CHAPTER-8
EARTHING OF LINE AND SUB-STATIONS

Chapter Code No	DESCRIPTION OF WORK	UNIT	Rate /Unit
1	2	3	4
8.1	Earthing of line for all type of supports as per REC construction standards using Stay wire/GI wire with one pcs.of M.S.rod20mm dia each 3 meter long and driving into earth by mechanical means as per approved design.Drawing &specification.All material except MS rod,MS flat & stay wirewill be supplied by the contractor.If material is supplied by the contractor ,the payment will be made as per prevailing Discomstore issue rates.(In case of PCC poles earthing must be connected with earthwire already available on PCC pole at bottom)	Nos	371.51
8.2	Earthing of 11/0.4 KV distribution transformer /sub-station with 3 pieces of M.S.Rod 20mm dia each 3 meter long and driving them into earth by mechanical means at a distance as per approved design & drawing & specification.The work includes flattening of top ends of M.S.rod drilling a hole of 9/16" dia.at flattened top and tightening of M.S.flat 50x6mm (having 3 hole 2ends and 1mm middle) with nuts and bolts with M.S.rods top end hole.The flat will also be welded with M.S.rod.The end will be connected to equipments as under in sequence.	Per Trans.	746.79
8.3	Mesh earthing for 33/11 kv sub-station as per approved map &design usingMS flat 50X6mm/MS road 20mm dia includinglaying of flat/rod at the depth of 0.65 Mtrs.,welding & jointing at joints , structures & equipments etc.asunder:		
8.3.1	Excavation of trench of 0.65Mtrs.depth and 0.5Mtr.width		
(a)	Normal soil	Cum	134.32
(b)	Hard Soil	Cum	169.19
(c)	Ordinary rock (where blasting is not required.)	Cum	331.47
(d)	Hard rock (where blasting is required.)	Cum	982.95
8.3.2	Laying of MS flat /MS rod in 0.65Mtr.deep excavated trench and welding of MS flat/rod continuosly with 100 mm overlaping for straight joint including coating of MS flat joints with molten bitumen and covering joint with bitumen impregnated tape to protect from rust.	Mtr.	28.51
8.3.3	Shaping of MS flat for connecting the equipments with earthmesh .The work includes the welding of MS flat with equipments/structure and also with earth mesh.The work also includes coating of MS flat joint with molten bitumen and covering jointwith bitumen impregnated tape to protect from rust.	Mtr.	42.94
8.3.4	Preparation of spikes made of M.S Rod of 20 mm dia and 3 Mtr.length as per design and requirment to be driven in earth by mechanical means and Providing & .fastening of suitable clampswith the M.S. Rod, connection of earth wire/stay wire/MS flat in clamp depending on type of soil:		
(a)	Where drilling is not required	Per-Nos.	210.91
(b)	Where drilling is required	Per-Nos.	690.45

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8.3.5	Filling of trench with available excavated muck in layers of 20cm (Max.)consolidating each deposited layer by ramming & watering with lead up to 50 Mtr, and lift up to 1.5 Mtr.	R.Mtr.	5.68
8.3.6	Painting of exposed portion of MS flat/rod with two coats of red-oxide primer and two coats of green enamel paint including material.	Mtr.	7.90
8.4	Earthing on 6.35/.24 KV S/S made with 4 nos. MS Rod 20 mm dia,electrodes (black) of 3 Mtr. Length to be driven in earth by mechanical means and jointing through transformers body, 11 KV neutral ,LT neutral & LA with MS flat 40x5 mm (black 32 mtr.) .The MS Flat will be welded at the top of the electrode.	Per.Trans.	1085.84
8.5	Earthing of new 33/11 KV S/S with bentonite compound (including material) involving following activities.	Per earthing	6269.05
8.5.1	Digging of 10.5 ft. deep pit of 4 ' dia (approx 132 cu.ft)		
8.5.2	Supply of 2" G.I pipe with cap(including fabrication of 30 holes in the periphery of pipe)		
8.5.3	Making chamber for water pouring including cast iron manhole cover		
8.5.4	Supply cost of 200 kg bentonite compound with making slurry		
8.5.5	Supplu of black cotton soil approx 80 cu.ft.		
8.5.6	Connecting electrode with Mesh Earthing		
8.6	Pipe Earthing for Power Transformer at 33/11KV S/S :- Supply and erection of earthing electrode shall consist of G.I. Pipe 100 mm, of 3 Mtr. Length. The electrode shall be buried as far as practicable 3 Meters below ground level. Wherever possible earth electrodes shall be located as near the water tap, water drain or near down take pipe. Earth electrodes shall not be installed in proximity to a metal fance. It shall be kept clear of the bulidings foundations and in no case it shall be nearer than 2 Mtr. from the outer face of the wall. The electrode shall be surrounded with layer of charcoal dust and salt mixture through out the length. The 100 mm G.I. pipe shall be provided with holes of 12 mm Dia drilled at 75mm interval upto 2.5 meters length from bottom. The top of the pipe shall be provided with a G.I. threaded cap for watering the earth through a pipe. A clamp with pati of 12" of M.S. Flat of size 50x6 mm shall be fixed (Bolted) on the top age of the pipe which in turn shall be connected Neutral/Body of the Power Transformer through M.S. Flat size 50x6 mm. The G.I. cap over the G.I. Pipe shall be housed in a masonry chamber, approximately 300 mm x 300 mm x 300 mm deep. The masonry chamber shall be provided with a RCC Inspection cover resting over a RCC frame, embedded in masonry.	Per earthing	5671.00

Note:-

1 **The quality of material supplied by the contractor be got checked and approved by the Circle S.E.**

2 **The nuts and bolts provided / supplied by the contractor will be confirmed to relevant ISS.**

3 **The Rates are inclusive of all applicable Taxes/ Duty except service tax which will be paid extra by Nigam if applicable**

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