

# Prevention at Work

## Construction-Related Deaths, Oklahoma, 1998-2008

### General Information

Construction of new homes and buildings as well as renovations of these structures results in many injuries and deaths each year in the United States. In 2008, 753 construction workers died due to construction-related injuries. From January 1998 to December 2008, 82 people were killed in construction-related incidents in Oklahoma. Construction-related deaths accounted for 7% of all work-related deaths in Oklahoma during this time period. More than half of all construction-related deaths were fall-related. All fatal injuries involved male workers. The age of workers killed ranged from 13 to 80, with a median age of 40. Fatal injuries were most common in the months of June and August. The smallest number of fatal injuries occurred in January and December. More than half of all fatal injuries occurred between 10:00 a.m. and 4:00 p.m., with the most occurring from 3:00-4:00 p.m. The largest number of fatal injuries occurred in Oklahoma and Tulsa Counties, with 18 and 15 fatalities, respectively.

### Slips and Falls

- A 31-year-old male was painting a three-story parking garage from the bucket of a lift. The bucket was extended approximately 30 feet on a slightly elevated incline when the bucket fell to the ground. It was thought to be overextended and the safety devices disabled. The painter was wearing his safety harness and it was attached to the bucket.  
[Three other men (ages 42, 54, and one man of unknown age) were fatally injured due to falls from construction equipment or vehicles.]
- An 80-year-old male was standing on a ladder painting a house when he fell more than 10 feet. He died several hours later at a hospital.  
[Four other men (ages 55, 60, 66, and 69) were fatally injured due to falls from ladders or benches.]
- A 37-year-old male was removing and installing steel roofing on a warehouse when he laid a section of sheet metal and then stepped on it. The metal could not hold his weight and he fell 30-40 feet onto a concrete surface.  
[Two other men (ages 19 and 58) were fatally injured due to falls through sheet metal.]
- A 28-year-old male was putting tar down to roof a church and moved the tripod device that was used to bring buckets of tar to the roof without stabilizing it. The device should have been stabilized by a 140-pound roll of roofing felt placed between the legs of the tripod. The worker tried to use the rope to lower an empty bucket of tar and the tripod started to tip off the roof; he grabbed it and fell 30 feet.  
[Five other men (ages 25, 36, 45, 46, and 46) were fatally injured due to falls from a roof.]
- A 50-year-old male was installing plywood roof decking over structural steel when he fell 20 feet through an unstable part of the roof and landed face first on the concrete slab below. He was not using fall protection gear.  
[Two other men (ages 37 and 40) were fatally injured as a result of falls through a roof.]
- A 47-year-old male co-owner of a construction company who was also the foreman of the construction crew was assisting employees in placing roof trusses when he fell off a 15-foot wall into electrical plumbing supplies located on concrete.  
[Three other men (ages 19, 21, and 36) were fatally injured as a result of similar falls from beams or trusses.]
- A 41-year-old male was digging a drainage ditch around a concrete wall at the construction of a new water plant. His right foot was in mud and his left foot on the retaining wall. His left foot slipped, causing him to lose his balance and hit his head on the retaining wall. He then fell into six inches of water and drowned.  
[One other man (age 60) was fatally injured as a result of a slip.]
- A 50-year-old male and his co-workers were installing a skylight. A piece of plywood covering the opening for the skylight had been removed and he fell 30-40 feet through the opening, landing on a concrete floor.  
[Three other men (ages 19, 23, and 56) were fatally injured as a result of falls through a skylight.]
- A 44-year-old male was on the second level of a construction site pulling up boards when he turned around, stepped through a hole where stairs were going to be, and fell 10 feet. He was aware of the hole, but may not have realized how close he was to the hole.

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- A 45-year-old male was preparing to roof a new home and was on the roof with the contractor receiving bundles of shingles off a conveyor belt from a truck below. While stacking the bundles, he lost his balance, slid to the end of the roof, and fell 10-15 feet to the ground below. A bundle of asphalt shingles (approximately 80 pounds) fell on his chest and abdomen.
- A 33-year-old male and co-workers were building a large exhaust stack at a power plant and welding inside the stack over a large boiler while standing on scaffolding. The scaffolding sections were 15 feet apart with ladders for movement to different levels. The worker was the first to start climbing down and fell 30-40 feet. [Eleven other men (ages 14, 21, 31, 39, 40, 44, 52, 61, 61, and 63) were fatally injured as a result of falls from scaffolding, or guardrails.]
- A 35-year-old male and a co-worker were on a platform attached to a forklift and were in the process of connecting a steel rafter on a supported column. The column and the rafter fell, causing the worker to also fall approximately 20 feet to the concrete floor below. [One other man (age 25) was fatally injured due to a fall from a platform.]
- A 38-year-old male was working as a welder at the construction site of a convenience store. He was working off a platform attached to the forks of a rough-terrain forklift. He had placed the platform between two pieces of structure when he fell approximately 10 feet off the platform above the entrance of the store.

#### Electrocutions

- A 21-year-old male construction worker was remodeling a house to install a toilet and lavatory. He was unable to work inside the house and went under it to extend the riser pipe. A co-worker found him lying on two water pipes under the house after he was apparently electrocuted. A 220-volt wire from where a hot water heater tank was removed was not capped and came in contact with a copper gas line. The gas line crossed a water line, and when the worker touched the water line, he was electrocuted. [One other man (age 26) died as a result of electrocution while working in a confined space.]
- A 63-year-old male roofing salesman was measuring for an estimate on a new roof when he lost his balance and

fell into an 8,000-volt power line. He then fell 26 feet from the second story roof to the ground.

- A 34-year-old male electrician was standing on a ladder approximately four feet off the ground rewiring light fixtures in the drop ceiling of an office building. He disconnected the neutral wire first instead of the hot wire and was electrocuted.
- A 24-year-old male was on scaffolding 21 feet off the ground. A co-worker was using an electric drill when the worker asked for the power cord for his electric handheld grinder. He plugged the grinder into the cord and slumped over, apparently electrocuted. Both he and his co-worker fell from the scaffolding to the ground.
- A 35-year-old male forklift operator was moving steel beams at a construction site. He raised the boom into high wires and was electrocuted. [One other man (age 37) died as a result of electrocution when a crane boom touched electrical lines.]
- A 41-year-old male roofer was climbing a ladder being held by a co-worker onto the roof of a church when a gust of wind caused his ladder to shift. His co-worker lost his balance, let go of the ladder, and while the roofer was on the ladder, it fell into high voltage electrical lines and he was electrocuted. [Three other men (ages 24, 31, and 41) died as a result of electrocutions while on ladders.]

#### Motor Vehicle Crashes

- A 53-year-old male truck driver was waiting on the shoulder of a road for a work crew. The crew came into sight and the driver attempted to make a left turn from the shoulder, but failed to see a loaded dump truck traveling in the same direction. The dump truck hit the truck on the driver's side and caused the truck to strike a tree and overturn.

#### Hot Environments

- A 58-year-old male electrician was running electrical wire in a daycare area of a shopping mall and standing on a six-foot ladder. The electricity was turned off to the area and he was working alone. The temperature in the room was over 100 degrees and he was found down and unresponsive. [Two other men (ages 32 and 56) died due to high temperatures and heat exhaustion.]

**Construction-related Deaths, Oklahoma, 1998-2008****Struck, Crushed, or Pinned by Construction Equipment**

- A 32-year-old male and a 49-year-old male were forming/constructing a retaining wall. A temporary retaining wall had been formed and plywood was used to place a form to pour the permanent concrete wall. Sand was being pushed by a loader behind the wall and the temporary wall buckled and collapsed. Several large concrete blocks fell on the men and crushed them. One other co-worker was injured.  
[One other man (age 29) was fatally injured due to the collapse of a retaining wall.]
- A 45-year-old male was on his first day of work as a surveyor. He was holding a measuring rod used for grading/leveling and standing behind and to the right of a road grader when the grader backed over him with its right rear tires.
- A 29-year-old male and a co-worker were attempting to place an I-beam for a lift in a building. The beam was on a forklift and they raised it into place to take measurements. The forklift was rated for 25,000 pounds and the I-beam weighed only 7,000 pounds. The carriage of the lift was up and the link pins that hooked a chain around the carriage snapped, causing the beam to drop, striking the worker in the head.
- A 21-year-old male worker was struck in the head by a falling 20-foot section of steel beam. One forklift had been used to raise a 40-foot steel beam 11.5 feet and a second forklift was used to elevate a platform holding the worker and his co-worker. Just as he was preparing to bolt the steel beam in place, the weld between the two 20-foot sections of the 40-foot steel beam broke.
- A 40-year-old male unrestrained backhoe operator was driving along an embankment when the backhoe turned over on its left side, and he was ejected and pinned under the top canopy.
- A 71-year-old male independent contractor was assisting a masonry company in bricking a private residence. He was using his front end loader and bucket to lift a 60-foot, 450-pound steel arch into position over the entrance of the home when the arch fell down the loader arms and struck him in the head, pinning him against the steering wheel. The front end loader was not equipped with a protective cage.
- A 50-year-old male plumber was standing in a 34-inch deep open-ended trench as a skid-steer loader operator placed backfill material in the trench. The skid-steer

loader tipped forward and the loader bucket struck the plumber in the head.

- A 37-year-old male was clearing and leveling a vacant lot for a residential pad. He was attempting to operate the boom of his backhoe/front-end loader from the ground with his hands, but it became stuck, swung around, and crushed him.  
[One other man (age 19) was fatally injured after being struck by a backhoe.]

**Cut or Pierced**

- A 43-year-old male inmate on a work-release work crew was doing construction in a warehouse. He was using a drill bit to pry open a garage door spring, but the spring was propelled into him and pierced him in the shoulder/neck area. He fell off a ladder and scaffolding onto the floor and died at the scene.

**Drugs/Alcohol**

- A 29-year-old male brick layer was working at a construction site when a co-worker found him down, unresponsive, and "extremely sweaty." His death was due to a cardiovascular episode and toxic effects of methamphetamine.

**Burns or Smoke Inhalation**

- A 31-year-old male welder and two other employees were welding in the interior of an asphalt plant silo. The oxygen line was left open, enriching the oxygen level in the silo. The welding torch was ignited and caught the welder's shirt on fire, resulting in third degree burns to 40% of his upper body.  
[One man (age 43) was fatally injured due to an explosion resulting from an ignition of fumes at a hydrocarbon plant.]
- A 41-year-old male was walking backwards on a roof dragging a device that allowed hot tar to drip onto the roof. He came to the edge of the roof, lost his balance, and fell backwards. The device got stuck on the roof, tilted, and hot tar spilled on him as he fell 20 feet. He suffered severe burn and fall injuries.

**Toxic Exposure**

- A 28-year-old male and three co-workers were placing a cement lining in a manhole. They were preparing to apply an epoxy coating at the end of the day when the worker entered the hole without a respirator and was overcome by hydrogen sulfide gas.

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#### Prevention

- Be alert to potential hazards. Do not distract fellow workers.
- Wear proper safety equipment, such as hard hats, safety goggles, gloves, and protective footwear.
- Use fall protection equipment such as lanyards and harnesses when working from heights. Cover holes on elevated levels.
- Scaffolding should be assembled on solid ground and away from electrical lines. Scaffolding should be equipped with guardrails.
- Use caution when walking around a construction site or on unfinished levels of construction. Watch for unfinished floors and uncovered holes.
- Maintain and utilize equipment according to manufacturer's recommendations.
- Keep workers on foot separated from equipment as much as possible.
- Do not enter trenches that have not been properly shored. Equipment and materials should be stored away from the edge of an excavated trench to prevent collapse of trench walls.
- Be aware of and avoid power lines near the work site.
- Avoid using ladders with metal components near electrical work or power lines.
- Use ladders tall enough for the task assigned. Do not overload ladders.

#### Resources

<http://www.ok.gov/odol/documents/OSHAConstructionChecklist.pdf>

<http://www.osha.gov/doc/index.html>

<http://www.cdc.gov/niosh/topics/constructionsafety/>

<http://www.osha.gov/Publications/OSHA3252/3252.html>

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