

GENERAL NOTES : EARTHING AND LIGHTNING PROTECTION

**PROJECT : BRAHMAPUTRA
PETROCHEMICAL COMPLEX**

**CLIENT : M/s BRAHMAPUTRA CRACKER
& POLYMER LIMITED**

0	3.9.2009	ISSUED FOR CONSTRUCTION	SMK	MKS	AKS
Rev. No	Date	Purpose	Prepared by	Checked by	Approved by

GENERAL NOTES: EARTHING AND LIGHTNING PROTECTION

1. Earthing shall be executed in accordance with the requirements laid down in IS: 3043 / other applicable BIS codes & standards IE rules and other statutory regulations, EIL Specifications for Earthing Installation (6-51-0084), applicable installation standards, specific job requirement indicated in this document and the respective earthing layout drawings.
2. In case of any contradiction between various referred standards / documents / statutory regulations the following order of priority shall govern
 - Statutory regulations
 - Cable layout drawing(s)
 - This specification
 - Installation standards
 - Standard specification
 - Codes and standardsHowever, concurrence of Engineer-in Charge shall always be obtained, before taking a decision in any such matter
3. Earth electrode shall be 3000 mm long having 100 mm (4") internal diameter and thickness of 13 mm. The earth pit design shall be as per IS 3043.
4. In case of paved areas, top of earth pit shall be flushed with FFL, whereas in case of unpaved areas, top of earth pit shall be projected 100 mm above FGL.
5. 75x10mm G.I. earth strip shall be used for Substations and 50x6mm GI earth strip shall be used in process units and offsite areas as main earth grid conductor.
6. Street lighting poles / high masts shall be earthed to the main earth grid, wherever available nearby, else separate 50 x 6 mm GI strip will be run for the street lighting system and shall be connected to main grid at minimum two points.
7. All lighting fixtures and single phase sockets shall be earthed using the third core of the feeding cable or third wire in circuit wiring as per respective lighting layout drawing.
8. Location of earth electrode in test pit, as shown on earthing layout drawing, is indicative. Exact co-ordinates of earth electrodes in test pit shall be decided at site so as to avoid fouling with underground facilities. However, proper spacing between earth electrodes shall be maintained (i.e. twice the earth electrode length).
9. All cable trays on the same route shall be bonded together at an interval of not more than 24 m by using single core 50 sq mm, Cu conductor, PVC insulated cable and shall be connected to main grid / earth plate.
10. All equipment shall be earthed through earth conductor as per Installation standard, 7-51-0116.
11. The KW rating of motors, wherever indicated in the layout drawing is for guidance only. Selection of earthing conductor shall be done based on exact rating as per respective motor's nameplate / motor list.
12. In hazardous areas, all process equipment shall be connected to the earth grid at minimum two points. Pipelines shall be earthed at entry and exit of battery limit of process unit as per EIL installation standard 7-51-0112. Size of earthing conductor shall be 25 sq. mm copper conductor, single core, PVC insulated cable.

13. Reinforcement bars of piperack concrete column / pavement shall be connected to the main earth grid by using 50 x 6 mm GI strip at interval of not more than 24 m.
14. Tall columns as per layout drawing having continuous metallic structure shall be earthed at minimum 2 points at its bottom and shall be directly connected to individual earth electrodes for lightning protection.
15. Welded technological structure shall be earthed minimum at two points, preferably diagonally opposite, to the main earth grid using 1 run of single core, 70 sq mm copper conductor PVC insulated cable, for each connection.
16. Earth strip, wherever shown on platforms, shall be cleated below the platform.
17. Tapings from main grid upto the earth plate shall generally be of the same size as the main earth grid.
18. Reinforcement bars of extreme columns of sub-station building, reinforcement bars in ground and first floor slab of sub-station building shall be effectively earthed using 75 x 10 mm GI strip
19. Lightning protection grid for buildings and sheds (wherever required) shall be formed by using 20x3mm G.I. strip suitably cleated along parapet wall / roof.
20. Each down conductor for lightning protection shall be directly connected to independent earth electrode in test pit.
21. Earthing of transformer neutrals shall be done using with two independent earth electrodes, as per IE rules. These electrodes shall be interconnected to main earth grid.
22. Clean earth system for instrumentation shall be separate from electrical earthing grid.
23. Clean earth system for electronic equipment such as numerical relays, VFD etc. shall be as per specific vendor requirements.