

# Powerlines at homebuilding sites and observing the limits of approach

The best way to prevent electrical contact is by staying clear of electrical hazards.

Homebuilding jobsites present numerous hazards to worker safety. One that's too often overlooked is the existence of energized powerlines near the work area. Disregarding or being unaware of the safe limits of approach for powerlines can have catastrophic consequences.

To reduce the risk of electrical contact and arc flash, construction workers need to be aware of powerline hazards—and then be vigilant about avoiding them at all times.

## Assess the powerline hazard

The first part of that equation is relatively straightforward. Before work begins, conduct a formal hazard assessment that includes identifying powerlines at the jobsite.

“Part of that is you're literally just using your eyes and observing if there are overhead lines where you'll be working,” says Cam McWhirter, a Powerline Technician Training and Apprenticeship Consultant at IHSA. “And if you'll be digging, you need to get locates for any underground utilities.”

Given the wide range of work that occurs at most homebuilding sites, it's a safe bet that if your site has existing powerlines, workers or equipment will at some point be near the lines. Workers may need to use ladders, scaffolds, or elevating work platforms to work above ground level. Tall or long-reach equipment such as cranes, concrete pumps, backhoes, and dump trucks are often present, too—and they're especially risky because operators can't always see overhead powerlines from the cab.

Every reasonable precaution must be taken to ensure workers do not contact energized electrical equipment, installations, and conductors. If a hazard assessment determines that workers are at risk, they must be informed of the risk, and steps must be taken to prevent electrical contact from occurring. First and foremost, this means observing the limits of approach.

## Maintain the safe limits of approach

If there's an overhead powerline at your jobsite, contact the local utility to determine the line's voltage. Depending on the amount of electricity running through the powerline, you must maintain a minimum safe distance from it in all directions. The table at right shows the safe limits of approach based on a powerline's voltage rating.

Voltage rating	Minimum distance
Less than 750 volts	1 metre (3.3 feet)*
750 to 150,000 volts	3 metres (10 feet)
More than 150,000 volts, but no more than 250,000 volts	4.5 metres (15 feet)
More than 250,000 volts	6 metres (20 feet)

\*Recommended by IHSA and its Labour-Management Network

“Not abiding by the limits of approach is the number one reason for contact with electrical lines,” McWhirter says. He adds that there are two important nuances for determining your jobsite's approach limit:

- **It's bigger than you think.** McWhirter notes that the distance you need to keep is from the end of your outstretched arm. “And if I put something conductive in my hand—like a five-foot-long tree branch—then the limit of approach becomes the initial distance, plus the length of that branch.”
- **It must account for planned or unplanned movement.** This is very important when it comes to vehicles on the jobsite. For example, if you're using a crane, you need to account for the possibility of wind blowing the hoist cable toward the electrical line.

The point is to make it impossible for a worker, equipment, or vehicle to be in close proximity to a powerline.

Of course, on a tight jobsite, the opposite may be true: it may be impossible not to breach the limits of approach. In such cases, a qualified person who has been authorized by the owner of the powerline (i.e., the local utility) should shut off the electricity, verify that it is off, and ensure that all stored energy is discharged.

## Take other steps to keep your distance

But simply knowing the limits of approach is not enough.

“If you identify that electricity is a hazard, then you need to have at least two effective barriers to contact,” McWhirter says. “You can't just say, ‘We know the limits of approach.’ You need to put that in place and have another effective barrier in case the first barrier breaks down.”



Those additional barriers either guard against worker error—being aware of the safe distance to a powerline doesn't mean you won't accidentally encroach on it—or serve as visual reminders of the hazard. At homebuilding jobsites, you should:



**Plan the work to minimize risk:** Ensure the site entrance/exit is not directly under electrical lines, if possible. And avoid storing materials beneath the lines—especially if they will need to be moved by a vehicle like a forklift or crane.



**Have a trained signaller:** By law, you must have a designated signal person when vehicles or equipment may approach the minimum distance to a powerline.



**Use powerline coverup:** Ask the utility owner to install coverup on electrical lines. But remember: coverup just makes the powerlines more visible; they don't protect against electric shock nor do they reduce the limits of approach.



**Install warning signs:** Remind workers of the dangers of working near powerlines by placing warning signs or flags throughout the jobsite.

“You should take every precaution possible when it comes to electricity—and put them in place before any work begins,” McWhirter says.

“Electricity travels so quickly. There's no opportunity to say, ‘This is starting to go bad, let's stop and increase our controls.’” ■



## More best practices



**DOWNLOAD** our *Guideline for Working Near Overhead Electrical Powerlines and Equipment on Construction Projects (W802)* for more information about electrical hazards and the limits of approach: [ihsa.ca/products/w802](https://ihsa.ca/products/w802)



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