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Overview

Safety is the most important aspect of any job performed on or around electrical equipment. Everyone must know the electrical hazards associated with the job and how to protect themselves from these hazards. Every year, there are thousands of electrical shock related accidents within the United States. Most of the accidents are the result of inadequate training/knowledge, complacency and/or a neglect of safety procedures. Connect/One has prepared specific guidelines to ensure your safety within close proximity to energized sources.

Connect/One Safety Responsibility for Field Service Operations:

- Must attend all safety training classes.
- Must follow safety procedure at all times.
- Must use all proper safety equipment and Personal Protective Equipment (PPE).
- Must immediately report any and all safety violations, unsafe conditions and/or accidents to their respective supervisors.
- Must conduct required inspections (e.g. Vehicle and Equipment Safety Inspection).

Governing Agencies

This section discusses the Occupational Safety and Health Administration (OSHA), the National Electrical Code (NEC), and the National Electrical Safety Code (NESC) roles in establishing safety regulation. Connect/One's safety policies are based on OSHA regulation and may be stricter than OSHA regulation. Following all Connect/One's safety policies ensures compliance with the governing authorities' regulations.

Occupational Safety and Health Administration (OSHA)

The Occupational Safety and Health Administration (OSHA) is the authority governing all occupational safety regulations. OSHA uses the Occupation Safety and Health Act to establish regulations pertinent to occupational safety. OSHA regulations are enforceable as federal laws. Any employer found in violation of any OSHA regulation could be subject to severe penalties including fines, imprisonment, or both. OSHA regulations related to telecommunication work, including CATV installers, are found in OSHA standard 1910.268. Other OSHA regulations pertaining to your work are located in the General Industrial Safety Orders.

While Connect/One can establish policies, provide equipment, conduct safety training, and check to see that safe practices are being followed at the job sites; it is your responsibility to ensure that safety is your first priority in the field. Failure to follow company safety policies could result in injury or equipment damage. Your failure to comply with these requirements could lead to termination of your employment.

National Electrical Code (NEC)

Given the potentially dangerous environment created by electricity and electrical work, several national agencies have developed regulations, codes and standards. The National Electrical Code (NEC) is a list of safety regulations and procedures for the installation of electrical wiring and equipment in the United States. It was created for the "practical safeguarding of persons and property from hazards arising from the use of electricity."

The NEC is not actually a law, but a code of practice. In order for the code to be legally enforced, the state, county and/or community must first adopt the NEC.

National Electric Safety Code (NESC)

The National Electrical Safety Code (NESC) is issued by the Institute of Electronic and Electrical Engineers (IEEE). The NESC lists safety regulations and procedures for the "practical safeguarding of persons from hazards arising from the installation, operation and maintenance of electric supply and communications cables and their associated equipment located throughout the cable plant." In other words, the NESC covers the entire cable system up to the tap port. The NESC does not cover the coaxial cable or materials in the customer's house drop and as with the NEC, the NESC must be adopted by the state, county and/or local community in order for the codes to be enforced.

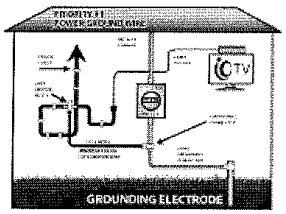
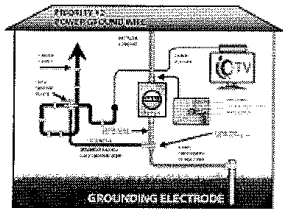
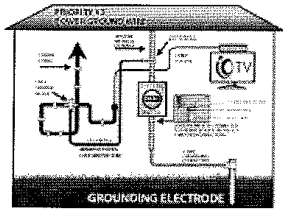
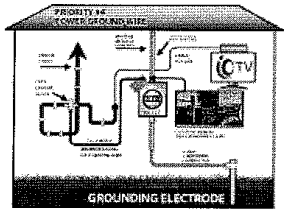
Definitions

Electricity	The flow of electrons through a conductor.
Voltage	Also known as electrical pressure (potential). It is the difference of electrical potential measured in Volts.
Current	The measurement of how much electricity passes a point on a wire in a time frame. Current is measured in Amperes.
Resistance	The opposition to current flow in a direct current (DC) circuit. DC circuit is measured in Ohms.
Impedance	The total opposition a circuit offers to the flow of alternating current. (AC)
Bond	The permanent joining of metallic parts to form an electrically conductive.
Ground	A connection to earth or conductor serving as earth potential. Ground is the point of reference in an electrical circuit considered to be at nominal zero potential when other potentials within the circuit are compared to it.
Neutral Wire	The Electrical return path for current to travel back to the source in a power transmission system.

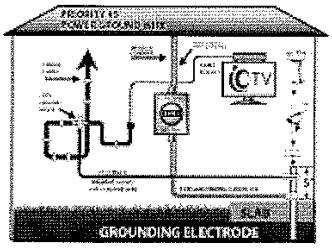
Grounding

It is important to understand that electricity will always seek a state of "0" zero potential (ground). Therefore, it is very important that all TELECOM electrical components are properly connected and grounded. Failure to properly ground an energized source can result in the following:

- Television "Hum-Bar"
- Drop is warm to touch or melted
- Flickering house lights
- No amperage reading on Ammeter
- Visual inspection reveals loose connections

Grounding Priorities	
	• Grounding of CATV service must be connected to the customer's 6 AWG Grounding Conductor with a split bolt connector • The Maximum CATV ground wire length cannot exceed 15 feet
	• Grounding of CATV service is connected to the load side of the electrical meter's metallic conduit with a grounding strap. • Metallic conduit must be connected to the meter by a metallic threaded connection that is wrench tightened. • Rust and paint must be scraped off the surface of the metallic conduit beneath the grounding strap to ensure the integrity of electrical connection. • The Maximum CATV ground wire length cannot exceed 15 feet.
	• Grounding of CATV service is connected to the line side of the electrical meter's metallic conduit. Line Side Conduit must be metallic • Metallic conduit must be connected to the meter by a metallic threaded connection that is wrench tightened. • Rust and paint must be scraped off the surface of the metallic conduit beneath the grounding strap to ensure the integrity of electrical connection. • The Maximum CATV ground wire length cannot exceed 15 feet.
	• Grounding of the CATV service must be connected to the side of the Meter pan using the Side Lip Mounted Meter Bonding Clamp. • The clamp must be attached as to not impede the function of any moveable component of the meter pan. • The connection of the clamp must be checked to ensure the mounting screw has penetrated any surface paint and/or rust. • The maximum CATV ground wire length cannot exceed 15 feet.

Grounding Priorities



- Grounding of the CATV service must be connected to the metallic cold water main within 5 feet of the service main's entrance into the structure (i.e. house, building).
- Verification must be made to ensure that the cold water is a viable grounding electrode.
- Supervisor authorization is required before attempting to utilize cold water as a CATV ground.
- The maximum CATV ground wire length cannot exceed 15 feet.

Electrical Hazards

Regulatory and industry standard - 600 volts and below is considered low voltage. Electrical current can travel approximately 1inch per 1,000 volts in air. Electrical current will always seek easiest path to ground or the path of least resistance.

Exposed Energized Overhead Power Lines/Parts

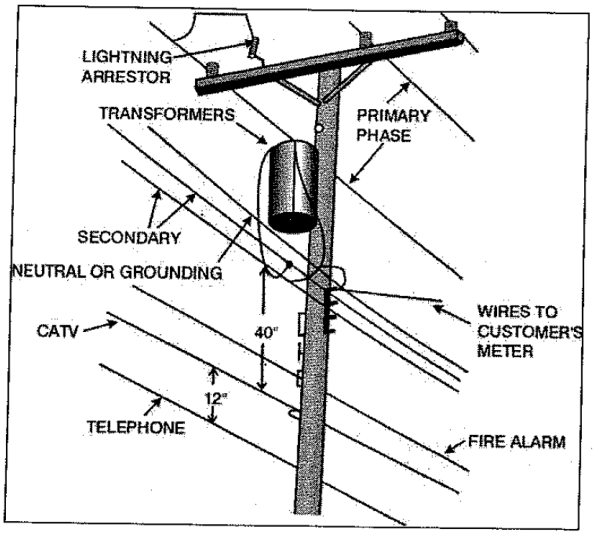
While performing work, it is important to understand the potential hazards associated with your assignment and your proximity to energized sources/wires. This is especially important when working in an elevated position such as on a utility pole or on a ladder.

Before beginning work, ensure that you are wearing all applicable PPE and that all electrical testing equipment is functioning properly. Conduct a work-site hazard assessment. The work- site inspection includes the following:

- Check for the presence of a damaged ground, bond, and/or neutral connection.
- Ensure that the utility wires, including primary and secondary, are properly connected.
- Ensure that all utility wires are connected to their appropriate insulators.

The following vertical clearances should be maintained between the cable strand and utility wires on the pole. See figure below.

- The strand must be placed no closer than 12 inches from the telephone line.
- The strand must be placed no closer than 40 inches from secondary power lines.



Residential Pole

Prior to coming in contact with any wire including TELCOM strand, it is necessary to determine the presence of any hazardous voltage. Connect/One's policy is that you should always maintain a least a 10-foot working distance from any primary line.

Tree Trimming and Pruning

Trimming of trees around energized wires is restricted. On the occasion that a limited amount of branches must be removed to complete your work assignment, the following requirements must be followed prior to contact with the tree:

Put on all applicable PPE. It is your responsibility to ensure that all PPE is properly tested, functioning and utilized for every work assignment.

Determine if any tree limbs are in contact with energized wires.

Pay close attention to any decayed, defective, diseased, hanging or broken branches. These branches may inadvertently come loose and come in contact with energized parts while you are working.

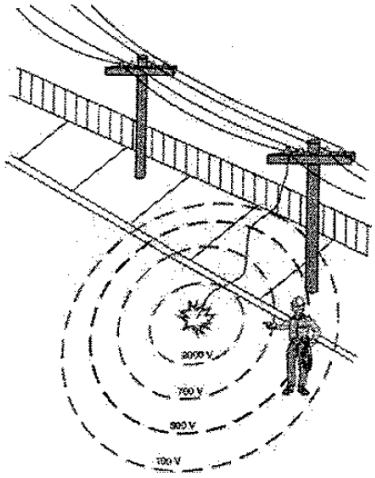
In addition, an inspection of the general work-site shall be conducted to include, but not be limited to, the following:

- Damaged ground bond and neutral wires.
- Damaged power utility wires, including primary and secondary energized wires. Ensure that all energized wires are connected to their appropriate insulators and properly connected.

If any of the above conditions are found to be present do not attempt to make any contact with either the tree or the telecom system. Contact your supervisor and await further instructions.

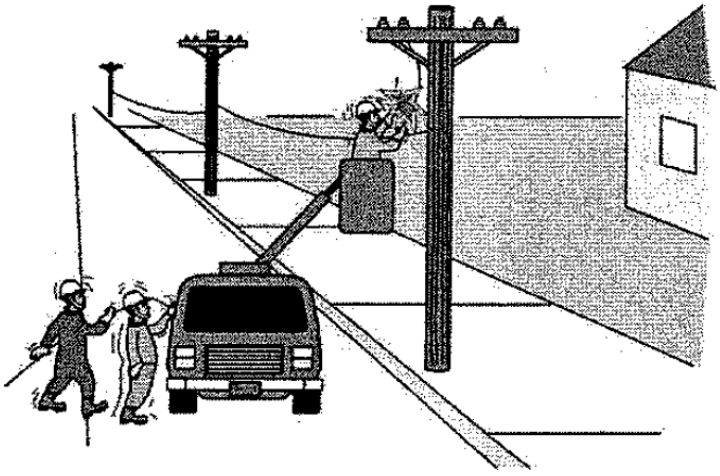
Step Potential

If an energized conductor comes in contact with the ground, the ground becomes energized. The voltage from the downed wire forms concentric circles of different voltage potentials around the point of contact. Voltage potential decreases from the point of contact with the ground. A person's feet in this energized area may be at two different voltage potentials, resulting in electrocution.



Touch Potential

Below is an example of the touch voltage potential. A person or vehicle in contact with an energized line is at a certain voltage potential. A voltage potential difference exists due to the insulating characteristics of the vehicle's tires. When a person touches the vehicle, the voltage potential difference causes a current through the person to ground, resulting in severe injury.



Other Electrical Hazards

- Fire alarm-possibly energized
- Cablevision plant-CATV coax
- Telephone
- Miscellaneous energized cables
- Risers from underground feeds
- Guy wires - braces for poles
- Any underground electrical distribution

Results of Electrical Hazards

As stated earlier, the human body can be a conductor for electrical current. If the human body contacts an electrically energized point in the circuit, the human body becomes a path for the current to return to its source. This is referred to as an electrical shock. Hazards of electrical shock include:

- Shock - Besides the pain that is suffered, there is a loss of muscle control and continued contact could lead to death.
- Falling - Due to jump back resulting from the shock. Additional injuries can result due to falling.
- Burns - Heat generated from an electric arc could be greater than 20,000°C. In comparison, the surface of sun is -40,000°C. Severe burns can result from an electric arc.
- Flash - A bright flash results with the electric arc. The flash and heat generated can cause spots and a sandy feeling in the eyes.
- Equipment damage - The electric arc could destroy equipment, which may be customer owned equipment.
- Injury or death.

Electrical Hazard – Shock

- It is important to be aware that any current of 15 milliamps (mA) or more can be fatal. Current values between 75 and 200 mA will probably be fatal from ventricular fibrillation.
- Ventricular fibrillation is a condition where the heart's muscle fibers contract rapidly and independently of each other.
- This lack of synchronization prevents the heart from pumping.

Current is the killing factor in electrical shock. Voltage is important only in that it determines how much current will flow through a body's resistance.

Electrical Shock Prevention Guidelines

The following are some guidelines that will help prevent receiving a serious electrical shock.

- Whenever you work on or near any energized equipment, you must wear electrical insulating gloves.
- Jewelry will not be worn when performing work. Keys, chains and wristwatches shall be removed from your body while working on or near electrical circuits. Any metal object can provide a path to your body if you come in contact with an exposed electrical conductor.
- Never reach inside a piece of equipment to the point that you lose sight of your hand. If you cannot see your hand, you do not know if your hand is coming close to an energized component or exposed conductor.
- Never drill into a wall without checking for electrical wires in the wall and on the opposite side of the wall to be drilled.
- Stand or squat when performing work. You should not kneel or lie down. These positions reduce your resistance to ground.

If you discover someone is being electrically shocked and are unable to separate themselves from the electrical source due to involuntary muscular contraction, **DO NOT** attempt to touch the victim. Your first step is to locate and disconnect the power source. If this is not possible, put on your insulating gloves and use a non-conductive object (e.g. wood beam, fiberglass stick; dry rope) to separate the victim from the energy source. The power company should disconnect the power supply.

If you witness someone working from a bucket truck and they make contact with an energized line, stay away from the vehicle and **DO NOT** attempt to lower the person with the remote bucket controls on the vehicle. Wait for the power company to de-energize the line or equipment.

Electrical Hazard - Burns

Burns occur from current flow and from electrical arcs (flash burns) and arcs can reach temperatures of 43,000 °F.

Protection:

- Safety glasses
- Fire retardant (cotton-fiber) clothing

Prevention:

- Follow company work rules
- Do not wear metal (jewelry) when working on energized circuits

Personal Protective Equipment (PPE)

The following PPE has been issued to provide protection against energized sources that may be encountered during routine and non-routine work conditions. It is imperative that each employee understands the proper use, function and testing of the following equipment:

- Hardhat
- Safety glasses
- Insulating class "00" gloves/leather protectors
- Voltage/Ohm/Ammeter (VOM) Meter
- Voltage detector (Tic Tracer)
- Approved footwear

Hard Hat and Safety Glasses (Electrical Safety)

Your hardhat and safety glasses are PPE that can prevent/minimize an injury due to accident contact with an energized source. This PPE should always be worn together while working outdoors or indoor if the potential of being struck by or against an object exists (including an energized source). The following tasks listed below will include, but not be limited to, the use of hardhat and eye protection.

- Drilling
- Snaking Cable
- Disconnecting/Reconnecting Tap
- Working in a bucket
- Working on the power supplies
- Working on a pole/ladder
- Working inside confined area

Insulating Gloves

The Class "00" rubber-insulating safety gloves and leather protector must be worn at the onset of any job or task that has a potential energy source. This includes all active and passive equipment such as:

- All pole work
- Grounding at a house
- Work on a power supply
- Plant maintenance (splicing feeder/trunk)
- Any location where there is a difference in exposed electrical potential
- Drop connection at ground point
- Drop removal and disconnection
- During storm restoration
- Aerial and underground construction
- Work on an amplifier that have voltages
- The gloves must be worn until all potential energized components are tested and found de-energized.

Apparel: Clothing

Connect/One approved clothing/uniform will be worn while performing all job related assignments. Under no circumstance will clothing made of man-made fabric be worn. These fabrics can melt during electrical arc condition causing severe burns. Because of this, the following protocol must be followed:

- Man-made fiber such as polyester and/or rayon must never be worn around exposed energized parts.

Only natural fibers such as cotton and/or wool are to be worn when working on an energized or potential energized source, around an open flame.

Apparel: Conductive (Jewelry)

When work is performed within reaching distance of exposed energized parts, all conductive apparel such as keys, chains, rings, wristwatches, earrings and/or metallic bans must be removed.

Under no circumstances shall any conductive apparel, such as rings and/or bracelets, be worn. It is policy that all conductive apparel is removed prior to starting work.

Electrical Safety Test Equipment

- Digital Volt/Ohm/Ammeter (VOM)
- Audio/Visual Voltage Detector - Tic Tracer
- Outlet Tester - Plug-in Polarity Tester

Examples of Hand Held Electrical Safety Equipment

The test equipment that is issued in your system might be a different model or make than the ones shown above. The operation of the safety equipment is basically the same. Read the manufacturer's user guide or manual for details on the use of the equipment you are issued before use.

Clamp-On Voltmeter (VOM)

The clamp-on volt/ohm/ammeter (VOM) is used to measure voltage AC and DC, AC current and depending on the model, DC current. The clamp-on VOM will also measure frequency, continuity and capacitance. Test current level prior to disconnecting/connecting any cable or ground wire. Figure below shows a clamp-on VOM.

Electrical Safety

The following safety precautions must be observed to ensure maximum personal safety during the operation of the meter:

- Review the operating instructions thoroughly. Pay attention to specific manufacturer's warning.
- Always inspect your meter, test leads and accessories for any sign of damage before each use. If a damaged condition exists, notify your supervisor immediately.
- Ensure that the transformer jaws are clean before taking a measurement.
- Never come into contact with a conductive object such as a metal conduit when taking electrical measurements.
- Never touch exposed wiring, connections or any other live circuits when attempting to take measurements.
- Remove any conductive jewelry.
- Always grasp the test probes so that your fingers are positioned behind the flash guards
- Always be alert for the presence of a buzzing sound, pale blue glow or an odor of ozone. All of these conditions may indicate the presence of high voltage. If this occurs, do not attempt to use your meter. Contact your supervisor or call for assistance.
- Always check and replace the batteries if a low battery level exists or is displayed.

Clamp-On VOM Construction and Controls

The transformer jaws (amp clamp) pick up the AC or AC/DC current flowing through the conductor. When measuring current, only place one conductor (wire) inside the jaws, not both. The trigger is pressed to open the transformer jaws. When the trigger is released, the jaws will close. The LCD display will display indications of measured values and feature symbols indicating function. The function selector allows the operator to select the signal to be measured and the range of scale: AC voltage, DC voltage, AC current, DC current, and continuity.

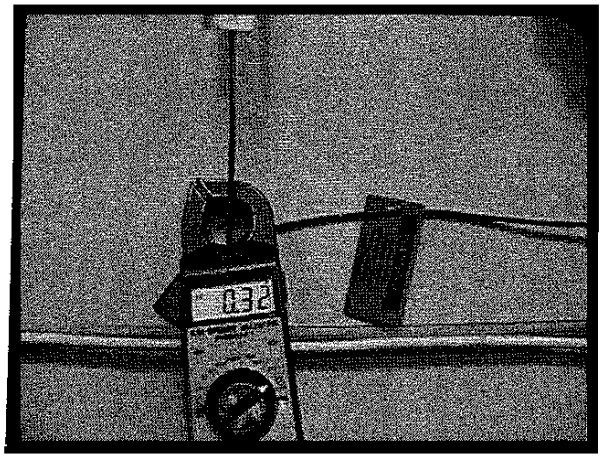
Using a Clamp-On VOM to Measure Current (A)

Current measurements are taken by setting the function switch to the ACA 700A range. Open the transformer jaws by pressing the trigger, and enclose one conductor (wire) only. Release the trigger and allow jaws to completely close before taking a reading. The reading will be indicated on the display.

Check Service Ground on an Install

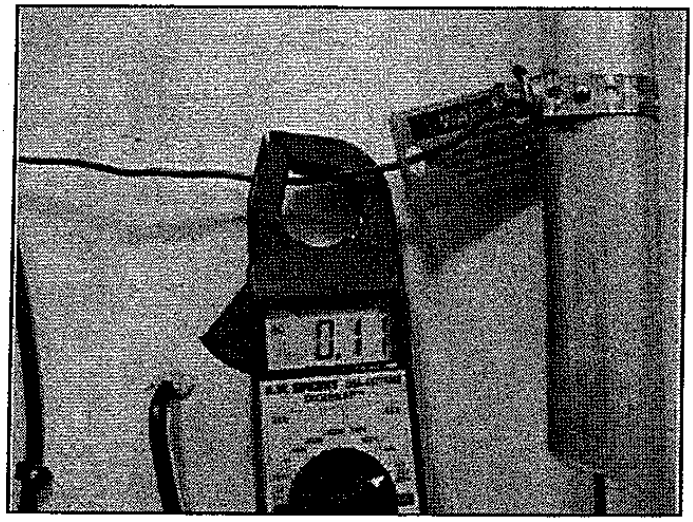
Taking a Reading on the Copper Service Ground

- Clamp around copper electric service ground before making new drop ground connection
- Must have a reading above 0.000 amps and less than 1amps



Check CATV Ground on a Disconnect or Before Maintenance Clamp Around Drop Ground

- To check drop ground for hazardous amperage before disconnecting or performing maintenance
- Make sure it is greater than 0.000 amps and below 1amps

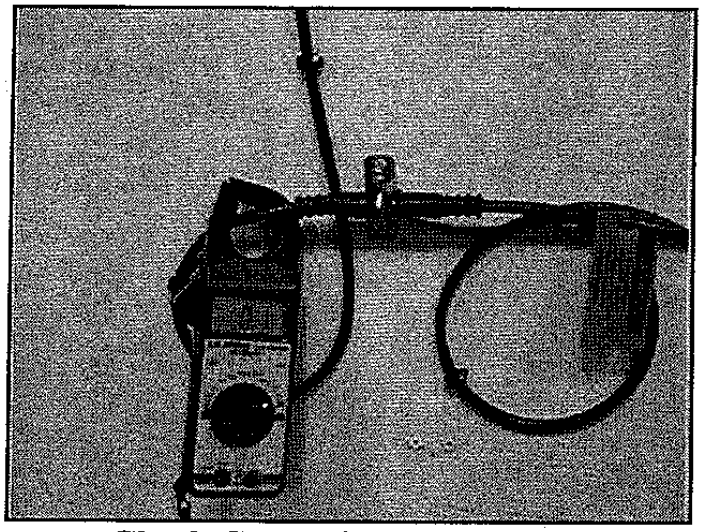


Check CATV Ground

Check For High Amperage On a Drop

Clamp Around Drop Wire Before Ground Block

- To check drop for high amperage, clamp around drop wire before ground block or grounding splitter, if no ground block is present.



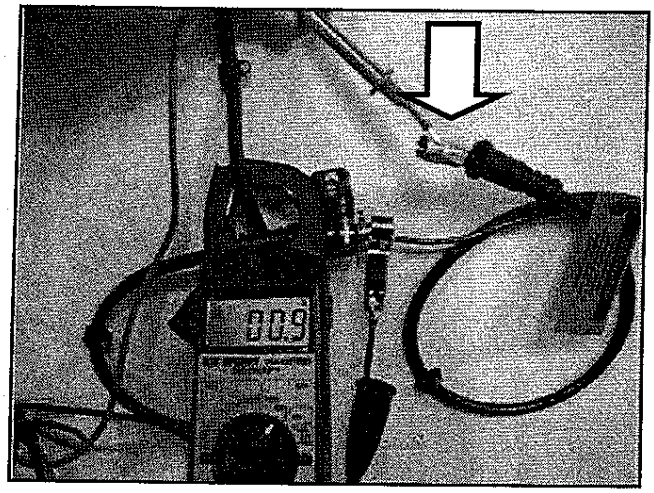
Check CATV Ground on Drop

If current is present, it just tell you that the drop is energized. Further testing is required to determine if the problem is from the house or tap.

Checking for Voltage on the Cable Shield

Reading Voltage on Shield of Cable

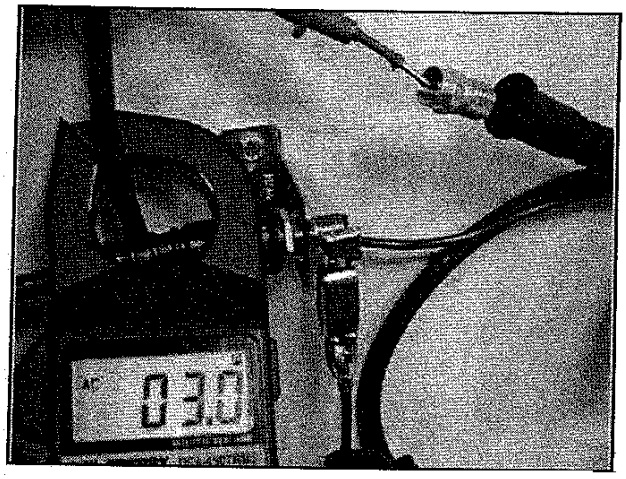
- After verifying that amperage on drop is within safe limits, you can remove cable from ground block and measure voltage on the shield to a good ground.



Checking for Voltage on the Cable Shield

Reading Voltage on a Center Conductor

- To read if voltage is present on the center conductor, place **Black** lead on a good ground, like the ground block and carefully probe center conductor with **Red** lead.
- Do not touch center conductor and shield at the same time.



Reading Voltage on a Center Conductor

Tic Tracer (Foreign Voltage Detector)

The Tic Tracer, shown below, is an instrument used to locate sources of AC voltage. The Tic Tracer voltage detector probe senses the electromagnetic field produced by an energized AC source such as electrical wires.

The Tic Tracer does not require contact with an energized source to detect voltage. The instrument does not indicate electrical current flow, only that a voltage (a difference in electrical potential) is present. When voltage is detected, the Tic Tracer emits a rapid audible ticking sound. The frequency of the ticking increases the closer the unit is positioned to the voltage source.

The Tic Tracer has an alarm function that will always activate at a safe distance from the voltage source.

Outlet Tester

The Outlet Tester, shown in the figure below, is an instrument used to determine the existence and polarity of AC voltage at a customer's outlet.

A hazardous ground can exist in the customer's wiring inside a wall, a wall outlet, a multiple outlet strip or an extension cord. The outlet tester checks for the existence of a ground through testing for low ground impedance.

To use the Outlet Tester, plug it into the electrical outlet to be tested. Observe the end of the Outlet Tester for signs of light indications.

If there is no light, it means the outlet is not connected or no power is on it.

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.

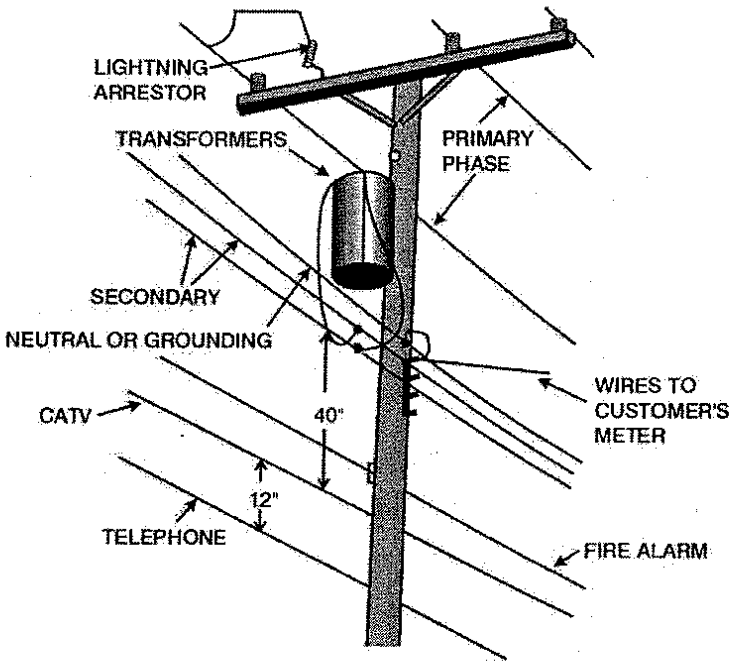
Step 2 - Ensure that all electrical testing equipment is functioning properly.

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:

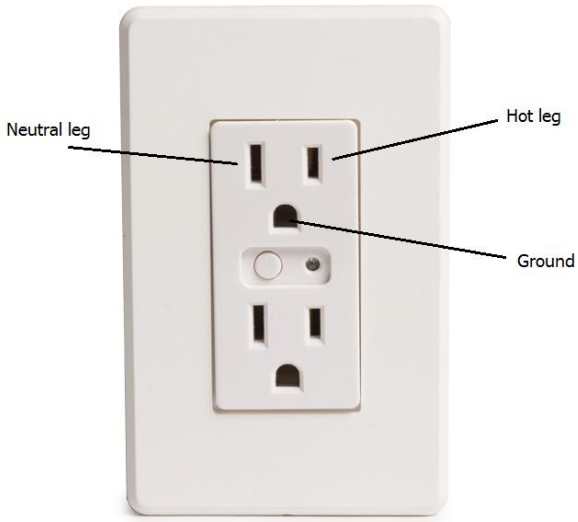
- Regardless of how far away the lightning is, you should stop outdoor work and go indoors or inside your vehicle if you see lightning.
- Stay off ladders.
- Avoid trees, and tents. Stay away from metal fences, wires and umbrellas.
- Do not handle electrical and/or Telecom wiring within the customer's 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.