Further Information

The safety tips in this pamphlet are not intended to be all-inclusive: They are simply a starting point to prevent electrical contacts from overhead and underground power lines.

Safety Around Underground Power Lines

As the operation approaches the estimated location of underground facilities, the excavator must determine the exact location of the marked facility by safe and acceptable means. The distance on both sides of a marked facility is 24 inches in North Dakota and can differ in other states.

- Location is usually done with hand tools.
- Make sure equipment owned by the consumer has been located.
- Treat all buried line/equipment as energized until a qualified electric utility worker says otherwise.
- If electrical equipment is damaged during trenching or excavating, consider this equipment to be energized until properly disconnected, tested and grounded.
- During excavation, if any facilities have been exposed, the excavator is responsible to inspect and support these facilities prior to backfilling.
- If damage of any kind is discovered or if there is any suspicion of damage, it is the responsibility of the excavator to immediately notify the owner directly.

Safety Around Electricity IS Vital

In past years, rural electric cooperatives in North Dakota have noticed an increasing number of incidents which involve cooperative facilities. This brochure outlines procedures which should be used when work is performed around overhead and underground facilities.

With planning and cooperation with other utilities and excavation companies, we can continue to do our jobs and limit the risks for injury, property damage or worse.

Follow These Steps to Workplace Safety

We instruct cooperative employees to properly plan their jobs, starting with the first meeting with the consumer where they lay out the route and set the plan in place, which benefits the needs of the consumer.

Next, requirements for the work are transferred to the staking sheets so everyone involved with the work is aware of the consumer's requests, and most of all, their facilities on-site.

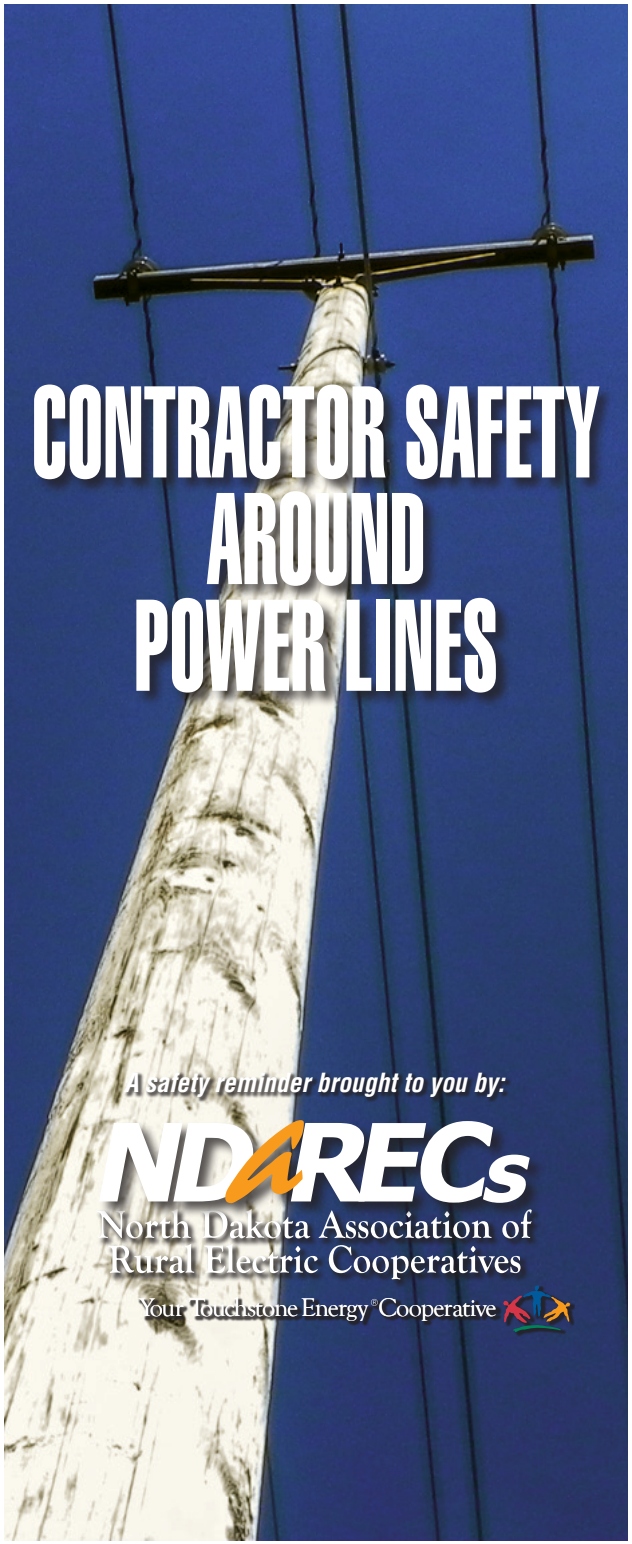
Third on the list is to look over the job with the consumer and start to produce a plan to accomplish the work, flag the proposed work area and call North Dakota One Call at 811 or 1-800-795-0555.

The fourth item is to make sure everyone involved with the work is brought up to speed on the requirements for this particular job. This is recapped in a tail gate briefing immediately before starting work on the job. During the tail gate briefing, hazards associated with the job should be discussed. Even though the presence of overhead power lines should be obvious to everyone present, this is one of the hazards the crew should discuss. A call to the facility owner will allow the person in charge to work with the owner of the line, and as a result, will lessen the opportunity for an accident to happen.

Plan to Prevent an Accident

One of the best ways to prevent an accident is to think ahead with proper planning and avoid later delays. Consider all of the hazards involved with the job:

- Hazards involving overhead power lines
- Hazards involving underground power lines
- Hazards located before the meter (utility side)
- Hazards located after the meter (customer's side)
- Other utilities in the area (gas, water, cable, telephone, electrical, etc.)



Overhead Power Line Tips for Construction Workers

Before you begin construction work:

- Survey the site for overhead power lines.
- Look up and live!
- Best safety practice: Never get closer than 10 feet to an overhead power line!

Consider ALL overhead power lines as energized until the electric utility indicates the line is not energized and has been grounded.

In construction work, an overhead power line safety component should be part of your employer's overall safety and health program and safety training.

If overhead lines are present, call the utility company and find out the voltage.

If overhead lines cannot be shut down, ask the utility company if they can install insulation over the lines during the time you are working near them.

Minimum Safe Distances Around Overhead Power Lines

Line Voltage	Minimum Safe Distance
Up to 50,000 volts	10 feet
50,000 200,000 volts	15 feet
200,000 to 350,000 volts	20 feet
350,000 to 500,000 volts	25 feet
500,000 to 750,000 volts	35 feet
750,000 to 1,000,000 volts	45 feet

Source: ASME B30.5a-1995

NOTE: Some facility owners may require a greater separation due to the nature of the work being done. Always contact the local utility company before working near power lines.

Working with Tools and Equipment

If lines cannot be shut down or insulation applied, a minimum safe distance of 10 feet must be established.

Have a brief job site meeting to discuss the planned work as it relates to the power lines.

Discuss topics such as the use of long-handled tools, ladders and equipment (raised dump trucks, back hoes, etc.) that could come in contact with the lines.

Consider the need for a designated person to monitor activities around the lines.

Only use nonconductive ladders when working near overhead power lines.

Employees shall not be permitted to approach or carry any object closer than 10 feet to an energized line.

The only exception is for trained and qualified employees using insulated tools designed for high-voltage lines.

Maintaining the Circle of Safety

The 20-foot rule for cranes and derricks – Occupational Health and Safety Administration (OSHA)(Sub part CC) regulations require that contractors and workers operating cranes or derricks stay a minimum of 20 feet away from overhead power lines.

Keep everything – you, the tools and materials you are handling, and the equipment you are operating – away from all power lines. Not only is this an important safety rule, it is an OSHA regulation and it is a law. Those caught violating the Circle of Safety can be fined. Remember to contact the utility owner to verify the operating voltage of the electrical lines in your work area.

Things to Consider if Vehicle/Equipment Comes in Contact with a Power Line:

Don't leave the vehicle, as long as you can stay inside and avoid touching metal on the vehicle.

If you need to get out to summon help or because of fire, jump out without touching any wires or the equipment, and keep your feet together and hop to safety.

When equipment is working close to energized power lines, the personnel standing on the ground shall not come in contact with the equipment.

Underground Power Line Safety for Construction Workers

When excavating or trenching, consider that electric lines and other utilities could be buried in the area.

Call before you dig! North Dakota's One-Call number is 811 or 1-800-795-0555.

After the markings have been made, excavators should maintain a minimum clearance of two (2) feet between the marked and unexposed underground facility and the cutting edge or point of any power-operated excavating or earth-moving equipment.

Avoid Hazards in Directional Drilling

Along with the many benefits from horizontal directional drilling come very serious dangers. The most dangerous strikes can occur when a drill hits an electric or gas line. The operator can be electrocuted or cause an explosion.

Other possible dangers:

- Step potential can endanger the tracking person as his or her feet encounter an energized area where the boring device has encountered an electrical line. The operator may also be injured.
- Touch potential will likely injure or kill the equipment operator as the current travels from the point of contact, through the boring equipment back to the operator's position.
- Follow equipment manufacturers' recommendations found in the equipment operator manuals.
- Plan and map your bore.
- With the bore plan in hand, the competent person should mark the route and make the call to One Call 48 hours prior to the beginning of drilling. After the area has been located, expose the existing utilities following relevant OSHA requirements.