Grounding System Resistances

IEEE std. 142-1991 recommends system resistance values of 1 to 5 Ohms

Soil	Median Soil Resistance Ohm-cmCD	Number of Grounding Rods					
		1 rod Ω	2 rods Ω	3 rods Ω	4 rods Ω	6 rods Ω	8 rods Ω
Inorganic Clays (2), Corrosive	2000 (1) GR	8.0	4.5	3.3	2.7	2.0	1.6
	MAG-ROD	1.3	0.7				
Peat (2), Brime Waste, Corrosvie	4000 (1) GR	16.0	9.0	6.7	5.4	4.0	3.2
	MAG-ROD	2.6	1.5	1.1	0.9		
Silt, Fine Clayey Sand, Shale	6000 (1) GR	24.0	14.0	10.0	8.0	6.0	5.0
	K-ROD	4.2	2.3	1.7	1.4	1.0	0.8
Clayey Sands	12,500 (1) GR	50.0	28.0	21.0	1.7.0	13.0	10.0
	KR	8.8	4.8	3.6	2.9	2.2	1.7
	KR-10′-E6″	6.7	3.6	2.7	2.2	1.6	1.3
Silty Sands	20,000 (1) GR	80.0	45.0	33.0	27.0	20.0	16.0
	KR	14.0	7.6	5.7	4.7	3.5	2.8
	KR-10′-E6″	10.7	5.8	4.3	3.5	2.6	2.1
Silty Sands	30,000 (1) GR	120.0	67.0	50.0	41.0	30.0	24.0
	KR	21.0	11.0	8.0	7.0	5.0	4.0
	KR-10′-E12″	13.0	7.0	5.0	4.0	3.0	2.0
Gravely Sands	80,000 (1) GR	320.0	180.0	135.0	110.0	80.0	65.0
	KR-20′-E12″	20.0	11.0	8.0	6.0	5.0	4.0
Granites, Basalt. Sandstone	100,000 (1) GR	400.0	225.0	165.0	135.0	100.0	80.0
	KR-20′-E24″	22.0	12.0	9.0	7.0	5.0	4.0
Gravel, Course Sand	175,000 (1) GR	700.0	400.0	300.0	240.0	175.0	150.0
	KR-20′-E36″	20.0	11.0	8.0	6.0	5.0	4.0

(1) Approximate median resistance values in Ohm-cm. Low resistivity soils are highly influenced by moisture + temperature.
(2) Increased probability of galvanic or electrolytic corrosion to underground steel components. MAG-ROD should be used to prevent such corrosion.
GR = Standard copper grounding rod
KR = ERI K-Rod
MAG-ROD = ERI cathotic protection grounding rod
E = ELF, electrolytic fill, hole