



Exposure sprinklers

9&10 June 2026

Agenda

- Situations where exposure sprinklers may be needed
- Data Sheet 1-20, *Protection Against Exterior Fire Exposure*

Example Situations

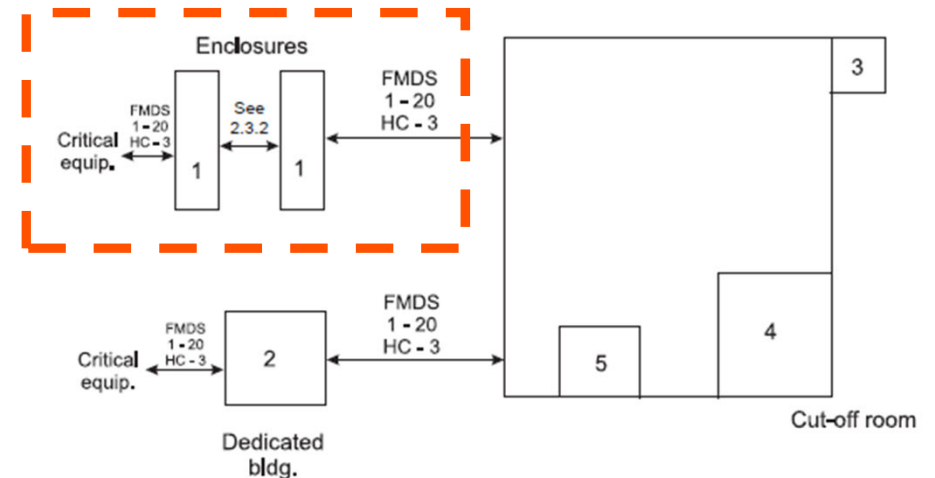
- First option is adequate space separation
- Wild-fire, see Data Sheet 9-19



EXPOSURE SPRINKLERS

Example Situations

- First option is adequate space separation
- Wild-fire, see Data Sheet 9-19
- Energy Storage Systems (ESS) with li-ion batteries, see Data Sheet 5-33



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- Wild-fire, see Data Sheet 9-19
- Energy Storage Systems (ESS) with li-ion batteries, see Data Sheet 5-33
- Idle pallets see Data Sheet 8-24



Table 1. Separation Distances for Outdoor Storage of Idle Pallets

Exposed Wall Category	Separation Distance, ft (m)					
	≤50 Pallets		51 to 200 Pallets		>200 Pallets	
	Wood & FM Approved	Plastic	Wood & FM Approved	Plastic	Wood & FM Approved	Plastic
Combustible	15 (4.5)	30 (9)	40 (12)	80 (24)	90 (27)	150 (45)
Noncombustible	12 (3.7)	15 (4.5)	30 (9)	40 (12)	50 (15)	100 (30)
1-hr	4 (1.2)	8 (2.4)	12 (3.7)	24 (7.4)	20 (6)	40 (12)
2-hr	3 (1)	6 (2)	10 (3)	20 (6)	15 (4.5)	30 (9)
3-hr	3 (1)	3 (1)	8 (2.5)	16 (5)	13 (4)	26 (8)
4-hr	3 (1)	3 (1)	3 (1)	3 (1)	3 (1)	3 (1)

Note: Separation distances of 3 ft (1 m) are recommended for access only with a 4-hr wall.

Example Situations

- First option is adequate space separation
- Wild-fire, see Data Sheet 9-19
- Energy Storage Systems (ESS) with li-ion batteries, see Data Sheet 5-33
- Idle pallets see Data Sheet 8-24
- Ignitable liquid tanks, see Data Sheet 7-88

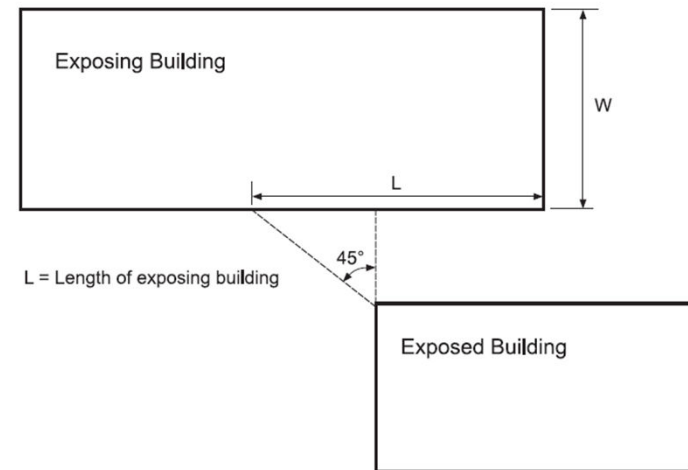
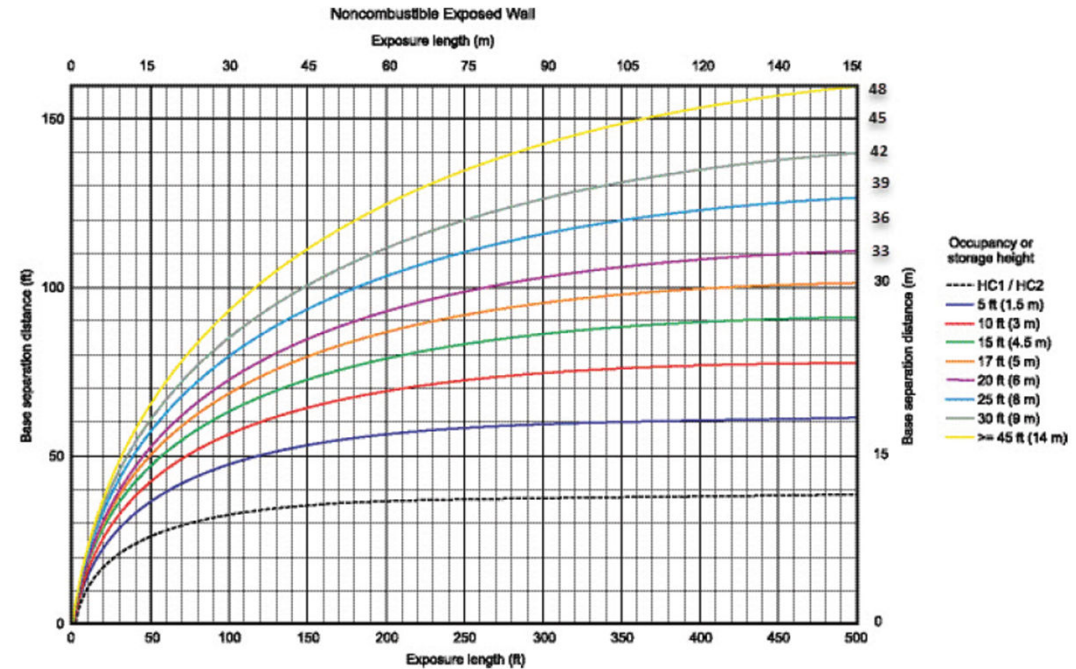


FM philosophy is to protect the building and use monitor nozzles for outdoor tanks (rather than fixed protection over tanks and in the bund)

EXPOSURE SPRINKLERS

MFL Space Separation

- Yard storage
- Unprotected exposing buildings
- Combustible exposed walls include those with windows with plastic frames or if they can be opened



Exposure Fires

- If MFL space separation is not present, lesser separation may be acceptable with fire service response – discuss with FM engineer



EXPOSURE SPRINKLERS

Data Sheet 1-20

- If space separation is deemed not acceptable:
 - Improve the fire resistance of the building
 - Install active exposure sprinkler protection



EXPOSURE SPRINKLERS

Active Exposure Sprinklers

- Determine length of exposed section (up to 122 m)
- If building wall is > 9 m, provide two or more levels of sprinklers spaced evenly, vertically
- Horizontal spacing 1.8 to 3.7 m
- 60 minute duration (+ hoses)

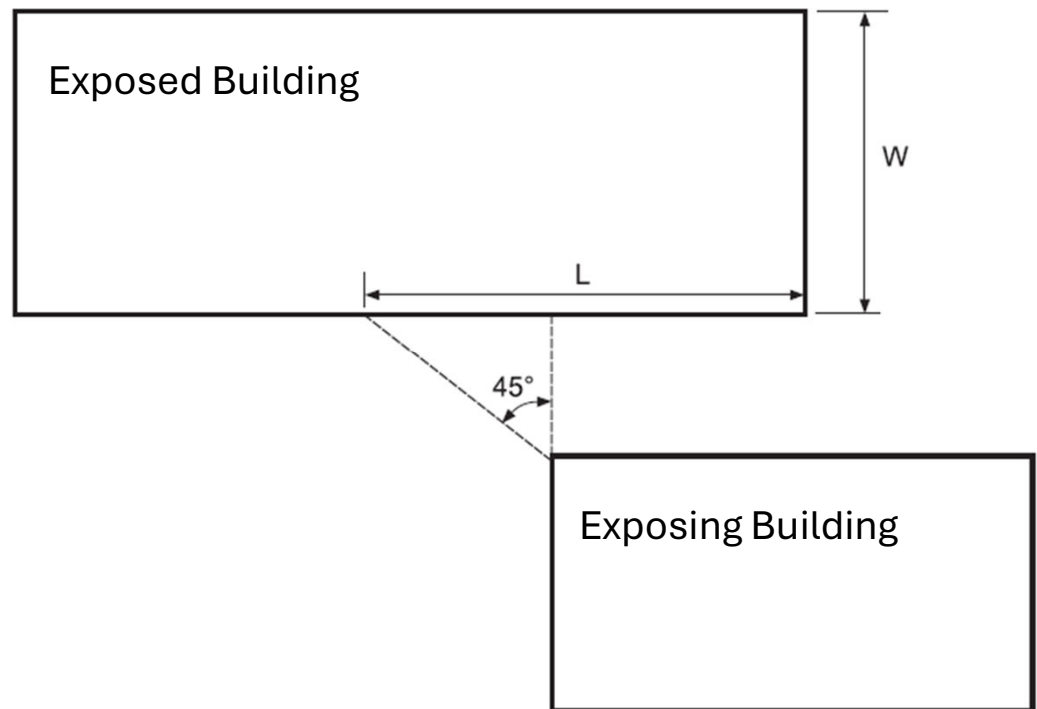


Table 2.4.1. Exterior Sprinkler Design Water Flow^{1,2}

Wall Construction	Vertical spacing, ft (m)	Water flow ³ , gpm/ft (L/min/m)
Combustible	10 (3.0)	2.7 (32.5)
	15 (4.6)	3.2 (39.6)
	20 (6.1)	3.8 (46.5)
	30 (9.1)	4.8 (60.1)
Noncombustible	10 (3.0)	1.9 (24.0)
	15 (4.6)	2.5 (30.8)
	20 (6.1)	3.1 (37.8)
	30 (9.1)	4.1 (51.4)

Note 1. Horizontal sprinkler spacing should be between 6 ft and 12 ft (1.8 m and 3.7 m).

Note 2. Sprinkler pressure should be between 7 psi and 90 psi (0.48 bar and 6.2 bar).

Note 3. Water flow listed as gpm/ft (L/min) per unit length of wall (ft [m]).

Active Exposure Sprinklers

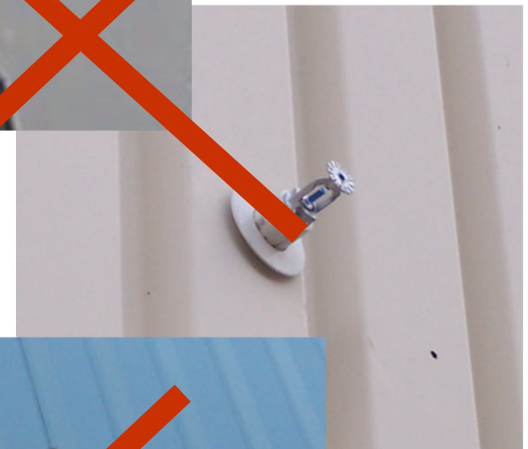
- FM Approved, non-storage, vertical sidewall heads
- 70°C quick-response upright heads on a dry-system or open deluge design (upright or pendent)
- 150 – 300 mm away from the wall
- Deflector facing the wall (water sprays onto the wall)
- Temperature sensing element 'visible' to the fire



EXPOSURE SPRINKLERS

Active Exposure Sprinklers

- Horizontal dry-pendent sprinklers
- Standard upright or pendent sprinklers
(x 2 flow from each head)



EXPOSURE SPRINKLERS

Active Exposure Sprinklers



EXPOSURE SPRINKLERS

Example

- Two rows of sprinklers heads at 6 m and 12 m
- Horizontal spacing 2.95 m (17 heads)
- $37.8 \times 2.95 = 111.5$ L/min per head
- $Q = K \sqrt{p}$
- Head pressure = 0.94 bar
- Flow = $17 \times 111.5 = 1900$ L/min

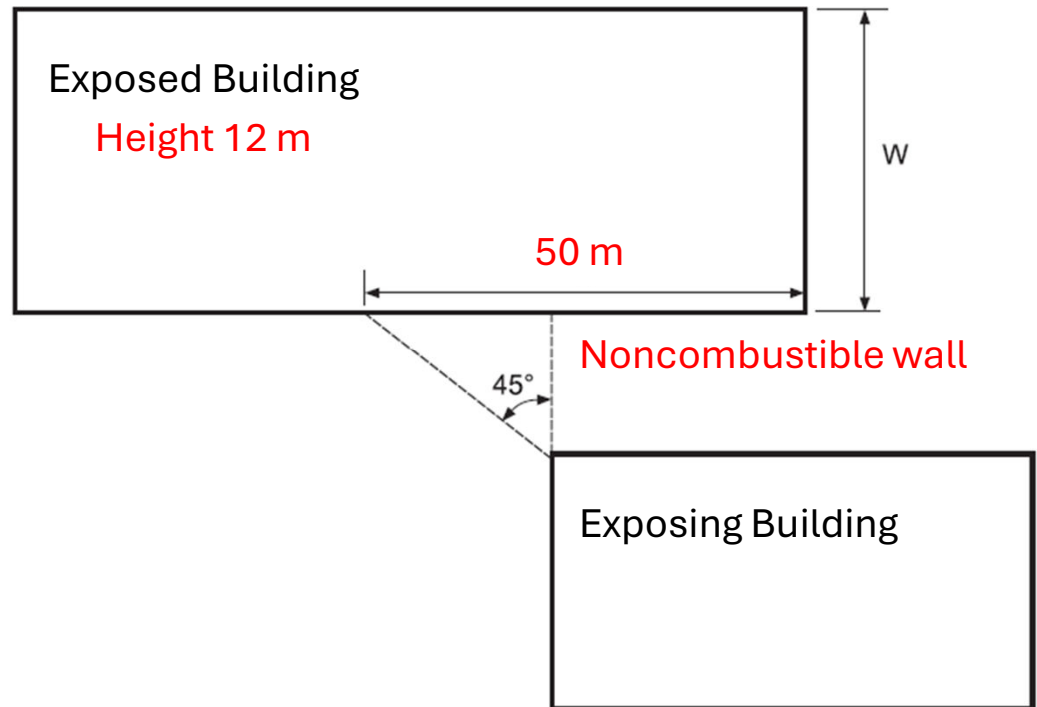


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