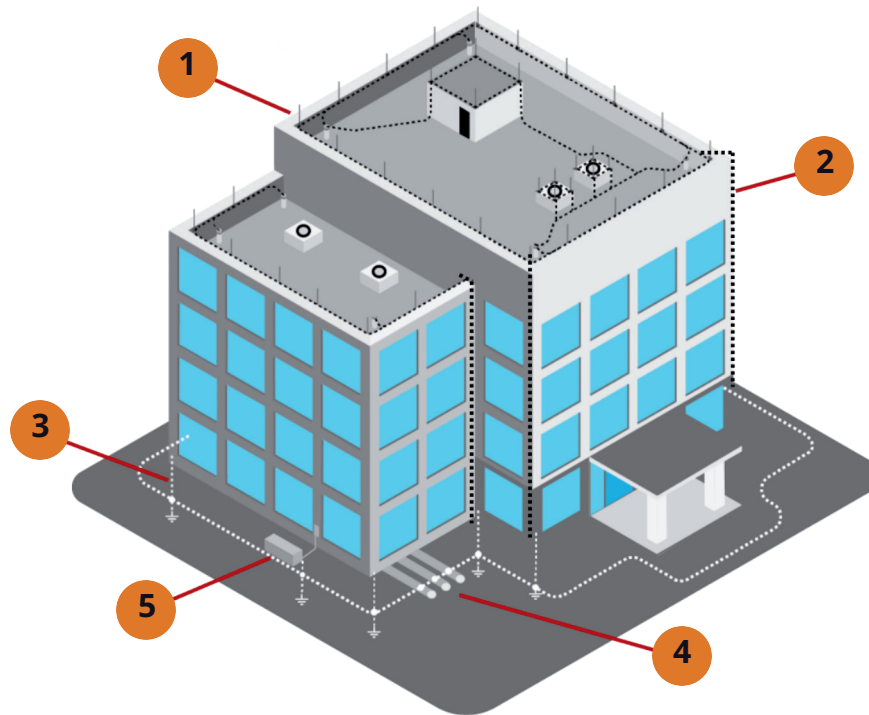


One Continuous Path



- 1 **Strike Termination Devices** — intercept the strike at deliberate points
- 2 **Conductors** — provide a continuous, low-impedance path for current to flow to ground
- 3 **Grounding** — safely dissipates the energy into the earth
- 4 **Potential Equalization** — bonds metal bodies so current can't jump between them
- 5 **Surge Protection** — safeguards electrical and electronic systems inside

Protecting Against Direct Strikes and Indirect Impacts

Direct Strike

Lightning hits the structure. The system intercepts it and gives it a safe path to ground.

Indirect Impacts

Lightning hits nearby and energy travels in through power, data and phone lines and metal piping. Bonding and surge protection keep dangerous overvoltages from reaching equipment and operations.

The Calculation Is Where It Starts

Every structure is unique. A risk calculation estimates how often lightning may strike and how much risk is tolerable. True operational resilience takes a full assessment — from the front door to a walk around the entire building — covering the structure, equipment, incoming services, operations and procedures. It requires professional knowledge of lightning behavior and protection measures.

Turn over to see what goes into the calculation

Find more resources at www.lightning.org

UNDERSTAND THE RISK

It's a Calculation, Not a Checklist

NFPA 780 provides two levels of lightning risk assessment: a **simple assessment** and a **detailed assessment**. The simple assessment uses the seven factors below to begin the process.

HOW OFTEN WILL LIGHTNING STRIKE?

1 Lightning Activity

How many flashes hit the ground in your region each year

2 Structure Size

Length, width and height create a collection area; taller structures draw strikes from farther away

3 Location & Surroundings

Sheltered by taller objects, standing alone, or on a hilltop

Expected strikes per year: $N_d = N_g \times A_e \times C_1 \times 10^{-6}$

$N_g = \text{Factor 1} \cdot A_e = \text{Factor 2} \cdot C_1 = \text{Factor 3}$

HOW MUCH RISK CAN YOU TOLERATE?

4 Construction

Structure and roof materials: metal, nonmetal or combustible

5 Contents

Value, flammability, sensitive electronics, irreplaceable items

6 Occupancy

Unoccupied, normally occupied, or hard to evacuate

7 Consequences

Need for continuous operation; potential environmental impact

Tolerable strikes per year: $N_c = 1.5 \times 10^{-3} \div (C_2 \times C_3 \times C_4 \times C_5)$

$C_2-C_5 = \text{Factors 4-7}$

The Result: If $N_d > N_c$ - a lightning protection system is recommended.

When to Go Further

The simple assessment focuses on strikes to the structure itself. For critical, complex or high-consequence facilities, NFPA 780's **detailed assessment** looks deeper. It evaluates risk from direct strikes, nearby strikes and strikes to incoming services, measured against tolerable risk for each category of loss. The result: protection measures that are specifically selected and justified. This evaluation is normally performed by a qualified professional.



Specifying a System? Work with an LPI Certified professional.

Find more resources at www.lightning.org