

 The logo for the North Central Fire Protection District (NCFPD) is a red Maltese cross with a gold border. The word "NORTH" is arched above the cross, and "CENTRAL" is arched below it. Inside the cross, the letters "F", "N", and "C" are arranged vertically, with "D" to the right of "N". Above the "F" is "EST." and below the "C" is "1947".	<p>NORTH CENTRAL FIRE PROTECTION DISTRICT</p> <p>POLICIES</p> <p>408.006 NCFPD COMMERCIAL WATER TANKS</p> <p>EFFECTIVE: JULY 2007</p>
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SCOPE

This policy clarifies the Fresno Fire Department's (FFD or Department) requirements for the required components, appurtenances, attachments and other information related to commercial water tank installations within the North Central Fire Protection District (NCFPD or District).

PURPOSE

This policy has been established to provide the NCFPD requirements related to commercial water tank installations.

BACKGROUND

As noted in the *California Fire Code (CFC)*, the authority having jurisdiction (AHJ) is permitted to develop policies pursuant to section 104.1. Required fire flow and commercial water tank installation are two of the most important items related to fire department operations, along with access.

REQUIREMENTS

Based upon the need for uniformity in application across the District's diverse service delivery area, and after careful deliberation of the applicable codes and standards, the District has determined the following:

1. Minimum capacity of water storage tanks used to meet the storage requirement shall be 10,000 gallons.
2. Interconnected tanks of a minimum capacity of 10,000 gallons may be permitted to meet the minimum fire flow storage requirement. Interconnecting tank plumbing shall be a minimum of 6 inches or larger.
3. The location of a commercial water tank installation shall be as follows:
 - a. Every tank location shall be approved by the District, prior to installation.

- b. The tank shall be located on level ground inside a six inch steel grade band at least two feet larger than the tanks diameter, filled with not less than six inches of crushed rock; or on a reinforced concrete pad, not less than six inches in thickness, and two feet larger than the tanks diameter.
 - c. Seismic restraint shall be required if the tanks height is more than twice the diameter of the tank.
4. The construction of commercial water tanks shall be as follows:
- a. Steel tanks shall meet the latest design criteria of *American Water Work Association (AWWA) D100* for welded steel tanks and *AWWA D103* for bolted steel tanks.
 - b. The shell and roof shall be a minimum 3/16 inches thick.
 - c. The shell bottom plate shall be a minimum 1/4 inch thick.
 - d. Tanks constructed of materials other than steel will be evaluated on a case by case basis and will be approved at the sole discretion of the NCFPD.
5. Coatings on steel tanks be as follows:
- a. Interior coatings shall consist of a minimum of two coats of Bitumastic Taste & Odor (BT&O) or approved equivalent.
 - b. Exterior coatings shall consist of a minimum of one coat of rust inhibiting primer of a nude color.
6. Each tank shall be equipped with the following equipment:
- a. An anti-vortex plate (tank fill point must be on the opposite side of the anti-vortex plate).
 - b. A minimum 20 inch bolted shell manhole.
 - c. A minimum 24 inch roof hatch.
 - d. A covered roof vent that is not less than twice the area of required discharge, covered with 3/8 inch stainless steel screen. The vent and screen may be incorporated as part of the roof hatch.
 - e. A rigid exterior roof ladder shall be installed on tanks greater than eight feet in height.

- f. A Varec brand water level gauge or approved equivalent.
 - i. The water level indicator shall be of an approved contrasting color which is plainly visible from the fire department access road.
 - g. A tank discharge connection flange(s) that is a minimum of 6 inches in diameter. An 8 inch flange is required when the length of underground piping exceeds 100 feet.
 - h. The tank discharge connection flange(s) shall have an OS&Y gate valve of the same size as the underground piping when a remote hydrant, drafting outlet, or fire pump is located more than 20 feet from the tank.
 - i. Where installed, the tank mounted drafting outlet shall be a 6 inch OS&Y valve, with a single, male, 4½ inch, National Hose Thread (NHT) outlet with cap.
7. Tank shall be plumbed to automatically refill within 24 hours for tanks supplying only drafting outlets or hydrants; or, 8 hours for tanks supplying fire sprinkler systems.
8. Domestic wells shall be noted and the flow rate and demand included on construction documents.
9. For wells supplying domestic plumbing and fire flow, an air gap of 2 inches from the high water line or a reduced pressure back flow device for the tank fill line connection shall be provided in accordance with the *California Plumbing Code (CPC)*.
10. When a building is required to have fire sprinklers installed, the tank water level shall be electronically supervised through the dedicated function fire alarm system. A supervisory signal shall be transmitted when the tank falls below 90% of its rated capacity.
11. Where fire hydrants are installed, each fire hydrant shall be installed as follows:
- a. Every hydrant installation location shall be approved by the District, prior to installation.
 - b. Hydrants shall be located not less than 50 feet from any building as measured along a drivable road which can support fire department apparatus.
 - c. Hydrants shall be located not more than 10 feet from an all-weather

driving surface which can support fire apparatus.

- d. All tank water shall be drained to a hydrant.
- e. When required, fire hydrants shall be protected from vehicular damage in accordance with the *CFC*.
- f. Draft connections shall include a single 4½ inch, male, NHT fire hose connection and 6 inch OS&Y valve with cap.
- g. Draft hydrants shall be *AWWA* approved fire hydrants with a minimum of one 4½ inch and two, 2½ inch NHT outlets with caps.
- h. Underground piping shall be C900, ductile iron, or other approved type, per *NFPA 24*.
- i. Underground piping 100 feet or less in length shall be a minimum of 6 inch inside diameter.
- j. Underground piping longer than 100 feet in length shall be a minimum of 8 inch inside diameter.
- k. Draft fire hydrants or outlets shall be fitted with a permanent and durable sign stating the following: "DRAFTING HYDRANT – XXXX GALLONS"
- l. Pressurized fire hydrants shall be *AWWA* approved fire hydrants with a minimum of one 4½ inch and two, 2½ inch NHT outlets with caps.
- m. Pressurized fire hydrants shall be fitted with a permanent and durable sign stating the following: "HIGH PRESSURE HYDRANT". The hydrant shall also be marked by stenciling "H.P." on the hydrant with blue paint using 3 inch tall (minimum) letters with a minimum ¼ inch stroke.

12. All plumbing shall be in accordance with the *California Building Code (CBC)*, *CPC*, and all other laws, codes ordinances and standards.

The amount of water storage for fire flow required shall be determined by the needed fire flow of the structure in accordance with the *NCFPD Fire Flow Requirements in Rural Areas Policy 408.003*.

Several additional permits are required from other agencies, which may include the County of Fresno. It is the responsibility of the contractor, owner, or agent to obtain all other applicable permits. Work begun without the requisite approved plans and permits may result in significant cost and unnecessary delay to a project.

REFERENCES

California Fire Code
American Water Works Association
California Plumbing Code
NFPA 24
California Building Code
NCFPD Fire Flow Requirements in Rural Areas Policy 408.003