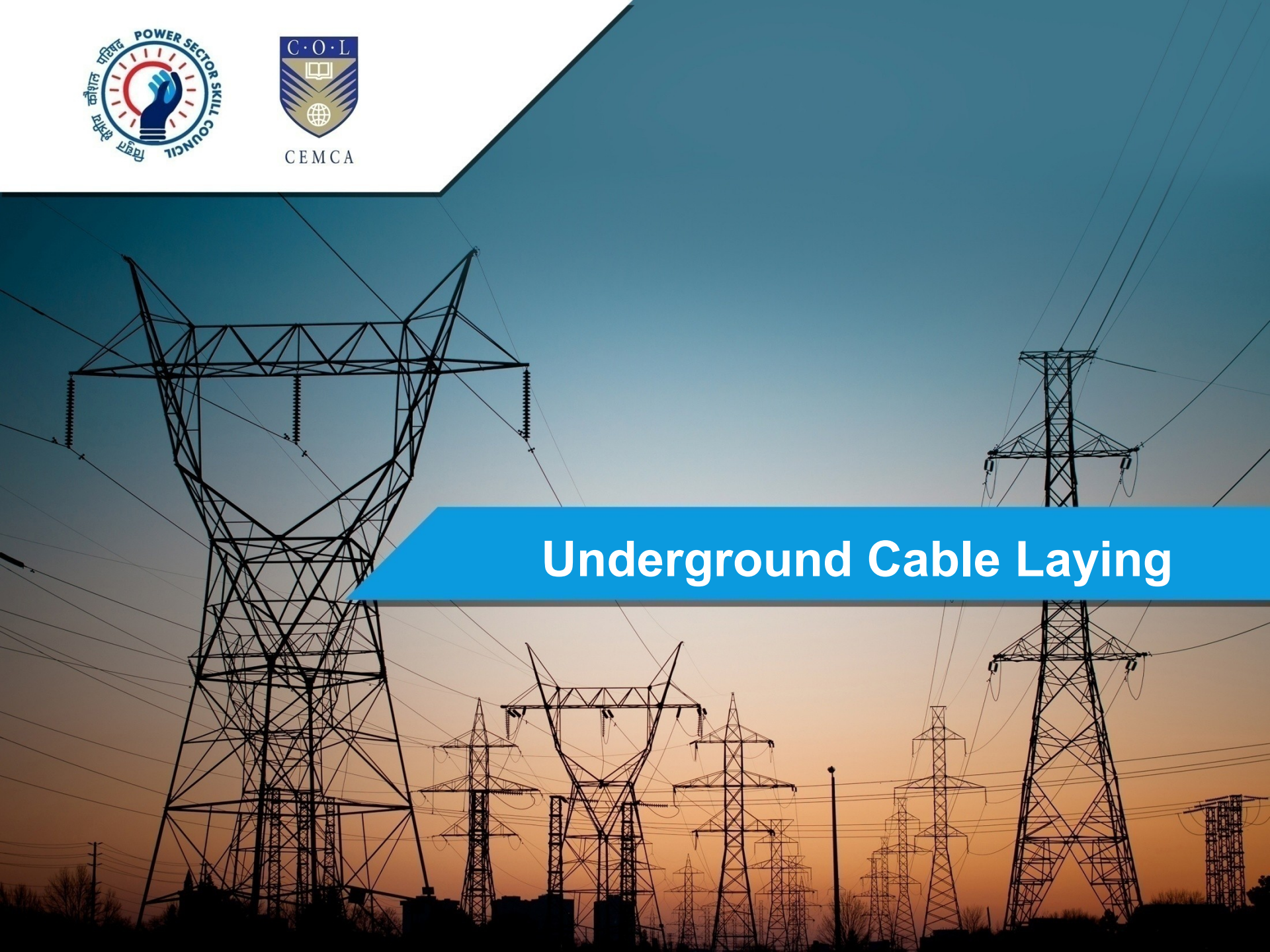




CEMCA

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

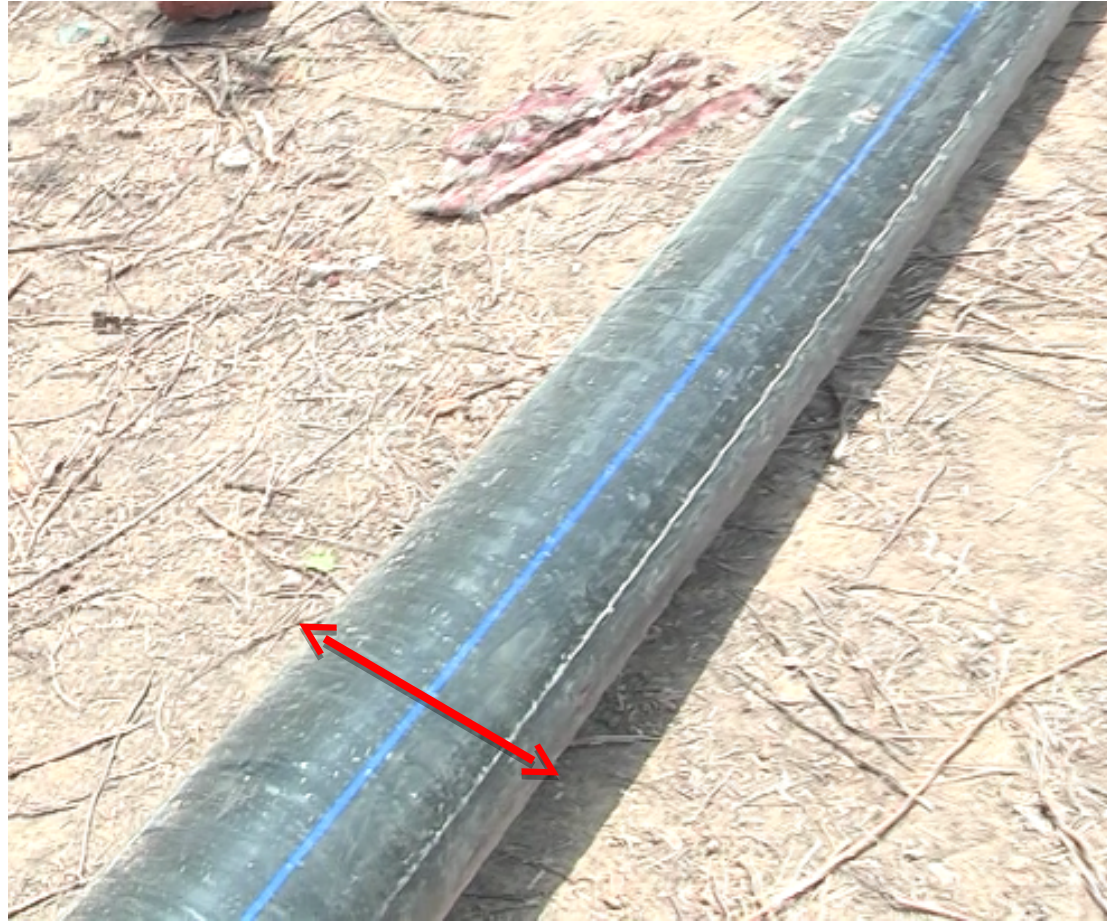


Boring is carried out with a trenchless machine

Laying of Trenchless Cable

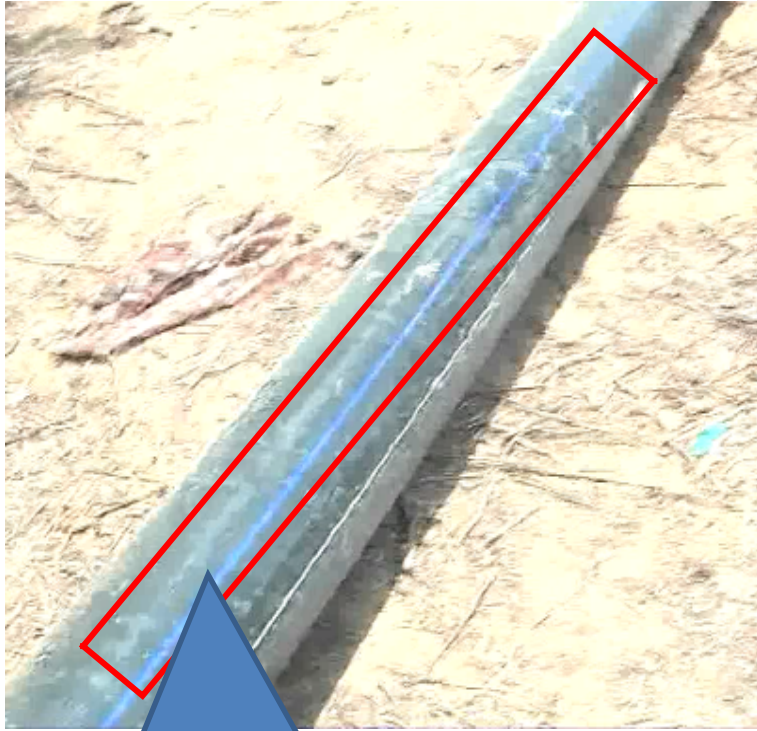


HDPE pipe



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

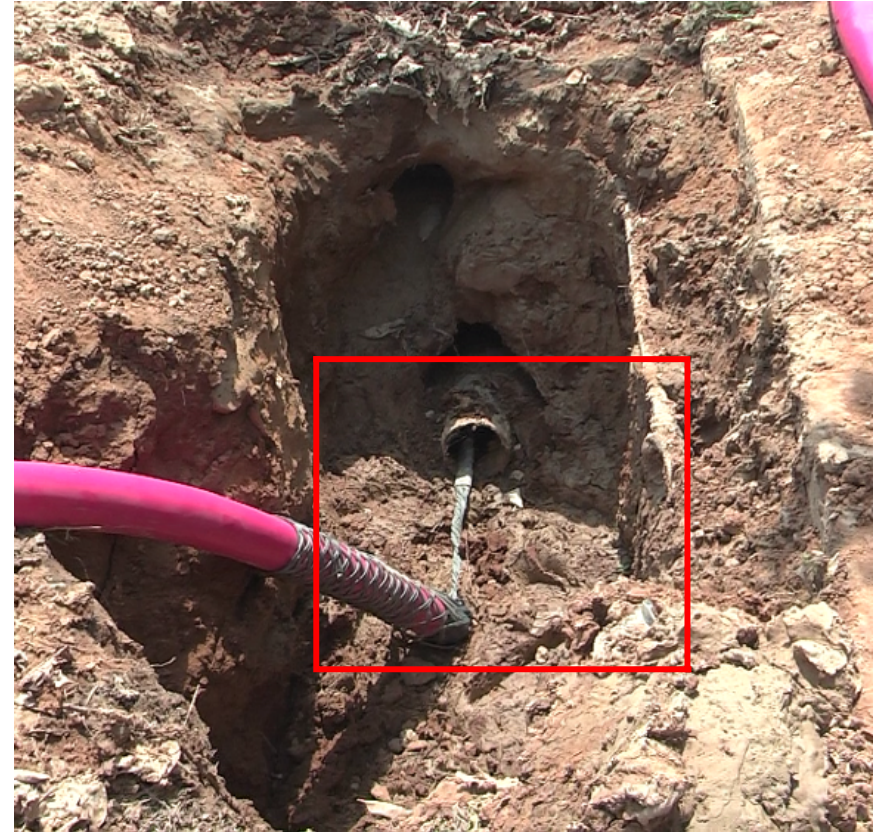


Depth of the pit is more than one metre

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



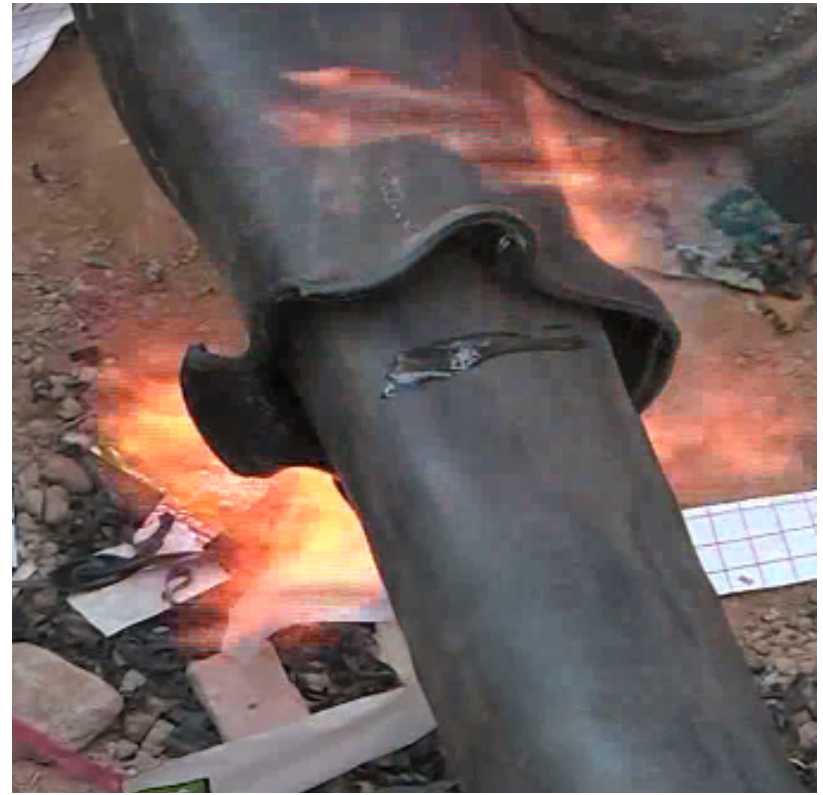
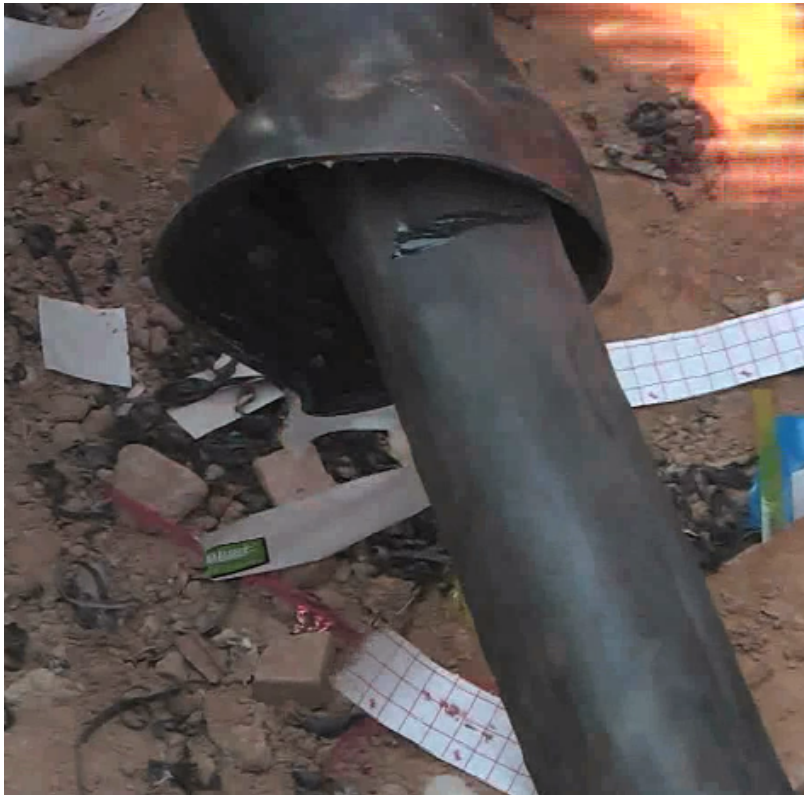
Length will generally be 250-300 metres

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

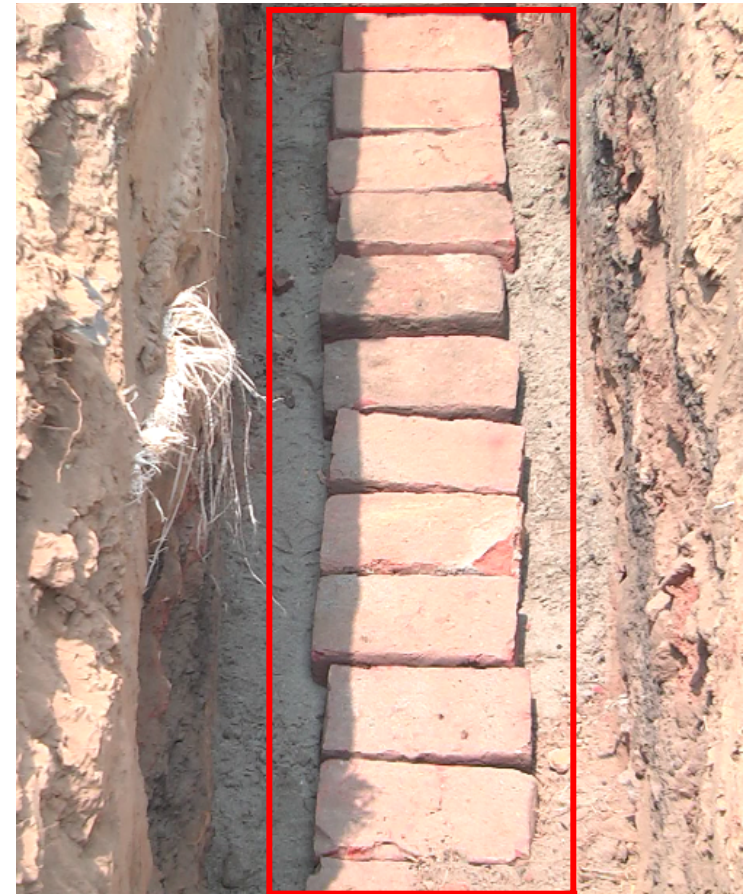


Sand padding is done

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

