











Session: Double Pole Erection






Learning Objective	Evaluation Criterion
Describe the process of double pole structure erection	Interactive Questioning






	Duration	45 Minutes
	Resources	PowerPoint Presentation, Markers and White Board
	Facilitator's Notes	Through a visual and video presentation, explain the process of erecting a double pole structure.

End of Note

		1.	<p>Tell:</p> <p>Welcome to the video presentation on 'Double Pole Erection'.</p>
		2.	<p>Tell:</p> <p>By the end of this session, you will be able to describe the process of double pole structure erection.</p> <p>Before we proceed, let us first check what we know about double pole structure and its uses.</p>
			<p>Facilitator's Notes:</p> <ul style="list-style-type: none"> • Conduct a Question and Answer activity for 5 minutes • Ensure almost every participant responds to the questions • If the participants hesitate to answer, encourage them by providing hints • At the end of the activity, appreciate those participants who have attempted to answer • End with a debrief on what is a transformer and how it is erected <p>End of Note</p>
		3.	<p>Ask:</p> <p>What is meant by a transformer?</p> <p>Possible Responses:</p> <ul style="list-style-type: none"> • Instrument that alters the input current • Instrument, which changes the voltage of the current <p>Ask:</p> <p>What is meant by double pole or DP structure?</p> <p>Possible Responses:</p> <ul style="list-style-type: none"> • Two poles are used to fix a transformer • Two poles are erected at a distance in such a way that the transformer is

			<p>fixed to them</p> <p>Ask:</p> <p>What is the use of a double pole structure?</p> <p>Possible Responses:</p> <ul style="list-style-type: none"> • Durability • More protection to consumers
		4.	<p>Tell:</p> <p>Thank you for participating so enthusiastically.</p> <p>Well! We have seen transformers in many cities and towns. Of late, we are seeing them in villages too. We know that a transformer supplies electricity to residents and factories. However, most of us do not know its definition.</p> <p>In simple terms, a transformer is electrical equipment, which either reduces or increases the voltage of an alternating current. The transformers you erect will reduce the high voltage current that is supplied from the power plants to our homes.</p> <p>These transformers can be supported by a single pole or double pole structure depending on the voltage being supplied.</p> <p>A double pole structure will ensure that the transformer is firmly fixed. It will ensure public safety.</p>
			<p>Tell:</p> <p>We now know the definition of transformer and use of double pole structure. Let us proceed to learn how a DP structure is erected.</p>
			<p>Ask:</p> <p>Does anyone of you have an idea of how a DP structure is erected?</p> <p>Facilitator's Note:</p> <p>Appreciate the responses, if any.</p> <p>Tell:</p> <p>Let us watch a video on how a High Tension or HT double pole structure is erected.</p>
		5-6.	<p>Facilitator's Note:</p> <p>Click to play the video.</p> <p>Tell:</p> <p>In the video, we have seen how the place is set up for laying the HT double pole structure.</p> <p>Even before the poles are brought to the site, the pole pit trench is dug. GI wire is passed through five earthing pipes for earthing connections. These pipes are fixed. The poles are now transported, unloaded and are kept ready for erection.</p> <p>The eleven-metre long PCC poles are carried with the help of a crane for HT installation. Please note that it is not necessary that all poles be erected by cranes. There are poles that can be erected manually too. The method used depends on the site and availability of resources.</p>

			Let us now watch a video clip on how the pole is erected.
		7-10.	<p>Facilitator's Note:</p> <p>Click to play the video.</p> <p>Tell:</p> <p>We have seen the method employed to lift and erect the pole perpendicular or vertical to the ground.</p> <p>Distance between the two poles should be 2200 millimetres.</p> <p>Proper care should be taken while lifting the pole for erection. Thus, you can ensure that the pole is not damaged and also no accident occurs.</p> <p>The lineman or assistant lineman should tie the rope firmly around the pole for the crane to lift it. The pole should be lifted from its minor axis so that the cantilever system is maintained for balance.</p> <p>The pole is then hooked to the crane and lifted up carefully keeping the balance of the pole.</p> <p>While the pole is being lifted, the assistant linemen anchor the pole on both the sides. Anchoring is required while erecting the pole in the pit. It is aligned on both the sides with the help of a rope by assistant linemen or linemen.</p> <p>The crane operator must move the crane very slowly and diligently so that the pole is placed directly in the pole pit. In some cases, the pole may have to be slightly tilted to avoid contact with the overhead lines obstructing it.</p> <p>The pole is placed inside the pit onto the cemented base plate while aligning the side anchors. The base plate is a 4-inch cemented slab already made and placed at the bottom of the pit. The other poles should also be erected for completing the DP structure.</p> <p>Once the pole is lowered into the pit, it is twisted so that it is placed exactly over the base plate. The alignment should be checked while the pole is being placed. The assistant linemen should keep turning the pole to ensure correct placement.</p>
			<p>Ask:</p> <p>The pole is now erected correctly and placed on the base plate. What do you think is the next step to be followed?</p> <p>Facilitator's Notes:</p> <ul style="list-style-type: none"> • The participants may or may not come up with the correct response • Appreciate the responses • Show the video
		11.	<p>Facilitator's Note:</p> <p>Click to play the video.</p> <p>Tell:</p> <p>To complete the erection of pole, the pit has to be refilled with soil. The second pole is also erected in the same manner.</p> <p>Now, the hook used for mounting the pole can be removed and the crane be used to pick up the next pole.</p> <p>While refilling the soil, a soil tamper is used.</p>

 	<p>12-14.</p>	<p>Ask:</p> <p>Why do you think a soil tamper is used while the pit is being filled with soil?</p> <p>Possible Responses:</p> <ul style="list-style-type: none"> • The pole is fixed tightly • The soil does not become loose <p>Tell:</p> <p>Well tried! A soil tamper is used to ensure that the soil around the pole is tight. This will ensure that the pole is firmly fixed. Spade is also used to pull in the soft and hard soil.</p> <p>Facilitator's Note:</p> <p>Click to play the video.</p> <p>Tell:</p> <p>We know that the second pole is also erected in a similar manner. However, care should be taken that the clearance or distance between the two poles is 2200 mm. This distance should be measured by using a measuring tape.</p> <p>If there is any difference in the clearance or vertical alignment, it should be corrected before soil refilling.</p> <p>To check the vertical alignment, MS channel is placed from the surface of one pole to the surface of the next pole. The lineman must check the alignment and inform the assistant linemen if there is any difference. The alignment should be corrected. Only then the refilling should be continued. This will ensure that the poles will remain completely erect.</p> <p>The pit is refilled by using alternate layers of soft and hard soil. These layers are tightened by the soil tamper as already learnt earlier. This will allow the poles to be firmly embedded in the ground.</p> <p>Let us look at some of the tips to be followed in the process.</p>
		<p>Ask:</p> <p>Can you think of any tips that can be followed to ensure that the pole is firmly erected?</p> <p>Facilitator's Notes:</p> <ul style="list-style-type: none"> • The participants may or may not come up with the suggestions • Appreciate the responses
 	<p>15-16.</p>	<p>Facilitator's Note:</p> <p>Click to play the video.</p> <p>Tell:</p> <p>Ensure that 1/6th of the pole is inside the pit. For example, if the HT pole is 36 feet long, then 6 feet of the pole should be under the ground. The remaining 30 feet is seen above the ground.</p> <p>Ensure that the refilling is completely done. While refilling, the first layer should be of soft soil followed by a layer of hard soil. This should be then covered with a brick lining. The layering should be carried on till the pit is completely filled. This will help in maintaining the complete DP pole structure perfectly.</p>

			After the refilling exercise is done, complete dressing is to be done. this means that the ground should be levelled and the entire area should be cleaned.
			<p>Tell:</p> <p>In this video presentation, we have seen “Double Pole Erection”. We have seen how the pole was lifted carefully with the help of a crane and placed in the pit. We have also seen the aligning of the two poles, refilling procedures and pole erection. Before we conclude, let us quickly recollect what we have learnt.</p>
Key Learning Outcomes			
		17.	<p>Tell:</p> <p>Let us quickly recap what we learnt so far.</p> <ul style="list-style-type: none"> • The pole should be lifted carefully with the help of a crane and placed in the pit • 11m long PCC poles are carried with the help of a crane for HT installation • Erect the pole in the pit made for pole erection and align • The distance between the two poles should be 2200mm • A soil tamper is used to ensure that the soil is tight around the pole • Distance should be measured by using a measuring tape • MS channel is placed from the surface of one pole to the surface of the next pole • Ensure that 1/6th of the pole is inside the pit
Glossary			
			<p>Cantilever: A fixed structural element, such as a beam or a plate, fixed at only one end to a (usually vertical) support from which it is jutting out.</p>