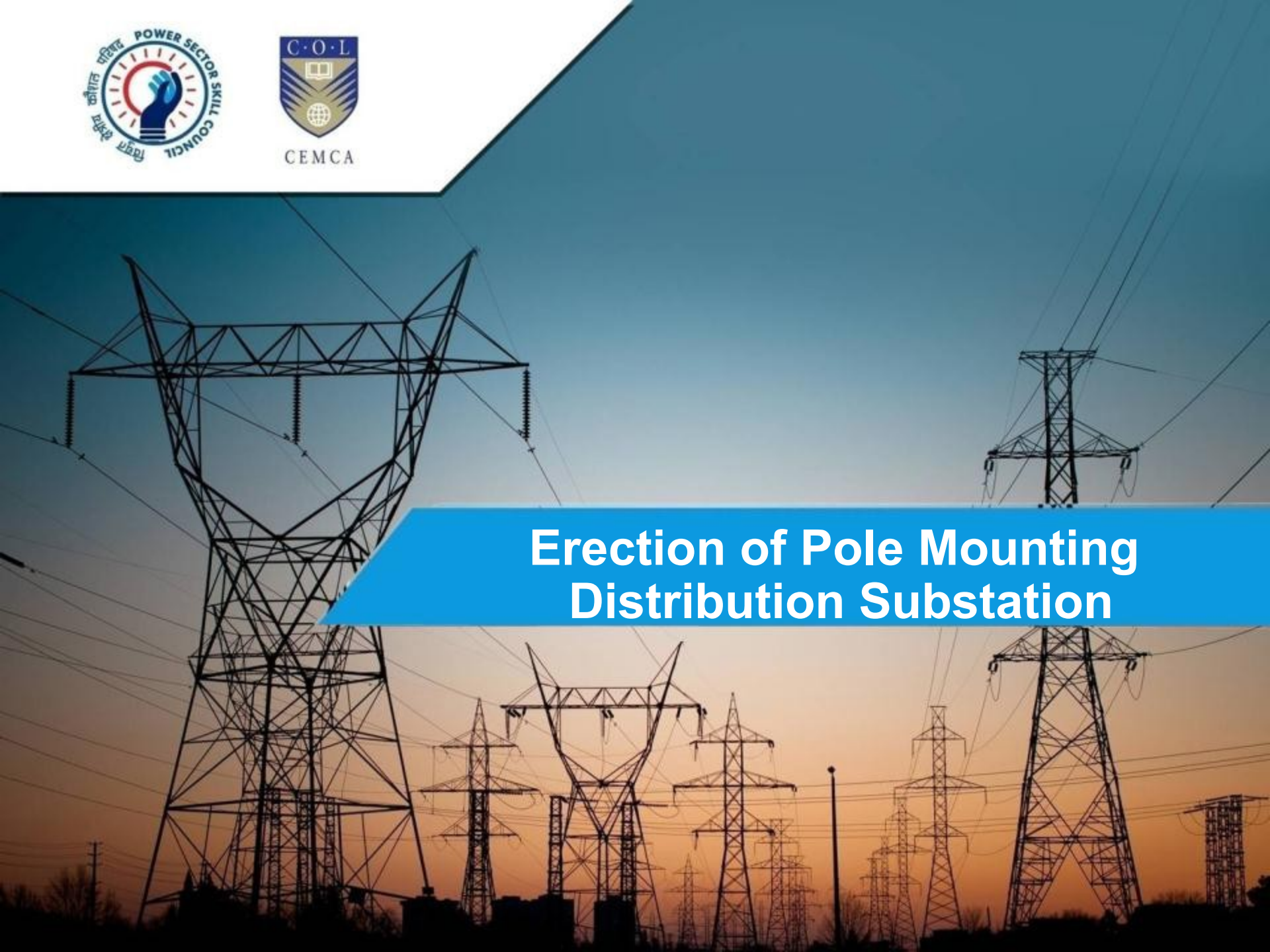




# Erection of Pole Mounting Distribution Substation



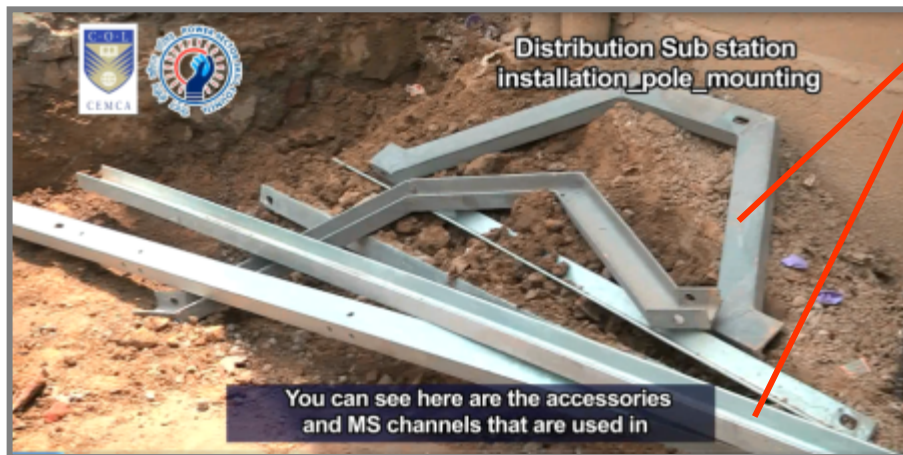
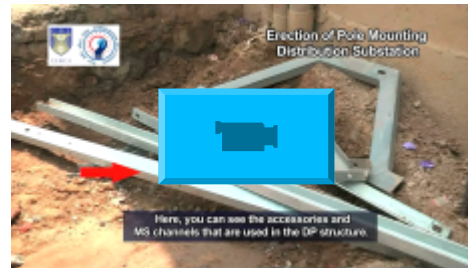
## Learning Objectives

By the end this session, you will be able to:

- Explain how to erect a Double Pole (DP) structure
- Describe the accessories and fittings on the DP structure



# Required Accessories in the DP Structure



**Cross arms and different types of channels**

**These items are fitted into the DP structure when the complete frame is fixed.**

**These are the pin insulators**



**They are fitted on the top hampers and cross arms.**

# Required Accessories in the DP Structure

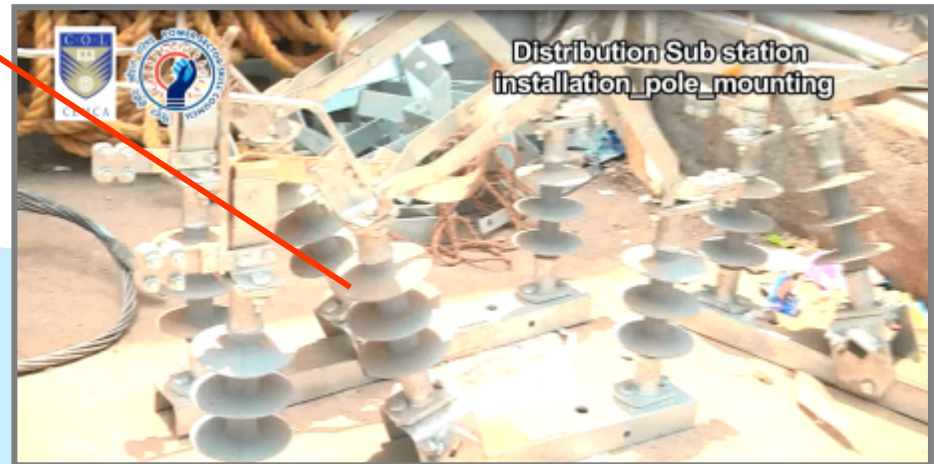


Different types of channels and top hampers including all sizes of MS clamps

These are the complete GO switch unit accessories

They are:

- 3 GO switch units
- GO switch handle
- GO switch pipe

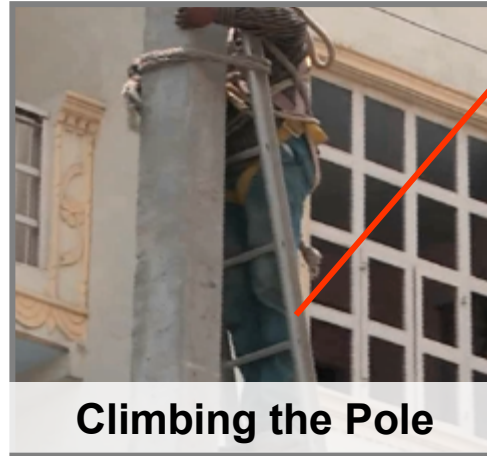


## Required Accessories in the DP Structure



**GO switch handle and  
the GO switch pipe**

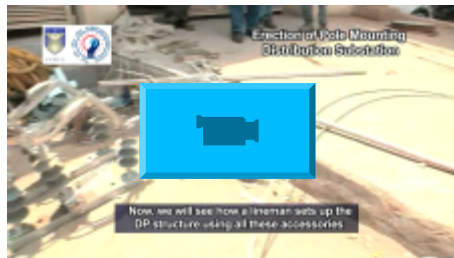
# Clamping and Wiring of Pin Insulators



Lineman climbs up the pole with the help of a ladder

**Precaution:**

Tie top end of the ladder to the pole with the help of rope



Lineman fixes the cross arms on the pole

**Precaution:**

Fix the safety hooks of full body harness on the line



# Clamping and Wiring of Pin Insulators



**Precaution:**  
Wear a safety rope, which is called jhola

Lineman must connect the shorting chain clips with the earth wire line



# Clamping and Wiring of Pin Insulators



**Lineman fixes the V-shaped cross arm on the pole**

**Lineman takes the cross arms from ground staff and the second lineman fixes the cross arm.**





# Clamping and Wiring of Pin Insulators



Lineman fixes the safety hooks of full body harness on the line

Lineman fixes:

- Top hamper
- D-clamp channel
- Pin insulator



Here the lineman is fixing the pin insulator on the D-Clamp Channel on the utility pole.

# Clamping and Wiring of Pin Insulators

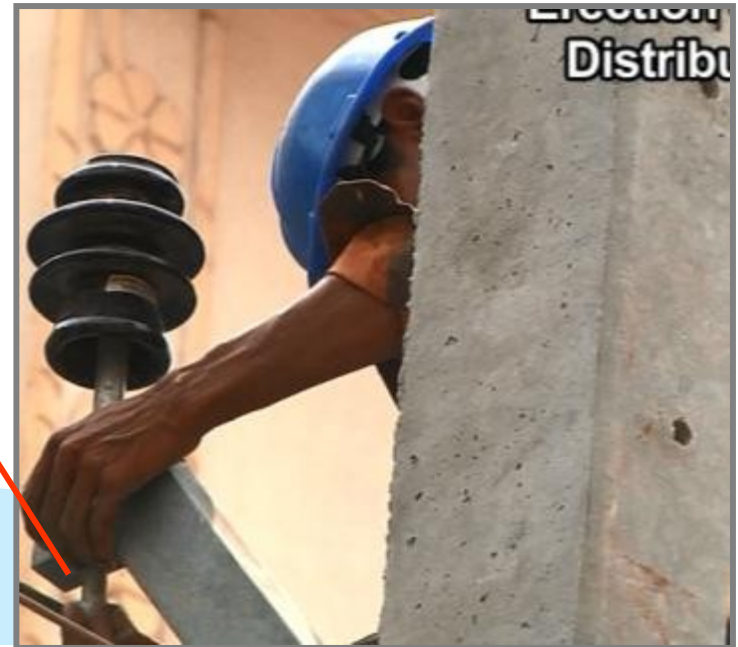


**Tightening of Pin Insulator Screw**

Lineman fixes the pin insulator screw

Lineman tightens the pin insulator screw

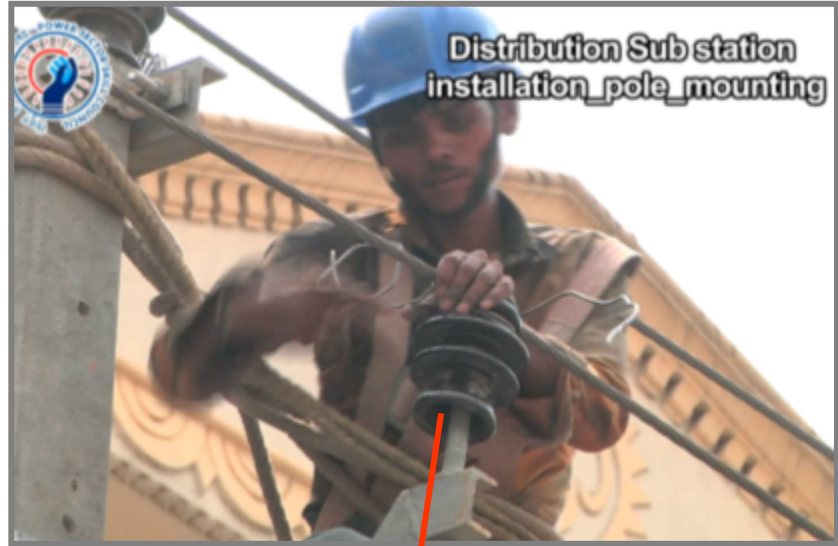
The same procedure is followed for the other pin insulators



# Clamping and Wiring of Pin Insulators



Lineman fixes the MS angle between the poles

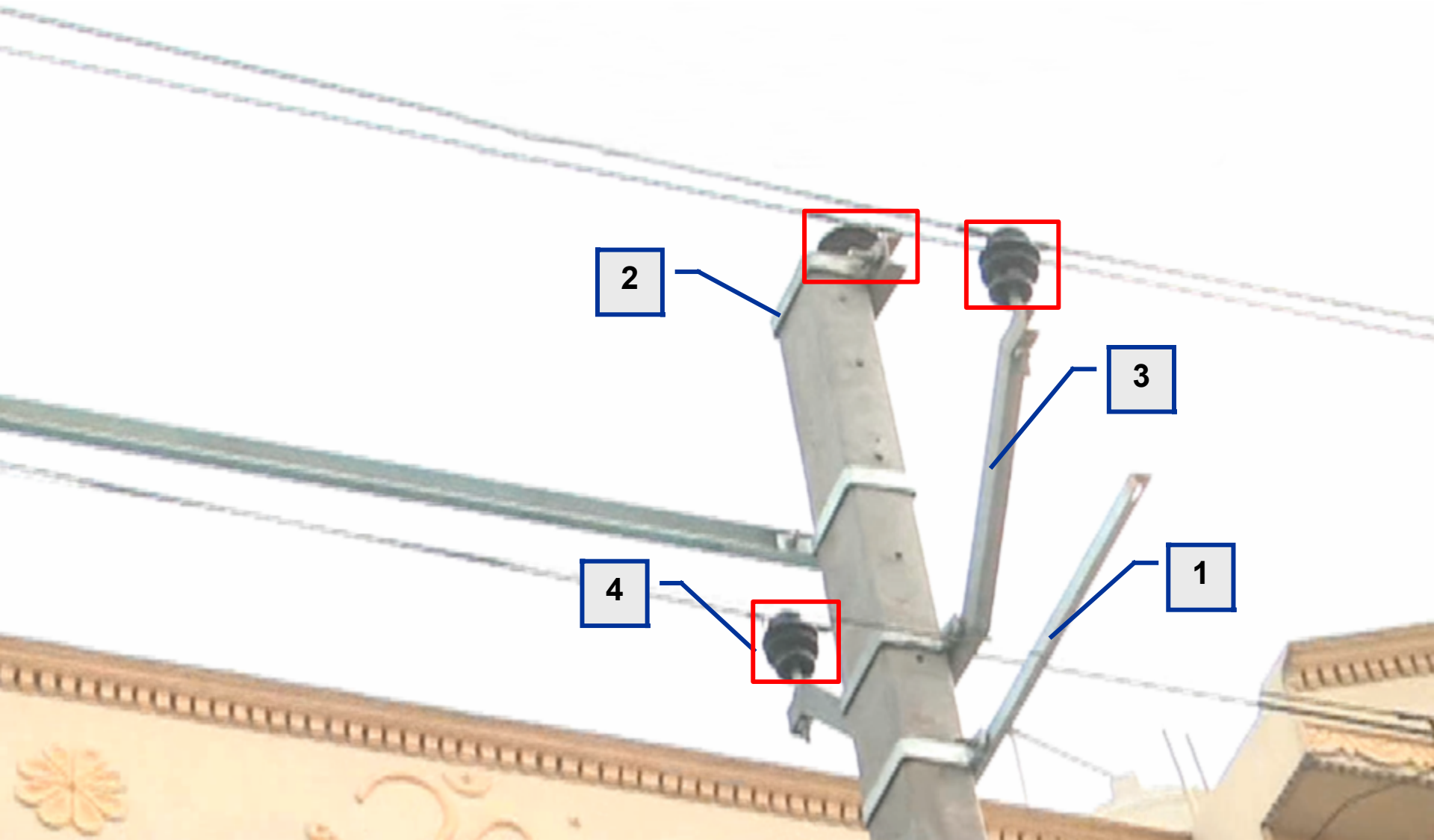


Lineman places the HT wire over pin insulators

Lineman fixes the aluminium wire over insulator



# Recap of Clamping and Wiring of Pin Insulators



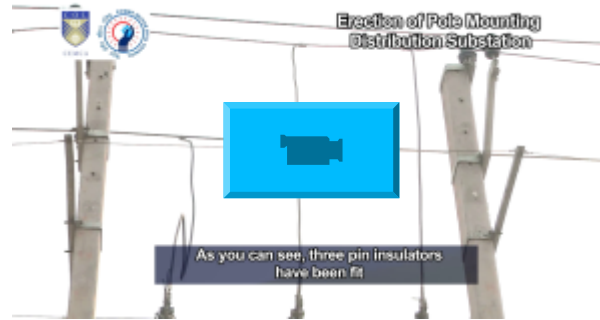
# Earth Pits

To take care of earthing / grounding of the structure:

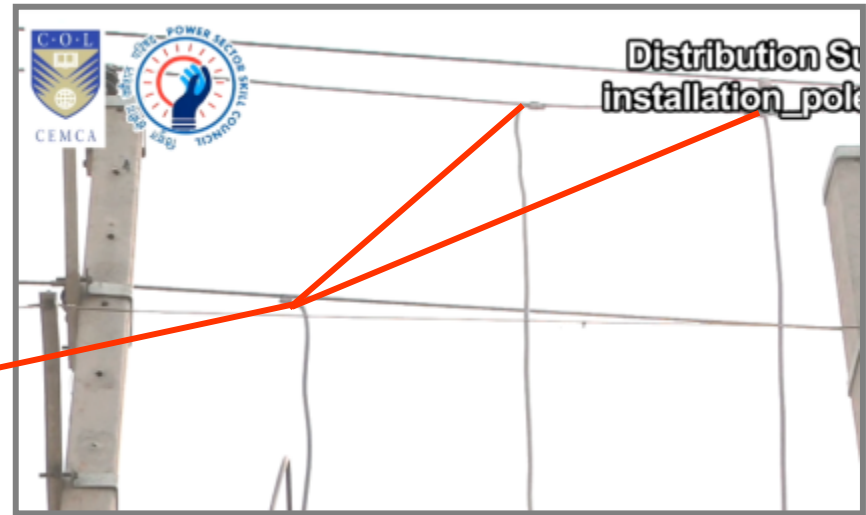
- 5 earth pits are dug at the base
- 2 earth leads come out from each electrode in these pits
- Double earths are provided in the transformer body
- To ensure lightning is arrested, one independent earth is provided



# Connections of a Transformer

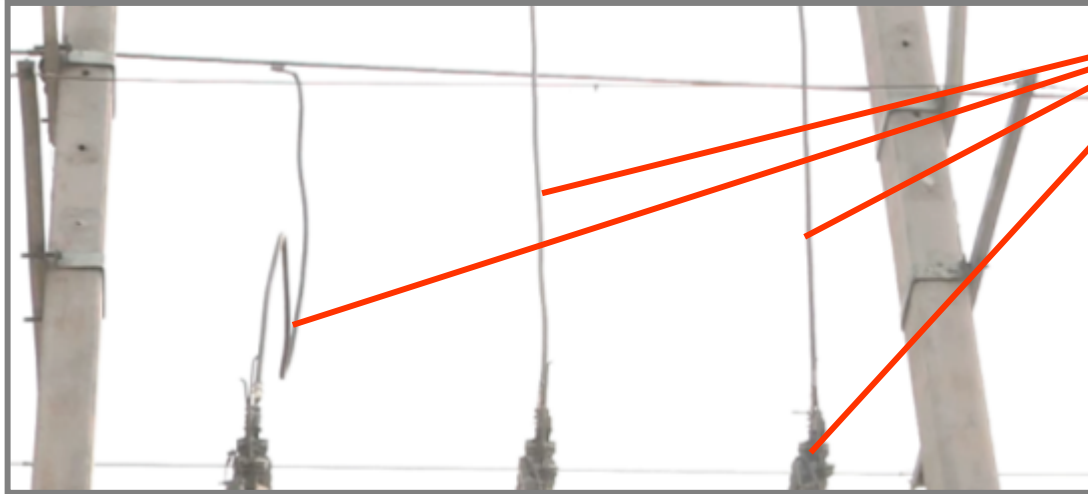


3 pin insulators are fitted and wound at the top of the structure with HT lines



Lines are connected through wedge clamps

# Connections of a Transformer



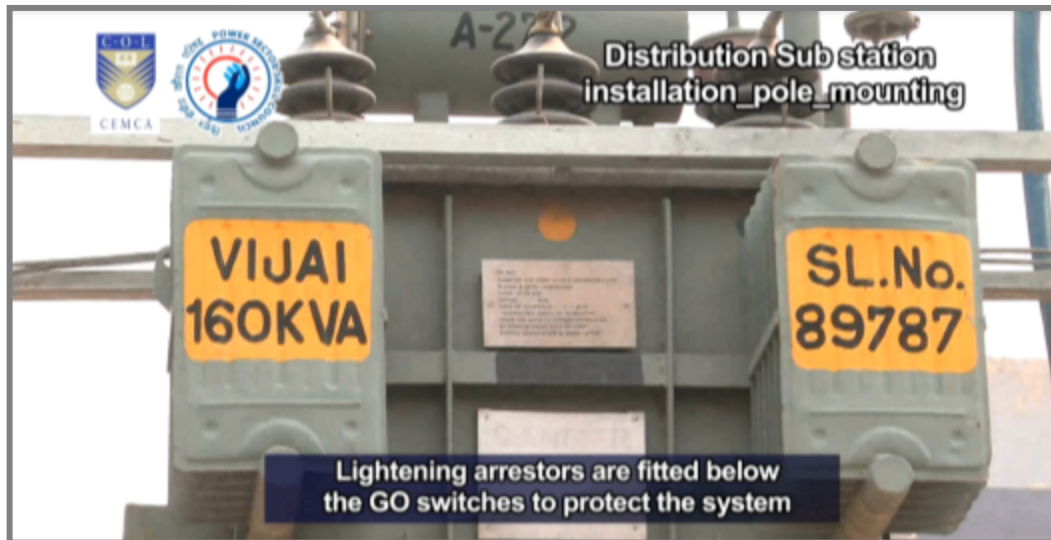
3 leads that come down are connected with GO switches

Drop-down fuses along with barriers are located below the GO switches



Below the GO switches, drop down fuses are fitted along with barriers.

# Connections of a Transformer



Lightning arrestors are fitted below the GO switches

**Purpose:** To protect the system from surge or lightning fault current

Transformer is mounted below the DP structure channel

LT leads are connected below the LT ACB

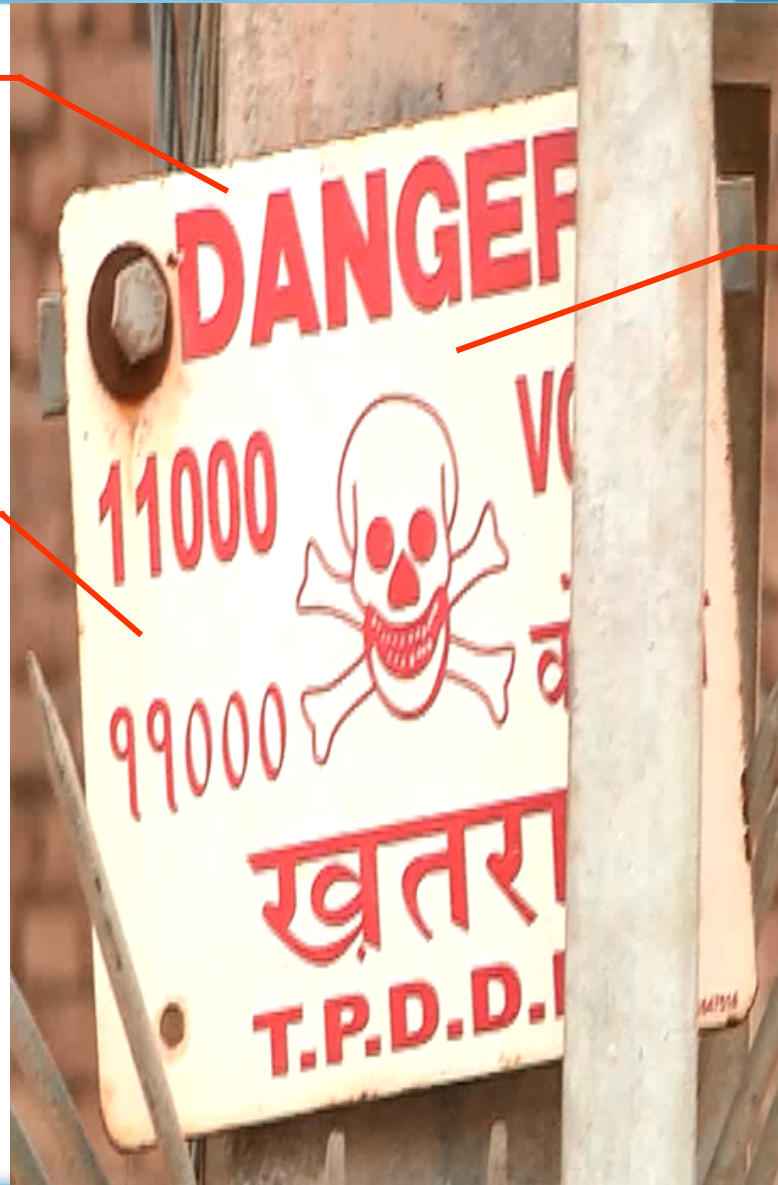




## Safety Precautions

An anti-climbing device and a danger plate are fitted at 3 metres above the ground

The status of the line voltage should be mentioned as per the CEA safety measures requirement



'Danger' should be written both in English and local languages

# Safety Precautions

All earth leads are connected with the equipment separately

DP structure is surrounded by MS fencing to prevent unauthorised entry

It is locked and the danger plate is displayed publicly

## Reasons:

- To let public know that this is a danger zone
- To inform the public that entry without permission is prohibited

## Key Learning Outcomes

- Cross arms and different types of channels are fixed to the DP structure when the complete frame is fit
- The lineman first fits two cross arms, so that he can stand comfortably with safety belts and then mount the top hampers
- The top hampers are fitted with 'V' cross arms and channels
- Three pin insulators will be fitted and wound at the top of the structure with HT lines
- The HT lines will be connected through wedge clamps
- DP structure will be surrounded by MS fencing to prohibit unauthorised entry
- MS fencing will not be connected to the five earths of the inside DP structure

