

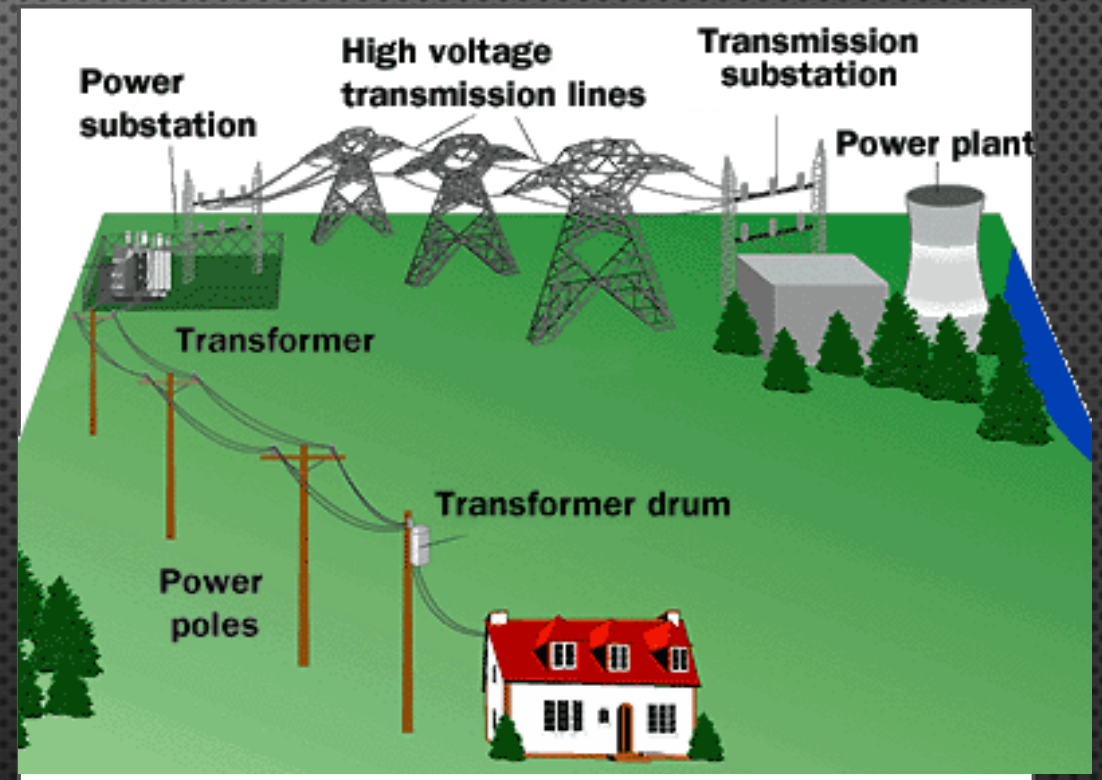
The background of the image is a dark, stormy sky filled with numerous bright, jagged lightning bolts. The bolts are primarily yellow and white, with some showing a blue or purple hue. They are scattered across the frame, with a few particularly large and bright ones that stand out prominently. The overall effect is one of intense energy and danger.

ELECTRICAL SAFETY

DON'T BE SHOCKED

ELECTRICITY 010

- ELECTRICITY GENERATED AT THE POWER PLANT FLOWS THROUGH:
- TRANSMISSION SUBSTATION
- HIGH VOLTAGE LINES
- SUBSTATION
- LOCAL DISTRIBUTION LINES



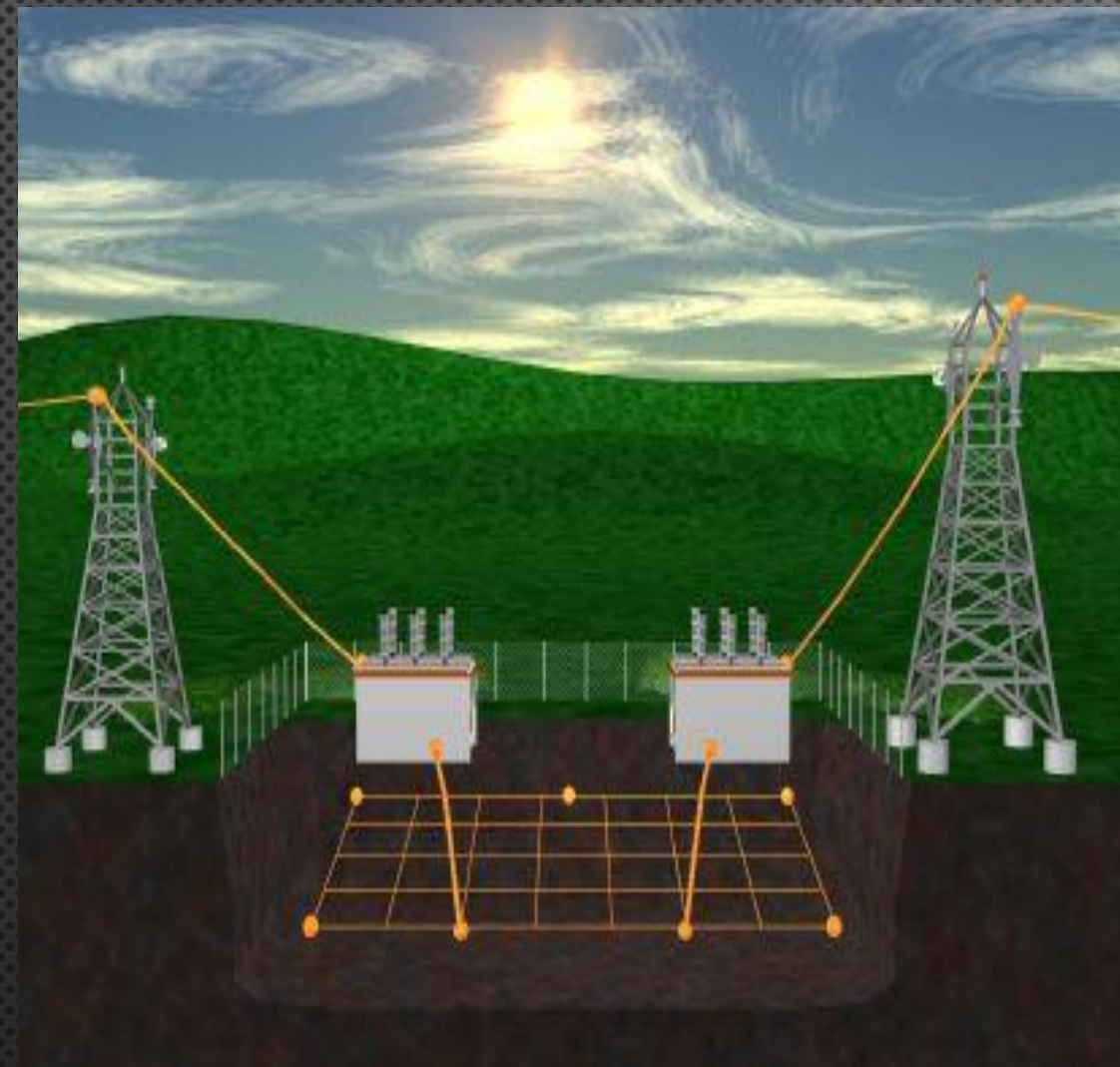
ELECTRICITY 010

- AT THE POWER GENERATING STATION THERE IS A LARGE

- **GROUNDING GRID**

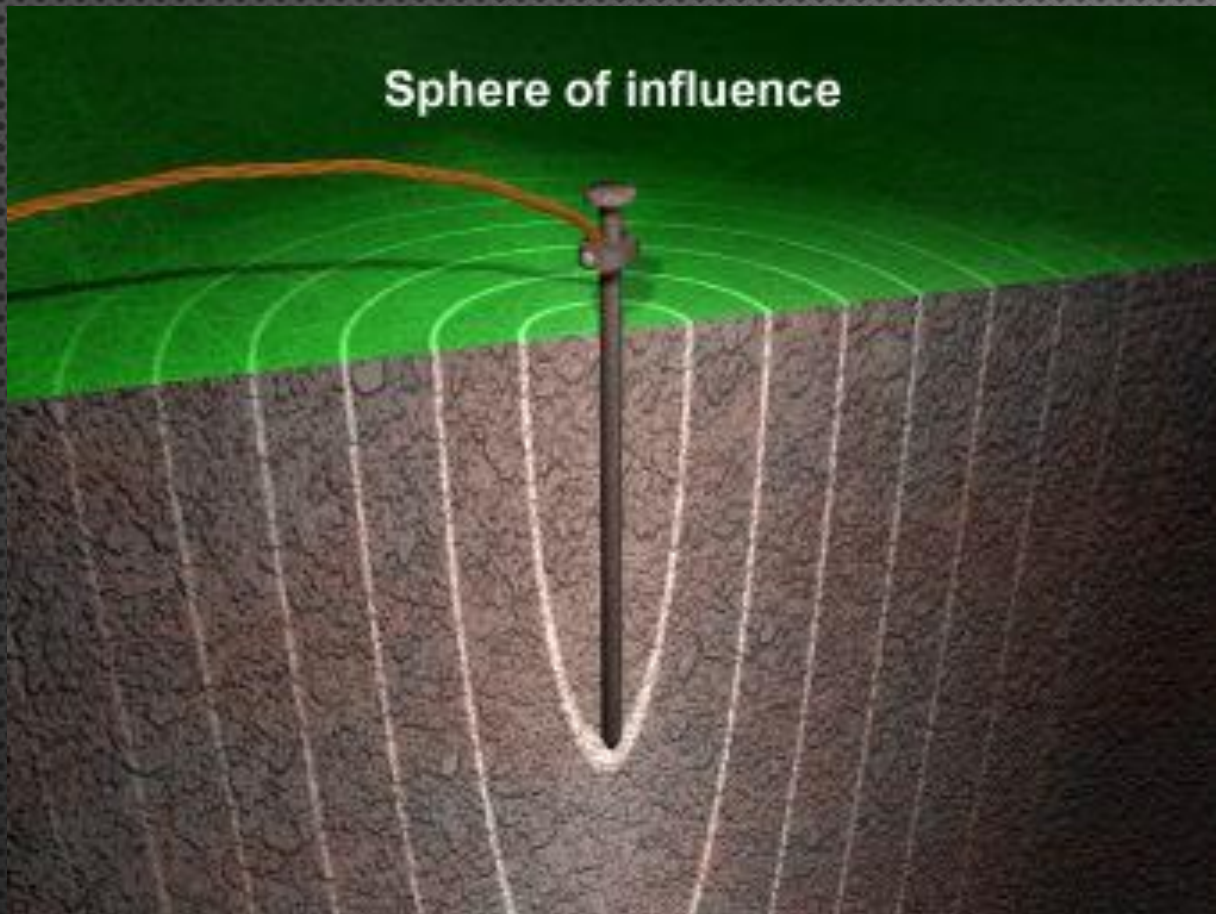
- THIS IS FOR THE RETURN

- **EARTH GROUND**



ELECTRICITY 010

RULE #1



- ELECTRICITY WILL ALWAYS FOLLOW THE PATH OF LEAST RESISTANCE TO GROUND
- ELECTRICITY WILL ALWAYS TRAVEL FROM A HIGHER RESISTANCE (GROUND STATE) TO A LOWER RESISTANCE (GROUND STATE)

ELECTRICITY 010

TO COMPLETE THE CIRCUIT BACK TO THE POWER PLANT

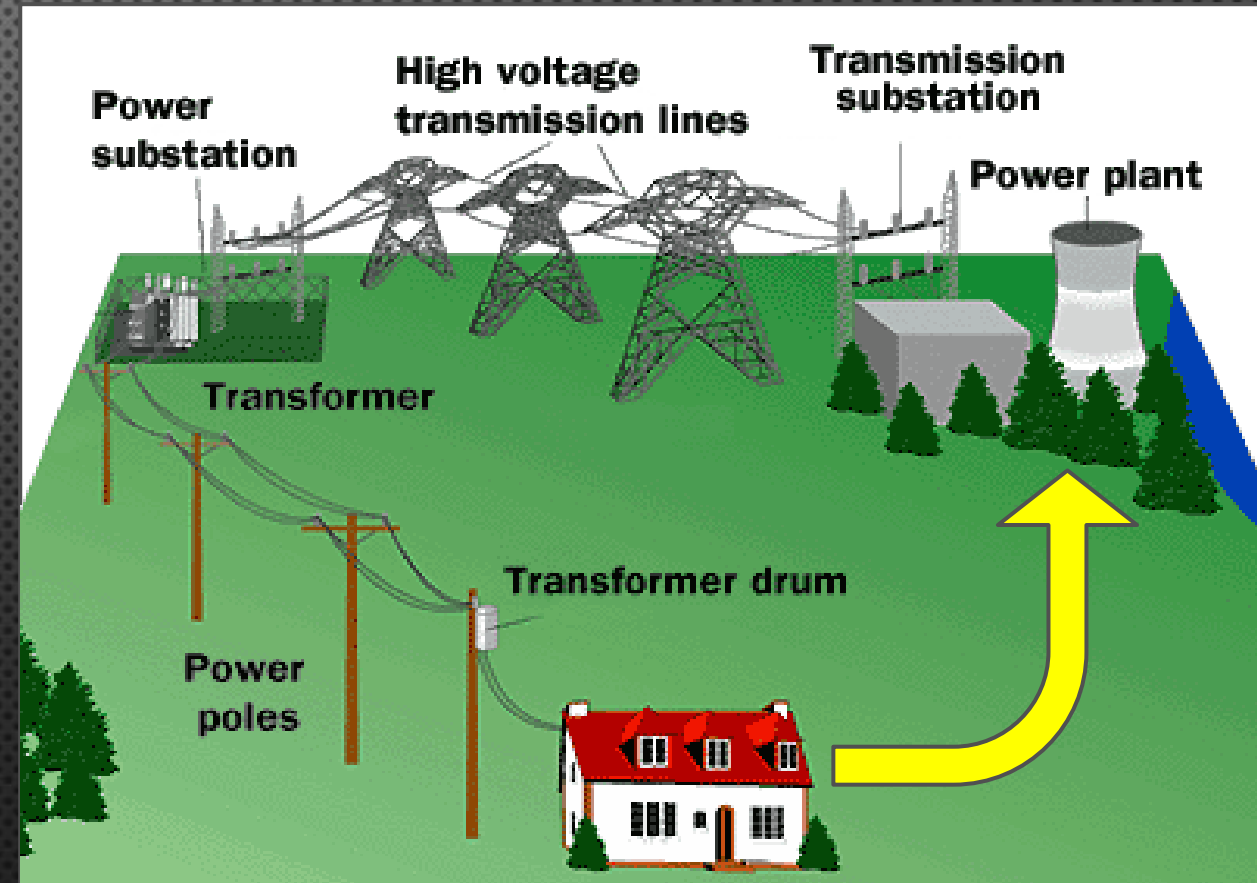
THE HOUSE GROUND

COMPLETES THE CONNECTION

IF YOU DO NOT HAVE A

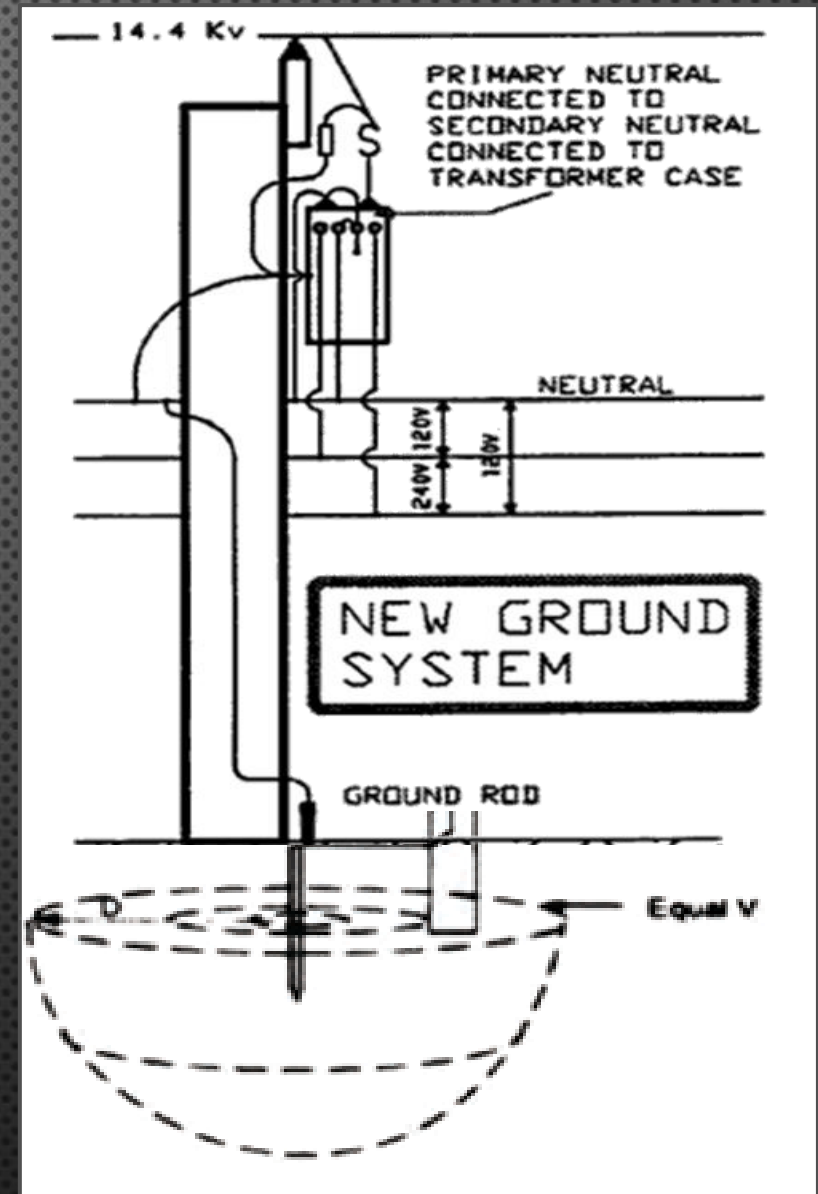
GROUND THE ELECTRONICS IN

THE HOUSE WILL NOT WORK



GROUNDING

- MGN TO VERTICAL GROUND
- PROVIDES A LOW IMPEDANCE PATH FOR STRAY CURRENT
- MGN ABSORBS THE UNBALANCED ENERGY BETWEEN THE 3 PHASES
- STRAY CURRENT IS DISPERSED TO GROUND



Foreign Voltage Detector

- ALWAYS USE A NON-CONTACT VOLTAGE DETECTOR

- YOU CANNOT SEE STRAY VOLTAGE

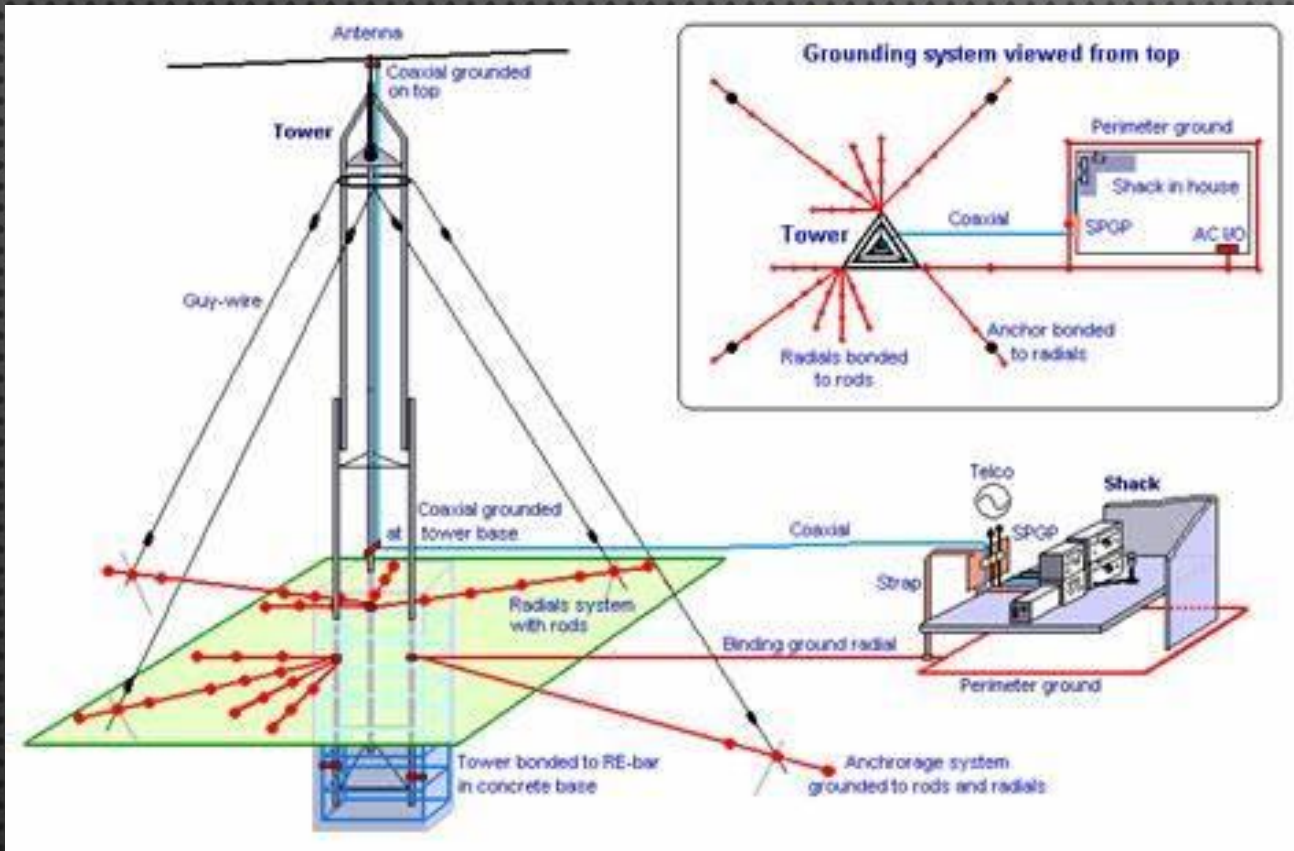
- KNOW THE TYPE OF DETECTOR YOU ARE USING

- SOME WILL ONLY DETECT THE MAGNETIC FLUX IN A CLOSED CIRCUIT

- THEY WILL NOT READ A HOT WIRE IF IT IS NOT IN GROUNDED CIRCUIT



Wireless Safety Tower & Site Grounding



Phone Tower
BUSS

WIRELESS SAFETY

- ROOF TOP SAFETY HAS ITS OWN SET OF HAZARDS
- WIRES ALL OVER THE ROOF
- YOU MUST HAVE BARRICADES OR FALL PROTECTION IF YOU ARE WITHIN 15' OF THE EDGE



- WHEN CUTTING ELECTRICAL WIRES
- CUT ONE CONDUCTOR AT A TIME



WIRELESS SAFETY



- **ALL TOWER WORKERS MUST BE CERTIFIED FOR TOWER RESCUE**
- **ALL TOWER WORKERS MUST BE TRAINED AND CERTIFIED FOR FIRST AID AND CPR**

WIRELESS SAFETY

- **EQUIPMENT CAN FAIL AND CATCH FIRE**
- **BURNING EQUIPMENT CAN CAUSE THE TOWER TO COLLAPSE**



**TOWER WORKERS
MUST BE TRAINED
IN THE HAZARDS
OF RF EXPOSURE
CONTACTING AN
AM TOWER &
GROUND CAN
CAUSE SERIOUS
RF BURNS**

Hazardous Effects Of Mobile Tower Radiation

Towers Radiation
ranges between
400 MHZ & 3GHZ

Radiation from these
towers may cause many
health hazards

Concern growing over
unscientific proliferation
of cell phone towers

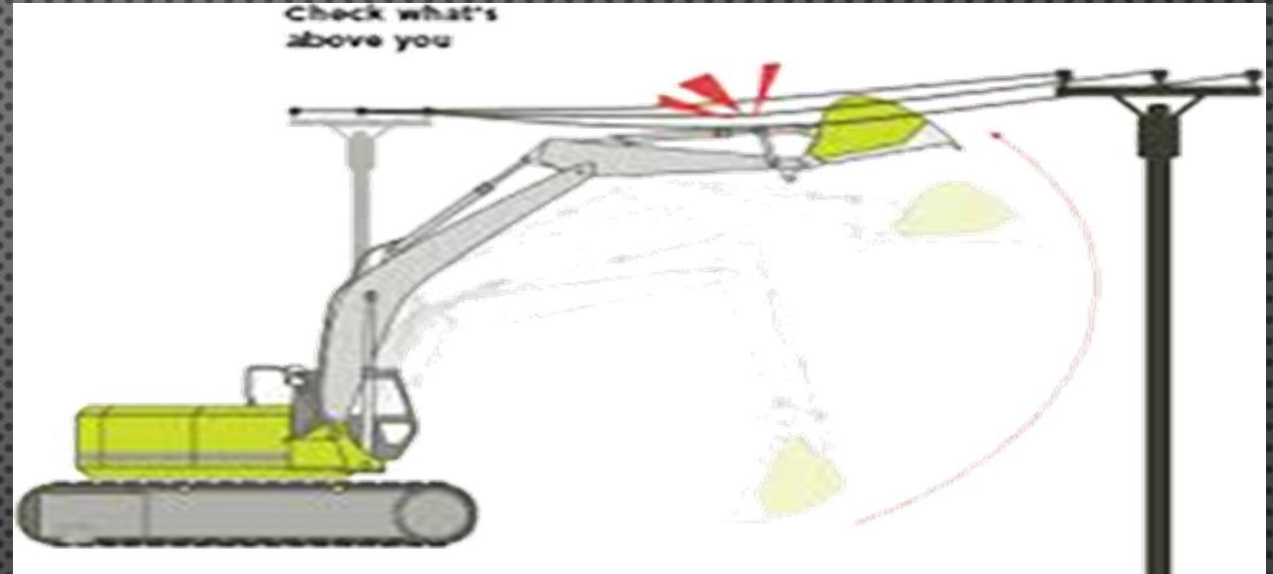
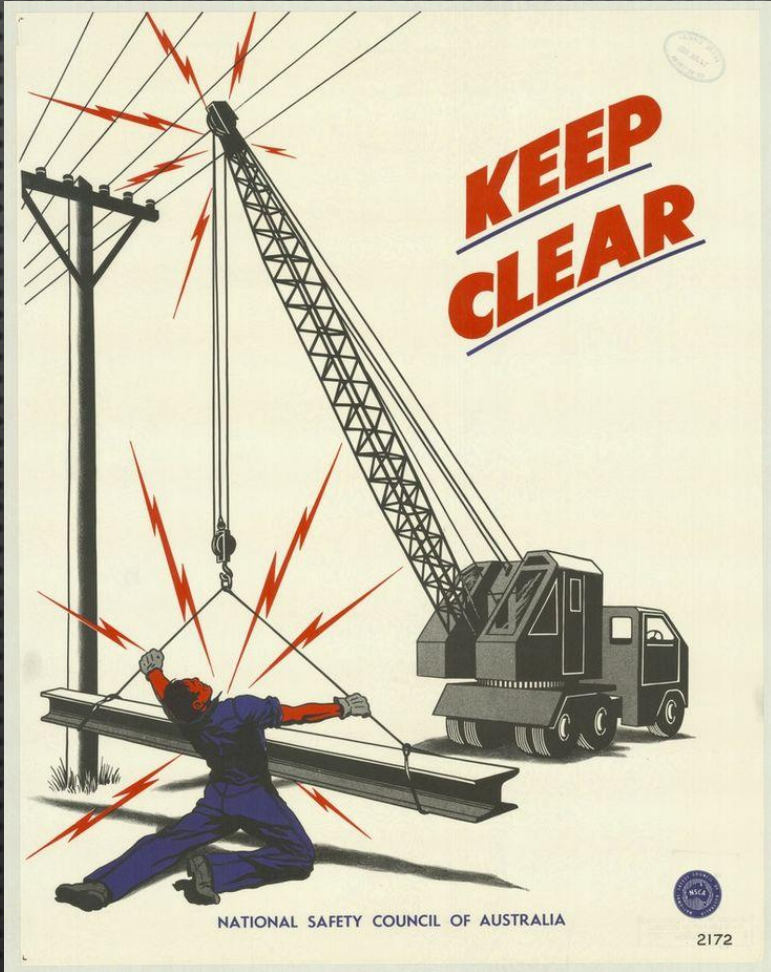
Experts highlight great
services rendered by
telecom firms

EMF Radiation causes
headache, depression,
high blood pressure
and sleep disorders



There are about
7.3bn mobile
subscriptions worldwide

EQUIPMENT CLEARANCE



ELECTROCUTION HAZARD
DEATH OR SERIOUS INJURY WILL RESULT FROM CONTACT WITH THIS MACHINE, TRUCK OR TRUCK ATTACHMENTS IF THEY SHOULD BECOME ELECTRICALLY CHARGED.
KEEP CLEAR

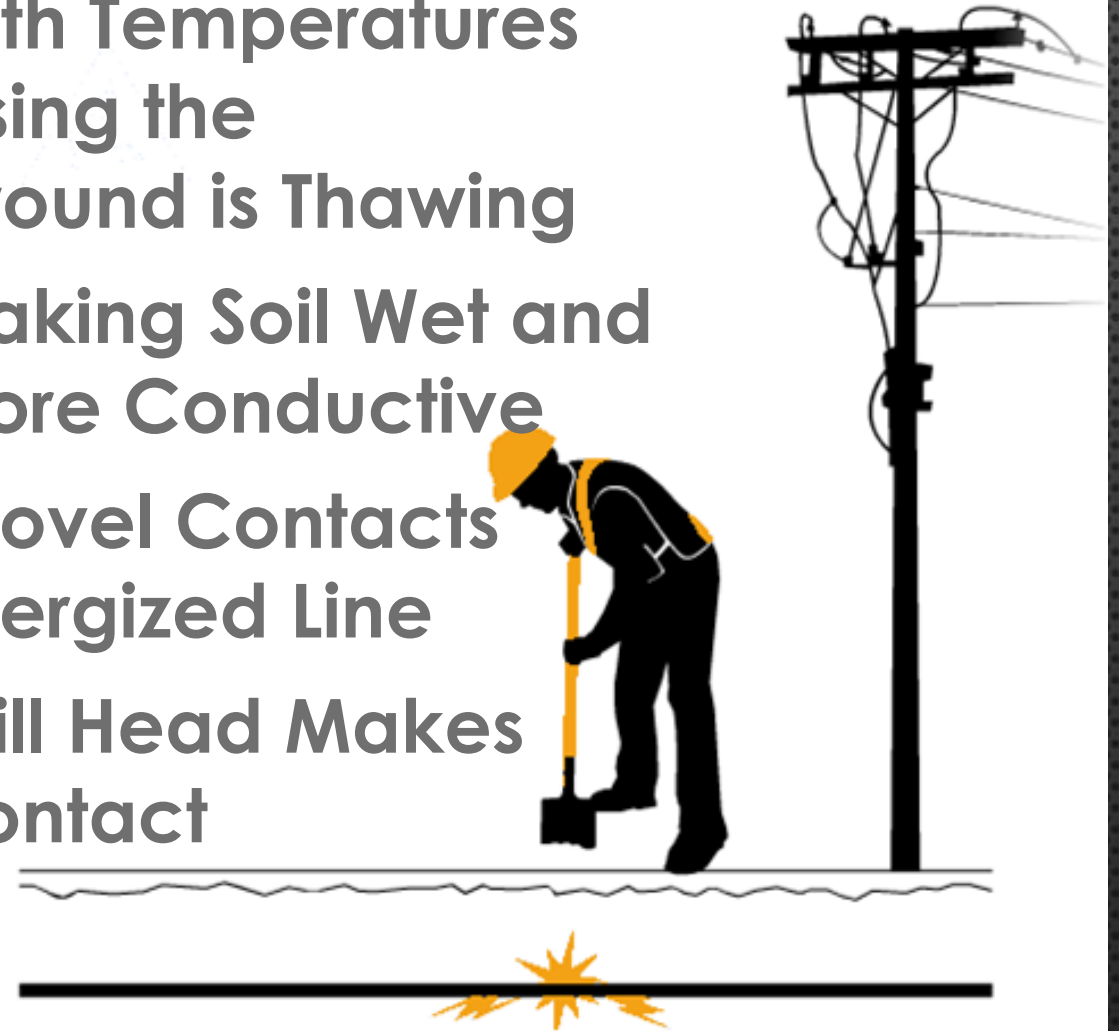
A warning sign with a red background and a white exclamation mark inside a triangle. Below the sign, the text reads: 'ELECTROCUTION HAZARD', 'DEATH OR SERIOUS INJURY WILL RESULT FROM CONTACT WITH THIS MACHINE, TRUCK OR TRUCK ATTACHMENTS IF THEY SHOULD BECOME ELECTRICALLY CHARGED.', and 'KEEP CLEAR'. To the right of the text is an illustration of a person in silhouette standing next to a machine with a reacher attachment. Red lightning bolts indicate a hazard from power lines above.

UNDERGROUND SAFETY

ALL UTILITIES MUST BE MARKED BEFORE DIGGING OR DRILLING



With Temperatures
Rising the
Ground is Thawing
Making Soil Wet and
More Conductive
Shovel Contacts
Energized Line
Drill Head Makes
Contact



UNDERGROUND SAFETY

IF THE STRIKE ALARM GOES OFF

STOP DRILLING

STAY ON THE DRILL

CALL THE UTILITY

DO NOT PULL BACK THIS MAY CAUSE
MORE DAMAGE

WAIT FOR THE ALL CLEAR FROM THE UTILITY
BEFORE GETTING OFF THE DRILL.





Health & Safety



Photo Source: Shutterstock

You're Doing it
WRONG

1. Identify Hazards & Existing Controls
2. Assess Risk (Probability x Severity)
3. Reduce Risk (Eliminate or Control)
4. Monitor Effectiveness of Controls

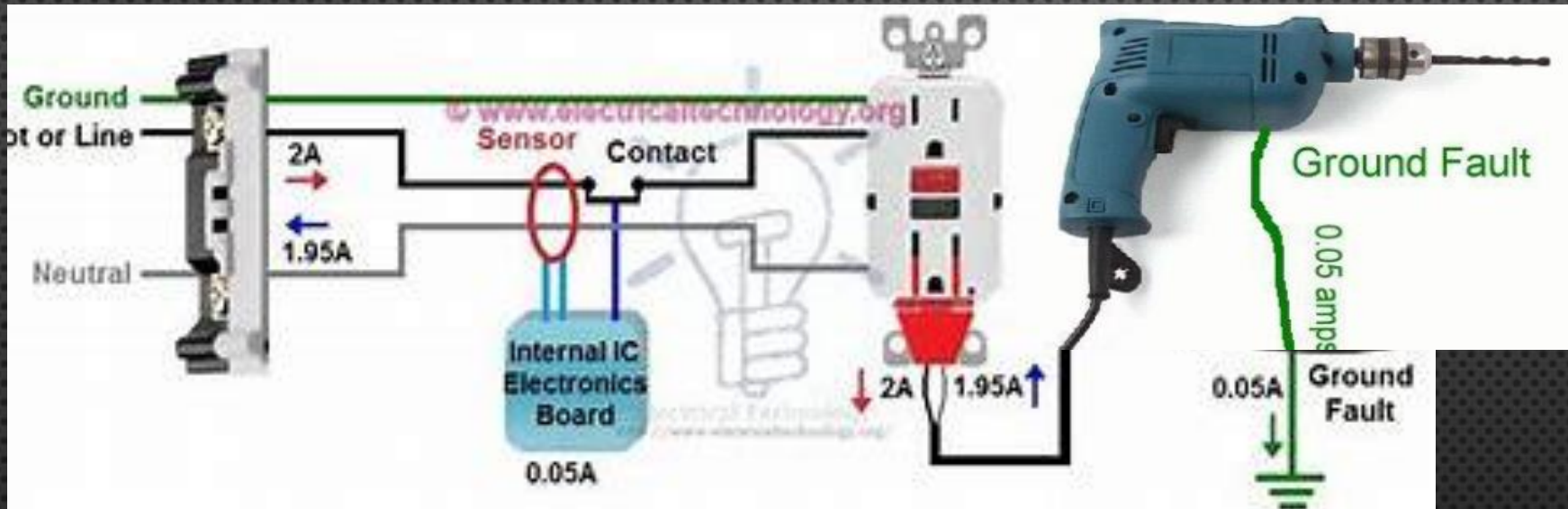
Check the Locate Marks Before

- Driving in Ground Stakes
- Setting Ped Stakes
- Setting Vaults

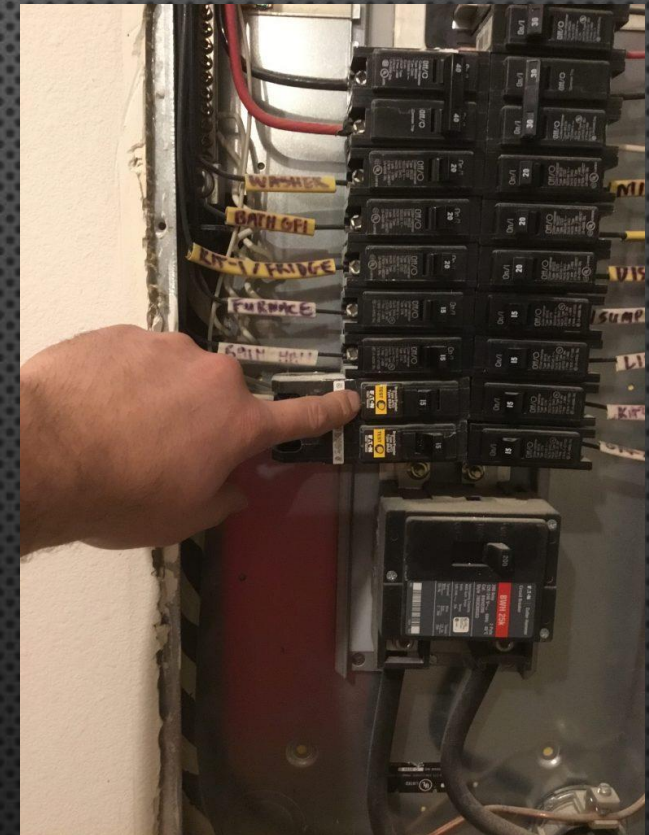


HOW GFCI WORKS

A GFCI Compares the Current Going to the Load and the Current Returning
If there is More Than 0.05 Amp Difference the GFCI Will Open the Circuit
This Happens in Less Than 1/40th of a Second



How GFCI Works?

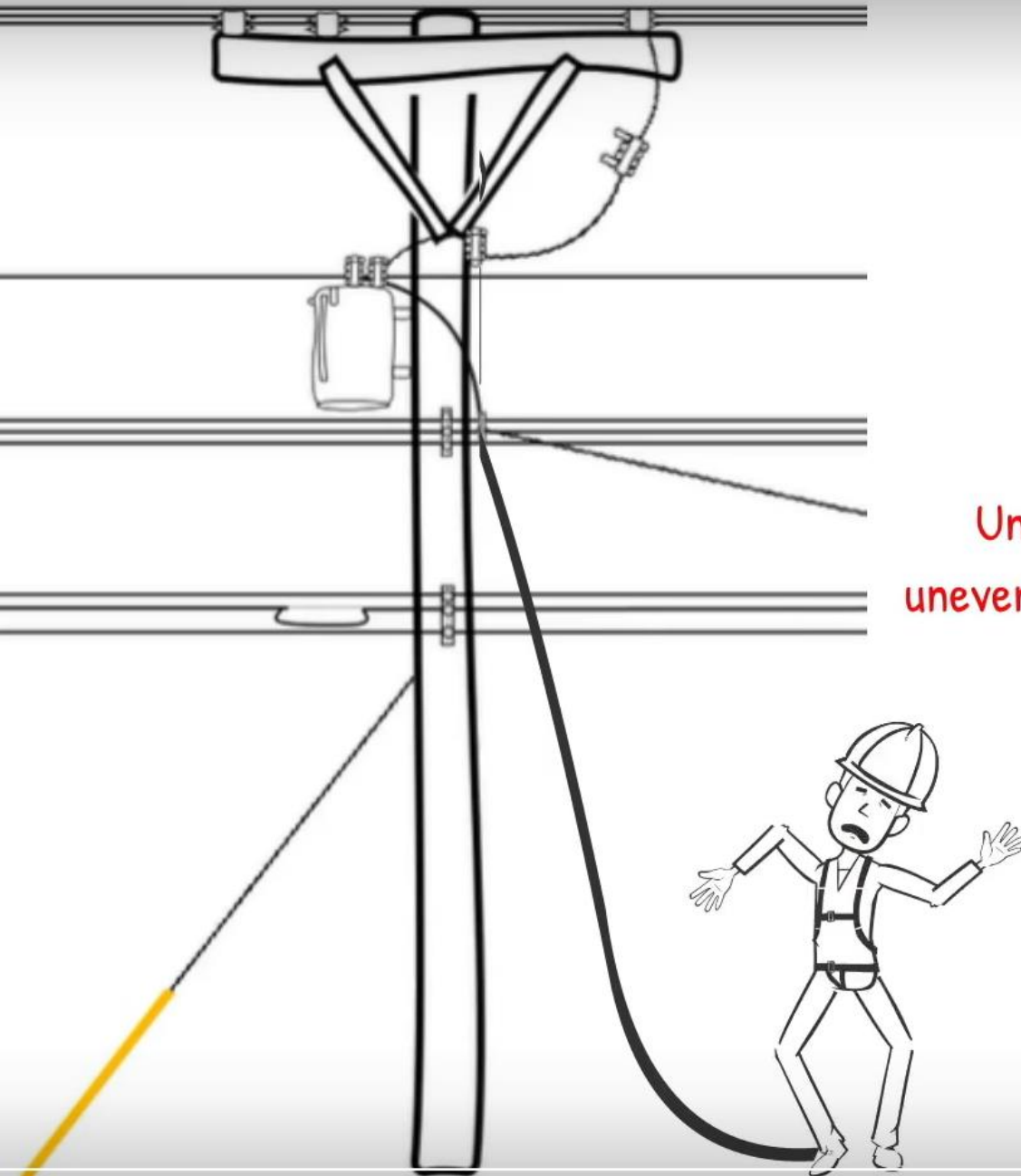


Voltage Gradient

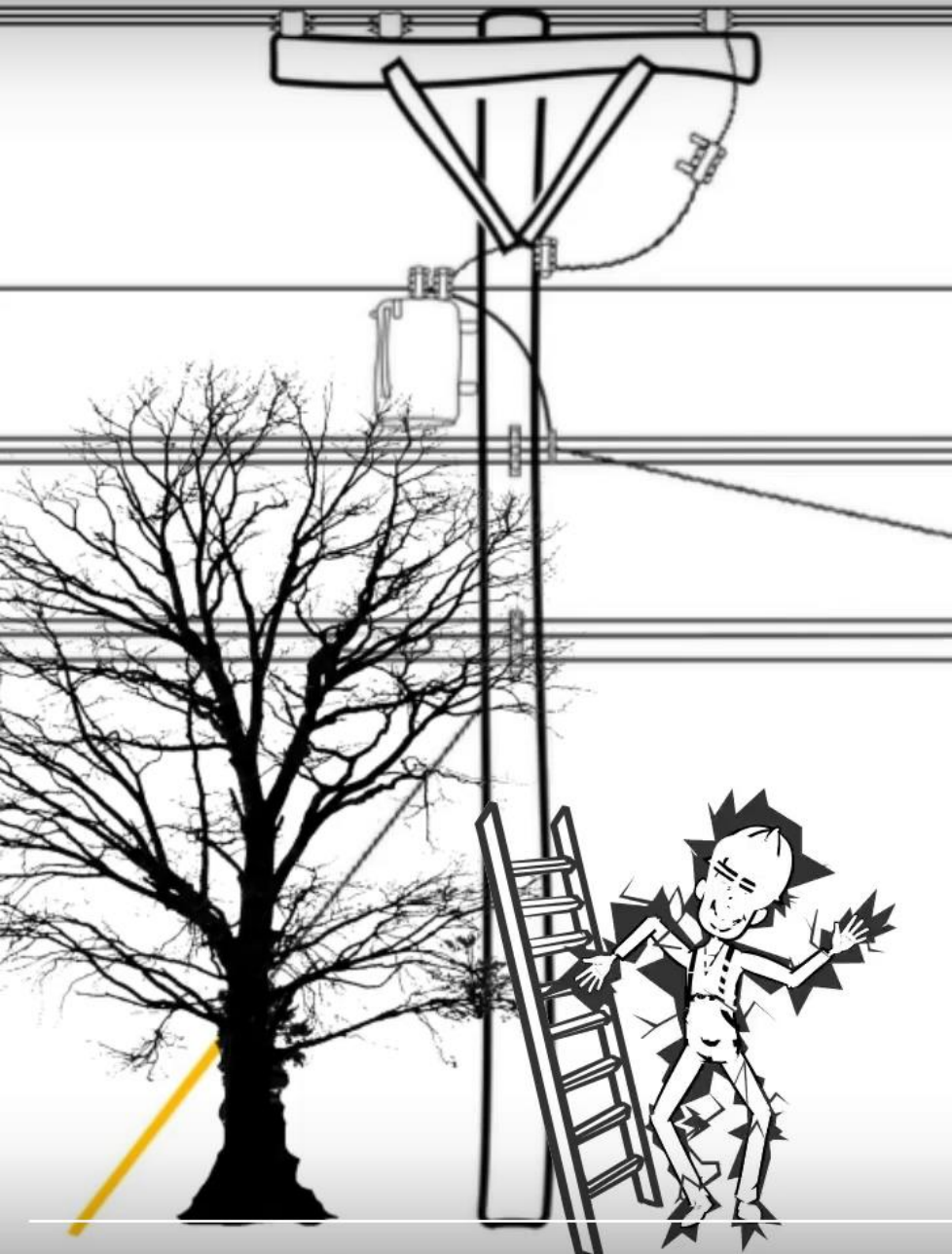
On The Ground Surface

Unlike the water ripple in a pond, the electricity flow can be very unevenly distributed. In wet conditions, the flow of electricity across the ground can be significantly greater.

Direct Contact



Touch Potential

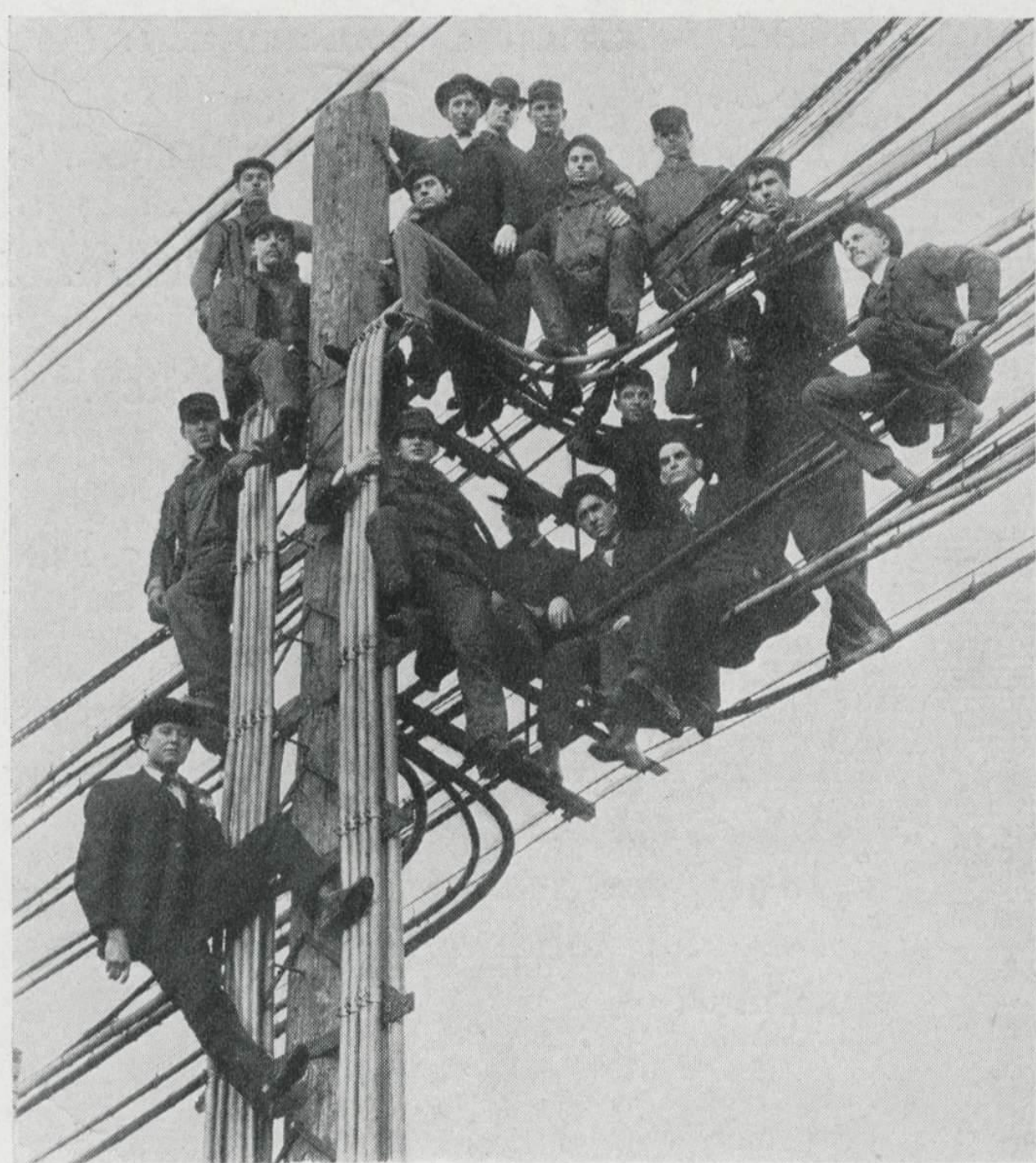


The electricity would flow through the hand, arm, chest, abdomen, leg and foot to the ground.
The difference in voltage (potential difference) in this case is referred to as “touch potential”.

Indirect Contact

Aerial Wired Safety

- PPE Must Be Worn at All Times
 - Hard Hat
 - Safety Glasses
 - Vest
 - Gloves
 - Boots
- Maximum Approach Distance
 - 24" to ANY ELECTRICAL CONDUCTOR
- Use an FVD Before Contacting Pole or Strand



Aerial Lift Safety

Always Make sure the Lift is on Level Ground, Outriggers Extended If so equipped.

This Lift was Rated for 141' Working Height and 600 lb. load. At 120' a Gust of Wind of 39 MPH Caused the Lift to Tip Over and Become entangled in the Electric Lines.

Operator Manual Should have a Graph showing Wind Speed and Maximum Working Height



AERIAL LIFT SAFETY

- REMEMBER DURING STORMS OR HIGH WIND SITUATIONS, YOUR BUCKET AND THE POLES ARE GOING TO SWAY
- TREES CAN SWAY INTO POWER LINES
- TREES UNDER THE WIND STRESS CAN BREAK AND BRING DOWN POWER LINES.

Do Not Operate a Bucket or Climb a Ladder If Wind Speed is **≥ 30 MPH** Continuously

