

**Construction and surface design of cisterns, hauled water storage tanks, and roof washers.**

- (A) Cisterns and hauled water storage tanks shall be watertight with a smooth, clean interior surface. All concrete tanks shall be made of materials and constructed in accordance with ASTM specifications C 913. All plastic or fiberglass tank materials shall meet NSF standard 61. All joints, connections, and other seams between component parts shall be sealed with nontoxic waterproof material that meets NSF standard 61 or equivalent to prevent the loss of stored water and the infiltration of surface or ground water. Cisterns and hauled water storage tanks made of materials not listed in this rule may only be used after review by the department.
- (B) Cisterns and hauled water storage tanks shall be easily accessible for cleaning. Partitions, baffles, or similar structural features shall be constructed of nonabsorbent, easily cleanable materials, free of spalls, cracks, or crevices which may entrap unwanted matter.
- (C) The capacity of cisterns and hauled water storage tanks shall be adequate to meet the intended needs of the household. No new cistern of less than two thousand five hundred gallons capacity per dwelling unit shall be installed. No new hauled water storage tank of less than one thousand gallons capacity per dwelling unit shall be installed, except if the tank is a supplemental water reservoir tanks for wells, ponds, and springs designed to receive hauled water as an additional water source.
- (D) Inlets to cisterns and hauled water storage tanks shall be of sufficient size and design to dissipate the pressure of the influent stream and minimize the stirring of any settled solids.
- (E) Cisterns and hauled water storage tanks shall be set level and at an adequate depth or location to prevent frost heave. The bottom of the excavation shall be continuous, relatively smooth, and free of rocks. The bottom of the excavation shall have a minimum of four inches of sand or similar granular material. Tanks shall not bear on rock ledges. Backfill shall be free of any large stones or debris, and shall be equally placed around the tank in uniform compacted layers of less than twenty-four inches. Earth cover shall be graded to prevent water from standing over the cistern or hauled water storage tank.
- (F) Manholes or risers shall be sealed to the top of the cistern or hauled water storage tank, have an opening of a minimum diameter of twenty-four inches and shall be constructed of the same or compatible material as the cistern or hauled water storage tank. The manhole opening shall have a watertight cover with edges projecting a minimum of eight inches above the level of the surrounding surface. The edges of the manhole or riser cover shall overlap the curb and project downward a minimum of two inches. The covers shall be secured to minimize the danger of contamination, accidents, and unwarranted entry. A concrete patio or wood deck may be located over a cistern or hauled water storage tank provided that proper access is maintained for filling, service and inspections.

- (G) A cistern shall be equipped with outlet drain or overflow pipe. Outlet drains and overflow pipes are optional on hauled water storage tanks. Cistern and hauled water storage tank outlet drains and overflow pipes shall be a minimum of four inches in diameter and not be connected to any sewer, soil pipe, building drain, or other waste pipe. Outlet drains and overflow pipes shall be equipped with non-corroding animal guards with a maximum opening of forty-three thousandths of an inch. Such drains are to discharge at a point free from flooding through an atmospheric break to prevent backflow. For purposes of this rule atmospheric break means an unobstructed vertical separation in the open air between the lowest opening of any pipe or faucet supplying water to, or draining from a holding tank, plumbing fixture, or other device and the highest flood level of the receiving drain or area.
- (H) Vents are optional on cisterns and hauled water storage tanks with inlets and outlets that are open to the air. Vents being utilized on a cistern or hauled water storage tank shall be inverted, and the vents and other openings shall be constructed and protected with noncorroding fly screen or guards with a maximum opening of forty-three-thousandths of an inch, so as to prevent the entrance of animals, insects, or other contaminating material.
- (I) Fittings and couplings which extend through the walls or the cover of cisterns and hauled water storage tanks shall all be cast in place, by the manufacturer. Couplings shall be made of either cast brass, or fiberglass, or galvanized cast iron or flexible pipe to manhole connectors conforming to ASTM C-923, or shall be two piece friction clamps or longitudinally ribbed plastic so as to prevent turning in place and the entry of contamination or loss of stored water.
- (J) A minimum of one above-ground roof washer/diverter and debris filtering device or a combination type of device shall be provided on each cistern and for each one thousand five hundred square feet of roof area. All roof areas being utilized for rainwater capture shall be protected by a roof washer. All roof washers shall have a manual diversion valve or flap or be of a design that will automatically divert the first ten gallons of rainfall runoff from the roof away from the cistern.
- (1) For the purposes of this rule "roof washer" means any manual or automatic diverter or other device that is designed to prevent the initial ten gallons of roof rainfall from entering a cistern.
  - (2) For the purposes of this rule "debris trap" means a screened device or filter that removes larger debris such as leaves and twigs after the water has discharged from the gutter and prior to entering a cistern.
  - (3) For the purposes of this rule "combination device" means a device that functions as both a roof washer for the first ten gallons and as a debris filter.
  - (4) For the purposes of this rule "gutter guard" means any device installed on the gutters designed to help exclude leaves and twigs from entering the gutter.
  - (5) The above-ground roof washer combination device or filtering device shall be provided with an above grade and easily removable debris trap with a minimum screen opening of one quarter inch. The debris trap shall be installed prior to the filtering device and designed to catch or entrap the

larger debris before it enters the filter or cistern tank. The top of the roof washer combination device or filtering device shall extend above the ground a minimum of eight inches and have outlets of a minimum of four inches. All collected rainwater shall pass through the roof washer combination device or filtering device and the debris trap or combination device prior to entering the cistern.

- (6) The debris filter or combination device shall have a capacity of at least ten gallons for every fifteen hundred square feet of roof area. Each debris filter or combination roof washer/filter device shall have either several inches of one half inch to three-quarter inches of washed gravel or an equivalent filtering media or filtering component capable of removing larger particles.
- (K) Cistern and hauled water storage tank inlet and fill pipes shall be a minimum diameter of four inches, except where the inlet is from a well being used as a combination water source with the cistern. Inlets shall be protected against contamination at all times. The fill pipe shall be equipped with a secured and watertight cap or cover and extend above the ground a minimum of eight inches. If an inlet enters the cistern from a well being used as a combination water source, the inlet from the well shall be protected by an air gap that is two times the diameter of the inlet pipe above the cistern overflow level.
- (L) The water intake for the pump in the cistern and hauled water storage tank shall either be attached to a flotation device and be located a minimum of four inches below the surface of the water, or shall be otherwise designed to maintain the required depth settings in the water. Submersible pumps may be used as the water intake and need not be attached to a flotation device. However, at no time shall the water intake for the pump be located less than four inches from the bottom of the cistern or hauled water storage tank. If multiple tanks are used for the cistern or hauled water storage tank systems then this rule applies only to the intake for the tank closest to entering the building.
- (M) Water obtained from cisterns shall be continuously disinfected and filtered as prescribed in rule 3701-28-15 of the Administrative Code. Hauled water storage tanks that receive hauled water from a public supply as their only water source are not required to be provided with continuous disinfection.
- (N) The following procedures for initial and periodic disinfection apply to cisterns and hauled water storage tanks.
  - (1) All loose debris, sediment, mineral encrustation and bacterial slime shall be removed from the cisterns, hauled water storage tank or spring box prior to disinfection.
  - (2) A solution of two hundred fifty milligrams per liter of chlorine shall be prepared in a storage container. The quantity of solution prepared shall be of sufficient volume to disinfect the entire cistern, hauled water storage tank, and all related storage, or pressure tanks, existing plumbing and attached fixtures.
  - (3) This solution shall be used to thoroughly rinse all sides of the cistern, hauled water storage tank and discharged. A second chlorine solution of two

hundred fifty milligrams per liter of chlorine shall then be circulated through the water supply system and distribution lines.

- (O) All cisterns and hauled water storage tanks that are permanently out of service shall be emptied of all accumulated water. At least one wall of the cistern or hauled water storage tank shall be removed, all or in part, to prevent the accumulation of water. All entrances and drains into the cistern or hauled water storage tank shall be disconnected and sealed. The cistern or hauled water storage tank shall be completely filled with an inert solid material to prevent collapse, except when the cistern is beneath a dwelling or a part of a dwelling foundation, or is to be converted to a room intended to be used as part of the dwelling.

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