California State Fire Marshal

CODE INTERPRETATION

Date Issued	February 9, 2016	Interpretation	14-013 Revised
Topic	High Rise Water Supply		
Code Section(s)	2013 CBC §403.3.2 and 903.3.5.2		
Requested by	Everett Engineering Mark Schmid, Engineering Manager		
Date Received	September 2, 2014		

Questions:

May a single on-site water supply tank adequately sized for private fire protection satisfy the provisions for an approved primary water supply and automatic secondary on-site water supply per the California Building Code (CBC) Section 403.3 and 903.3.5.2 in a Group B or R2 high-rise building using any allowed construction type?

YES. The configuration would need to meet the capacity/duration requirements, refill requirements, and be connected to an adequate municipal water supply approved by the Authority Having Jurisdiction. The building cannot be more than 200 feet above the lowest level of fire department vehicle access. This is explained in further detail below.

Response Clarification

The Office of the State Fire Marshal understands that the primary source for the sprinkler system is the on-site water supply tank. The tank supplies the fire pump which supplies the fire sprinkler system, as the municipal water supply serves as the means to automatically refill the on-site water supply tank. There is also a manual bypass from the municipal water supply to the discharge side of the fire pump.

Capacity/Duration Requirement's [CBC 903.3.5.2]

The on-site water supply tank must have a usable capacity of not less than the hydraulically calculated sprinkler demand, including the hose stream requirement. The on-site water supply tank shall also have a duration of not less than 30 minutes, as determined by the occupancy hazard classification in accordance with NFPA 13, whichever is greater. In no case shall the secondary on-site water supply be less than 15,000 gallons.

Refill Requirement's [NFPA 22- 14.5.3.2.1]

The on-site water supply tank must be equipped with automatic refill as required by NFPA 20 and NFPA 22. In this case, the sprinklers would operate off the tank (and pump) and being refilled by the municipal water supply at the same time. In the event of a breakage on the refill line, the "secondary tank" would have not less than 30 minutes of water remaining. The municipal water supply must be capable of automatically refilling the tank at 110 percent of the rate required to provide the total fire protection system demand. A manual tank fill bypass must also be provided that can refilling the tank at 110 percent of the rate required to provide the total fire protection system demand.

Municipal Water supply to On-Site Water Supply Tank [CBC 403.3.2]
The on-site water supply tank is required to be supplied from no fewer than two water mains located in different streets. Each of these connections would require an independent automatic refill valve and an independent manual bypass valve.

High-rise buildings not having an occupied floor more than 120 feet above the lowest level of fire department vehicle access, would only require the tank to be supplied from one municipal water supply main.

High-rise buildings (200 feet above the lowest level of fire department vehicle access)
This water supply configuration would not be applicable in high-rise buildings having an occupied floor more than 200 feet above the lowest level of fire department vehicle access.