High Voltage Protection Action ("HVPA")

Protecting workers & the public from electric shock!

Objective

- This is solely designed to serve as a primer for governmental agencies to watch & advise of violations of OSHA's regulations & help take High Voltage Protection Action – HVPA preventing electric shock to workers & the public.

Background

- Electricity especially high voltage can be deadly if not properly controlled
- Working near electric lines & equipment direct and indirect contact must be avoided.
  - Direct contact is contact with the electric facility with any part of the body or equipment
  - Indirect contact is when any part of the body or equipment is “too close” to electric facilities where arcing or electric flow is permitted

Electric Power Space

- Utilities have established areas on poles where the various service lines electric, telephone, & cable lines are installed.
- The upper portion of the pole is reserved for electric facilities. Generally, with the highest voltage lines being at the top of the pole.
- A neutral space separates the electric power lines & equipment for communication & other non-electric utilities on utility poles.

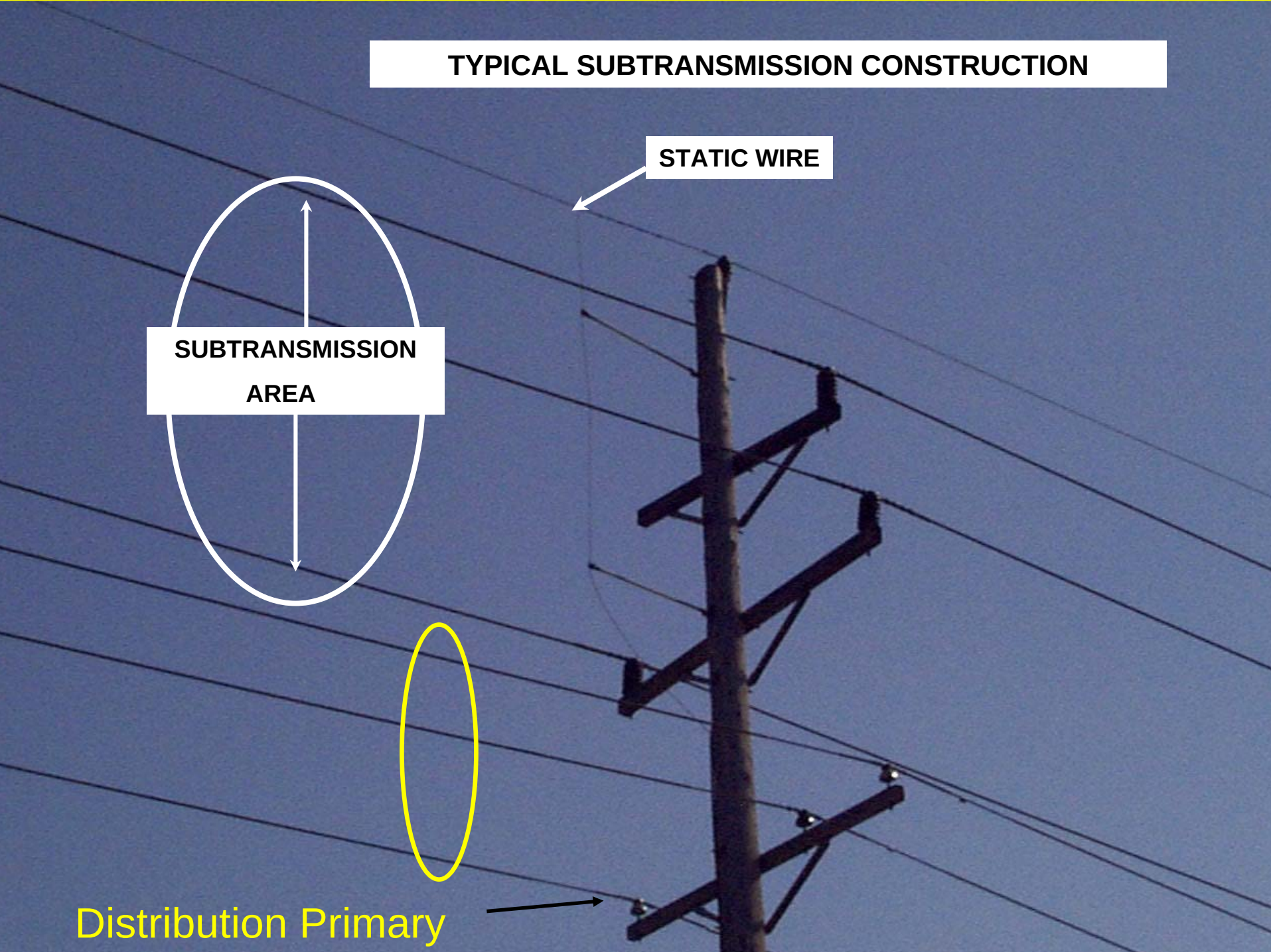
Equipment is installed on poles in the following order from the top down:

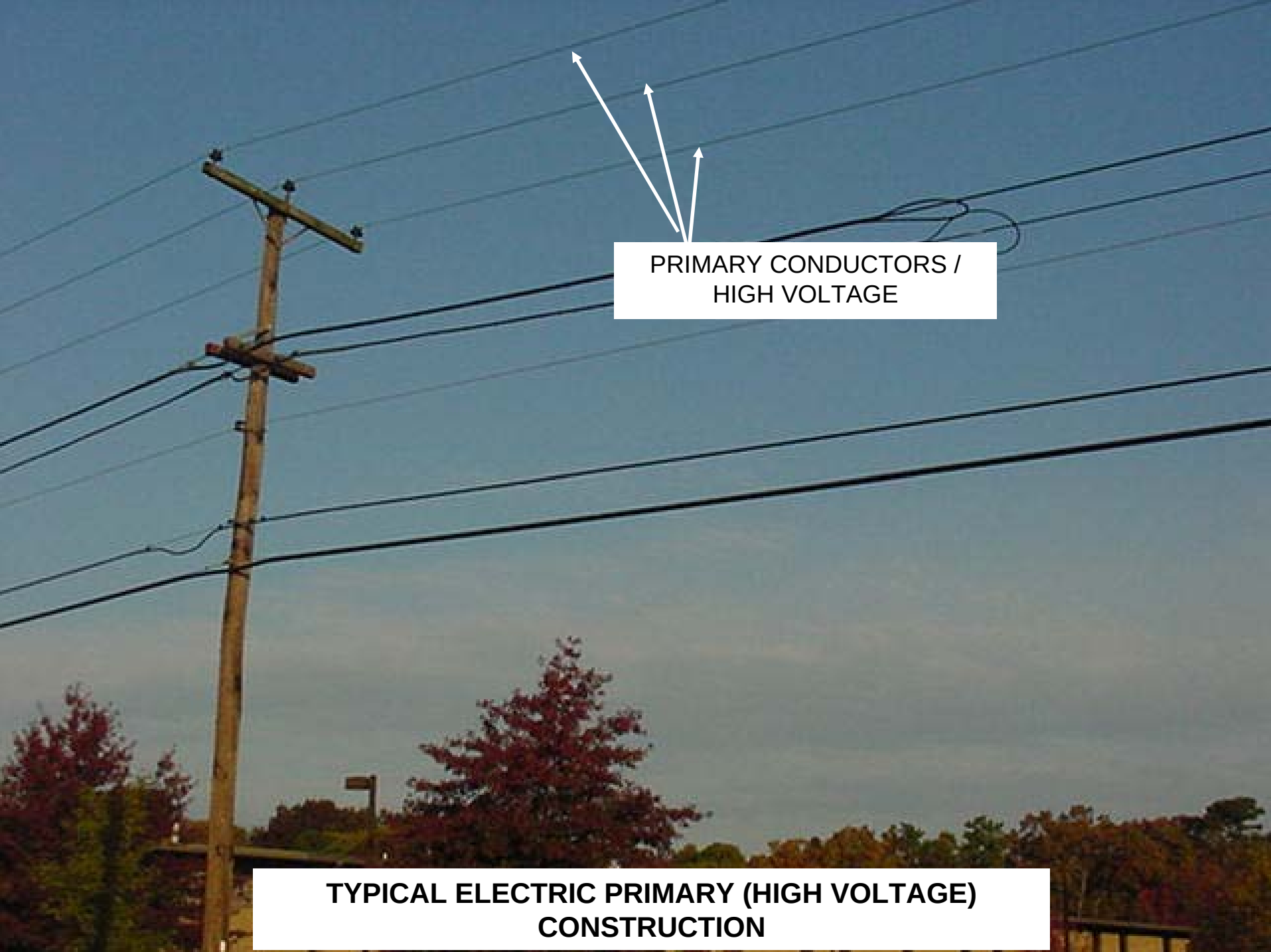
- Primary electric wires(top of pole) 2,400 to 69,000 volts
  - (wire bare or weather coating only – **not insulated**)
- Secondary electric wires for local use less than 600 volts (usually 120/240)
  - (wire bare or weather coating only – **not insulated**)

- Fiber Optics (can be installed in the power space or communications space)

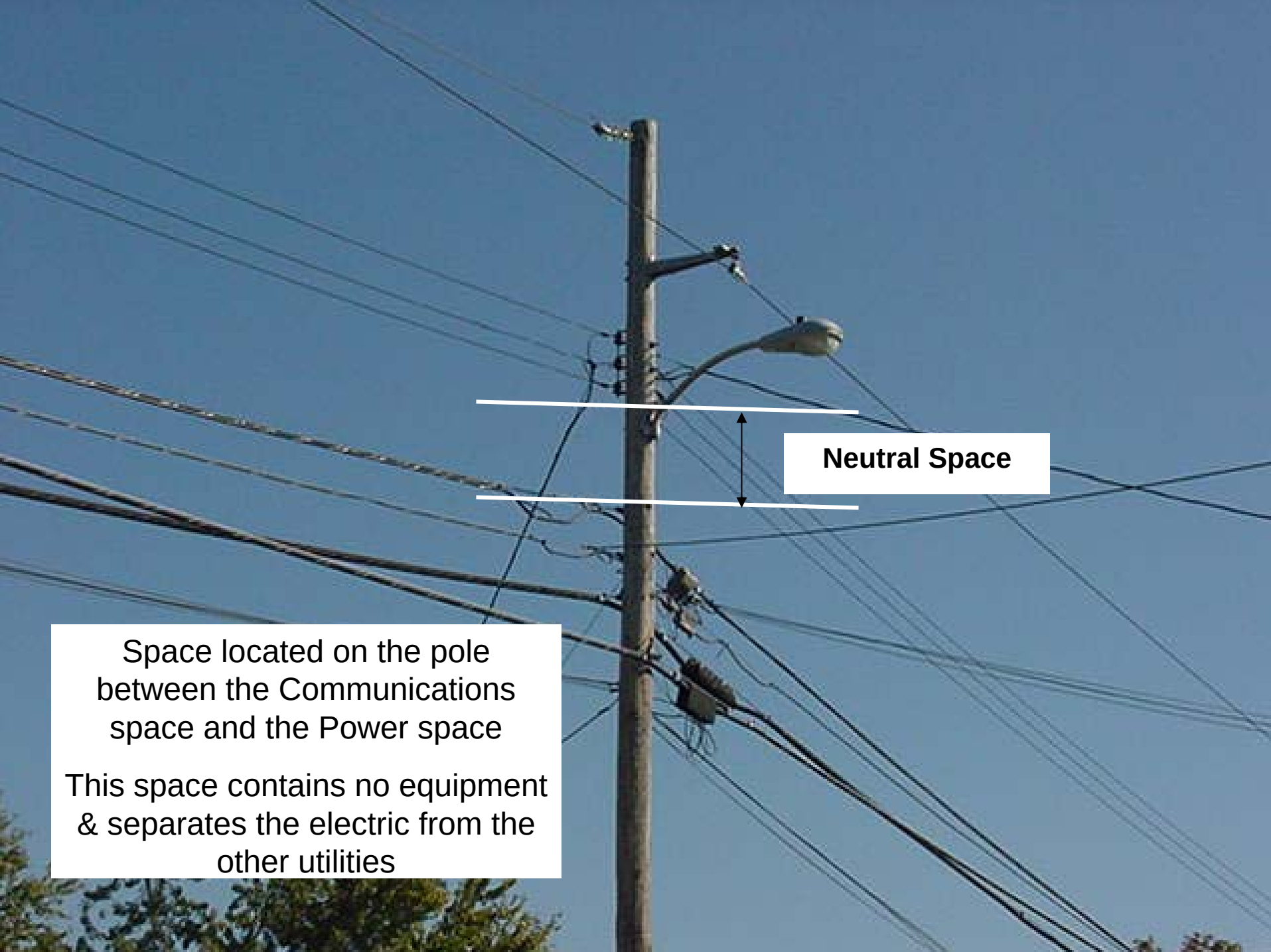
- Fire Alarm
- Cable -TV (CATV)
- Telephone Lines

SAFETY - IF YOU CAN'T IDENTIFTY WHERE THE WIRE IS CONNECTED ON THE POLE DO NOT TOUCH!


TYPICAL SUBTRANSMISSION CONSTRUCTION
STATIC WIRE
SUBTRANSMISSION AREA
Distribution Primary



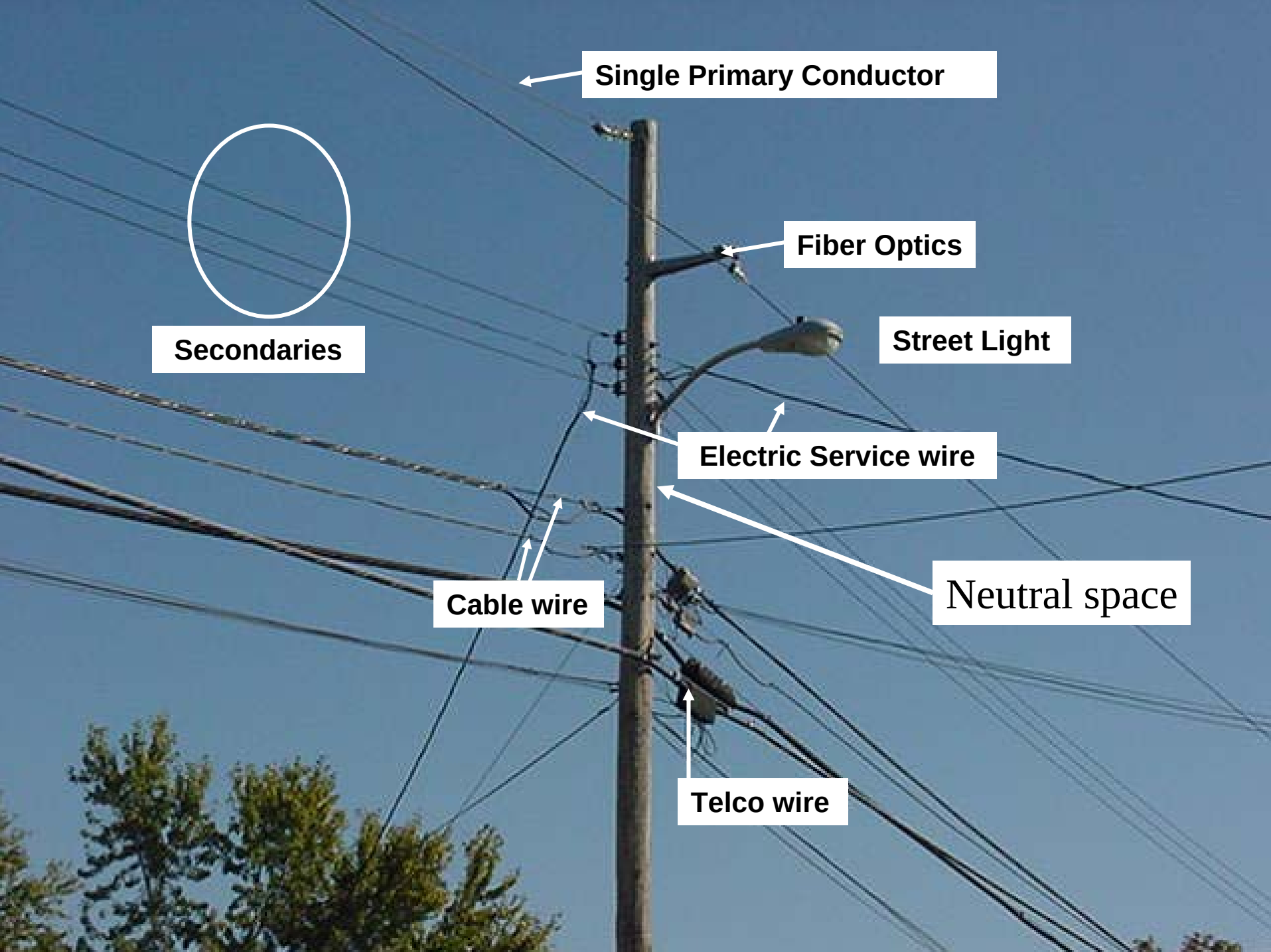
TYPICAL ELECTRIC PRIMARY (HIGH VOLTAGE) CONSTRUCTION



Space located on the pole between the Communications space and the Power space

This space contains no equipment & separates the electric from the other utilities

If you ID any of this equipment to be in contact with electrical facilities call, your Local Utility immediately


Single Primary Conductor
Secondaries
Fiber Optics
Street Light
Electric Service wire
Neutral space
Cable wire
Telco wire


CATV
TELCO


Fire Alarm wire

Controlling Electric Contact

- To avoid direct and indirect electric contact OSHA has established clearances workers and equipment must stay away from energized electric facilities (power lines & transformers) – This will be referred to as the High Voltage Protection Action or (“HVPA”).

ELECTRIC Clearance Distances

Working	Clearance	Distances
Voltage (“V”)	Fully Insulated Minimum Distance	Un-insulated (or covered) minimum distance
Less than 300 volts (phase to phase)	3 – feet	10 – feet
300V to 50 kV	10 – feet	10 – feet
More than 50 kV	10-feet plus 0.4 inches for each 1\kV >50kV	10-feet plus 0.4 inches for each 1\kV >50kV
Vehicle in transit	**Clearance**	**Distances**
Voltage (“V”)	Minimum Distance	
Less than 50kV	4-feet	
50 kV up to & including 345kV	10-feet	
More than 345 kV	16-feet	

Determining Electric Clearance Distances

- If the voltage of the electric line is unknown, counting the number of insulators can help estimate the voltage.
- Crews working near electric power lines should check with the local electric utility to determine the line voltage & work rules.

INSULATORS

- Air-Natural Insulator
- Glass
- Porcelain
- Polymer
- Plastic

Electric Clearance Distances

Keep clear of high voltage electric lines

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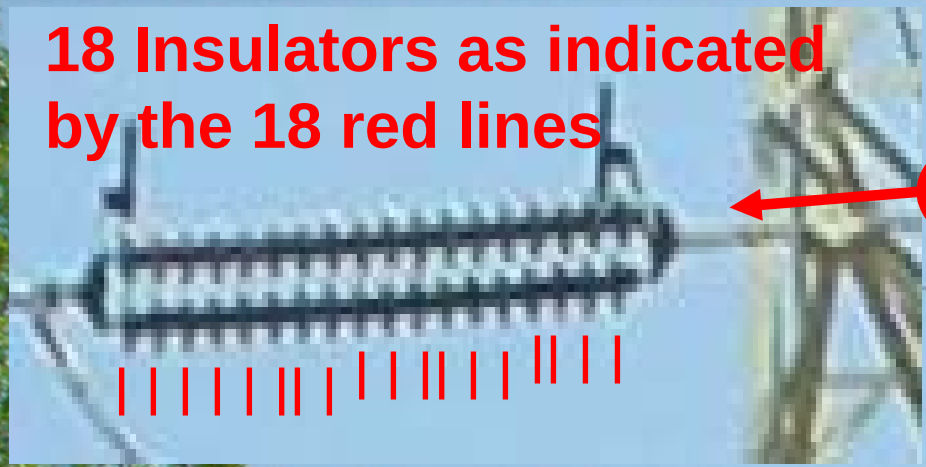
Less than 300 volts (phase to phase)	**3 – feet**	**10 – feet**
300V to 50 kV	**10 – feet**	**10 – feet**
More than 50 kV	**10-feet plus 0.4 inches for each 1\kV >50kV**	**10-feet plus 0.4 inches for each 1\kV >50kV**

Note : kV is kilovolts or 1,000 volts

Rule of thumb: no. of insulators + 10 = clearance distance in feet



Rule of thumb: Number of insulators + 10 = Clearance in feet

Example: 18 + 10 = 28 feet

Electric Clearance Distances

Prevent electric (direct & indirect) contact incidents by enforcing the High Voltage Clearance Requirements

- Stop workers observed that are not maintaining the electric clearance distances

- Notify the regional Occupational Health & Safety Administration (“OSHA”) of the violation

Five Step Process – Step 1

- Determining if OSHA's High Voltage clearances are being violated.
  - Is the crew working or has any equipment closer than 10 feet to a high voltage or primary line?
  - Is the crew working or has any equipment closer than 3 feet to an electric line or secondary line?
  - Is the voltage more than 50kV & the crew is not maintaining the correct clearance distance?

Five Step Process – Step 2

- If the high voltage clearances are being violated & workers / public are in danger, attempt to have the work near the power line stopped.
- If the workers are not willing to stop, notify local law enforcement.

Remember that equipment near or in contact with high voltage lines may present a danger to people on the ground near that equipment. Stay away from that equipment!

Five Step Process – Step 3

- Advise the work crew of the OSHA required clearances.
- Inquire if the work crew had contacted the local electric utility. Suggest that they do so before continuing their work close to the electric lines.

Remember that equipment near or in contact with high voltage lines may present a danger to people on the ground near that equipment. Stay away from that equipment!

Five Step Process – Step 4

- Document as much information as possible
  - The information collection form may be helpful in collecting the violation details
    - Names of the contractor, license plate on equipment, location details, type of electric facilities, description of the high voltage clearance violation.
  - Take photographs if you have a camera

Five Step Process – Step 5

- Notify OSHA (report it to the Director or Assistant Director) or as instructed by your local Citizen Corp lead or Sponsoring Agency
- OSHA's Contact information by NJ county:
  - Essex, Hudson, Morris, Sussex: OSHA's Parsippany Office @ **973.263.1003**
  - Bergen, Passaic: OSHA's Hasbrouck Heights Office @ **201.288.1700**
  - Hunterdon, Middlesex, Sommerset, Union, & Warren: OSHA's Avenel Office @ **732.750.3270**
  - Other counties not listed: OSHA's Marlton Office @ **856.757.5181**
  - **For incidents outside business hours call 1.800.321.6742**

OSHA REFERRAL FORM - High Voltage Proximity

1. **Date and Time Hazard Observed: _____**
2. **Employer Company Name: _____**
3. **Management Official's Name: _____**
4. **Hazard Location/Address:**

   _____

   County: _____
5. **Proximity of Equipment to Power Line: _____**
6. **Voltage of Overhead Line: _____**

   Primary Line: _____

   Secondary Line: _____
7. **Equipment in Use:**

   Crane _____

   Backhoe _____

   Scaffold _____

   Other _____
8. **Type of Work Being Performed:**

   Excavation Work _____

   Building Under Renovation _____

   Building Under Construction _____

   Residential Home _____

   Tree Trimming _____

   Other _____
9. **Brief Description of Hazardous Condition:_____**

_____

_____

_____

10. **Comments Made to Management Official:_____**

_____

_____

_____

11. **Management Official's Response:_____**

_____

_____

_____

12. **Your Contact Information:**

Name:_____ Phone No:_____

Your Safety

- Do not approach any vehicles or equipment that may be in contact (direct or indirect) with electric or high voltage lines.
- Approach all wires as if the line was energized & **Kept away!**
- Do not attempt to rescue anyone in contact with electric lines until the power has been de-energized.
- In an emergency,call the electric utility & 911