

4.25 Sprinkler Protection for Car Stackers/Lift Systems (2022)

Reference: 2022 NFPA 13 Section ,(9), 4.3.5, A.4.3.5(9) & Sections 9.5.5.3.1, 10.2.7.4.2, 19.1.2(1), 10.3.2 (9), A.10.3.2 (9) 19.2.1.2.4(2)(3), 19.2.3.1.1(1), 28.2.4.7.3; 2022 SFBC Section 403.3.3, 2022 San Francisco Fire Code, Sections 105.7.26, 903.3.1.1 & 903.3.5, 914.3.2

Purpose: Provide additional SFFD guidelines for sprinkler protection of car stackers not specifically addressed in 2022 NFPA 13. This AB does not apply for Mechanical-Access enclosed parking garages per 2022 CBC Section 406.6.4 which will require a separate specially engineered automatic sprinkler system.

The sprinkler design criteria for car stackers/lift systems must extend 15 feet into adjacent areas that do not contain car stackers/lift systems per 2022 NFPA 13 Section 19.1.2. (1).

Parking garage areas containing Car Stackers / lift systems with a single lift platform shall be protected by an automatic wet-pipe sprinkler system designed to Extra Hazard Group 2 (EH2) for a maximum of two cars stacked vertically in the same location. In addition, non-extended coverage standard-response sidewall sprinklers listed for Ordinary Hazard shall be acceptable for use under the parking lift platform. Each sidewall sprinkler shall cover an area of 80 square feet or less.

The hydraulic calculation design criteria shall include all ceiling-level sprinklers within a minimum 2,500 sf area of sprinkler operation, or the maximum area containing car stackers/lift systems extending 15 feet into adjacent areas that do not contain car stackers/lift systems. Sidewall sprinklers under the parking lift platforms are not required to be included in the area of sprinkler operation.

Parking garage areas containing Car Stackers / lift systems with 2 or more parking lift platforms shall be protected by an automatic wet-pipe sprinkler system designed to Extra Hazard Group 2 (EH2). In addition, non-extended coverage standard-response sidewall sprinklers, listed for Ordinary Hazard Group 2 (OH2), shall be acceptable for use to cover under each parking lift platform, including the bottom level, if the stacker is provided with a pit.

The hydraulic calculation design criteria shall include all ceiling-level sprinklers within a minimum 2,500 square feet area of sprinkler operation, or the maximum area containing car stackers/lift systems extending 15 feet into adjacent areas that do not contain car stackers/lift systems, whichever is less, but not less than 1,500 SF required for Ordinary Hazard Group 2 (OH2). In addition, a total of six (6) sidewall sprinklers under lift platforms shall be included in the area of sprinkler operation. The design density for the sidewall sprinklers shall be Ordinary Hazard Group 2 (OH2). The sidewall sprinkler flow shall be from two (2) sidewall sprinklers covering under the top level parking lift platform at three (3) adjacent stalls or areas with car stacker/lift platforms. The EH2 design area can be reduced from 2,500SF to NOT LESS than 2,000 SF if high-temp sprinklers or K-11.2 sprinklers are used at the ceiling per 2022 NFPA

13 Sections 19.2.3.2.6 or 19.2.3.2.7.

Parking drive aisles or other areas with loft or column-less car stacking / lift platforms shall follow all of the criteria outlined in this administrative bulletin.

For a high-rise building, car stacker sprinkler systems will cause the secondary water supply capacity to increase. For water supply and secondary water supply capacity purposes, the system is to be considered as an Extra Hazard System. The secondary water supply shall be designed for largest car stacking sprinkler system demand plus a hose allowance of 100 gpm for 90 minutes. If the available city main flow at 20 psi is not adequate to provide this requirement, the secondary water supply shall become the primary water supply. For this case, the secondary/primary water supply capacity must meet the above requirements and the requirements specified in 2022 NFPA 13 and 2019 NFPA 14.

For a low-rise building, if the city main cannot provide the required flow at a residual pressure of 20 psi, a primary water supply tank and fire pump must be provided. The capacity of the tank shall meet the above requirements and the specific applicable requirements listed in 2022 NFPA 13 and 2019 NFPA 14.