



CONSTRUCTION
INDUSTRY RESEARCH
AND POLICY CENTER
VOL. 3 NO. 2

Construction Fatality Digest



APRIL—JUNE 2014

QUARTERLY REPORT

Topics of Interest:

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

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Fall Fatalities Account for Almost Half of All Fatalities

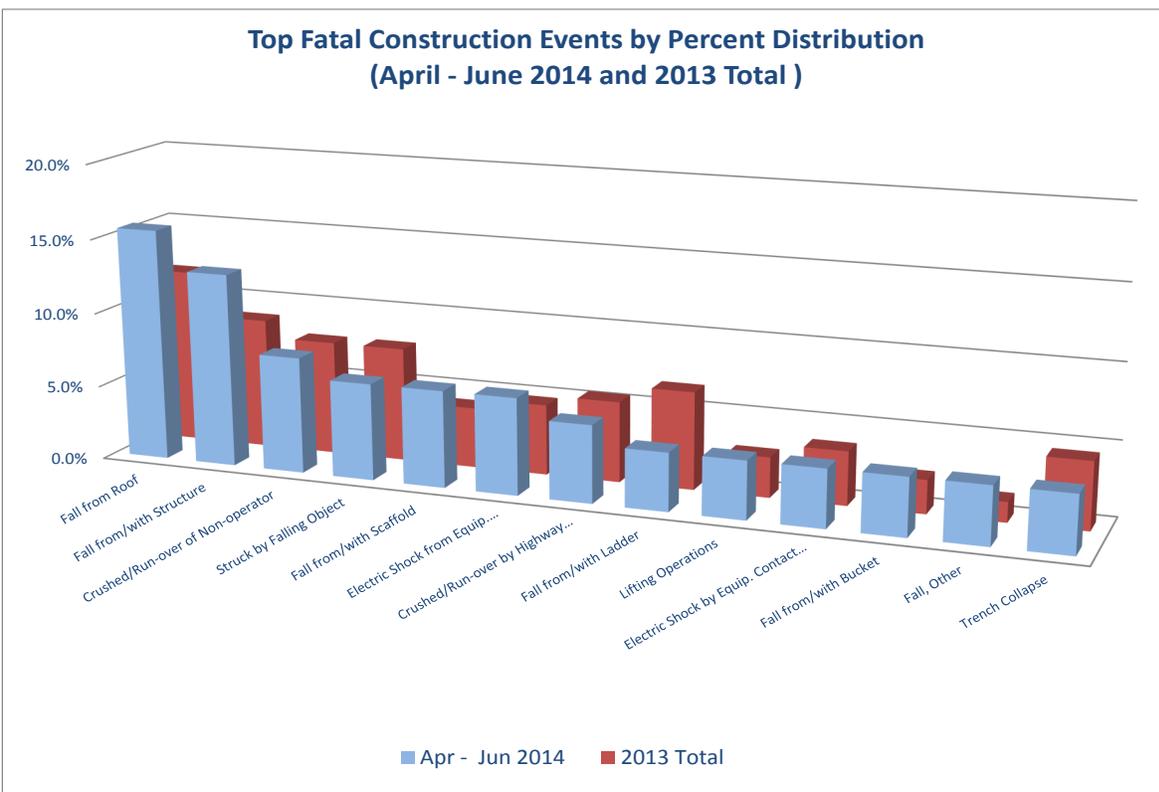
“Fall from Roof” led all fatal construction events reported to CIRPC for the second quarter of 2014. Of the 77 fatal events reported for the April to June period, “Fall from Roof” accounted for 15.6% (12 events) of the total. “Fall from Roof” has led all fatal construction events reported to CIRPC for the first two quarters of 2014. Rounding out the leading fatality causes for the quarter are “Fall from/with Structure” at 13.0% (10 events) followed by “Crushed/Run-over of Non-operator” with 7.8% (6 events), and “Struck by Falling Object”, “Fall from/with Scaffold”, and “Electric Shock from Equipment installation/tool use” each with 6.5% (5 events).

All types of falls (ladder, roof, vehicle, scaffold, bucket, structure, platform, and opening) accounted for 49.4% (38 events). For 2013, “Fall from Roof” was 11.7% (52 events) and all types of falls were 37.2% (165 events) of the total.

When comparing the ranking totals for 2013 with those for the current quarter, there is little variation. “Fall from Roof” increased from 11.7% of the events to 15.6% and “Fall from/with Structure” increased from 8.8% to 13.0%, whereas “Fall from/with Ladder” decreased from 6.5% to 3.9%.

An alarming number of heart attacks (82) were reported for the year 2013, far exceeding the recorded events for the year 2012 (30). This trend is continuing into 2014 with 33 heart attacks in the first quarter of 2014, although only 6 were reported for the second quarter. It should also be noted, that heart attacks are not included in the 77 fatal events analyzed here.

**Top Fatal Construction Events by Percent Distribution
(April - June 2014 and 2013 Total)**



Regional Breakdown

“Of the 77 fatal events 66.2% (51 events) were in Federal OSHA states, while 33.8% (26 events) were in State Plan States.”

A total of 77 events were reported from the regions in the second quarter of 2014. Of these, 26% came from region 4 (20 events), 18 came from region 6, and 8 from region 2.

Of the 77 fatal events 66.2% (51 events) were in Federal OSHA states, while 33.8% (26 events) were in State Plan States.

The breakdown by state has Texas with the greatest number of events with 14 (18.2%), followed by Florida with 8 (10.4%), and New York with 6 (7.8%).

Fatal Events by Region

April to June 2014		
Region	# of Cases	Percent
1	4	5.2%
2	8	10.4%
3	6	7.8%
4	20	26.0%
5	7	9.1%
6	18	23.4%
7	4	5.2%
8	3	3.9%
9	6	7.8%
10	1	1.3%
Total	77	100.0%

Fatal Events by NAICS Code

A breakdown of fatal events by NAICS code shows “Roofing Contractors” at the top with 16.9% (13 events) of the total 77 events. Other top codes are “Highway, Street, and Bridge Construction” contractors with 14.3% (11 events), “Electrical Contractors” with 11.7% (9 events), and “Site Preparation Contractors” with 11.7% (9 events). This is the same top four, in the same order, for both quarters of 2014.

Fatal Events by NAICS Code

Code	Description	# of Cases	Percent
238160	Roofing Contractors	13	16.9%
237310	Highway, Street, and Bridge Construction	11	14.3%
238210	Electrical Contractors	9	11.7%
238910	Site Preparation Contractors	9	11.7%
238310	Drywall and Insulation Contractors	4	5.2%
236220	Commercial and Institutional Building Construction	3	3.9%
237110	Water and Sewer Line and Related Structures Construction	3	3.9%
238110	Poured Concrete Foundation and Structure Contractors	3	3.9%
238130	Framing Contractors	3	3.9%
238140	Masonry Contractors	3	3.9%
238990	All Other Specialty Trade Contractors	3	3.9%
238220	Plumbing, Heating, and Air-Conditioning Contractors	2	2.6%
238320	Painting and Wall Covering Contractors	2	2.6%
236115	New Single-Family Housing Construction	1	1.3%
236118	Residential Remodelers	1	1.3%
236210	Land Subdivision	1	1.3%
237120	Oil and Gas Pipeline and Related Structures Construction	1	1.3%
237130	Power and Communication Line and Related Structures Construction	1	1.3%
238120	Structural Steel and Precast Concrete Contractors	1	1.3%
238150	Glass and Glazing Contractors	1	1.3%
238290	Other Building Equipment Contractors	1	1.3%
238390	Other Building Finishing Contractors	1	1.3%
		77	100.0%



Top Construction Standard Violations

Of the 158 cases in the first two quarters of 2014 examined by CIRPC, 114 reported citations issued*. In the 114 cases there were 349 violations of OSHA standards. The average number of violations per case with citations issued was 3.06. For the previous year (CY2013) the average number of violations per case was 3.86.

The “General Duty Clause” standard is the top violated standard for the year to date with 25 occurrences. “Reporting Fatalities & Multiple Hospitalization Incidents” accounted for 24 violations followed by “Powered Industrial Trucks” with 23 issued.

When comparing the running total of 2014 violations with OSHA’s Top 10 standards violated in FY2013 (per www.osha.gov), there are similarities and differences. Five of the most frequently violated OSHA standards are also found on the quarterly report list (“Fall Protection”, “Hazard Communication”, and “Scaffolding”, “Powered Industrial Trucks”, and “Lockout/Tagout”).

Top Standard Violations Reported During CY 2014

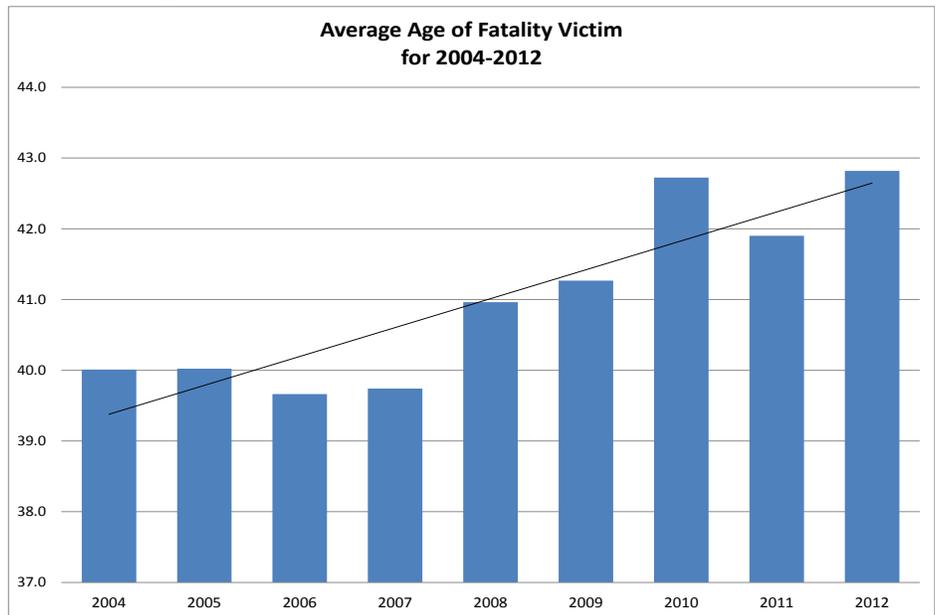
Rank	Std #	Description	# of Occurrences
1	5a1	General Duty Clause	25
2	1904.39	Reporting Fatalities & Multiple Hospitalization Incidents	24
3	1910.178	Powered Industrial Trucks	23
T4	1910.1200	Hazard Communication	16
T4	1910.147	The Control of Hazardous Energy (Lockout/Tagout)	16
T4	1926.501	Fall Protection	16
7	1910.266	Logging Operations	13
T8	1910.132	PPE - General Requirements	12
T8	1926.451	Scaffolding	12
T10	1910.333	Electrical Safe Work Practices	8
T10	1926.21	Safety Training and Education	8
T12	1910.23	Guarding Floor & Wall Openings	7
T12	1910.269	Electric Power Generation, Transmission, Distribution	7
T14	1910.146	Confined Spaces	5
T14	1926.1053	Ladders	5
T14	1926.1412	Crane/Derrick Inspection	5
T14	1926.454	Scaffold Training	5
T14	1926.503	Fall Protection Training	5

* Inspectors have up to six months to issue and finalize citations in fatality investigations.

Trends in Fatalities - Age of the Victims

There appears to be a significant increase in reported fatal heart attacks on construction sites. Unhealthy lifestyles may be a main contributor of heart attacks, but another important factor may be age.

The chart to the right plots the age of the reported fatality victims for years 2004 to 2012. The chart shows how the age of the victim has been increasing; going from 40.0 years to just under 43. For the current year (2014) the age has increased again to 44.0. The role played by age in construction site fatalities may bear further study.



Data from CIRPC’s Annual Fatality Report. Reports can be found at <http://cirpc.bus.utk.edu/FatalityReports.asp>

Summary of Fatal Events

Below is a selection of the fatal event summaries from the 77 cases reported for the quarter.

CATEGORY: ROOF FALLS

Inspection # - 317772812

An employee removing tar paper and nails from the roof of a single story home was fatally injured when he fell off the roof and landed on a concrete floor nine feet below.

Inspection # - 317714376

Victim was standing between the drip edge and a dormer on a 10/12 pitch roof after caulking nail heads on the dormer. A foam cushion, approximately 30- x 30- x 6-inches, was lying at the victim's feet. When the victim turned to step toward a ladder his right foot came in contact with the foam cushion. The victim over corrected, lost his balance, and fell an estimated 13 feet to the lower level.

Inspection # - 965738

A roofer was laying out safety cabling and marking skylights that were to be covered with plywood, when he slipped and fell through one of the skylights.

CATEGORY: STRUCK BY FALLING OBJECT/PROJECTILE

Inspection # - 317452951

Employee was working/ standing on top plate wall installing a truss. The truss was caught by the wind and hit the victim in the shoulder causing him to fall. Victim hit the ground and got up and was walking around. Another employee called emergency medical services. The victim was transported to the hospital where he later passed away from internal injuries.

Inspection # - 317685832

Three workers were engaged in clearing trees from a new residential subdivision lot. A white oak tree, approximately 30 feet tall, was standing about 5 feet from a red oak tree that was approximately 70 feet tall. Employee #1 used his Caterpillar excavator and dug around the roots of the white oak tree and used the excavator's bucket to push the tree down. He then swung the bucket 90 degrees and started scraping up brush nearby. Employee #2 used his Volvo excavator to pick up the white oak and the victim used his chain saw to cut the tree above its root ball and then walked south to the opposite end of the tree and topped it. Next, he walked further south, approximately 30 feet, and started delimiting branches from the top of a hickory tree that had been pushed down previously. The red oak tree suddenly uprooted and fell to the ground, striking the right side of victim's head. Roots of red oak were disturbed when the white oak was removed. Wet ground from a rainfall of approximately two inches and a wind speed of 15 mph all aided in the tree falling.

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

Inspection # - 317752905

An employee was operating an articulated hauler and was dumping dirt when he lost control and the hauler rolled down an embankment approximately 100 feet, fatally injuring him.

Inspection # - 317366193

Two dump truck drivers were fatally injured when one driver veered into the path of the other. They collided head-on causing both trucks to catch fire and be engulfed in flames.

Summary of Fatal Events (Continued)

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

Inspection # - 317745362

The victim was standing at the back of a roller trying to start the motor by crossing over the electrical current with a screwdriver. The foreman was backing up on a bulldozer. The victim was fatally crushed between the bulldozer and the roller.

Inspection # - 316215698

Employee was standing on the edge of a 5-foot excavation, when he slipped and fell into it. A front end loader was mixing soil in the excavation and struck the victim when he fell into the excavation.

Inspection # - 317775146

Employee was putting air in a tire of a front end loader when the ring on the multi-piece tire blew off and struck him in the head.

CATEGORY: OTHER FALL EVENTS

Inspection # - 316924687

The victim was replacing a roof on a farm when he fell 20 feet from a ladder. The victim was taken to the hospital where he later passed away.

Inspection # - 317493583

Employee was on a 10 foot fiberglass stepladder brushing a water based vapor barrier on HVAC duct work when he slipped and fell from the ladder and received fatal injuries.

Inspection # - 317747582

The victim, a superintendent, was working from a frame scaffold at approximately 3 feet to install decorative molding, when he fell to the ground and dislocated his left ankle. His foot was splinted at the jobsite and he was transported to a medical center where he was treated for his injury. He was released from the hospital the same evening. He was later found dead at his home in the early morning hours of the following day. The death was attributed to the injury sustained in the fall.

Inspection # - 31577318

Co-worker said he was directed to strip/remove the wooden forms from the back of the completed wall which was approximately 9 ft. 3 in. above the foundation level. The forms were of various sizes, with 3 of the largest being about 7 ft. by 10 ft. and constructed with 2 x 4 lumber framing and a solid facing. According to the co-worker, he positioned the forklift on the back side on the wall and the victim climbed an extension ladder placed on the front side of the wall. The wall had wooden sill plates mounted on its top surface and the victim walked down the length of the wall until reaching a point of the next form where he ran a strap through the wire loop at the top of the form and then put the strap onto one of the forklift tines. Co-worker used the forklift to strip the form, took the form away, and returned for removal of the next form. Victim then repeated the strap connection as before on the next form. Co-worker said that as he began to lift the form away he saw the victim stepping sideways and losing his balance and then fatally falling backwards off the wall.

Inspection # - 316924893

The victim was cleaning the "RapidMix 400 C" mobile cement plant in preparation for a job the following week. He was working on the north side of the mixer and stepped on top of the mixer to exit on the south of the plant. When he stepped on top of the mixer, one of the doors gave way and he fell into the mixer receiving a fatal crushing injury.

Summary of Fatal Events (Continued)

CATEGORY: OTHER FALL EVENTS (Continued)

Inspection # - 316216027

An employee was fatally injured when the section of the railroad bridge he was standing on collapsed and fell to the pavement below.

Inspection # - 317687143

The victim was working from an approximate 25 degree sloped metal awning and an aluminum extension ladder that was leaned against the sloped metal awning on a building facade. The victim was working to bore two wall penetrations into the structure. The victim had one leg on the ladder and the other leg and hip on the awning during the operation. No personal fall arrest or restraint systems were in place. The wall penetrations were approximately 13 feet above the sidewalk. The drill bit became "bound up" thus "kicking the drill back" during the operation throwing the victim off balance. The ladder then slid and tipped over to the right while the victim fell towards the left and received head injuries when he struck the concrete sidewalk.

Inspection # - 978063

The victim was standing on a make-shift wooden pallet basket unloading spools of wire on to the fourth floor through a hotel window. The pallet was not secure to lift and tipped over as employees unloaded the spools and the victim and pallet fell to the ground below.

Inspection # - 317779270

The victim was working on the 2nd floor level of a new construction single family dwelling. The employee fell through an unguarded wall opening to the concrete subfloor 10 feet below. The victim suffered a fatal fractured skull, broken neck and broken back.

Inspection # - 317231868

The victim was part of a concrete crew prepping and installing concrete form work at the rebar columns for a new five story rental car facility. On the day of the event, the victim was one of a two man crew assigned to install the form work on 24 inch wide, 30 foot high rebar concrete columns. The victim climbed the rebar column to remove some material to accommodate the form to be set. The victim was secured to the column with a personal fall restraint system. At some point the column began to lean and started to fall over. The victim was caught under the column as it struck the ground sustaining fatal injuries.

Inspection # - 317256907

A crew of 5 employees were disassembling and removing conveyer equipment from a grain elevator. One employee was working from a catwalk at approximately 60 feet above the ground where the "grain leg" had been removed. This created a 60 x 28 inch hole that was not covered. The victim either slipped or stepped into the hole and fatally fell 60 feet to the ground below.

Inspection # - 317680650

A glazier was found inside a two story commercial building lying on concrete floor. There was apparent trauma to head and body and it is believe he fell from a height. There were no witnesses to the event. The employee had been working for approximately 1 hour at the job site.

CATEGORY: ELECTROCUTIONS

Inspection # - 978940

The victim was part of a crew performing interior demolition work. The victim cut an energized, electrical wire. The contact caused the victim to be fatally electrocuted.

Summary of Fatal Events (Continued)

CATEGORY: ELECTROCUTIONS (Continued)

Inspection # - 317683266

The victim was placing a ten foot long metal sheet on the roof of an industrial building, when he lifted the metal sheet and it made contact with a 4kV power lines that were near the roof of the building.

Inspection # - 979641

Two employees, working from the basket of an aerial lift, were applying a self-adhesive plastic film to the outside of existing windows and frames to protect them when the building was painted. At some point the lift made contact with an overhead power line resulting in them getting shocked and one receiving fatal burns.

Inspection # - 317750370

A two man crew was installing lighting fixtures in a hospital. The victim, an electrician, was working from an eight foot step ladder. The ceiling height was 8'11" with a J box located within the ceiling. He made contact with an existing energized wire (480-277 volts) located within the J Box. He fell from the ladder and suffered fatal injuries.

Inspection # - 965987

The victim was preparing to service a water well located behind the servicing truck. The employee was raising the boom in order to prepare to move sections of pipe in order to gain access to the pump, when the boom contacted an overhead power line. The victim was fatally electrocuted.

CATEGORY: OTHER FATALITY CAUSES

Inspection # - 317727493

An employee was removing excess concrete from the return conveyor belt rollers of a Putzmeister Telebelt (a telebelt is a mobile 110 foot collapsible conveyor belt mounted on a truck chassis). The employee became fatally entangled in the return rollers of the energized and operating conveyor belt during cleaning and was crushed.

Inspection # - 317746584

An employee was attempting to remove a trench box using an excavator, when the machine started to tip-over, the employee tried to jump from the cab and was fatally crushed by the excavator as it rolled over on its side.

Inspection # - 317718013

An employee was lowered into a 15 foot deep excavation in the bucket of an excavator. The employee exited the bucket and was in the excavation "digging out" around the sewer main to find the sewer tap when the north side of the excavation collapsed, striking the employee and fatally pinning him against the arm of the excavator.

Inspection # - 974469

An employee was removing an auger bit from a tracked drill rig and then planned to install a muck bucket to the rig. The employee was suddenly engulfed in a "sink hole" that opened up next to excavation. The employee was swallowed in the hole and was fatally pinned by rocks and dirt.

Note: These narratives are taken directly, with only minor editing, from the reports filed by the CSHO's.



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