

7080.2050 DISTRIBUTION OF EFFLUENT.

Subpart 1. General. Distribution of effluent for ISTS must meet or exceed the requirements of this part.

Subp. 2. Supply pipes.

A. The supply pipe extending from the septic tank to the undisturbed soil beyond the tank excavation must meet the strength requirements of American Society for Testing and Materials (ASTM), Schedule 40 Pipe, contained in Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120, ASTM D1785 (2006). The schedule is incorporated by reference, is available through the Minitex interlibrary loan system, and is not subject to frequent change.

B. Supply pipes must:

- (1) be made from materials resistant to breakdown from sewage and soil;
- (2) be watertight, including all joints;
- (3) be durable throughout the design life;
- (4) not deflect, buckle, crush, or longitudinally bend;
- (5) be resistant to pressures, fatigue, and strain for the application;
- (6) be installed according to American Society of Testing and Materials, Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications, ASTM D2321 (2005). The standard is incorporated by reference, is available through the Minitex interlibrary loan system, and is not subject to frequent change;

(7) be designed, installed, and protected to minimize the danger of freezing in the pipe;

(8) not be closer than six inches from final grade. Pipes susceptible to freezing shall be insulated; and

(9) be set back from water supply wells and water service pipes according to chapters 4715 and 4725.

C. The minimum slope for gravity supply pipes is one percent (1/8 inch per linear foot). There is no maximum slope. Pipe restraints must be used for slopes greater than 20 percent or where fluid velocities in the pipe exceed 15 feet per second. For pressure systems, a minimum slope of one percent for drainback or other frost protection measures must be employed.

D. Access to each supply pipe must be provided for cleanout. The access point must be accessible from final grade.

Subp. 3. Gravity distribution.

A. Serial distribution must be used to distribute effluent to individual trenches in a soil treatment and dispersal system. If the necessary elevation differences between trenches for serial distribution cannot be achieved by natural topography or by varying the excavation depths, parallel distribution must be used. Serial distribution must not create a pressure head on trenches at lower elevations.

B. If drop boxes are used for serial distribution, subitems (1) to (6) apply.

(1) The drop box must be watertight and constructed of durable materials not subject to corrosion or decay.

(2) The invert of the inlet supply pipe must be at least one inch higher than the invert of the outlet supply pipe to the next drop box.

(3) The invert of the outlet supply pipe to the next drop box must be no greater than two inches higher than the crown of the distribution pipe serving the trench in which the box is located.

(4) When sewage tank effluent is delivered to the drop box by a pump, the pump discharge must be directed against a wall or side of the box on which there is no outlet or directed against a deflection wall, baffle, or other energy dissipater. The discharge rate into the drop box must not result in surfacing of sewage from the drop box. The supply pipe must drain after the pump shuts off.

(5) The drop box must be covered by a minimum of six inches of soil. If the top of the box is deeper than six inches, access must be provided above, at, or within six inches of finished grade.

(6) The drop box must be placed on firm and settled soil.

C. If valve boxes are used, all requirements of item B apply to valve boxes.

D. Distribution boxes must meet the standards in subitems (1) to (6).

(1) The box must be watertight and constructed of durable materials not subject to corrosion or decay.

(2) The distribution box must be covered by a minimum of six inches of soil. If the top of the box is deeper than six inches, access must be provided above, at, or within six inches of the finished grade.

(3) The inverts of all outlets must be set and maintained at the same elevation.

(4) The inlet invert must be either at least one inch above the outlet invert or sloped such that an equivalent elevation above the outlet invert is obtained within the last eight feet of the inlet pipe.

(5) Each trench line must be connected separately to the distribution box and must not be subdivided. Distribution boxes must not be connected to one another if each box has distribution pipes.

(6) When sewage tank effluent is delivered by pump, a baffle wall must be installed in the distribution box or the pump discharge must be directed against a wall, baffle, side of the box on which there is no outlet, or directed against a deflection wall, baffle, or other energy dissipater. The baffle must be secured to the box and extend at least one inch above the crown of the inlet pipe. The discharge rate into the distribution box must not result in surfacing of sewage from the box. Pressure must not build up in the box during pump discharge.

E. Nonpressurized distribution pipes must meet the requirements of subitems (1) to (4) and subpart 2, item B, subitems (1) and (3) to (5).

(1) Distribution pipes used for gravity distribution must be at least four inches in diameter.

(2) Distribution pipes used for gravity distribution must have at least one row of holes of no less than one-half inch in diameter spaced no more than 40 inches apart.

(3) Distribution pipes for gravity distribution must be laid level or on a uniform slope oriented away from the distribution device of no more than four inches per 100 feet.

(4) Distribution pipes for gravity distribution in seepage beds must be uniformly spaced no more than five feet apart and not more than 30 inches from the side walls of the seepage bed.

Subp. 4. Pressure distribution.

A. All systems must be pressurized as required in parts 7080.2200 to 7080.2400.

B. Pressurized distribution pipes must conform to the requirements of subpart 2, item B, subitems (1) and (3) to (5).

C. Pressure distribution pipes and associated fittings must be properly joined together. The pipe and connections must be able to withstand a pressure of at least 40 pounds per square inch.

D. The distribution network must be designed so there is less than a ten percent variance in flow for all perforations.

E. Perforations must be no smaller than one-eighth inch diameter and no larger than one-quarter inch diameter. The number of perforations, perforation spacing, and pipe size for pressure distribution must be in accordance with Table VI. The friction loss in any

individual perforated lateral must not exceed 20 percent of the average pressure head on the perforations.

TABLE VI
MAXIMUM NUMBER OF PERFORATIONS PER LATERAL

Perforation spacing in feet	1/4 inch holes				
	1	1.25	1.5	2	3
2	10	13	18	30	60
2.5	8	12	16	28	54
3	8	12	16	25	52
Perforation spacing in feet	3/16 inch holes				
	1	1.25	1.5	2	3
2	12	18	26	46	87
2.5	12	17	24	40	80
3	12	16	22	37	75
Perforation spacing in feet	1/8 inch holes				
	1	1.25	1.5	2	3
2	21	33	44	74	149
2.5	20	30	41	69	135
3	20	29	38	64	128

F. Perforation holes must be drilled straight into the pipe and not at an angle. Pressurized distribution laterals must be installed level. Perforation holes must be free of burrs. Holes must be spaced no more than three feet apart. A method to introduce air into

the pipe after dosing must be provided. The pipes must completely drain after the pump turns off.

G. Pressure distribution laterals must be spaced no further than 36 inches apart in seepage beds and mound absorption beds, and no further than 24 inches from the outside edge of the bed.

H. Pressure distribution laterals must be connected to a header or manifold pipe that is of a diameter such that the friction loss in the header or manifold will be no greater than five percent of the average head at the perforations. The header or manifold pipe must be connected to the supply pipe from the pump.

I. Perforated laterals must not be installed closer than 12 inches from the edges of the absorption bed and perforated laterals must terminate no closer than 12 inches from the ends of the absorption bed.

J. Pressure distribution pipe cleanouts must be provided to check the system for proper operation and cleaning of plugged perforations. Cleanouts must be accessible from final grade.

Statutory Authority: *MS s 115.03; 115.55*

History: *32 SR 1347; 35 SR 1353; 38 SR 1001*

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