

The Fatal Four

In the construction industry, two groups of workers account for the most accidents. According to the Bureau of Labor Statistics, workers 25 years old and younger account for the most nonfatal accidents, while those in the 55-to-64-year-old cohort experience the most fatalities.

The first group is easy enough to understand. Those working for the least amount of time have the least amount of training and experience; they don't even know what they don't know.

Why the second group? They have the most experience and training. Based on my own time on site and the stories below, there are a lot of different reasons, but complacency lies at the heart of it. In short, we get too comfortable. Fear is nature's way of telling us that we are doing something potentially dangerous. If we feel too much at ease when scribing with a table saw or bump firing with a nailer, the clock starts ticking down to the "cautionary tale."

According to the Occupational Safety and Health Administration (OSHA), four types of accidents account for 60% of all construction fatalities: crush (caught in or between objects), falls, struck-by incidents (impact), and electrocutions. Let's look at a real-life case for each accident type and break down what went wrong and what we can learn.

CRUSH

I and another junior worker were sent to repair some insulation and vapor barrier in a crawlspace. The only access was a small panel in the skirting around the addition. While I went in, my co-worker waited outside and handed me tools, tape, flashlight, and so forth. After a few minutes of crawling around on my belly, it started to rain. With no place for him to wait out the rain and nothing further for him to do, I told my co-worker he should go home, as it was close to the end of the day. The clearance between the underside of the floor joists and the floor was less than a foot in most places. So, rolling over had to be done between joists after squeezing under them. No need to be a great detective to figure out what happened next: I got stuck—wedged under a couple of joists, face buried in insulation and vapor barrier, with my hands and arms up by my head.

Critical factors. I am alone, it's dark (the flashlight is partly under me), and I had compressed my chest to fit where I am, so I cannot take a full breath. I can't get to my phone because it's on my hip, and I can't maneuver my hands down to reach it. I am also trying extremely hard not to panic.

About an hour later, I got out. Using my toes and my neck to inch my way along, I managed to get to a joist cavity, roll over, and breathe fully.



Lessons learned. Working alone carries great risk. If it can't be avoided, be careful about the tasks that you choose to do.

As we said in Scouts, I failed to plan, so I planned to fail. If I had been prepared, I would have understood that it's always a bad idea to go into a confined work area with no other routes out, no help, and no backup to check on me.

Finally, I was tired, and it was the end of day. There are 8 a.m. jobs and 4 p.m. jobs. People are not as sharp after a full day of work, and mistakes are more likely. Either schedule difficult or dangerous tasks for earlier in the day, or work in extra precautions when doing such tasks later in the day.

FALL

Dan, an experienced roofer with more than 15 years on the job at the time, was removing ice and snow from a four-story condo building in February. The ice buildup was thick, with some icicles thicker than an average person's waist. Dan had been working on this building and others in the complex for a couple of weeks and anchor points had been set up for tying off. As he unhooked his rope from one anchor point to reach for another, his feet went out from him (you can't see the ice under the snow), and down four stories he went.



The doctors told him what saved him was that he passed out on the way down, which kept him from being tense as he hit, with the cushioning effect of the snow assisting. He came to on the ground with his co-worker looking over him asking what he needed. A smoke and an ambulance, he replied. Dan was more than likely in shock; he came to not fully feeling pain or anxiety. Looking up from the ground, his first thought was, “Wow, that seems high. Glad I don’t feel too bad.”

The paramedics strapped him to a backboard, and he was off to hospital. His stay was close to a month with full recovery being close to 18 months. Workers compensation took care of retraining and rehab. He had never desired an office job, so, eventually, he went back to roofing but not until more than a year later.

Critical factors. In February in Ottawa, the temperature can drop to as low as -20°F with an average of around 6°F. Cold temperatures affect equipment and people and how they work. Reaction times are slower, and body movement is restricted due to extra clothing. Catches and clips on safety equipment are harder to operate and adjust. Surfaces are slipperier, not just from the ice and snow; even a clean, shingled roof doesn’t grip as well when cold.

Lessons learned. The weather where you work is a factor, and sometimes the most important one, in jobsite safety. How does your clothing change how you will move? Do you need to adjust your harness and do you know how to do so correctly? Visibility and traction can change with precipitation and temperature. Be aware of your surroundings and prepare and adjust accordingly.

Dan was not inexperienced, tired, or untrained. He was wearing the correct equipment, but the equipment wasn’t attached to the anchor point when he slipped. When Dan works a roof now, two ropes are set up for each worker on large jobs—not just anchor points

but a line available so no one is without attachment when moving positions. Dan invests in the better harness and changes ropes out regularly. He believes that it’s better to spend the money now than lose it later by not being able to work because of an accident. As he tells his crew, the point is to go home at the end of the day.

IMPACT

Mike was new to running a dump truck, having just a couple of years in after doing long-haul trucking. As he was working for a water and sewer company, the days started early and ran long during the summer. The last task of the day was to clear out the box of the truck and work through the end-of-day maintenance checklist at the yard. A cookie of asphalt had gone cold and was stuck to the bottom of the box. Lifting the box part way up, Mike climbed along its edge, using a shovel to try to pry the deposit loose. After a few attempts with no result, Mike climbed into the box to get better leverage.

Working in the box with it inclined, Mike managed to release the asphalt. As it slid out quickly, he lost his footing and slid out of the box right behind the block. The deposit shot out of the tailgate, throwing it open. Mike followed, exiting the box just as the gate dropped back down across his legs.

Lying on the ground, Mike wasn’t able to move his legs at first; the impact of the gate had numbed everything from the thigh down. Slowly, feeling returned, and he dragged himself over to one of the tires and propped himself up to check on his injuries.

No bones were broken, and no hospital trip was taken. Deep, multicolored bruises appeared across both thighs and took weeks to fully fade. Driving, walking, and even sitting caused him pain for well over a month.



Critical factors. Mike was alone, inexperienced, and tired after a long day. With that as his starting point, Mike came to the problem of the stuck asphalt and reacted without an understanding of the possible outcomes. He was fortunate that the gate didn't land on his head or crush his chest; any slight change in how he slid could have resulted in his death or a much more severe injury.

Lessons learned. Luck cannot be a substitute for planning in safety. The company's end-of-day checklist was a list of things to be done but not of how to do those things safely. After Mike's incident, the company wrote up a procedure on how to deal with this recurring situation.

Again, working alone always poses extra challenges, so it should also require extra care if it cannot be avoided. Mike was an inexperienced worker on this task. Training and procedures set up and followed would have helped prevent the accident.

End of day creates its own set of challenges, whether you're experienced or not. You may be in a hurry to finish; you're not as alert or as physically strong. Depending on the time of year, light may be fading along with your energy. A set of well-practiced procedures can act as guardrails to keep you safe.

ELECTROCUTION

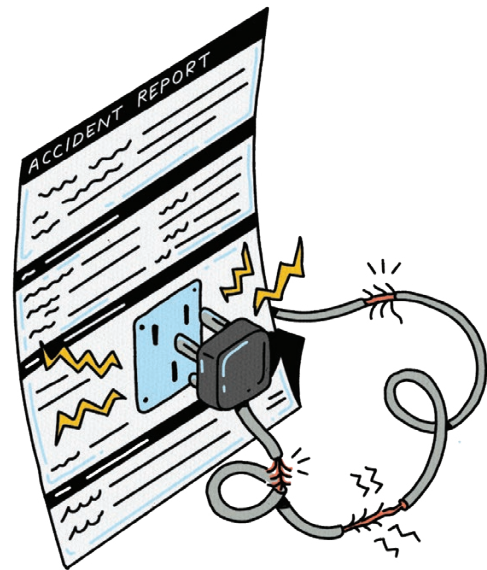
The table saw in my boss' basement shop was an old model, but with its heavy cast top and 30-amp power source, it was able to plow through anything we gave it. I had gone over to it to run some oak posts that I knew my jobsite saw wouldn't be able to handle. I went to plug the saw into the temporary outlet that the electrician had run off the panel—the basement was in perpetual renovation, so a line of BX was hooked into the panel in the mechanical room out to the main working area. I took the plug for the saw, grabbed the outlet box, and woke up a few moments later, on the other side of the room. The connections inside the outlet had come loose from being moved and even kicked out of the way while crew members had been through the space.

My injuries were minor: racing heart, tingling hands with a small burn, and a sore backside from landing on the concrete floor. As with the previous stories, I got lucky.

Critical factors. Someone had noticed that the plug was loose and mentioned it to our boss, who turned off the breaker and was going to tell the electrician the next time he came by, but no note was put on the panel. Someone else turned on the breaker while starting up other tools in the morning but didn't think to ask why it had been off in the first place.

Lessons learned. An electrical outlet should not be a kick toy. A line like this should be better thought out; otherwise, someone is going to get hurt.

The main problem was the lack of procedures and lines of communication. Each person had thought either they had done enough or another individual had taken care of it. A small shop or crew doesn't have the same systems a midsize to large business might



have. However, with fewer employees, change and information can be spread quickly. A phone call, mass text/email, or signage would have prevented me or anyone else from unknowingly being put in danger. Constant lines of communication, even for minor issues, should be a standard no matter the size of the operation.

STAYING SAFE

In the United States last year, 1,069 workers died due to on-site accidents, and a little over 1% of workers had an injury that resulted in lost time. Those numbers from the Bureau of Labor Statistics have remained steady for over a decade despite local and national awareness campaigns.

As workers of various levels of experience, how do we help ourselves stay safe? As a new hire, you can start by asking questions. Simply stopping and looking at the situation will slow you down enough to begin to learn. The same holds true for the individual who has been on the tools for a long time. Think things through in the same way you look at a door to be trimmed or a roof to be flashed. Work through the process to create the desired outcome. If you don't know how to get there, ask someone who does.

Larger companies have safety committees and government-mandated procedures that they need to follow. Owner operators or small businesses lack the scale to create these systems, but that does not mean they can't take steps to help keep workers safe: holding a weekly meeting, sharing stories like these, requiring a (often-delayed) safety course. Remember, the point is to go home at the end of the day, hopefully intact.

Marc Forget is an associate editor at JLC. He is a licensed carpenter of 20 years from Ottawa.