



## **LIVE-LINE INSTALLATIONS ON STEEL POLES ARE SAFE** *SAME BASIC PROCEDURES ARE FOLLOWED FOR BOTH WOOD AND STEEL POLES*

Working live is a necessity for all utilities. No matter how brief, power interruptions inconvenience customers and are a source of lost revenue for utilities.

Steel distribution poles help utilities keep distribution systems intact and lines live. That's according to George Manning, formerly a chief executive of Energy Cooperative, a utility holding company based in Ohio. "If a wood pole is hit by an automobile, there's a good chance it will shear and fall down, bringing down other poles in the distribution line. This almost always causes a power outage," says Manning.



*Linemen follow very similar safety procedures for steel and wood poles.*

He continues, "In the same situation, a steel distribution pole will only dent.. Since no other steel poles are downed or damaged, there is no power interruption. The lineman can work live to replace the dented pole during regular hours.

"With steel poles," he adds, "labor and equipment costs are reduced. And we don't lose revenue because of unforeseen power outages.."



*Steel poles can create a more reliable distribution system.*

As George Manning testifies, keeping electric power flowing to customers is of great importance. That's why most utilities have made live-line maintenance a common practice. Working live allows a utility to avoid power outages, increase system availability and enhance service reliability. Live-line maintenance is mandatory when it is not possible to transfer or shut down electrical power. Working live is preferred for installing switches, replacing insulators or installing a distribution or transmission pole.

No matter what the task at hand, or the type of pole a lineman is working with — steel, wood,, concrete or fiberglass — the rules remain the same: safety procedures should always be followed to the letter.

Dave Kenney, president of Chatham-Kent Hydro, ardently agrees with this mindful approach to live-line maintenance, and distribution maintenance in general. His company, which supplies power to 34,000 customers in Chatham-Kent, an urban area in the Canadian province of



*Proper safety procedures must be followed when working with steel or wood poles.*

Ontario, has a Health and Safety Committee that assists with the development of a full range of live-line maintenance procedures.

The group includes both linemen and management to ensure that installation protocols take into account all aspects of the task at hand, from equipment to manpower. One of the committee's assignments has been to develop installation and live-line protocols for steel poles. Chatham-Kent Hydro first purchased steel distribution poles in 1996 when looking for an alternative to wood poles and an answer to the environmental issues that surrounded their disposal. To help draft guidelines for the 'new' pole material, the committee attended a session with the steel pole manufacturer on steel pole handling.

### **A Basic Recipe For Safe Live-Line Steel Pole Installation**

According to Kenney, Chatham-Kent Hydro's line crews follow the same basic procedures for wood and steel poles.

"We stress two things in all live-line maintenance: second point of contact and concentration," Kenney says. "We also have an emergency plan in place, and practice CPR and rescue operations at least twice a year. Ongoing safety training is also an important part of our regimen."

He continues, "Theoretically, there is no difference in installation procedures between wood and steel poles. Our staff was concerned about the use of steel, so we developed stricter procedures for steel pole installation. These procedures include more cover-up on the lines, more clearance from steel to live conductors, and grounding the pole to isolate the line in the event of accidental contact with an energized circuit."

With a typical live-line job, the linemen at Chatham-Kent Hydro work in teams of three, with two of the crew in the bucket truck. Each lineman wears rubber gloves to handle the line safely. The third lineman is on the ground as an observer to make sure that installation protocol is followed and to assist with rescue if needed.

Kenney estimates that Chatham-Kent Hydro replaces some 250 wood poles per year. Approximately 100 of these replacements are steel poles.

Following is the protocol that Chatham-Kent Hydro follows for installation of steel poles:



*Steel distribution poles are light weight and easy to handle, transport and store.*

## **Steel Pole Installation on a 27,600-Volt Circuit with a 4000-Volt Underbuild**

The crew will complete a job plan and tailboard conference and obtain a hold-off on the circuits.

*Preferred method of installation:*

1. Check adjacent structures (porcelain wood pins).
2. Install protective cover up on underbuild that will allow movement along phases while the steel pole is being raised.
3. Spread underbuild on approved temporary conductor support.
4. Install a minimum of 3 lengths of cover up on top circuit.
5. Using a double bucket truck, untie and lift center phase or top conductor approximately 2 meters.
6. Install adequate approved cover up on steel pole that is to be installed.
7. Install temporary ground to base of top section to bond truck and pole to system neutral.
8. Install ratchet binder cant hook at lowest point of attachment on top section to be raised.
9. Mark friction point on bottom section to allow a 21" to 27" overlap of top section (check manufacturer's specifications).
10. Raise top section of steel pole with Radial Boom Derrick truck using approved web sling. Make sure to continue maintaining safe limits of approach.
11. Align welds on top and bottom section of the pole to allow ease of friction fit.
12. Put a slight down pressure on boom to ensure sections are join properly.
13. Tie in top or center phase conductor.
14. Relocate remaining phases.
15. Secure pole. With cover up in place, remove old pole.
16. Remove cover up, starting with furthest phase.
17. Disconnect temporary ground.
18. Surrender hold off.

### ***NOTE: RIV NUT ON BOTTOM SECTION MUST BE:***

- β In line with the overhead line (vertical & semi-roll)*
- β Across to the overhead line (A- frame construction)*

### **Safety is Key**

By its very nature, live- line and utility maintenance overall is a dangerous undertaking. Proper safety precautions are required at every step of the process with every type of pole. An additional benefit of the steel distribution pole is that less maintenance is required, which reduces the likelihood of injury to linemen.

While general maintenance and installation methods will always vary, attention to the details of keeping linemen and customers safe must be a top priority for all utilities. Strong and resilient steel distribution poles can add a new dimension to the utility manager's safety regimen.

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*Less maintenance is required with steel poles which can reduce the likelihood of injury.*