815 KAR 20:130. House sewers and storm water piping; methods of installation.

RELATES TO: KRS 318.010, 318.015, 318.130, 318.150
STATUTORY AUTHORITY: KRS 198B.040(10), 318.130
NECESSITY, FUNCTION, AND CONFORMITY: KRS 318.130 requires the department to promulgate administrative regulations establishing the Kentucky State Plumbing Code to regulate plumbing, including the methods and materials that may be used in Kentucky for the construction of house sewers and storm water piping. This administrative regulation establishes the materials and methods of installation that may be used in the construction of house sewers or storm water piping.

Section 1. Independent System.

(1) The drainage and plumbing system of a new building and of a new work installed in an existing building shall be separate and independent of other buildings except as otherwise established in this administrative regulation.

(2) A building shall have an independent connection with either a public or private sewer or sewer system.

Section 2. Exceptions.

(1)

(a) If a building stands in the rear of other buildings or on an interior lot and a sewer connection cannot be made available to the rear building through an adjoining alley, court, yard, or driveway, the sewer from the front building may be extended to the rear building and it shall be considered as one (1) sewer.

(b) The exception established in this subsection shall not apply to corner lots if a sewer connection is available from the street or alley or to a new or existing building that abuts a street or alley.

(2) A building sewer may serve additional buildings and still be considered as one (1) sewer if the additional buildings are:

(a) Used in conjunction with the primary building;

(b) Contained within the same deed as the primary building; and

(c) Restricted within the deed from being sold separately from the primary building.

Section 3. Connection with Private Sewage Disposal System. If a sewer is not available, the house drain from a building shall connect with an approved private sewage disposal system.

Section 4. Excavations. An excavation made for the installation of a house sewer shall be open trench work, and the trenches shall be kept open until the piping has been inspected, tested, and approved.

Section 5. Depth of Sewer at the Property Line.

(1) The sewer at the property line shall be at a sufficient depth to properly serve a plumbing connection installed in the basement of a building.

(2)

(a) A house sewer shall be laid on a grade of not less than one-eighth (1/8) inch nor more than one-fourth (1/4) inch per foot.

(b) A sewer shall have at least an eighteen (18) inch cover.

(c) Sewer piping installed under property subject to vehicular traffic (such as a driveway, parking lot, or similar location) shall have at least a twenty-four (24) inch cover unless:

1. Constructed of cast iron piping, schedule 40 or 80 PVC produced and labeled as ASTM D2665 or D1784, or schedule 40 or 80 ABS produced and labeled as ASTM D2661; and

2. Encased in a minimum of six (6) inches of concrete on each side and the top. Pipe shall be covered to prevent direct contact with concrete.

(d) A sewer shall be backfilled by hand and tamped six (6) inches above the piping or filled with six (6) inches grillage above the piping.

(e) Each joint in cast iron and vitrified clay pipe shall be constructed to comply with 815 KAR 20:060, Sections 4 and 5.

(f) If less than eighteen (18) inches of cover is available, a request for a variance shall be submitted to the division in writing.

Section 6. New House Sewer Connections. A house sewer installed where a private sewerage system has been discarded may connect to the house drain if the existing plumbing system meets the State Plumbing Code.

Section 7. Materials for House Sewers. A house sewer or combined sewer shall be made of:

(1) Extra heavy cast iron pipe;
(2) Service weight cast iron;
(3) Vitrified clay;
(4) Concrete;
(5) Coextruded composite PVC pipe produced and labeled ASTM F1488;
(6) PVC or ABS plastic pipe Schedules 40 and 80;
(7) Cellular core PVC produced and labeled as ASTM F891;
(8) Cellular core ABS produced and labeled as ASTM 628 or ASTM F1488;
(9) Truss pipe;
(10) Extra heavy SDR 35 pipe;
(11) Type PS 46, PVC in sizes four (4) inches through fifteen (15) inches produced and labeled as ASTM F789;
(12) PVC ribbed pipe produced and labeled as ASTM F794; or
(13) PE produced and labeled as ASTM F714.

Section 8. Material for Storm Sewers Inside Buildings.

(1) A storm sewer inside a building extending to a point two (2) feet outside a building in sizes eight (8) inches and smaller shall be made of:
(a) Cast iron pipe;
(b) Aluminum; or
(c) Schedule 40 ABS or PVC DWV pipe or PVC pipe produced and labeled as ASTM F1488.

(2) A storm sewer in a size of ten (10) inches or larger shall be made of:
(a) Cast iron;
(b) Aluminum;
(c) Schedule 40 ABS or PVC DWV pipe;
(d) SDR 35;
(e) Vitrified clay or concrete conforming to appropriate commercial specifications with approved joints; or
(f) PE pipe produced and labeled as ASTM F714.

(3) Primary and secondary roof drains shall comply with the requirements established in this subsection.
(a)
1. Roof drains shall have strainers extending not less than four (4) inches above the surface of the roof immediately adjacent to the roof drain.
2. Strainers shall have an available area not less than one and one-half (1 1/2) times the area of the conductor or leader to which the drain is connected.

(b) Roof drain strainers for use on sun decks, parking decks, and similar areas that are normally services and maintained, may be of the flat surface type, installed level with

the deck, with an available inlet area not less than two (2) times the area of the conductor or leader to which the drain is connected.

(c) Secondary (emergency) roof drains or scuppers shall be provided where the roof perimeter construction allows ponding if the primary roof drains become blocked.

(d) Separate systems required.

1. Secondary roof drain systems shall have piping and point of discharge separate from the primary system.

2. Discharge shall be above grade plane in a location that would normally be observed by the building occupants or maintenance personnel.

(e) Primary and secondary drains shall be sized in accordance with Section 11 of this administrative regulation.

Section 9. Change of Direction. A change in direction of a sewer shall be made only with:

(1) Long curves;

(2) Forty-five (45) degree wyes;

(3) Half wyes;

(4) Quarter, sixth, eighth or sixteenth bends; or

(5) Sanitary tees installed on their back or on their sides. If installed, sanitary tees shall be at an angle of not more than forty-five (45) degrees.

Section 10. Size of House Sewers and Horizontal Branches.

(1) The minimum size of a house sewer shall not be less than four (4) inches nor less than that of the house drain.

(2) A house sewer receiving a branch shall be sized in the same manner as a house drain.

(3) The house drains shall be installed in accordance with 815 KAR 20:090.

Section 11. Size of Storm Systems.

(1) The required size of a storm sewer shall be determined on the basis of the total drained area in horizontal projection in accordance with the table in subsection (4) of this section.

(2) A storm sewer shall not be laid parallel to or within two (2) feet of a bearing wall.

(3) The storm sewer shall be laid at a sufficient depth to protect it from freezing.

(4)

Diameter of pipe - inches	Maximum drained roof area square feet*	
	Slope 1/8 in. fall to 1 ft.	Slope 1/4 in. fall to 1 ft.
3	N/A	1,160
4	1,880	2,650
5	3,340	4,720
6	5,350	7,550
8	11,500	16,300
10	20,700	29,200
12	33,300	47,000
15	59,500	84,000

*The calculations in this table are based on a rate of rainfall of four (4) inches per hour

Section 12. Combined Storm and Sanitary Sewer System.

(1) If a combined sewer system is used, the required size of the house drain or house sewer shall be determined by multiplying the total number of fixture units carried by the drain or sewer by the conversion factor corresponding to the drained area, and the total

fixture units, adding the product to the drained area and applying the sum from the table for storm water sewers in Section 11 of this administrative regulation.
(2) A combined house drain or house sewer shall not be less than four (4) inches in diameter, and a combined house drain or house sewer shall not be smaller in size than that required for the same number of fixture units or for the same roof area in separate systems.
(3)

CONVERSION FACTORS FOR COMBINED STORM AND SANITARY SYSTEM

Number of Fixture Units on Sanitary System

Drained roof area in square feet	Up to 6	7 to 18	19 to 36	37 to 60	61 to 96	97 to 144	145 to 216	217 to 324
Up to 120	180	105	60	45	30	22	18	15
121 to 240	160	98	57	43	29	21	17.6	14.7
241 to 480	120	75	50	39	27	20	16.9	14.3
481 to 720	75	62	42	35	24	18	15.4	13.2
721 to 1,080	54	42	33	29	20	15	13.6	12.1
1,081 to 1,620	30	18	16	15	12	11.5	11.1	10.4
1,621 to 2,430	15	12	11	10.5	9.1	8.8	8.6	8.3
2,431 to 3,645	7.5	7.2	7.0	6.9	6.6	6.5	6.4	6.3
3,646 to 5,460	2.0	2.4	3.0	3.3	4.1	4.2	4.3	4.4
5,461 to 8,190	0	2.0	2.1	2.2	2.3	2.4	2.5	2.6
8,191 to 12,285	0	0	2.0	2.1	2.1	2.2	2.3	2.3
12,286 to 18,420	0	0	0	2.1	2.1	2.1	2.2	2.2
18,421 to 27,630	0	0	0	0	2.0	2.1	2.2	2.2
27,631 to 40,945	0	0	0	0	0	2.0	2.1	2.2
40,946 to 61,520	0	0	0	0	0	0	2.0	2.1
Over 61,520	0	0	0	0	0	0	0	2.0

(4)

NUMBER OF FIXTURE UNITS ON SANITARY SYSTEMS

Drained roof area in square feet	325 to 486	487 to 732	733 to 1,098	1,099 to 1,644	1,645 to 2,466	2,467 to 3,702	3,703 to 5,556	Over 5556
Up to 120	12	10.2	9.2	8.4	8.2	8.0	7.9	7.8
121to 240	11.8	9.9	9.1	8.3	8.1	8.0	7.9	7.8
241 to 480	11.5	9.7	8.8	8.2	8.0	7.9	7.8	7.7
481 to 720	10.8	9.2	8.6	8.1	7.9	7.9	7.8	7.7
721 - 1,080	10.1	8.7	8.3	8.0	7.8	7.8	7.7	7.6
1,081 - 1,620	9.8	8.4	8.1	7.9	7.7	7.7	7.6	7.5
1,621 - 2,430	8.0	7.9	7.8	7.7	7.6	7.5	7.4	7.4
2,431 - 3,645	6.2	6.3	6.4	6.4	6.8	7.0	7.1	7.2
3,646 - 5,460	4.5	4.7	5.0	5.1	6.1	6.4	6.9	6.9

5,461 - 8,190	2.8	3.2	3.7	4.6	5.0	5.6	6.2	6.4
8,191 - 12,285	2.4	2.5	2.6	2.7	3.5	4.5	5.2	5.6
12,286 - 18,420	2.3	2.3	2.4	2.4	2.6	3.2	4.2	4.7
18,421 - 27,630	2.2	2.3	2.3	2.3	2.4	2.5	2.8	3.1
27,631 - 40,945	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.4
40,946 - 61,520	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Over 61,520	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0

(5) For a building constructed after August 1, 1996, each plumbing fixture or opening connecting to a combination sanitary and storm sewer system shall either:

(a) Be installed above the elevation of the cover of the nearest manhole serving the main; or

(b) Discharge through a sewage ejector to the combined sewer system at an elevation high enough to prevent flooding of the building.

Section 13. Storm Sewers and House Sewers in Undisturbed or Filled Ground.

(1) A house sewer laid in undisturbed ground shall be laid on at least four (4) inches of pea gravel, sand, or other approved grillage as defined in 815 KAR 20:010.

(2) A storm sewer laid in undisturbed ground shall not require grillage.

(3) A storm sewer or house sewer laid in filled ground shall be embedded to the lower quadrant with at least a four (4) inch concrete pad below the invert, or other equivalent support approved by the department.

(4) A support filled in ground shall be on a ten (10) foot center to a solid footing, either undisturbed earth or rock.

(5) A house sewer constructed of flexible thermoplastic sewer piping shall be installed with at least six (6) inches of gravel on the bottom, top, and sides of the piping.

Section 14. Drainage Below Sewer Level (Public). In a public building in which the whole or part of the building drain and plumbing system lies below the level of a main sewer, sewage and waste shall be lifted by a device that complies with Sections 16 and 17 of this administrative regulation and discharged into the building sewer.

Section 15. Drainage Below Sewer Level (Residential).

(1) In a residential building in which the sewer level is above the basement floor, waste water shall be lifted by means of an approved sump pump appropriate for that installation.

(2) The sump pit shall:

(a) Be gas and air tight; and

(b) Be constructed of:

1. Poured or precast concrete;
2. Approved fiberglass; or
3. PE material.

(3) The sump pit shall be provided with a two (2) inch vent, which may also act as a waste and vent for a laundry tray.

(4) The pump discharge piping shall be discharged into a two (2) inch waste pipe extended inside the building to a height at least twelve (12) inches above the outside grade plane.

(5) The sump pit shall be provided with a tight-fitting concrete cover.

(6)

(a) On the outside of the building, the waste piping shall connect into a four (4) inch by two (2) inch sanitary tee, which shall connect into a four (4) inch P trap and then into the sanitary sewer.

(b) The four (4) inch by two (2) inch sanitary tee shall be extended at least two (2) inches above the finished grade plane and shall be provided with a ventilated cap.

Section 16. Sumps and Receiving Tanks.

(1) A subsoil drain shall discharge into an air tight sump or receiving tank located to receive the sewage by gravity.

(2) The sewage shall be lifted and discharged into the house sewer by a pump or ejector.

(3) Sewage sumps shall be a minimum twenty four (24) inches in diameter and no less than twenty four (24) inches in depth.

(4) A system that relies solely on a pump shall be equipped with both an audible and visual alarm to be placed within the occupied space.

(5) The sump shall automatically discharge.

Section 17. Ejectors, Vented.

(1) A sewage ejector serving a residential installation shall be vented with a two (2) inch vent.

(2)

(a) Except as established in paragraph (b) of this subsection, an ejector serving a commercial or industrial installation shall be vented with a three (3) inch vent.

(b)

1. If a three (3) inch vent stack is serving a fixture that empties into the ejector pit and is located within twenty-five (25) feet of the pit, the ejector may be revented with a two (2) inch vent back to the three (3) inch vent stack.

2. The ejector vent shall not be smaller than that recommended by the manufacturer of the pump.

(3) A portion of the building drainage system that is above the cover of the manhole serving the main that can flow by the gravity to a sewer shall be installed for gravity flow to the combined sanitary and storm sewer, except for a system designed otherwise by a licensed professional engineer.

Section 18. Ejector Power: Motors, Compressors, and Air Tanks.

(1) A motor, air compressor, or air tank shall be located so that it shall be open for inspection and repair at all times.

(2) An air tank shall be proportioned to furnish sufficient air at suitable pressure to the ejector to completely empty the sump or storage tank with the compressor not operating.

(3) The end pressure in the tank shall not be less than two (2) pounds for each foot of height through which sewage is raised.

Section 19. Ejectors for Subsoil Drainage.

(1) If a subsoil catch basin is installed below the sewer level, an automatic ejector shall be used.

(2) The ejector or a device raising subsoil water shall discharge into a properly trapped fixture or into a storm water drain.

Section 20. Drainage of Yards, Areas, Roofs, and Traps.

(1) A roof, paved area, court, or courtyard shall be drained into:

(a) A storm water system;

(b) A combined sewerage system; or

(c) A surface drainage area unless prohibited by the local health department or sewer district.

(2) A yard, roof, paved area, court, or courtyard shall not be drained into a sewer intended for sewage only.

(3) Traps.

(a) If a drain is connected to a combined sewerage system, it shall be trapped.

(b) If a roof leader, conductor, or gutter opening is located more than ten (10) feet from a window, scuttle, or air shaft, a trap shall not be required.
(c) A trap shall be set below the frost line or on the inside of the building.
(d) If a drain is not connected to a combined sewer, a trap shall not be required.

Section 21. Size of Rain Water Leader. An inside leader shall not be less size than as established in the following table:

Area of Roof (In Square Feet)	Leader, Diameter (Inches)
Up to 90	1 1/2
91 to 270	2
271 to 810	3
811 to 1,800	3 1/2
1,801 to 3,600	4
3,601 to 5,550	5
5,501 to 9600	6

Section 22. Inside Conductors or Roof Leaders.
(1) If a conductor or roof leader is placed within the walls of a building, or in an interior court or ventilating pipe shaft, it shall be constructed of:
(a) Cast iron pipe;
(b) Galvanized wrought iron;
(c) Galvanized steel;
(d) Copper;
(e) Schedule 40 ABS or PVC DWV pipe; or
(f) Reinforced thermosetting resin pipe produced and labeled as ASTM F1113 (red and silver thread).
(2)
(a) Except as established in paragraph (b) of this subsection, PVC or ABS pipe and fittings shall be limited to buildings in which the conductor does not exceed forty-five (45) feet in height, measured from the grade plane as defined by the Kentucky Building Code, 815 KAR 7:120, or Kentucky Residential Code, 815 KAR 7: 125, and continuing through the vertical distance of the building to a maximum height of forty-five (45) feet.
(b) PVC or ABS pipe and fittings may be installed in a building in which the conductor exceeds forty-five (45) feet in height if the installation complies with all of the requirements established in this section.
(c) The use of PVC and ABS piping shall be limited to Schedule 40 or 80 produced and labeled as ASTM D2665 and D1784 for PVC piping and ASTM D2661 for ABS piping.
(d) The installation of the PVC or ABS pipe and fittings shall be made in compliance with the manufacturer's recommendations, which shall be made available to the inspector.
(e) Firestop systems shall be inspected in accordance with ASTM E2174 by an inspection agency approved by the department.

Section 23. Outside Conductors.
(1) If an outside sheet metal conductor or downspout is connected to a house drain, it shall be connected by means of cast iron pipe extending vertically at least one (1) foot above the grade plane.

(2) If the downspout runs along a public driveway without a sidewalk, it shall be placed in a niche in the walk, protected by wheel guards, or enter the building through the wall at a forty-five (45) degree slope at least twelve (12) inches above the grade plane.

Section 24. Defective Conductor Pipes. If an existing sheet metal conductor pipe within the walls of a building becomes defective, the conductor shall be replaced by one that conforms to this administrative regulation.

Section 25. Vent Connections with Conductors Prohibited.

(1) A conductor pipe shall not be used as a soil, waste, or vent pipe.

(2) A soil, waste, or vent pipe shall not be used as a conductor.

Section 26. Overflow Pipes. An overflow pipe from a cistern, supply tank, expansion tank, or drip pan shall connect indirectly with a house sewer, house drain, soil pipe, or waste pipe.

Section 27. Subsoil Drains. A subsoil drain below sewer level shall discharge into a sump or receiving tank and shall be automatically lifted and discharged into the storm drainage system or upon the ground outside the building it serves.

Section 28. Approvals of New Sewer Connections to Existing Buildings. If the local health department or sanitary sewage system board, plant district, or treatment plant owner prohibits the discharge of a basement floor drain or other apparatus into the sanitary sewer system, an existing basement floor drain or sump pump apparatus shall comply with the construction requirements of this administrative regulation and be inspected prior to the approval of a connection for a new sewer line.

(1 Ky.R. 485; eff. 3-12-1975; 2 Ky.R. 497; 3 Ky.R. 314; eff. 9-1-1976; 4 Ky.R. 62; eff. 10-5-1977; 192; eff. 6-7-1978; Recodified from 401 KAR 1:100, 7-5-1978; Am. 5 Ky.R. 164; eff. 10-4-1978; 8 Ky.R. 362; eff. 1-6-1982; 10 Ky.R. 1016; eff. 3-31-1984; 12 Ky.R. 1675; eff. 5-6-1986; 13 Ky.R. 959; eff. 12-2-1986; 14 Ky.R. 1142; eff. 1-4-1988; 16 Ky.R. 911; eff. 1-12-1990; 2779; 17 Ky.R. 1108; eff. 8-22-1990; 18 Ky.R. 2725; eff. 4-3-1992; 19 Ky.R. 822; eff. 11-9-1992; 1659; eff. 3-12-1993; 2742; 20 Ky.R. 309; eff. 8-6-1993; 21 Ky.R. 1974; eff. 3-22-1995; 22 Ky.R. 2339; eff. 8-1-1996; 23 Ky.R. 2625; 2994; eff. 2-10-1997; 24 Ky.R. 962; eff. 12-15-1997; 27 Ky.R. 231; 773; eff. 9-11-2000; 33 Ky.R. 3273; 4180; eff. 7-6-2007; 35 Ky.R. 2608; 36 Ky.R. 99; eff. 7-29-2009; 41 Ky.R. 179; eff. 9-24-2014; 42 Ky.R. 133; eff. 11-6-2015; 43 Ky.R. 624; eff. 1-6-2017; 46 Ky.R. 1682, 2442; eff. 6-2-2020.)