

Sprinkler Design Requirements Based on Vulnerable Occupancy Facility Size and Sleeping Accommodations

Type of Vulnerable Occupancies Facility	Building Size and/or Accommodations Limit			
	Sprinklers Not Required	Sprinkler Design		
		NFPA 13D	NFPA 13R	NFPA 13
Care Occupancy and Retirement Home (OFC 9.7)	1 to 3 storeys, with sleeping accommodation for 1 to 4 persons	1 to 3 storeys, with sleeping accommodation for 5 to 10 persons	1 to 3 storeys, with sleeping accommodation for 11 persons or more 4 to 6 storeys	7 storeys and greater
Care Occupancy or Care and Treatment Occupancy (OFC 9.4)	NA	NA	1 to 6 storeys	7 storeys and greater

NFPA 13, 13R and 13D Sprinkler Design/Installation Comparison Chart [Based on National Fire Protection Association (NFPA) Source Document]

System Feature	NFPA 13 (see OFM Note 1)	NFPA 13R (see OFM Note 2)	NFPA 13D (see OFM Note 3)
Purpose	Property Protection & Life Safety	Life Safety	Life Safety
Water Supply	30 minutes; Pumps = NFPA 20; Pressure Vessels = NFPA 22	30 minutes; Pumps = NFPA 20; Pressure Vessels = NFPA 22	10 minutes (unless a 1-storey home under 2000ft ² then 7 minutes); (see OFM Note 4) Pumps ≠ NFPA 20; Pressure Vessels ≠ NFPA 22
Components – Listing	Required for all except: Hanger rods & pipes identified in standard	Required for all except: Hanger rods & pipes identified in standard	Required for all except: tanks, expansion tanks, pumps, hangers, waterflow detection devices, and waterflow valves shall not be required to be listed
Pipe & Fittings	Common Requirements	Common Requirements	Common Requirements; Multipurpose systems with no fire department connection permits 130 psi pressure rating; Permits the use of ½” pipe for certain “network systems”
Underground Piping	NFPA 24	Not within scope, assumed to conform to local plumbing codes	Not within scope, assumed to conform to local plumbing codes
Sprinklers	Residential in Dwelling unit, Quick-response in LH occupancies	Residential; Quick-response if up to 4 in dwelling unit	Residential
Fire Department Connection	Required	Single 1½” or 2½” Connection; N/A for inaccessible or 1-storey less than 2000 ft ²	Not Required
Alarms	Required	Required (if building alarm is installed, water flow alarm must be connected)	Not required if smoke detectors are installed
Installation Rules	Residential and Extended Coverage Rules	General Guidance	General Guidance
Antifreeze			
Design – Sprinklers	Total of 4 sprinkler operations (residential design approach)	Maximum 4 sprinklers operation (inside dwelling units)	Maximum 2 sprinklers operating
Design - Discharge	0.1 gpm/ft ² or Listing of sprinkler	0.05 gpm/ft ² or Listing of sprinkler	0.05 gpm/ft ² or Listing of sprinkler
Sprinkler Omissions	Minimal (See Note 1)	Attics, Garages, Closets...etc. (See Note 2)	Attics, Garages, Closets...etc. (See Note 3)
Sprinklers on Balconies	Yes (See Note 1)	See Note 2	See Note 3
Demand Calculations	Use NFPA 13 hydraulic calculations	Use NFPA 13 hydraulic calculations	Pipe sized using NFPA 13D

OFM Notes Providing Additional Design/Installation Details

Note 1: (see NFPA 13 for additional information)

- Bathrooms do not require sprinklers if area ≤ 55 sq. ft. and walls are noncombustible or limited combustibles providing a 15-minute thermal barrier rating. Exception does not apply in care occupancies and care and treatment occupancies, and in bathrooms that open directly onto public corridors.
- Closets/pantries do not require sprinklers if area ≤ 24 sq. ft., least dimension ≤ 3 ft. and walls/ceilings are surfaced with noncombustible or limited combustibles materials.

- Sprinklers needed below exterior balconies if of combustible construction and the width exceeds 4 ft.

Note 2: (see NFPA 13R for additional information)

- Bathrooms do not require sprinklers if area ≤ 55 sq. ft.
- Closets/pantries do not require sprinklers if area ≤ 24 sq. ft., least dimension ≤ 3 ft. and walls/ceilings are surfaced with noncombustible or limited combustible materials.
- Design criteria for areas outside dwelling units shall comply with NFPA 13, except that system demand is permitted to be limited by compartment area. System demand does not have to be greater than the demand for 4 heads where the area is compartmented into areas of 500 sq. ft. or less by 30-minute fire-rated construction.
- Attached garages are not exempt from requiring sprinklers.
- Attached open porches, open balconies, and exterior corridors/stairs do not require sprinklers.

Note 3: (see NFPA 13D for additional information)

- Bathrooms do not require sprinklers if area ≤ 55 sq. ft.
- Closets/pantries do not require sprinklers if area ≤ 24 sq. ft., least dimension ≤ 3 ft. and walls/ceilings are surfaced with noncombustible or limited combustible materials.
- Attached garages or carports, open porches, open balconies, and exterior corridors/stairs do not require sprinklers.

Note 4: Section 9.7 of the Ontario Fire Code requires 20 minute water supply duration