GENERIC SPECIFICATIONS

Advanced Lightning Rod

General

1.1 The lightning protection system shall be of the enhanced type which is designed to attract lightning to a preferred point and safely convey the lightning energy to ground with minimal risk of side flashing via a pre-determined route.

1.2 The complete lightning protection system will comprise the following key components.

(a) Advanced lightning rod
(b) Mounting support
(c) High voltage shielded cable
(d) Lightning Strike Recorder
(e) Dedicated earthing system

The Lightning Rod

2.1 The advanced lightning rod shall be of a “Controlled Advanced Triggering” type and will respond dynamically upon leader activity in the near area.

2.2 The advanced lightning rod shall be configured as a spheroid which is comprised of separate electrically isolated panels surrounding an earthed central finial.

2.3 The insulation material used to electrically isolate the panels shall be comprised of a base polymer which provides high ozone and UV resistance with a dielectric strength of 24 – 38 KV/mm.

2.4 The external shape of the advanced lightning rod shall be such that it will limit the development of sharp point corona discharge under static thunderstorm conditions.

2.5 The upper section of the central finial shall be rounded to provide a blunt surface

2.6 The upper section of the central finial shall be related to withstand 200KA.

2.7 An air gap shall be provided between the individual electrically isolated panels (4 panels) and the blunt configured tip of the central rod. Dome shapes and pointed central rods will not be acceptable.

2.8 Arcing shall occur between the panel sections of the spheroid and the blunt configured finial tip only upon the progression of a lightning leader.

2.9 The advanced lightning rod shall have no moving parts and will have no dependence on external power supply or batteries. There should be no high impedance static drain unit between the central rod and the panels.

2.10 Under a normal atmosphere all components of the advanced lightning terminal shall be non corroding.

2.11 The advanced lightning rod shall be installed at a minimum of 10 metres from the ground.

2.12 The advanced lightning rod shall be insulated from all surrounding points and features of the structure being protected.

2.13 The advanced lightning rod shall not be installed in a corrosive environment unless the manufacturers written approval has first been granted.

2.14 The advanced lightning rod shall be installed as per the manufacturers instructions.

2.15 The advanced lightning rod shall not be of the ESE type and all lightning terminals claiming compliance to NF C17-102 shall not be considered suitable.

2.16 The advanced lightning rod shall have been tested to the following standard IEC 60-1:1989.

2.17 The lightning rod shall be shown to have withstood a minimum current impulse of a 180kA 8/20 µs waveform as per the test standard IEC 60-1: 1989.

Mounting Support of Lightning Rod

3.1 The mounting pole used to support the lightning rod shall be a circular insulating fibreglass tube at a minimum height of 2 metres. The pole will have an outside diameter of 68mm.

3.2 The mounting pole and supports shall be securely fixed with brackets and guy wires where required.

3.3 The downconductor shall pass through the centre of the insulating pole for the entire length of the pole.

High Voltage Shielded Cable – (HVSC)

4.1 The high voltage shielded cable shall consist of a core filler, stranded copper conductor, insulation material, outer copper conductor with external conductive sheath.

4.2 The main copper conductor within the high voltage shielded cable shall have a minimum cross sectional area of 50mm^2.

4.3 The outer diameter of the high voltage shielded cable shall be less than 38mm.

4.4 The high voltage shielded cable shall have a maximum inductance of 100nH/m.

4.5 The main copper conductor shall allow for direct connection to the lightning rod through the use of a compression lug.

4.6 The high voltage shielded cable shall be fixed to the structure through the use of suitable saddles every two metres for the length of the cable route.

4.7 The high voltage shielded cable shall be installed as per manufacturers instructions and shall not be subject to bends of less than 0.6 metres radius.

4.8 The high voltage shielded cable shall have been tested to the following standard IEC 60-1:1989.

4.9 The high voltage shielded cable shall have been subjected and successfully withstood a maximum voltage of 280kV in compliance to IEC test standard, IEC 600601, 2nd edition, 1989-11.

Event Recording Device

5.1 All systems shall be installed complete with the lightning strike recorder.

5.2 The lightning strike recorder shall contain a mechanical 6 digit display which will register all lightning discharges with a sensitivity of 1500A 8/20 µs peak current impulse.

5.3 The lightning strike recorder shall be housed in a IP 67 rated enclosure and will operate without reliance on batteries or an external power source.

5.4 The lightning strike recorder shall be installed as per the manufacturers instructions.

5.5 It shall be shown that the event recording device has been successfully tested under test standard IEC 60-1:1989.

Earthing

6.1 The earthing system shall incorporate the following individual components or a combination of the following – 25 x 3mm flat copper tape buried to a depth of not more than 800mm or by deep driven copper bonded steel core earth rods. All components of the earthing system shall be electrically connected to the central injection rod which is securely connected to the lower end of the high voltage shielded cable.

6.2 The earthing system shall be installed so that the final impedance reading does not exceed 10 Ohms unless otherwise stipulated by the lightning protection manufacturer or consulting engineer.

6.3 It is recommended that the earthing system is bonded to all structural reinforcing steel of the building, along with all connecting services.

6.4 The use of ground resistance improvement material shall be applied in order to reduce the resistivity levels of the earthing system.

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