GENERIC SPECIFICATIONS

Advanced Lightning Air Terminal

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 via a predetermined route in order to minimise the risk of side-flash.

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

(a) Lightning Air Terminal
(b) Mounting support
(c) Dedicated down conductor
(d) Lightning Strike Recorder
(e) Dedicated, purpose-designed earthing system

The Lightning Air Terminal

2.1 The lightning air terminal shall be an Early Streamer Emission terminal which will respond dynamically upon downward leader activity in the near area.

2.2 The lightning air terminal 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 central finial shall be elevated above the spheroid to a length of 86 mm

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2.6 The upper section of the central finial shall be rated to withstand 3 successive 10/350 impulses of magnitude 100kA.

2.7 An air gap shall be provided between the individual electrically isolated panels (4 panels) and the finial tip of the central rod.

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

2.9 The lightning air terminal shall have no moving parts and will have no dependence on an external power supply or batteries.

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

2.11 If using HVSC as a down conductor, the lightning air terminal shall be insulated from all surrounding points and features of the structure being protected.

2.12 The lightning air terminal shall not be installed in a corrosive environment unless the manufacturer's written approval has first been granted.

2.13 The lightning air terminal shall be installed as per the manufacturer's instructions.

2.14 The lightning air terminal shall be tested and certified in accordance with the current French National Standard – NF C 17-102 and IEC Test Standard – IEC60-1:1989.

Mounting Support of Lightning Air Terminal

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

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

3.3 The down conductor shall pass through the centre of the pole for the entire length of the pole.

High Voltage Shielded Cable - (HVSC Plus)

4.1 The high voltage shielded cable shall consist of a central filler, concentric aluminium conductor, binder tape, conductor screen insulation, insulation screen, copper tape screen and external outer sheath.

4.2 The main aluminium conductor within the high voltage shielded cable shall have a minimum cross sectional area of 50mm².

4.3 The outer diameter of the high voltage shielded cable shall be 36mm.

4.4 The high voltage shielded cable shall have an inductance of 93nH/m.

4.5 The main aluminium 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 manufacturer's instructions and shall have a minimum bending radius of 430mm.

4.8 The high voltage shielded cable will have a withstand voltage (1.2/50 µs impulse) of ≥ 500 kV

4.9 The high voltage shielded cable shall have been tested in accordance with standard AS1931, Part 1 (2).

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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 an 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 manufacturer's instructions.

Earthing

6.1 The earthing system shall incorporate the following individual components or a combination of the following – 25 x 3 mm flat copper tape buried to a depth of not more than 800mm or by deep driven copper bonded steel core earth rods and or solid stainless steel grade 316 earth rods where applicable. 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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