10 CSR 20-8.125 - Alternative Sewer Systems
(excerpts related to LPSS Systems)

- State Regulations – Missouri DNR

PURPOSE: This rule specifies the minimum standards for the design of alternative sewer systems that are part of wastewater collection and treatment systems. This rule is to be used with rules 10 CSR 20-8.110 through 10 CSR 20-8.210. It does not address all aspects of design, and the design engineer may refer to other appropriate reference materials so long as these minimum standards set forth in this rule are met.

(1) Applicability. Wastewater systems that utilize alternative sewer systems shall be designed based on criteria contained in this rule, published standards, applicable federal and state requirements, standard textbooks, current technical literature, and applicable safety standards. In the event of any conflict between the above criteria, the requirement in this rule shall prevail.

(A) This rule shall not apply to treatment units covered in 10 CSR 20-8.300.

(B) This rule shall not apply to treatment units covered in 10 CSR 20-8.500.

(2) Approval of Sewers. For sewer approval, follow the provisions listed in 10 CSR 20-8.120(2).

(3) Supplement to the Engineering Report. Alternative sewer systems shall not to be used in lieu of conventional gravity sewers, but may be acceptable when it can be shown in the engineering report that it is not feasible to provide conventional gravity sewers. For more information, follow the provisions in 10 CSR 20-8.110(4).

(4) General.

(A) Continuing Authority. The continuing authority must be responsible for the operation and maintenance and modernization of an alternative sewer system collection system. See 10 CSR 20-6.010(2) for acceptable continuing authorities.

(B) Flooding. For flood protection, follow the provisions in 10 CSR 20-8.140(2)(B).

(C) Accessibility. For pumping station structure and septic tank accessibility, follow the provisions listed in 10 CSR 20-8.140(2)(D).

(D) Security. For fencing criteria, follow the provisions in 10 CSR 20-8.140(8)(A).

(E) Potable Water Sources. For the minimum separation distances from potable water sources, follow the provisions in 10 CSR 20-8.130(2)(D).

(F) Protection of Water Supplies. For the separation and crossings of water supplies, follow the provisions in 10 CSR 20-8.120(5).

(5) Pressure Sewers.

(A) Sewer Design.

1. Velocity. Design shall be based on the most probable number of pumping units expected to operate simultaneously or on some other acceptable method of computing the peak pumpage rate.

A. A cleansing velocity of at least two feet per second (2 ft/s), at least once and preferably several times per day, shall be achieved.

2. Minimum size. The minimum diameter sewer main pipe shall not be less than one and a half inches (1.5").

3. Installation. For sewer installation, follow the provisions in 10 CSR 20-8.120(3).

4. Hydrostatic pressure test. The applicant must comply with the manufacturer's recommended testing procedures.

5. Locator Wire. Locator wire must be utilized when sewer lines are installed within the public right-of-way in accordance with Section 319.033, RSMo.

(B) Sewer Appurtenances. Appurtenances shall be compatible with the piping system and full bore with smooth interior surfaces to eliminate obstruction and keep friction loss to a minimum.

1. Isolation valves shall be-

A. Comprised of resilient seated gate valve or ball valve with a position indicator;

B. Constructed from corrosion resistant materials; and

C. Enclosed in a watertight and lockable valve box.

2. Isolation valves shall be installed on-

A. The upstream side of major pipe intersections;

B. Both sides of stream, bridge, and railroad crossings, and unstable soil; and

C. The terminal end of the system to facilitate future extensions

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3. Proper support (e.g., crushed stone, concrete pads, or a well compacted trench bottom) shall be provided for valves so the weight of the valve is not carried by the pipe.

(C) Service Line Connection. The minimum diameter service line pipe shall be one and one quarter inches (1.25").

(D) Grinder Pump Stations.

1. Number of pumps.

A. Simplex grinder pump station shall-

(I) Not serve multiple equivalent dwelling units (EDU) if owned, operated, and maintained by individual homeowners; and

(II) Not serve commercial facilities.

B. Multiple unit grinder pump stations must be owned, operated, and maintained by an approved continuing authority. See subsection (4)(A) of this rule for more continuing authority information.

2. Grinder pump vaults shall be watertight.

3. Storage volume. A grinder pump vault shall have a storage volume of at least seventy (70) gallons.

4. Valves. The following valves must be provided in the grinder pump vaults:

A. A shutoff valve accessible from the ground surface;

B. A check valve to prevent backflow; and

C. An anti-siphon valve, where siphoning could occur.

5. Grinder pump construction. For design of pumps and motors, follow the provisions in 10 CSR 20-8.130(5).

6. Controls. For water level control design, follow the provisions in 10 CSR 20-8.130(3)(C).

7. Electrical equipment. For electrical equipment, follow the provisions in 10 CSR 20-8.130(3)(B) 2.

8. Emergency operations. When the continuing authority operates and maintains the grinder pump stations, provisions must be made for periods of mechanical or power failure.