

외부 뇌보호 시스템의 보호범위 규정

1. KS 규정에 의한 보호각 (KSC IEC 61024-1)

보호레벨 (뇌격거리)	설치 높이(m)				MESH 폭 (m)
	20	30	45	60	
I (20m)	25	*	*	*	5
II(30m)	35	25	*	*	10
III(45m)	45	35	25	*	15
IV(60m)	55	45	35	25	20

- 적용대상 : 철탑이나 CCTV Pole 등 돌출 구조물에 적합

① * 부분은 보호각 적용이 불가능하며 회전 구체법을 적용함.

② 뇌격거리는 낙뢰의 종결점에서의 뇌격과의 거리

뇌격거리가 짧을수록 뇌 빈도수가 높아진다.

(낙뢰보호강도를 높이기 위하여 보호레벨- I 적용을 권장함)

2. 회전 구체법에 의한 보호반경 (NFPA 780-10)

적용	뇌격거리 (m)	설치 높이(m)			
		1.5	3	4.5	6
선박 및 특수 돌출물	30	9	15	18	21
일반 건, 구축물	45	12	18	21	24

- 적용대상 : 철탑이나 CCTV Pole 등 돌출 구조물에 적합

3. 일반 건, 구축물에 대한 피뢰침 설치기준 (NFPA 780-10/11)

- 적용대상 : 일반 건물이나 평면 구조물에 적합

① 구조물 평면의 한면(변) 최대길이가 7.6m 이하가 될 때

- 피뢰침간 최대 이격거리가 7.6m 이므로 1 대로 보호가능

② 구조물 평면의 한면(변) 최대길이가 7.6m 이상이 될 때

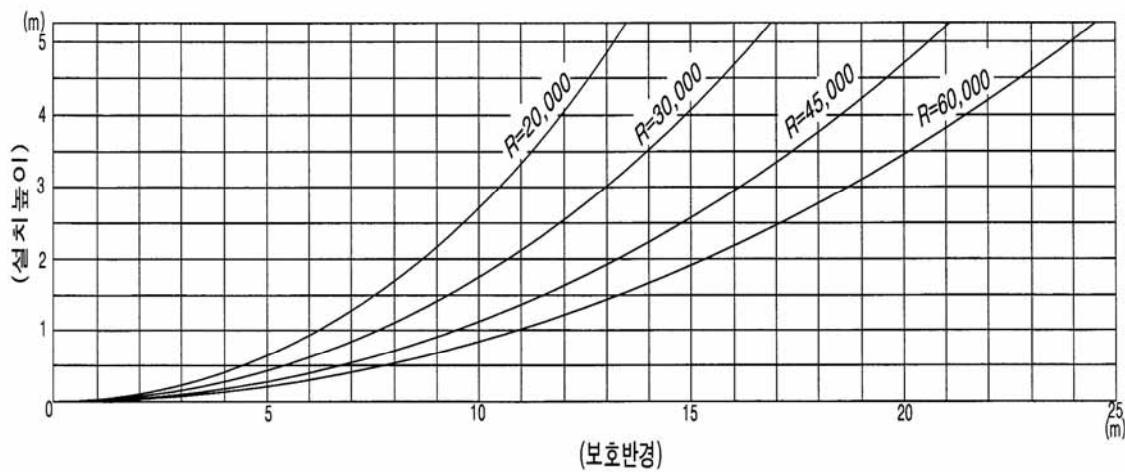
- 구조물 가장자리(Edge)에서부터 7.6m 이격으로 설치

- 구조물 중간부분은 최대 이격거리를 15m 이내로 설치

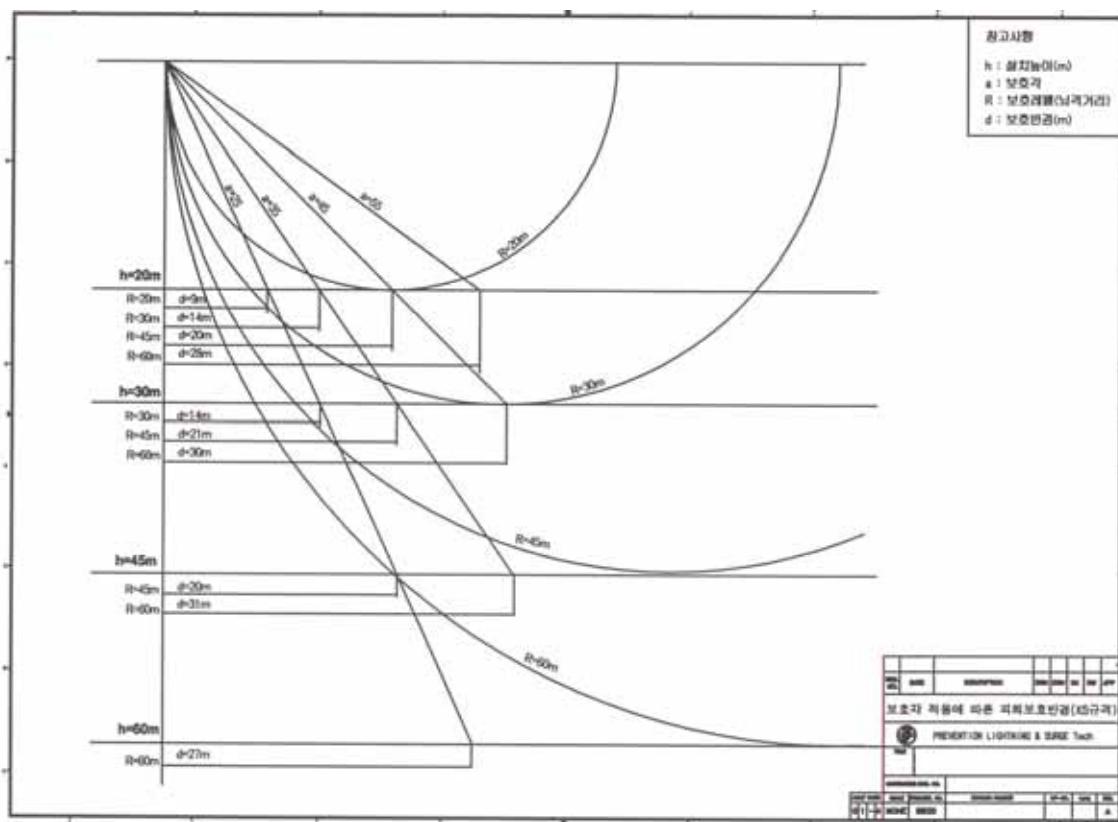
4. 적용기준

일반적으로 낙뢰 특성상 보호범위 설정이 어려워 상기 1, 2, 3 항의 요건중 가장 보호 신뢰도가 높고 적용이 용이한 경우는 3 항으로써 이는 1, 2 항의 보호범위를 다 수용할 수가 있다.

Protection Zone

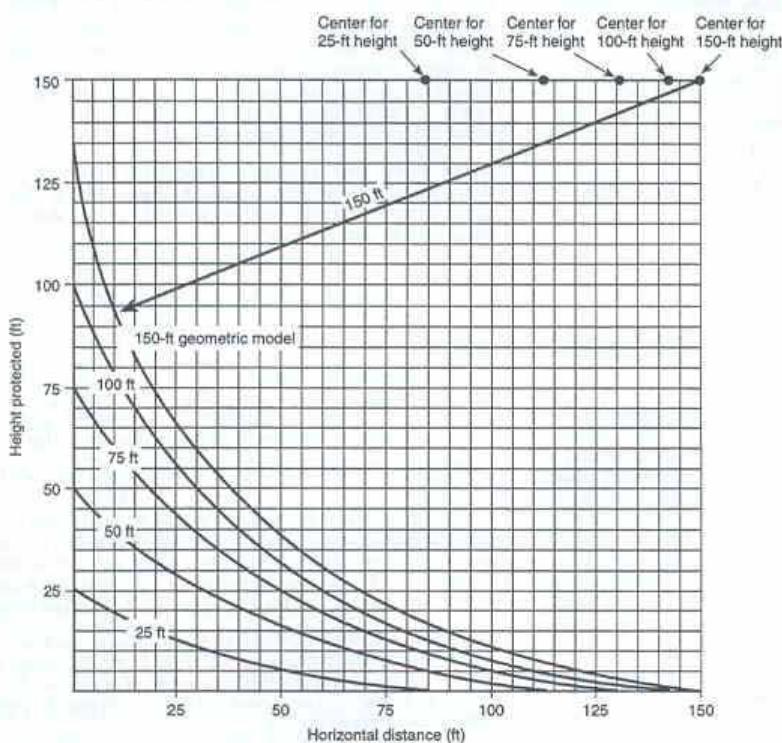


보호반경(화전구체법)



보호반경(보호각법)

FIGURE 3.7.3.3 Zone of protection.



For SI units, 1 ft = 0.305 m.

FIGURE 3.8.1 Air terminals on pitched roof.

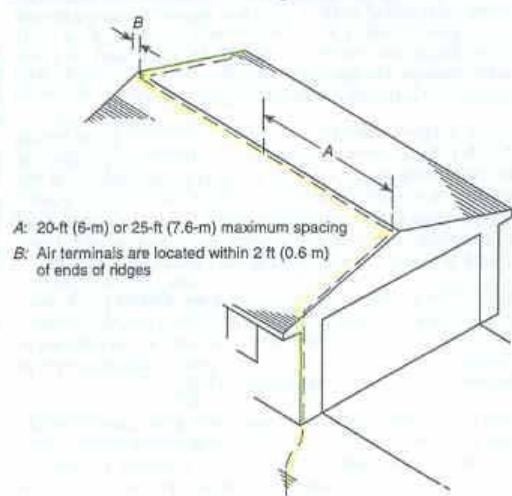


FIGURE 3.8.1.2(a) Air terminals on flat roof.

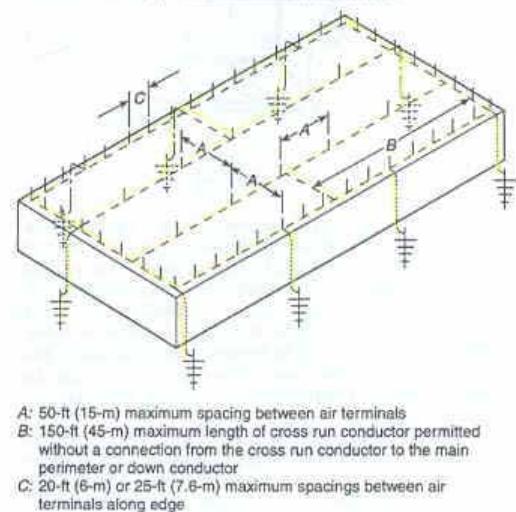
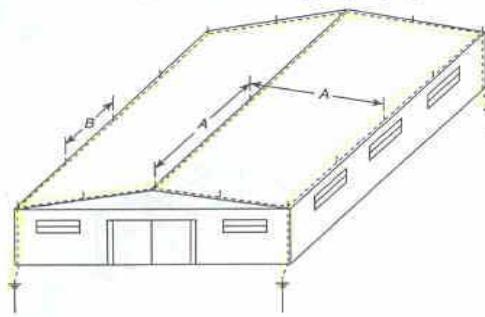


FIGURE 3.8.1.2(b) Air terminals on gently sloping roof.



A: 50-ft (15-m) maximum spacing
 B: 20-ft (6-m) or 25-ft (7.6-m) maximum spacing

FIGURE 3.8.4(a) Flat or gently sloping roof with irregular perimeter.

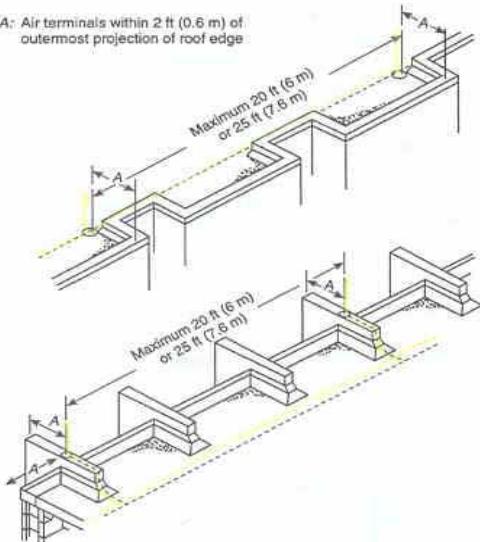
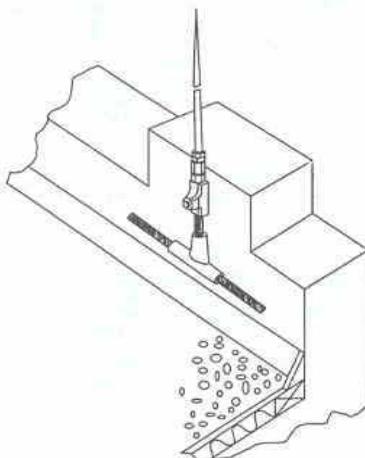


FIGURE 3.8.4(b) Irregular roof perimeter.



Note: Air terminal tip configurations can be sharp or blunt.

3.8.3 Roofs with Intermediate Ridges. Strike termination devices shall be located along the outermost ridges of buildings that have a series of intermediate ridges at the same intervals as required by 3.8.1. Strike termination devices shall be located on the intermediate ridges in accordance with the requirements for the spacing of strike termination devices on flat or gently sloping roofs. If any intermediate ridge is higher than the outermost ridges, it shall be treated as a main ridge and protected according to 3.8.1.

3.8.4 Flat or Gently Sloping Roofs with Irregular Perimeters. Structures that have exterior wall designs that result in irregular roof perimeters shall be treated on an individual basis. In many cases, the outermost projections form an imaginary roof edge that is used to locate the strike termination devices in accordance with 3.8.1. In all cases, however, strike termination devices shall be located in accordance with Section 3.8, as shown in Figure 3.8.4(a).

Strike termination devices installed on vertical roof members shall be permitted to use a single main-size cable to connect to a main roof conductor. The main roof conductor shall be run adjacent to the vertical roof members so that the single cable from the strike termination device is as short as possible and in no case longer than 16 ft (4.9 m). The connection of the single cable to the down conductor shall be made with a tee splice, as shown in Figure 3.8.4(b).

3.8.5 Open Areas in Flat Roofs. The perimeter of open areas, such as light or mechanical wells, shall be protected if the open area perimeter exceeds 300 ft (92 m), provided both rectangular dimensions exceed 50 ft (15 m).

3.8.6 Domed or Rounded Roofs. Strike termination devices shall be located so that no portion of the structure is located outside a zone of protection, based on a striking distance of 150 ft (45 m), as set forth in Section 3.8.