22.1 General.

The criteria in Chapter 20 shall apply to storage protected with CMSA sprinklers.

22.1.1

Quick-response CMSA sprinklers designed to meet any criteria in Chapter 20 through Chapter 25 shall be permitted to protect any of the following:

(1) Light hazard occupancies
(2) Ordinary hazard occupancies

22.1.2

Standard-response CMSA sprinklers designed to meet any criteria in Chapter 20 through Chapter 25 shall be permitted to protect ordinary hazard occupancies.

22.1.3

When using CMSA, the design area shall meet the requirements of 28.2.4.3.1.

22.1.4

Protection shall be provided as specified in this chapter or appropriate NFPA standards in terms of minimum operating pressure and the number of sprinklers to be included in the design area.

22.1.5 Open Wood Joist Construction.

22.1.5.1

Where CMSA sprinklers are installed under open wood joist construction, one of the following shall be provided:

(1) A minimum pressure of 50 psi (3.4 bar) for K-11.2 (160) sprinklers
(2) A minimum pressure of 22 psi (1.5 bar) for K-16.8 (240) sprinklers
(3) The pressure from Table 22.4 for K-19.6 (280) or larger sprinkler.
(4) The pressure from Table 22.4 for K-11.2 (160) or K-16.8 (240) where each joist channel is fully separated with material equal to the joist material to its full depth at intervals not exceeding 20 ft (6.1 m).

22.1.5.2 Preaction Systems.

22.1.5.2.1

For the purpose of using Table 22.2, preaction systems shall be classified as dry pipe systems.

22.1.5.3

Building steel shall not require special protection where Table 22.2 are applied as appropriate for the storage configuration.

22.1.5.4 * Storage Conditions.

The design of the sprinkler system shall be based on those conditions that routinely or periodically exist in a building and create the greatest water demand, which include the following:

(1) Pile height
(2) Clearance to ceiling
(3) Pile stability
(4) Array

22.1.6 *

The ceiling design criteria for single-, double-, and multiple-row racks in Chapter 22 shall be based on open rack configurations as defined in 3.3.154.

22.1.7

Protection criteria for Group A plastics shall be permitted for the protection of the same storage height and configuration of Class I, II, III, and IV commodities.

22.2 Palletized and Solid-Piled Storage of Class I Through Class IV Commodities.

Protection of palletized and solid-piled storage of Class I through Class IV commodities shall be in accordance with Table 22.2.

Table 22.2 CMSA Sprinkler Design Criteria for Palletized and Solid-Piled Storage of Class I Through Class IV Commodities (Encapsulated and Nonencapsulated)

Configuration	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		K-Factor/ Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	
		ft	m	ft	m				psi	bar
Palletized	Class I or II	25	7.6	30	9.1	11.2 (160) Upright	Wet	15	25	1.7
							Dry	25	25	1.7
						16.8 (240) Upright	Wet	15	10	0.7
							Dry	25	15	1.0
						19.6 (280) Pendent	Wet	15	16	1.1
						25.2 (360) Pendent	Wet	15	10	0.7
				35	10.7	11.2 (160) Upright	Wet	15	25	1.7
							Dry	25	25	1.7
						16.8 (240) Upright	Wet	15	15	1.0
							Dry	25	15	1.0
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
		30	9.1	35	10.7	19.6 (280) Pendent	Wet	15	25	1.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
		35	10.7	40	12.2	19.6 (280) Pendent	Wet	15	30	2.1
						25.2 (360) Pendent	Wet	15	23	1.6

Configuration	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		K-Factor/ Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	
		ft	m	ft	m				psi	bar
	Class III	25	7.6	30	9.1	11.2 (160) Upright	Wet	15	25	1.7
							Dry	25	25	1.7
						16.8 (240) Upright	Wet	15	15	1.0
							Dry	25	15	1.0
						19.6 (280) Pendent	Wet	15	16	1.1
						25.2 (360) Pendent	Wet	15	10	0.7
				35	10.7	11.2 (160) Upright	Wet	15	25	1.7
							Dry	25	25	1.7
						16.8 (240) Upright	Wet	15	15	1.0
							Dry	25	15	1.0
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
		30	9.1	35	10.7	19.6 (280) Pendent	Wet	15	25	1.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
		35	10.7	40	12.2	19.6 (280) Pendent	Wet	15	30	2.1
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
	Class IV	20	6.1	30	9.1	11.2 (160) Upright	Wet	20	25	1.7
								15	50	3.4
						16.8 (240) Upright	Wet	20	15	1.0
								15	22	1.5
						19.6 (280) Pendent	Wet	15	16	1.1
						25.2 (360) Pendent	Wet	15	10	0.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
		25	7.6	30	9.1	16.8 (240) Upright	Wet	15	22	1.5
						19.6 (280) Pendent	Wet	15	16	1.1
						25.2 (360) Pendent	Wet	15	10	0.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6

Configuration	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		K-Factor/ Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	
		ft	m	ft	m				psi	bar
		30	9.1	35	10.7	19.6 (280) Pendent	Wet	15	25	1.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
		35	10.7	40	12.2	19.6 (280) Pendent	Wet	15	30	2.1
						25.2 (360) Pendent	Wet	15	23	1.6
Solid piled	Class I or II	20	6.1	30	9.1	11.2 (160) Upright	Wet	15	25	1.7
							Dry	25	25	1.7
						16.8 (240) Upright	Wet	15	10	0.7
							Dry	25	15	1.0
						19.6 (280) Pendent	Wet	15	16	1.1
						25.2 (360) Pendent	Wet	15	10	0.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
		25	7.6	30	9.1	16.8 (240) Upright	Wet	15	10	0.7
						19.6 (280) Pendent	Wet	15	16	1.1
						25.2 (360) Pendent	Wet	15	10	0.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
		30	9.1	35	10.7	19.6 (280) Pendent	Wet	15	25	1.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
		35	10.7	40	12.2	19.6 (280) Pendent	Wet	15	30	2.1
						25.2 (360) Pendent	Wet	15	23	1.6

Configuration	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		K-Factor/ Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	
		ft	m	ft	m				psi	bar
	Class III	20	6.1	30	9.1	11.2 (160) Upright	Wet	15	25	1.7
							Dry	25	25	1.7
						16.8 (240) Upright	Wet	15	15	1.0
							Dry	25	15	1.0
						19.6 (280) Pendent	Wet	15	16	1.1
						25.2 (360) Pendent	Wet	15	10	0.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
		25	7.6	30	9.1	16.8 (240) Upright	Wet	15	22	1.5
						19.6 (280) Pendent	Wet	15	16	1.1
						25.2 (360) Pendent	Wet	15	10	0.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
		30	9.1	35	10.7	19.6 (280) Pendent	Wet	15	25	1.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
		35	10.7	40	12.2	19.6 (280) Pendent	Wet	15	30	2.1
						25.2 (360) Pendent	Wet	15	23	1.6
	Class IV	20	6.1	30	9.1	11.2 (160) Upright	Wet	15	50	3.4
						16.8 (240) Upright	Wet	15	22	1.5
						19.6 (280) Pendent	Wet	15	16	1.1
						25.2 (360) Pendent	Wet	15	10	0.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
		25	7.6	30	9.1	16.8 (240) Upright	Wet	15	22	1.5
						19.6 (280) Pendent	Wet	15	16	1.1
						25.2 (360) Pendent	Wet	15	10	0.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6

Configuration	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		K-Factor/ Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	
		ft	m	ft	m				psi	bar
		30	9.1	35	10.7	19.6 (280) Pendent	Wet	15	25	1.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
		35	10.7	40	12.2	19.6 (280) Pendent	Wet	15	30	2.1
						25.2 (360) Pendent	Wet	15	23	1.6

22.3 Palletized and Solid-Piled Storage of Nonexpanded and Expanded Group A Plastic Commodities.

Protection of palletized and solid-piled storage of nonexpanded and expanded Group A plastic commodities shall be in accordance with Table 22.3.

Table 22.3 CMSA Sprinkler Design Criteria for Palletized and Solid-Piled Storage of Group A Plastic Commodities

Storage Arrangement	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		K-Factor/Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	
		ft	m	ft	m				psi	bar
Palletized	Cartoned nonexpanded plastics	20	6.1	30	9.1	11.2 (160) Upright	Wet	25	25	1.7
						16.8 (240) Upright	Wet	15	22	1.5
						19.6 (280) Pendent	Wet	15	16	1.1
						25.2 (360) Pendent	Wet	15	10	0.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
		25	7.6	30	9.1	16.8 (240) Upright	Wet	15	22	1.5
						19.6 (280) Pendent	Wet	15	16	1.1
						25.2 (360) Pendent	Wet	15	10	0.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
		30	9.1	35	10.7	19.6 (280) Pendent	Wet	15	25	1.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
		35	10.7	40	12.2	19.6 (280) Pendent	Wet	15	30	2.1
						25.2 (360) Pendent	Wet	15	23	1.6

Storage Arrangement	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		K-Factor/Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	
		ft	m	ft	m				psi	bar
Solid piled	Cartoned nonexpanded plastics	20	6.1	30	9.1	11.2 (160) Upright	Wet	15	50	3.4
						16.8 (240) Upright	Wet	15	22	1.5
						19.6 (280) Pendent	Wet	15	16	1.1
						25.2 (360) Pendent	Wet	15	10	0.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
		25	7.6	30	9.1	16.8 (240) Upright	Wet	15	22	1.5
						19.6 (280) Pendent	Wet	15	16	1.1
						25.2 (360) Pendent	Wet	15	10	0.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
		30	9.1	35	10.7	19.6 (280) Pendent	Wet	15	25	1.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
		35	10.7	40	12.2	19.6 (280) Pendent	Wet	15	30	2.1
						25.2 (360) Pendent	Wet	15	23	1.6
Palletized	Exposed nonexpanded plastics	20	6.1	30	9.1	11.2 (160) Upright	Wet	25	25	1.7
						16.8 (240) Upright	Wet	15	22	1.5
		25	7.6	30	9.1	16.8 (240) Upright	Wet	15	22	1.5
	Cartoned or exposed expanded plastics	18	5.5	26	7.9	11.2 (160) Upright	Wet	15	50	3.4
						16.8 (240) Upright	Wet	15	22	1.5
Solid piled	Cartoned or exposed nonexpanded plastics	20	6.1	30	9.1	11.2 (160) Upright	Wet	15	50	3.4
		25	7.6	30	9.1	16.8 (240) Upright	Wet	15	22	1.5

22.4 Single-, Double-, and Multiple-Row Rack Storage for Class I Through Class IV Commodities.

Protection of single-, double-, and multiple-row rack storage for Class I through Class IV commodities shall be in accordance with Table 22.4.

Table 22.4 CMSA Sprinkler Design Criteria for Rack Storage of Class I Through Class IV Commodities (Encapsulated and Nonencapsulated)

Storage Arrangement	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		K-Factor/Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	
		ft	m	ft	m				psi	bar

Storage Arrangement	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		K-Factor/Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	
		ft	m	ft	m				psi	bar
Single, double, and multiple-row racks	Class I or II	20	6.1	30	9.1	11.2 (160) Upright	Wet	15	25	1.7
							Dry	25	25	1.7
						16.8 (240) Upright	Wet	15	10	0.7
							Dry	25	15	1.0
						19.6 (280) Pendent	Wet	15	16	1.1
						25.2 (360) Pendent	Wet	15	10	0.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
		25	7.6	30	9.1	11.2 (160) Upright	Wet	20	25	1.7
							Dry	30	25	1.7
						16.8 (240) Upright	Wet	15	10	0.7
							Dry	30	15	1.0
						19.6 (280) Pendent	Wet	15	16	1.1
						25.2 (360) Pendent	Wet	15	10	0.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
		30	9.1	35	10.7	11.2 (160) Upright	Wet	In-rack sprinklers required. See Chapter 25.	NA	NA
							Dry	In-rack sprinkler option available. See Chapter 25.	NA	NA
							Dry*	36	55	3.8
						16.8 (240) Upright	Wet	In-rack sprinklers required. See Chapter 25.	NA	NA
							Dry	In-rack sprinkler option available. See Chapter 25.	NA	NA
							Dry*	36	22	1.5
						19.6 (280) Pendent	Wet	15	25	1.7
		35	10.7	40	12.2	11.2 (160) Upright	Dry*	36	55	3.8
						16.8 (240) Upright	Dry*	36	22	1.5
						19.6 (280) Pendent	Wet	15	30	2.1
						25.2 (360) Pendent	Wet	15	23	1.6

Storage Arrangement	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		K-Factor/Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	
		ft	m	ft	m				psi	bar
	Class III	20	6.1	30	9.1	11.2 (160) Upright	Wet	15	25	1.7
							Dry	25	25	1.7
						16.8 (240) Upright	Wet	15	15	1.0
							Dry	25	15	1.0
						19.6 (280) Pendent	Wet	15	16	1.1
						25.2 (360) Pendent	Wet	15	10	0.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6

Storage Arrangement	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		K-Factor/Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	
		ft	m	ft	m				psi	bar
				30	9.1	11.2 (160) Upright	Wet	In-rack sprinklers required. See Chapter 25.	NA	NA
							Dry	In-rack sprinklers required. See Chapter 25.	NA	NA
						16.8 (240) Upright	Wet	15	22	1.5
							Dry	In-rack sprinklers required. See Chapter 25.	NA	NA
						19.6 (280) Pendent	Wet	15	16	1.1
						25.2 (360) Pendent	Wet	15	10	0.7
		25	7.6	35	10.7	11.2 (160) Upright	Wet	In-rack sprinklers required. See Chapter 25.	NA	NA
							Dry	In-rack sprinklers required. See Chapter 25.	NA	NA
						16.8 (240) Upright	Wet	In-rack sprinklers required. See Chapter 25.	NA	NA
							Dry	In-rack sprinklers required. See Chapter 25.	NA	NA
						19.6 (280) Pendent	Wet	15	25	1.7
				40	12.2	19.6 (280) Pendent	Wet	15	30	2.1
						25.2 (360) Pendent	Wet	15	23	1.6
		30	9.1	35	10.7	19.6 (280) Pendent	Wet	15	25	1.7
		35	10.7	40	12.2	19.6 (280) Pendent	Wet	15	30	2.1
						25.2 (360) Pendent	Wet	15	23	1.6

Storage Arrangement	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		K-Factor/Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	
		ft	m	ft	m				psi	bar
	Class IV	20	6.1	25	7.6	11.2 (160) Upright	Wet	15	50	3.4
						16.8 (240) Upright	Wet	15	22	1.5
						19.6 (280) Pendent	Wet	15	16	1.1
				30	9.1	11.2 (160) Upright	Wet	20	50	3.4
								15	75	5.2
						16.8 (240) Upright	Wet	15	22	1.5
						19.6 (280) Pendent	Wet	15	16	1.1
						25.2 (360) Pendent	Wet	15	10	0.7
				40	12.2	25.2 (360) Pendent	Wet	15	23	1.6
		25	7.6	30	9.1	11.2 (160) Upright	Wet	In-rack sprinklers required. See Chapter 25.	NA	NA
						16.8 (240) Upright	Wet	15	22	1.5
						19.6 (280) Pendent	Wet	15	16	1.1
						25.2 (360) Pendent	Wet	15	10	0.7
				35	10.7	11.2 (160) Upright	Wet	In-rack sprinklers required. See Chapter 25.	NA	NA
								In-rack sprinklers required. See Chapter 25.	NA	NA
						16.8 (240) Upright	Wet	In-rack sprinklers required. See Chapter 25.	NA	NA
								In-rack sprinklers required. See Chapter 25.	NA	NA
						19.6 (280) Pendent	Wet	15	25	1.7
				40	12.2	19.6 (280) Pendent	Wet	15	30	2.1
						25.2 (360) Pendent	Wet	15	23	1.6
		30	9.1	35	10.7	19.6 (280) Pendent	Wet	15	25	1.7
		35	10.7	40	12.2	19.6 (280) Pendent	Wet	15	30	2.1
						25.2 (360) Pendent	Wet	15	23	1.6

NA: Not applicable.

*High temperature-rated sprinklers are used. Dry system water delivery is required in accordance with 8.2.4 with a maximum time of water delivery of 30 seconds with four sprinklers initially open.

22.5 Rack Storage of Group A Plastic Commodities.

Protection of single-, double-, and multiple-row rack storage for nonexpanded Group A plastic commodities shall be in accordance with Table 22.5.

Table 22.5 CMSA Sprinkler Design Criteria for Rack Storage of Group A Plastic Commodities Stored Up to and Including 35 ft (10.7 m) in Height

Storage Arrangement	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		K-Factor/ Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	
		ft	m	ft	m				psi	bar

Storage Arrangement	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		K-Factor/ Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	
		ft	m	ft	m				psi	bar
Single-, double-, and multiple-row racks	Cartoned nonexpanded plastics	20	6.1	25	7.6	11.2 (160) Upright	Wet	15	50	3.4
						16.8 (240) Upright	Wet	15	22	1.5
						19.6 (280) Pendent	Wet	15	16	1.1
				30	9.1	11.2 (160) Upright	Wet	30	50	3.4
							Wet	20	75	5.2
						16.8 (240) Upright	Wet	15*	22	1.5
						19.6 (280) Pendent	Wet	15	16	1.1
		25	7.6	30	9.1	11.2 (160) Upright	Wet	In-rack sprinklers required. See Chapter 25.	NA	NA
						16.8 (240) Upright	Wet	15*	22	1.5
						19.6 (280) Pendent	Wet	15	16	1.1
						25.2 (360) Pendent	Wet	15	10	0.7
		25	7.6	35	10.7	11.2 (160) Upright	Wet	In-rack sprinklers required. See Chapter 25.	NA	NA
							Wet	In-rack sprinklers required. See Chapter 25.	NA	NA
						16.8 (240) Upright	Wet	In-rack sprinklers required. See Chapter 25.	NA	NA
							Wet	In-rack sprinklers required. See Chapter 25.	NA	NA
						19.6 (280) Pendent	Wet	15	25	1.7
		30	9.1	35	10.7	19.6 (280) Pendent	Wet	15	25	1.7
		35	10.6	40	12.2	19.6 (280) Pendent	Wet	15	30	2.1
						25.2 (360) Pendent	Wet	15	23	1.6

Storage Arrangement	Commodity Class	Maximum Storage Height		Maximum Ceiling/Roof Height		K-Factor/ Orientation	Type of System	Number of Design Sprinklers	Minimum Operating Pressure	
		ft	m	ft	m				psi	bar
	Exposed nonexpanded plastics	20	6.1	25	7.6	11.2 (160) Upright	Wet	15	50	3.4
						16.8 (240) Upright	Wet	15	22	1.5
		20	6.1	30	9.1	11.2 (160) Upright	Wet	30	50	3.4
							Wet	20	75	5.2
						16.8 (240) Upright	Wet	15*	22	1.5
		25	7.6	30	9.1	11.2 (160) Upright	Wet	In-rack sprinklers required. See Chapter 25.	NA	NA
						16.8 (240) Upright	Wet	15*	22	1.5
		25	7.6	35	10.7	11.2 (160) Upright	Wet	In-rack sprinklers required. See Chapter 25.	NA	NA
							Wet	In-rack sprinklers required. See Chapter 25.	NA	NA
						16.8 (240) Upright	Wet	In-rack sprinklers required. See Chapter 25.	NA	NA
							Wet	In-rack sprinklers required. See Chapter 25.	NA	NA

NA: Not applicable.

*Limited to single- and double-row racks with minimum 8 ft (2.4 m) aisles.

22.6 Rubber Tires.

Protection of rubber tires with CMSA sprinklers shall be in accordance with Table 22.6.

Table 22.6 Control Mode Specific Application (CMSA) Protection for Rubber Tires

Piling Method	Maximum Storage Height		Maximum Ceiling/Roof Height		K-Factor	Type of System	Number of Sprinklers	Operating Pressure
	ft	m	ft	m				
Rubber tire storage, on-side or on-tread, in palletized portable racks, or open portable racks, or fixed racks without solid shelves	25	7.6	32	9.8	11.2 (160)	Wet	15	75 psi (5.2 bar)
	25	7.6	32	9.8	16.8 (240)	Wet	15	35 psi (2.4 bar)

22.7 Roll Paper Storage.

Protection of roll paper storage with CMSA sprinklers shall be in accordance with Table 22.7.

Table 22.7 Control Mode Specific Application (CMSA) Protection of Roll Paper Storage [Number of Sprin

Storage Height		Maximum Building Height		Nominal K-Factor	Type of System	Heavyweight						
						Closed Array	Standard Array		Open Array		Closed Array	
ft	m	ft	m			Banded or Unbanded	Banded	Unbanded	Banded	Unbanded	Banded or Unbanded	
20	6.1	30	9.1	11.2 (160)	Wet	15 at 50(3.4)	15 at 50(3.4)	15 at 50(3.4)	15 at 50(3.4)	NA	15 at 50(3.4)	
20	6.1	30	9.1	11.2 (160)	Dry	25 at 50(3.4)	25 at 50(3.4)	25 at 50(3.4)	NA	NA	25 at 50(3.4)	
26	7.9	60	18.3	11.2 (160)	Wet	15 at 50(3.4)	15 at 50(3.4)	15 at 50(3.4)	15 at 50(3.4)	NA	NA	
20	6.1	30	9.1	16.8 (240)	Wet	15 at 22(1.5)	15 at 22(1.5)	15 at 22(1.5)	15 at 22(1.5)	NA	15 at 22(1.5)	
20	6.1	30	9.1	16.8 (240)	Dry	25 at 22(1.5)	25 at 22(1.5)	25 at 22(1.5)	NA	NA	25 at 22(1.5)	
26	7.9	60	18.3	16.8 (240)	Wet	15 at 22(1.5)	15 at 22(1.5)	15 at 22(1.5)	15 at 22(1.5)	NA	NA	

Note: Base design on 25 sprinklers at 75 psi (5.2 bar) for K-11.2 (160) sprinklers or 25 sprinklers at 35 psi (240) for K-16.8 (240) sprinklers when storage is in closed or standard array; other arrays not applicable (NA).