



FIRE SUPPRESSION WATER STORAGE TANKS

The following are the requirements for installation of water storage tanks in the local response area that do not have pressurized water systems within Kings County. Please contact our department if there are any questions PRIOR to installation. While all of these points may not apply to your situation, it is for your information and review. Violations of the following are enforced under the authority of the California Fire Code (CFC), Public Resource Code, and National Fire Protection Association (NFPA) and in accordance with the Kings County Ordinance Code.

1.All residential and commercial structures shall meet NFPA 1142 fire flow requirements or as specified by the Fire Department. Water Storage tanks shall meet NFPA 22 requirements. Water tank maintenance shall meet NFPA 25C, Chapter 9 requirements.

Exceptions:

- a)This shall not apply to pole barns, detached carports, and other small non-enclosed structures.
- b)Structures falling within this exception shall not have more than two sides enclosed and shall not be located within 25 feet from adjacent structures.
- c)R-3 occupancies which are single story with a square footage at or less than 2,499 square feet; and for R-3 occupancies which are two story, at or less than 2,999 square feet.
- d)Mobile homes shall not have to adhere to NFPA 1142.

Even if these exceptions are met, the Fire Department reserves the right to require a water storage tank or pool system due to the projected fire flow requirements of the property.

2.Tank Connection:

- a)Connection to the tank shall be located not less than 8" from the bottom of the tank.
- b)An approved brass shut-off valve shall be located at the tank.
- c)There shall be an elbow attached to the interior of the tank descending to no less than 2" from the bottom of the tank.

3.Pumper Connections:

- a)The Fire Department Connection (FDC) shall be equipped with a 4-1/2" male coupling. (National Hose Thread) NFPA 24-5.9.2.2
- b)The FDC shall be placed at least 40' from the building and no more than 150' from furthest portion of the structure.
- c)The FDC shall not be less than 24" or more than 36" from final grade.
- d)The FDC and piping shall be supported in an approved manner. NFPA 24-9.1.2
- e)FDC shall be protected by barrier posts if deemed necessary. NFPA 24-5.9.1.4

1. Materials NFPA 1142-8.3.2:

- a) Piping shall be listed for fire protection service and comply with AWWA standards. Piping shall be designed to withstand a working pressure of at least 150 psi. (PVC minimum of Schedule 40 for underground sections only.)
- b) All joints and fittings shall be approved and listed.
- c) Caps shall be required and may be of brass or polyurethane. They must be properly secured and arranged for easy removal by Fire Department. NFPA 24-5.9.2.2
- d) Underground piping, if applicable, shall be no less than 6" in diameter. NFPA 24-5.2.2
- e) All bends and changes in direction of the piping shall be supported with thrust blocks. (If using Schedule 40 PVC pipe for the underground, the thrust block must completely surround the galvanized elbow joint to prevent movement.)
- f) A maximum of 3-90 degree elbows shall be permitted.
- g) A tracer wire shall be installed with the underground piping.

4. Access:

- a) The tank and/or Fire Department Connections shall be accessible to all fire apparatus at all times (all weather road). Location shall not interfere with nearby objects including buildings, fences, posts or other obstructions. There shall be at least 3' of clearance in all directions and the connection shall face the engine access as directed by the Fire Department.
- b) All roadways shall have an unobstructed width of no less than 20' easement with an all-weather surface, exclusive of shoulders, capable of supporting fire department apparatus and 13' 6" in vertical clearance. CFC 503.2.1
- c) The FDC shall be located within 8' of fire apparatus access road.

5. General requirements:

- a) Plans shall be submitted to Fire Department PRIOR to installation. These plans shall include piping details (class & type), lengths, joint information, size and location of water supply, type & location of valves, FDC locations & measurements. All water tanks over 5,000 gallons need to be on an approved foundation or on a foundation that is recommended by the tank manufacturer. A set of foundation plans need to be provided and approved by the building department.
- b) Pipe depth shall be at least 3 feet (36 inches).
- c) A reliable means of automatically maintaining the water level in the tank shall be provided. (This is normally by means of a float valve)
- d) Refill piping shall not be less than ¾" galvanized pipe from the top of the tank.
- e) There shall be a 24" X 24" inspection hatch on the top of the tank.
- f) There shall be a ladder available for all inspections.
- g) There shall be a vent of 4", equivalent to the outlet size located on the top of the tank. (This vent shall be protected from invasion of excessive dirt and/or living things.
- h) A floater shall shut off at least 2" below the water line (see schematic).
- i) Poly tanks shall not exceed 10,000 gallons.
- j) Only two tanks will be allowed to achieve water storage requirements.
- k) The metal ring that forms the base for the tanks shall be three inches wide.
- l) The water shall be onsite and in service prior to combustible material on site.

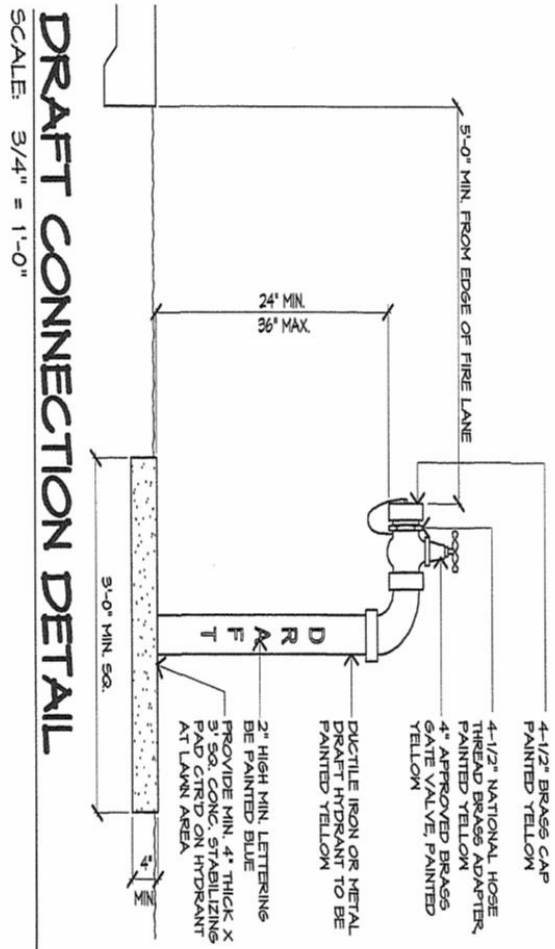
6. Testing:

- a) Provide a copy of Contractors Material & Test Certificate furnished by the installing contractor.
- b) Trench shall be backfilled between joints before testing to prevent movement of the pipe. All joints shall be visible during testing.
- c) All new service mains shall be tested hydrostatically at not less than 50 psi for 2 hours.
- d) Testing shall be done in the presence of the Fire Department.
- e) All control valves and FDC's shall be fully opened and closed under system pressure.

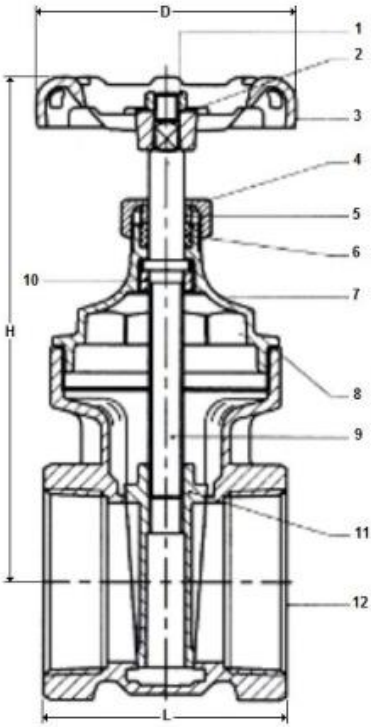
Contact the Fire Department at (559) 852-2881 for the following inspections:

- 1. Rough inspection-
 - To check clearances of connections
 - Fire apparatus roads and road conditions
 - Pressure test of underground
 - Need ladder to verify location of interior piping and float valve

- 2. Final Inspection-
 - Flushing of line
 - Checking the water refill capabilities
 - Make sure tank is full of water
 - Inspect remaining hardware

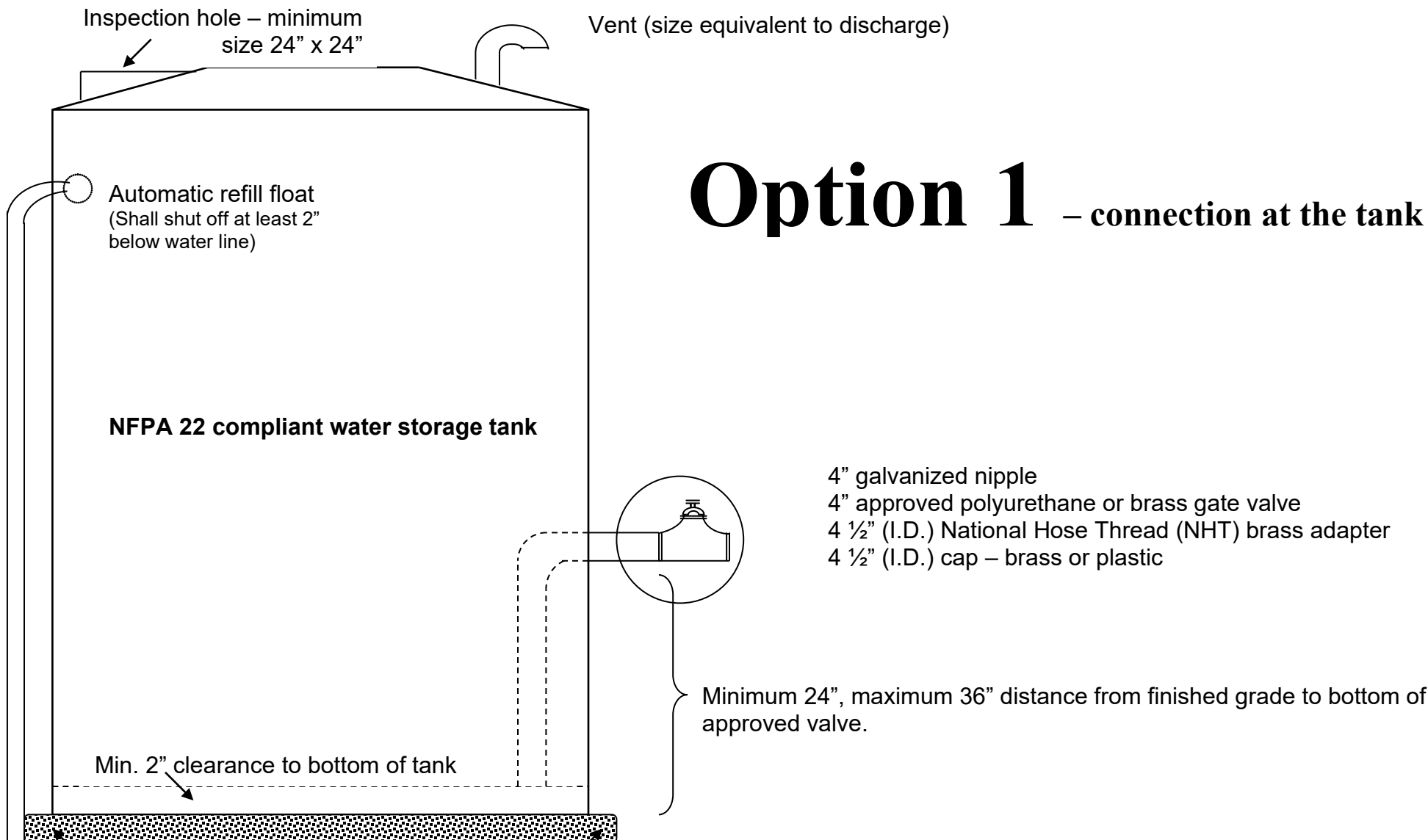


514T Full Port Gate Valve





Part Number	DMH4045F
Material	Cast Brass
Male Thread	NPT x NST (NH)
Male Thread Size	4" x 4-1/2"
Weight Lb	5.6300



Option 1 – connection at the tank

- 4" galvanized nipple
- 4" approved polyurethane or brass gate valve
- 4 1/2" (I.D.) National Hose Thread (NHT) brass adapter
- 4 1/2" (I.D.) cap – brass or plastic

Minimum 24", maximum 36" distance from finished grade to bottom of approved valve.

Min. 2" clearance to bottom of tank

Steel ring filled w/ smooth DG or pea gravel. Tanks 5000 gallons or greater shall have an engineered foundation – Separate Building permit required.

Provide proper support for Fire Department Connection (*when required*).

The Fire Marshal shall pre-determine the location of the tank and inspect for access during the permit process.

From pump or water source: minimum 3/4" residential / 2" commercial water supply line
 NFPA refill requirements shall be met

Vent (size equivalent to discharge 4")

The Fire Marshal shall pre-determine the location of the tank and inspect for access during the permit process

Inspection hole – minimum size 24" x 24"

Automatic refill float

Option 2 – remote connection

NFPA 22 compliant water storage tank

Piping shall comply with NFPA 22, 14.2.2.2

6" pipe up to 25,000 Gallons

8" pipe 25,001 to 100,000 Gallons

10" pipe 100,000 + Gallons

4" galvanized nipple

4" approved polyurethane or brass gate valve

4 1/2" (I.D.) National Hose Thread (NST) brass adapter

4 1/2" (I.D.) cap - brass or plastic

Approved gate valve (Locked open)

Min. 2" clearance to bottom of tank

8" min.

Flanged cast iron, steel pipe or welded steel pipe

Minimum 24", maximum 36" distance from finished grade to bottom of approved valve. (May require vehicle protection)

Steel ring filled w/ smooth DG or pea gravel. Tanks 5000 gallons or greater shall have an engineered foundation – Separate Building permit required.

6" Schedule 40 PVC min. NFPA 1142, 8.3.2

Provide concrete stabilizing pad for draft connection. Refer to draft connection detail.

From pump or water source: minimum 3/4" residential / 2" commercial water supply line; NFPA refill requirements shall be met.

Thrust blocking

Bury depth: min. 3'