of the concrete.

Inspection Number: 1006518
Employees were demolishing a gazebo at an established residence for remodeling purposes. The employees removed the walls of the structure, leaving just the posts to support the constructed roof. The victim was pulling on tension cables and the structure shifted and the roof collapsed onto the victim, crushing him.

Inspection Number: 1011757
An employee collapsed and suffered seizures following his performance of demolition work at a construction site on a day when ambient temperature reached 91 degrees F. He was pronounced dead at the hospital shortly thereafter.

CATEGORY: OTHER FATALITY CAUSES (continued)

Inspection Number: 1012028
Employee was cutting pipe, using a cut-off saw (demolition saw), for a sewer line. The saw kicked back during cutting operation striking the employee in the neck and cutting his jugular vein.

Inspection Number: 1023114
A crew was working in a trench approximately 11 feet in depth replacing water pipes. At the time of the accident, the employee was using a chop saw to cut an 8 inch in diameter, 3 feet in length iron pipe. The crew was making a T section into the pipe to install a new fire hydrant. It appears the pipe was cut through on the top side but not on the bottom. The victim was observed cutting and seconds later observed holding his throat. The actual event was not witnessed. When the saw was removed from the trench, a rock was stuck to the blade. It was evident that the saw hung up and kicked back fatally striking the worker in the neck.

Inspection Number: 1006348
The victim fell when the asphalt and ground collapsed and sloughed off into an excavation. This also caused a rupture in a 10 inch water line. The excavation subsequently filled with water and the trapped victim asphyxiated.

Inspection Number: 1007918
An employee died due to injuries sustained from a trench slough off. The trench was approximately 11.5 foot deep, 9 feet wide and 72 feet long. The employee was using a Vibrating Plate Compactor (tapper) to compact stone around a 42 inch culvert concrete pipe. No cave in protection was utilized. The vibration from the tapper and excavator, caused the side of the trench below the road to slough off and fall onto the employee.

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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.