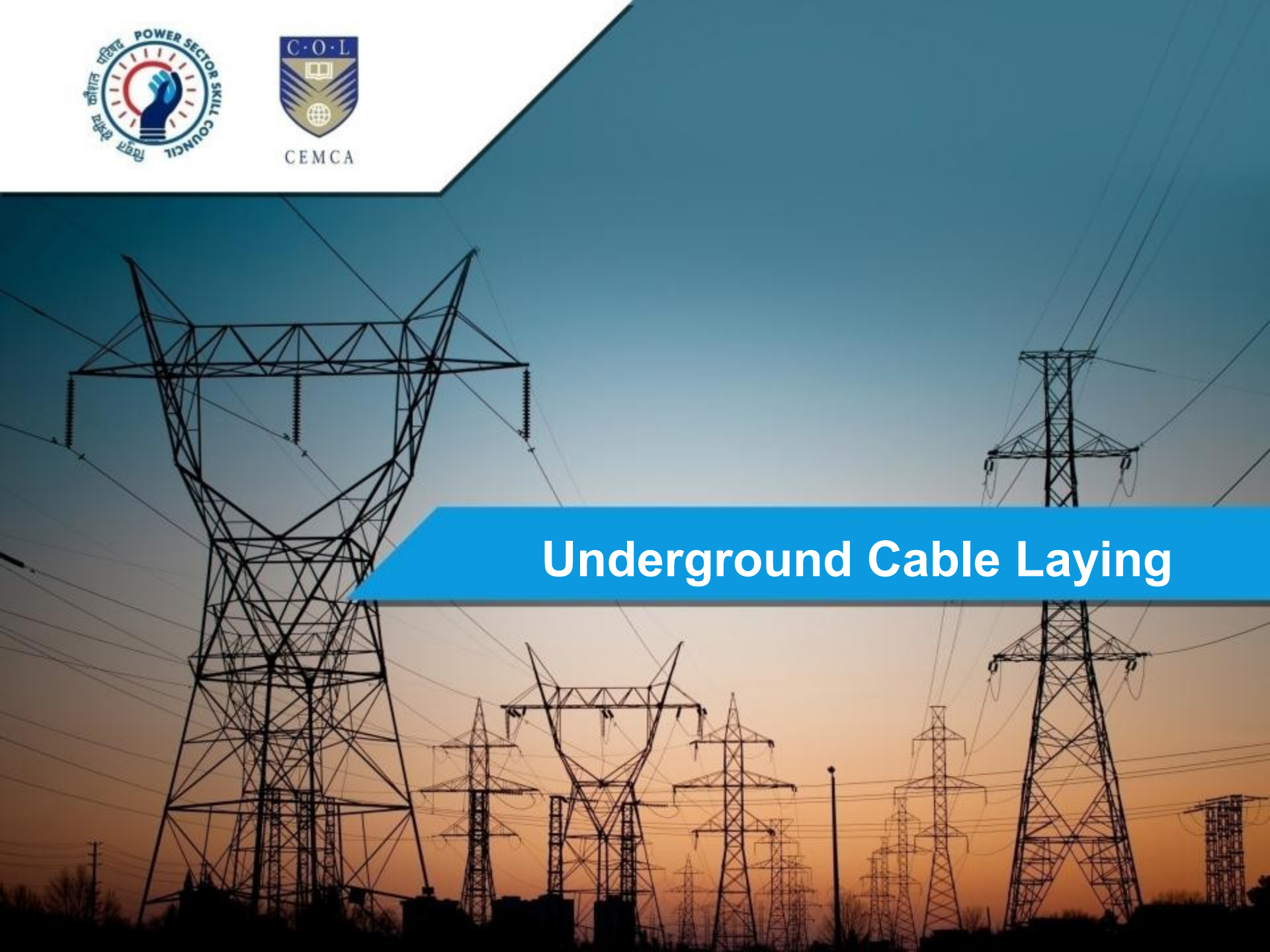




# Underground Cable Laying



## Learning Objective

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

- Explain the two different ways of laying a cable



## Open House Discussion

- What is cable laying and how can we do it?
- What do you mean by trenchless cable laying?
- What do you mean by open trenches?
- What is the difference between trenchless cable laying and laying cables in open trenches?



# Laying of Trenchless Cable – Introduction



Digging a pit for laying trenchless cable

# Laying of Trenchless Cable

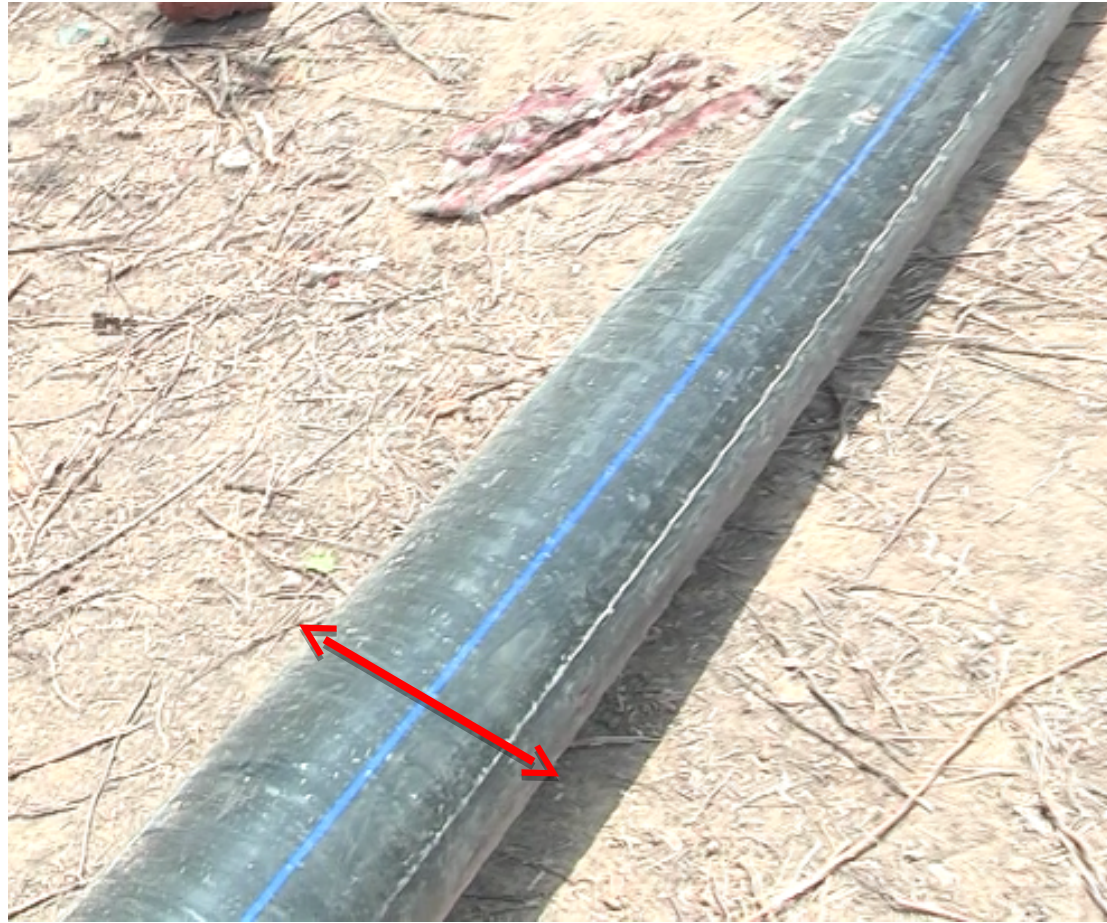


**Boring is carried out with a trenchless machine**

## Laying of Trenchless Cable

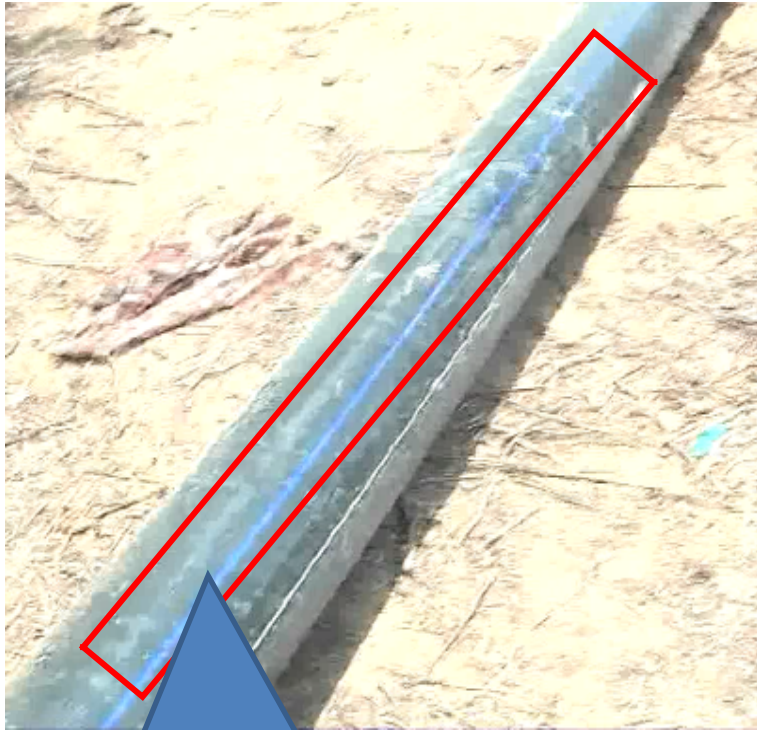


HDPE pipe



Diameter is 160mm

# Laying of Trenchless Cable



Wire inside the pipe



Insertion of HDPE pipe through bore

## Laying of Trenchless Cable



**Roller stools for smooth movement of the pipe**



# Laying of Trenchless Cable



Cable attached to the drum jack



Rollers through which the cable passes

## Laying of Trenchless Cable



The cable is pulled up to the pit

# Laying of Trenchless Cable



Chinese finger



Pipe pulling rod

## Laying of Trenchless Cable



Test pit of cable trench

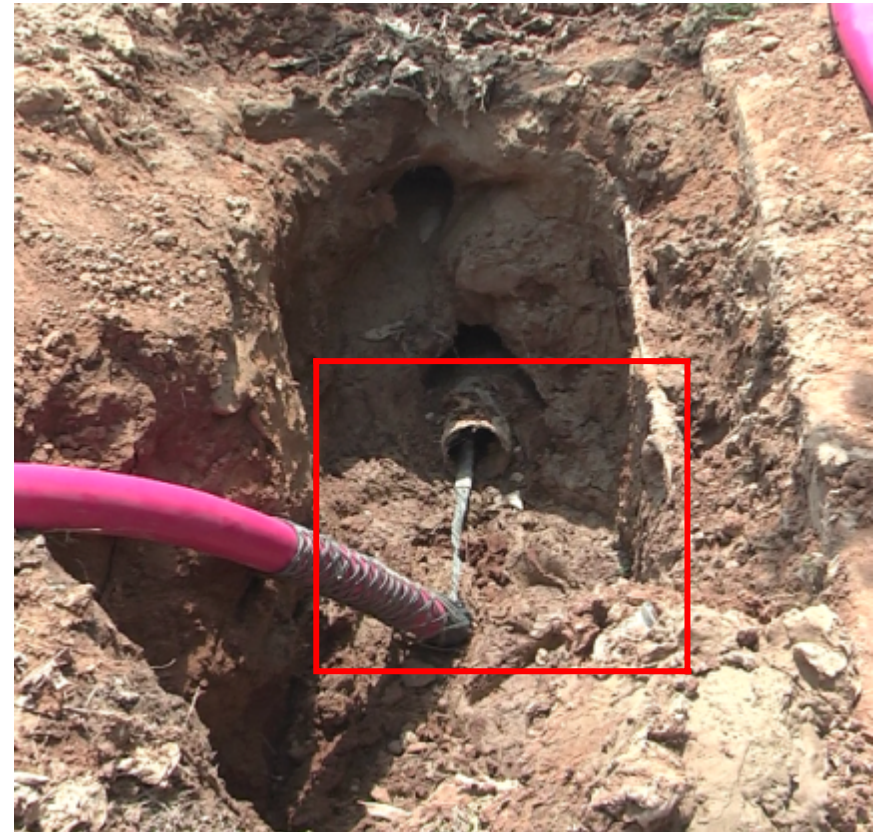


Depth of the pit is more than one metre

## Laying of Trenchless Cable



Depth increases to 1.5 to 2 metres further



The cable has to be pulled inside

## Laying of Trenchless Cable



Cable is being pulled inside

## Laying of Trenchless Cable



Helpers pulling cable from the drum



Cable going inside the pipe

# Laying of Trenchless Cable



Trenchless machine



End of the cable

Rod to pull the cable



# Laying of Trenchless Cable



3 × 400 square mm 11 KV HT cable drum

# Laying of Trenchless Cable



Length will generally be 250-300 metres

## Laying of Trenchless Cable



Extra digging for XLPE joint

## Laying of Trenchless Cable



Heat treatment process of straight through joint

## Laying of Trenchless Cable



The joints have been made successfully – A 3-core 400 sq mm, heat shrink type

# Cable Laying in Open Trench



**Excavated trench for double circuit**



**Circuits running parallel with brick padding**

# Cable Laying in Open Trench



Depth of trench is maintained as 1.05 metres

Width of trench is maintained as 140 cm

# Cable Laying in Open Trench



The trench being filled with soil



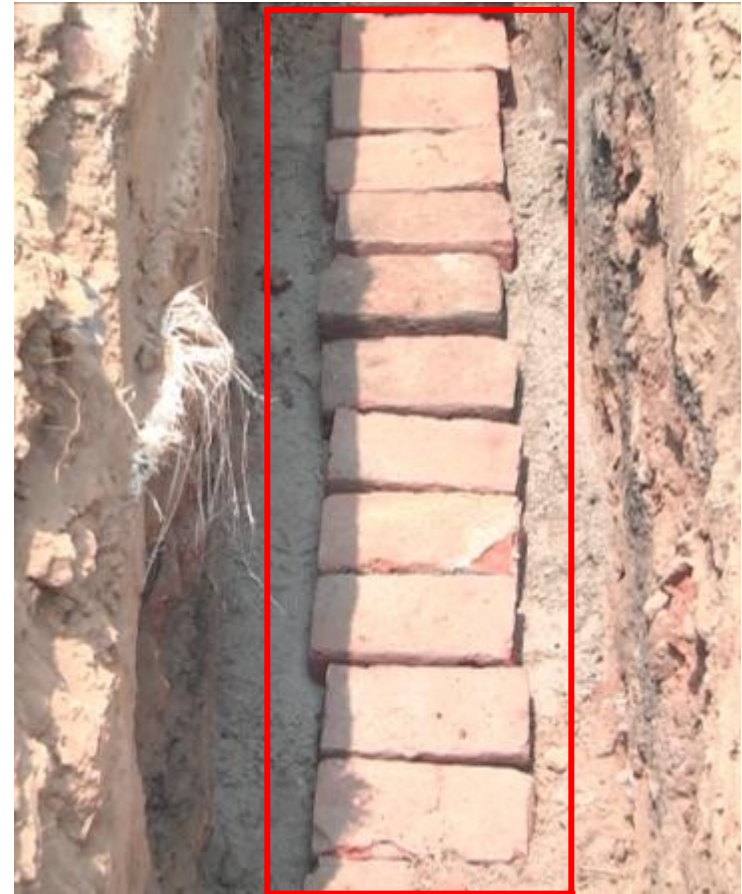
Sand padding is done



## Cable Laying in Open Trench



**Docketing of the bricks**



**Brick docketing provides mechanical strength**

## Cable Laying in Open Trench



Filling the trench with soft soil first



Filling the trench with hard soil

## Key Learning Outcomes

- We need to dig a pit to lay a trenchless cable of 11kV rating or HT feeder
- Boring is carried out with a trenchless machine by injecting water into the soil
- Roller stools are placed under the HDPE pipe for smooth movement of the pipe without any drag or stress
- To lay an 11 KV HT cable using the trenchless technique, you must:
  - Attach the cable to the drum jack
  - Move the cable up to the pit with the help of rollers
  - Pull the cable with the help of D-clamp



## Key Learning Outcomes

- Heat treatment process is required to prepare the straight through joint
- To lay a cable in an open trench, a double circuit is excavated
- The circuits runs parallel in the trench with brick padding in between
- The trench must be refilled with the soil accumulated during digging and the surface smoothed thereafter
- Docketing of bricks is done to provide mechanical strength to the cables

