Electrical Safety on the Job Site

Working on Pole and/or Strand (Routine Work Conditions)

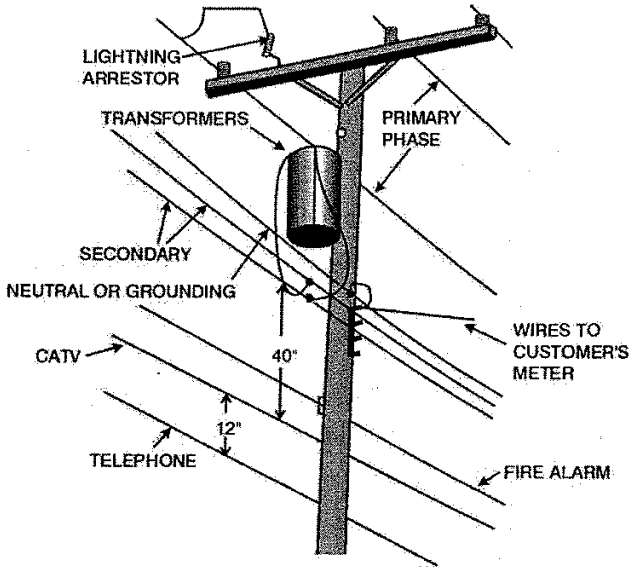
While working in an elevated position it is important to understand the potential hazards associated with your assignment and your proximity to energized sources/wires. The following steps must be adhered to before beginning your work:

Step 1 - All applicable PPE as outlined in this guide must be put-on.
Step 2 - Ensure that all electrical testing equipment is functioning properly.
Step 3 - A work-site assessment must be conducted to determine the presence of any existing or potential hazards.

The work-site inspection must include the following:

1. Check for the presence of a damaged ground, bond and/ or neutral connections.
2. Ensure that all utility wires including primary and secondary are properly connected.
3. Ensure that all wires are connected to their appropriate insulators.
4. Prior to coming into contact with any wire, including TELECOM strand, it is necessary (using your voltage detector) to determine the presence of any hazardous voltage.

Any compromise of the above will create an electrical safety concern for you. Visually inspect before you work.



Hazard at the Pole

Non-Routine Conditions
(Restoration)

When approaching a restoration site, such as in post storm conditions, the employee(s) is required to perform the following inspection to ensure the site is safe and free of potential (visual) hazards. The following conditions and protocol should be observed:

- Proper PPE including electrically insulating "00" gloves must be worn throughout the completion of the assignment.
- Initially treat all wires as energized until they are tested and found de-energized.
- Do not come into contact with any wire unless its source has been identified.
- Observe all procedures/protocol as outlined in the Tree Trimming and Pruning of this chapter.
- Observe the work-site for any cables that may be in contact and/or entangled with energized sources. If this condition exists, notify your supervisor or dispatch. Do not approach or make any attempt to touch this cable until you have discussed the situation with your supervisor and/or dispatch.

If a drop cable is found entangled on a communication strand, such as a TELECOM or telephone, never attempt to pull/de-tangle the cable from the ground. If this condition is encountered adhere to the following:

Use the voltage detector to determine if the cable is energized.

- If energized; secure the site with a cone barrier and contact your supervisor and/or dispatch. Do not make any attempt to approach the site.

Any reports of entangled wires communicated by a field technician(s) to dispatch or to their supervisor must immediately be reported to the proper authority having jurisdiction. If a visual confirmation of a suspected hazardous condition exists, do not hesitate to contact your supervisor or authorized person for assistance.

Working In and Around Dwellings

When working inside and around a subscriber's home it is important to follow the correct protocol to ensure your safety and the safety of your customers.

The following work clearances must be maintained when working in and around a dwelling. Refer to the following table:

Work Clearances for Cable Drop	
Object/Area	**Clearance from Object**
Utility power service	12 inches
Telephone service drop	4 inches
Residential driveway	13 feet above driveway
Commercial driveway	18 feet above driveway
Roadways	15 feet above residential, 18 feet main street

Disconnecting/Reconnecting a House Drop

When connecting/disconnecting a house drop always adhere to the following steps:

- Put on Insulating "00" Gloves.
- Visually inspect the cable drop to determine whether it is melted.
- Using your Volt/Ohm/ Ammeter (VOM), test the grounding conductor to determine if the current is equal to or exceeds one (1) amp.
- If the current is equal to or exceeds one (1) Amp; do not connect/disconnect. Inform your supervisor and/ or dispatch of the condition.
- A visual inspection of the coaxial cable, power/power service and telephone grounding conductors must be made at both the ground block (house) and tap (pole). The power company and customer must be notified of any potentially hazardous condition identified in the inspection.
- Always remember to follow proper grounding procedures as outlined in the grounding section.

Hot Ground - Defined as a ground wire or cable line that has electric current going through it.

> **Excessive current on the drop cable is usually the result of a faulty power neutral. Any attempt to disconnect the coaxial cable drop may result in personal injury and/ or damage to the customer's location.**

Work-site Protocol: Safety within the Customer's home

When working inside a subscriber's home the following protocol should be followed to ensure your safety and the integrity of the installation.

- A 2" (two inch) TELECOM cable clearance shall always be maintained around all energized wires within the dwelling.
- When drilling through wall always maintain an 8" (eight inch) clearance from electrical outlets.
- When running TELECOM cable through insulating material such as fiberglass, always maintain the following rules.
    - Wear your dust mask filter.
    - If you suspect asbestos insulation do not disturb it. Always route the TELECOM cable to prevent any disturbance and/or contact with asbestos material.
    - Put-on and wear your eye protection and hardhat while working around insulating material. Also recommended are the use of work gloves and long sleeves.

Electrical Hazards of Storm Conditions

The weather plays an important role in outdoor work, especially during storm conditions. Use extreme caution during storm conditions. Ice, snow, high winds and downed trees can cause downed power lines. Identification of the type of line is difficult under a storm condition. Always assume the line is energized until proven otherwise. Stay away from the line and call for help.

There is a chance, during storm conditions, that the coaxial cable can become entangled with the secondary power lines, resulting in the coaxial cable becoming energized. For example, the secondary power line crosses the coaxial cable, or debris shorts the two together. The insulation on the coaxial cable is tough; however, it can be cut in extreme conditions, resulting in exposed messenger, braid, or center conductor. It is extremely important that during storm conditions, the technician uses the portable test equipment to check the coaxial cable before conducting repairs. The technician must not perform pole work during storm conditions.

Energized downed power lines create a phenomenon known as "step and touch voltage potential." The energized conductor in touch with the ground actually causes the ground to become energized. The voltage from the downed wire forms circles of different voltage potentials around the point of contact. The voltage potential decreases as you go further away from the point of contact with the ground. If a person steps and walks through this energized area, his/her feet may be at two different voltage potentials.

Remember that electrical current flows through a conductor when there is a difference in voltage potential. Due to the separation between the worker's feet, a path is created through the person's body for current to flow. This can result in severe injury.

Lighting

Another hazardous storm condition is lightning, shown below. Lighting kills an estimated 93 people each year. It is Connect/One's policy that no construction or line maintenance work shall be performed during an electrical storm.

Lightning often precedes rain and can strike as far as 10 miles away from the rain of a thunderstorm. So when lightning is present, follow these safety guidelines:

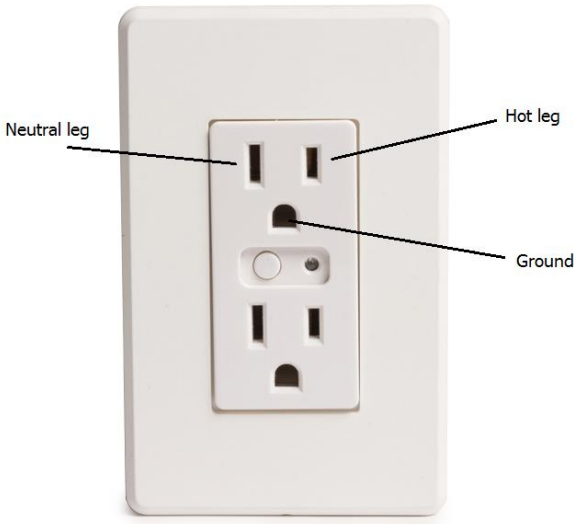
- Regardless of how far away the lightning is, you should stop outdoor work and go indoors or inside your vehicle if you see lightning.
- Stay off ladders.
- Avoid trees, and tents. Stay away from metal fences, wires and umbrellas.
- Do not handle electrical and/or Telecom wiring within the customer's location until lightning is out of your immediate area.
- Seek safe shelter such as a vehicle or building.
- If lightning is striking near you, avoid direct contact with other people, remove metal objects such as tool belts and crouch down with your feet together flat on the ground. Keep as low as possible, but do not lie flat on the ground.

Customer Created Hazards

Electricity is a very serious hazard. Unfortunately, not everyone is as safety conscious as you about electrical safety. As you work in a customer's home, be aware of potential electrical hazards. Avoid all exposed electrical wires and energy sources, especially when crawling in basements, attics or crawl spaces.

Sloppy electrical connections within the customer's dwelling can be dangerous. Improper grounding or neutral wire connections can present serious electrical hazards. Always check electrical components and circuits with a voltage tester and/or outlet tester before touching with a tool or any part of your body.

Typical Polarized Outlet



Duplex Outlet

Common Outlet Problems

Broken ground: Loss of your protection. Broken ground will compromise your safety. Broken bond wire: Possibility of equipment enclosures becoming energized. Broken bond could allow metal to be at different voltage potentials.

Broken neutral: Loss of preferred return path. Broken neutral will put return current on the bond and ground, setting up a dangerous condition.