

4715.2440 DESIGN OF SUMPS.

Subpart 1. **Construction.** Sumps and receiving tanks shall be constructed of poured concrete, metal, or other approved materials. If constructed of poured concrete, the walls and bottom shall be adequately reinforced and designed to acceptable standards. Metal sumps or tanks shall be of such thickness as to serve their intended purpose and shall be treated internally and externally to resist corrosion.

Subp. 2. **Discharge line.** The discharge line from such pumping equipment shall be provided with an accessible backwater valve and gate or full port ball valve, and if the gravity drainage line to which such discharge line connects is horizontal, the method of connection shall be from the top through a wye branch fitting. Except for grinder pumps and as provided in part 4715.2450, the minimum size of any pump or discharge pipe from a sump having a water closet connected thereto shall not be less than two inches. The grinder pump and its discharge line shall be a minimum of 1-1/4 inches in size. The calculated velocity in any sump discharge line shall not be less than two feet per second.

Subp. 3. **Sumps for buildings.** Building drains or building sewers receiving discharge from any pumping equipment shall be adequately sized to prevent overloading. In all buildings, other than single- and two-family dwellings, should three or more water closets discharge into the sump, duplicate pumping equipment shall be installed with controls that alternate the operation of each pump under normal conditions.

Subp. 4. **Covers.** Sumps and receiving tanks must be provided with gastight covers, except that float control or switch rods must operate without binding. The cover must be of a bolt and gasket type or equivalent manhole opening to permit access for inspection, repairs, and cleaning. Covers must be metal or other structurally sound material that is water-resistant and impervious to moisture, and must be adequate to support anticipated loads in the area of use.

Subp. 5. **Capacity.** In a single-family dwelling, the minimum storage capacity from the pump suction inlet to the alarm level of a sump other than a macerating toilet system is 18 gallons. For all facilities, the sump basin storage volume and the pump capacity shall be adequate to prevent overloading and shall minimally meet the requirements in this subpart.

A. The pump and sump basin shall be able to accommodate the peak flow into the sump for a duration of five minutes.

B. The peak flow into the sump shall be approximated by calculating the peak water supply demand for the fixtures discharging to the sump as determined in part 4715.3700, and adding any flows from tanks or other equipment based on the maximum flow rates from the equipment. The maximum liquid level in the sump shall be calculated with the peak flow beginning at the highest design liquid level in the sump under normal operating conditions with one pump operating.

C. The calculated maximum liquid level in the sump must be less than the alarm level and must be below the sump inlet.

Subp. 6. **Sump vent.** The top of the sump tank shall be provided with a vent pipe which shall extend separately through the roof, or may be combined with other vent pipes. Such vent shall be large enough to maintain atmospheric pressure within the sump under all normal operating conditions and in no case less than in accordance with the number of fixture units discharging into the sump. When the foregoing requirements are met and the vent, after leaving the sump, is combined with vents from fixtures discharging into the sump, the size of the combined vent need not exceed that required for the total number of fixtures discharging into the sump. No vent from an air operated sewage ejector shall combine with other vents.

Subp. 7. **Clear water sumps.** Sumps and receiving tanks which receive only clear water drainage, and from which sewage is excluded, need not be airtight or vented. Sumps and receiving tanks must be provided with covers fastened or secured so as to prevent entry by children. The covers must be adequate to support anticipated loads in area of use. In nonresidential buildings guard rails constructed in accordance with chapter 1305, Minnesota Building Code, may be used in lieu of covers.

Statutory Authority: *MS s 16B.59 to 16B.75; 326.37 to 326.45; 326B.101 to 326B.194; 326B.43 to 326B.49; 326B.52*

History: *9 SR 1557; 15 SR 76; 19 SR 590; 23 SR 686; 28 SR 146; L 2007 c 140 art 4 s 61; art 6 s 15; art 13 s 4; L 2008 c 337 s 64; 36 SR 1479*

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