Article 11

HOUSE DRAINS AND SEWERS

120. INDEPENDENT SYSTEM. The drainage and plumbing system of each new building and of new work installed in an existing building shall be separate from and independent of that of any other building except as provided below, and every building shall have an independent connection with a public or private sewer when available.

Exception. Where one building stands in the rear of another building on an interior lot and no private sewer is available or can be constructed to the rear building through adjoining alley, court, yard, or driveway, the house drain from the front building may be extended to the rear building and the whole will be considered as one house drain.

121. OLD HOUSE SEWERS AND DRAINS. Old house sewers and drains may be used in connection with new buildings or new plumbing only when they are found on examination and test to be tight and suitable for further use. If the old work is found defective the proper administrative authority shall notify the owner to make the necessary changes to conform with this code.

122. CONNECTIONS WITH PRIVATE SEWAGE DISPOSAL SYSTEMS.

(A) When a public sewerage system is not available, drain pipes from buildings shall be connected with approved private sewage disposal works designed and constructed as provided in the following sections. In no case shall fixtures be set on a lower level than the land which contains the approved sewage disposal works unless cared for as described in Paragraph 130.

(B) APPROVED PRIVATE SEWAGE DISPOSAL WORKS. An approved private sewage disposal works shall consist of a septic tank and a subsurface absorption trench, disposal field or other treatment works considered equally efficient by the Department of Health & Welfare, Bureau of Health. When a private sewage disposal system is proposed to handle a daily flow in excess of 2,000 gallons of sanitary sewage, as determined from section 122 (D) or when a commercial or self-service laundry is proposed, a plan prepared by a registered professional engineer shall be submitted to the Bureau of Health for review and appoval. The plan includes: percolation tests, soils information, topography, size of septic tanks, length and configuration of subsurface absorption trenches, distance from existing and proposed domestic water supply, distance from lake, river, stream or similar intermittent watercourse or tidal water, and other pertinent data.

(B-1) An abandoned well or spring shall not be used as a cesspool or leaching pit. Cesspools or leaching pits or dry well shall not be used as disposal or treatment works for sanitary sewage.

(B-2) The effluent from a septic tank or other approved sewage disposal system shall discharge into an approved subsurface absorption trench, disposal field or public sewerage system, and shall not be discharged into any open ditch or surface depression. Any such effluent or sewage shall not be discharged into any river, stream, lake, pond, or similar watercourse or any tidal waters unless a license is first secured from the Environmental Improvement Commission as provided by Title 38, R. S. 1964, Chapter 3, Section 413, as amended.

(C) LOCATION OF DISPOSAL FACILITIES. The location of the disposal facilities shall be such as to provide between it and the components listed in the following table not less than the distance stated:

COMPONENTS	Daily sewage flow less than 2,000 gallons.		Daily sewage flow in excess of 2,000 gallons.		House sewer
	Septic Tank	Disposal Trench	Septic Tank	Disposal Trench	
	Feet	Feet	Feet	Feet	Feet
Property line	10	10	20	20	—
Buildings	8	20	20	40	—
Normal high water mark of any lake, pond, river, stream, or similar intermittent watercourse	100*	100	100	300	100**
Tidal water (mean hightide)	60*	60	100	100	60**
Well or spring used as a domestic water supply.	100	100	100	300	100**
Well or spring used as a domestic water supply with a daily water use in excess of 2,000 gallons.	100	300	100	300	100**
Water supplyline	10	10	10	25	10***
Downhill slope steeper than one vertical to three horizontal.	—	50	—	50	—

EXCEPTIONS:
*One and two family dwelling septic tank, or any other tank or similar receptacle directly receiving sewage for the purpose of pumping or transporting it to an approved disposal area shall be at least 25 feet from the normal high water mark of any lake, pond, river, stream, or similar intermittent watercourse, and the system shall be tested after installation and found water tight.
**May be 25 feet providing the house sewer is constructed of cast-iron, cement-asbestos, PVC, and ABS of standards listed under article 4, Sections 38-39 and the system shall be tested after installation and found water tight.
***See Section 123.

(D) VOLUME OF SANITARY SEWAGE—Each unit of the disposal system shall be designed to treat adequately the estimated ultimate volume of sanitary sewage to be discharged from the premises to be served. The estimated volume of sewage flow shall be determined from the expected daily quantities of sewage per unit of contributary population as published by the Bureau of Health. (See Appendix C)

(E) APPROVED SEPTIC TANKS—Septic tanks shall be watertight and constructed of sound and durable materials not subject to decay, excessive corrosion, frost damage or to crackling or buckling due to settlement or backfill. Tanks and covers shall be designed and constructed so as to withstand normal structural loadings. The tank with cover shall be constructed of either precast reinforced concrete, poured-in-place reinforced concrete, bituminous-coated metal complying with Commercial Standard CS 177-62, and bearing the Underwriters Label, or other material as accepted by the Bureau of Health.

(E-1) CAPACITIES AND DIMENSIONS OF SEPTIC TANKS. Septic tanks shall have the following minimum capacities:

(E-1a) ONE AND TWO FAMILY DWELLINGS—When serving one or two family dwellings units, they shall have capacities as shown below. Expansion attics shall be considered as additional bedrooms.

LIQUID WORKING CAPACITY OF SEPTIC TANK IN GALLONS

No. of Bedrooms	Gallons Capacity
2 or less	750
3	900
4	1000
Each additional bedroom added	250

(E-1b) INSTITUTIONS, SCHOOLS, AND SIMILAR ESTABLISHMENTS—When serving other than one or two family dwellings, septic tank liquid working capacity shall be 1½ times the daily estimated flow from Section 122 D up to flows of 1,500 gallons per day, but in no case shall the capacity be less than 750 gallons liquid working capacity. Septic tank working capacity for flows between 1,500 gallons per day and 14,500 gallons per day shall be equal to 1,125 plus 0.75Q, where Q is equal to the flow in gallons per day.

(E-1c) LIQUID DEPTH—The liquid depth of the tank shall be a minimum of 30 inches. The tank may be oval, circular, or rectangular, in plan, provided the distance between the outlet and inlet of the tank is at least equal to the liquid depth of the tank, and to the longest dimension.

(E-2) BAFFLES AND TEES—Inlet baffles or vented tees shall extend below the liquid level at least 6 inches. In no case shall the penetration of the inlet device exceed that of the outlet device. The outlet baffles or vented tees shall extend below the liquid surface to a distance equal to 40 per cent of the liquid depth. Penetration of outlet baffles or tees in horizontal cylindrical tanks shall be equal to 35 per cent of the liquid depth. The inlet and outlet baffles or vented tees shall extend above liquid depth to approximately one inch from the top of the tank. Venting shall be provided between compartments.

(E-3) MEANS OF ACCESS—Each compartment shall be provided with an access manhole. Cleanout openings shall be located over each sanitary tee or baffle, shall be at least 100 square inches with one dimension of at least eight (8) inches, and shall be constructed in a manner that will prevent the entrance of surface water.

(E-4) COMPARTMENTS—Multi-compartment septic tanks with transverse baffles may be used provided that:

a. The number of compartments does not exceed two.
b. The total capacity is not less than 1,000 gallons.
c. The capacity of the first compartment is at least equal to the the capacity of the second compartment.
d. The compartments shall be constructed in a manner that will permit venting the compartments through the building sewer or other suitable outlets.
e. Tanks in series may be used providing the first tank is at least equal to the capacity of the second tank and provided that the number of such tanks does not exceed two.

(E-5) GROUND WATER—The invert of the outlet of a septic tank shall be above maximum ground water elevation.

(F) Any variation in the above type of unit shall first be accepted by the Bureau of Health.

(G) PERCOLATION TESTS—The suitability of the soil for sewage disposal shall be determined from the results of percolation tests and from other characteristics of the underlying soil, including maximum ground water elevation, presence of ledge, drainage conditions, and other pertinent data. Percolation tests shall be performed under the supervision of a qualified person such as a master plumber, registered professional engineer, or registered land surveyor in accordance with the procedure published by the Bureau of Health, (See Appendix C) and a signed report submitted to the Local Plumbing Inspector. Percolation test should not be made in frozen ground.

(G-1) ONE AND TWO FAMILY DWELLINGS—Percolation test in at least four (4) separate test holes uniformly spaced shall be performed at the site of each disposal area for one and two family dwellings.

(G-2) INSTITUTIONAL AND COMMERCIAL ESTABLISHMENTS—Percolation tests in at least six (6) separate test holes uniformly spaced for the first 1,000 gallons of estimated daily sewage flow and one percolation test in a separate test hole for each 1,000 gallons of sewage thereafter, shall be performed at the site of each subsurface disposal area for institutional and commercial establishments such as, schools, trailer parks, motels, restaurants, commercial and/or self-service laundry, etc.

(H) DISPOSAL FIELDS—The area required for each disposal field shall be determined in relation to the volume of sanitary sewage and percolation test as follows:

(H-1) ONE AND TWO FAMILY DWELLINGS—the minimum linear feet of approved absorption trench for one and two family dwellings shall be determined from the following table:

LINEAR FEET OF APPROVED ABSORPTION TRENCH

Percolation Rate (Time in minutes for water to fall one (1) inch)	YEAR ROUND USE Two Bedrooms or less	YEAR ROUND USE Each additional bedroom	SUMMER ONLY Two Bedrooms or less	SUMMER ONLY Each additional bedroom
5 or less	83	42	50	25
10	110	55	67	33
15	127	64	77	38
30	167	84	100	50
45*	200	100	120	60
60	Unsuitable	Unsuitable	133	67
Over 60	Unsuitable	Unsuitable	Unsuitable	Unsuitable

*OVER 45 min. per inch unsuitable for year round use.

(H-2) INSTITUTIONAL AND COMMERCIAL ESTABLISHMENTS—The minimum effective sidewall area of approved absorption trench for institutional and commercial establishments such as schools, trailer parks, motels, restaurants, commercial and/or self-service laundry, etc., shall be determined from the following table:

MAXIMUM RATE OF SEPTIC TANK EFFLUENT APPLICATION

Percolation Rate	Sq. ft./GPD	Sq. ft./GPD with GG	Sq. ft./GPD with AW	Sq. ft./GPD with GG & AW
5 or less	0.45	0.54	0.63	0.72
10	0.63	0.76	0.88	1.01
15	0.78	0.94	1.09	1.25
30	1.10	1.32	1.54	1.76
SOIL SUITABLE FOR SUMMER USE ONLY				
45	1.34	1.61	1.88	2.15
60	1.55	1.86	2.17	2.48
Over 60	UNSUITABLE FOR SUBSURFACE DISPOSAL			

GPD—One Gallon per day GG—Garbage Grinder AW—Automatic Washer.
Sq. Ft.—Effective sidewall area in square feet.

Each disposal area shall have a minimum of 150 square feet of effective sidewall in not less than 50 linear feet of the absorption trench. The effective sidewall area shall be the total area of the trench sidewalls below the invert of the percolation line. The effective sidewall area of the approved standard absorption trench shall be three (3) square feet per one (1) linear foot of trench.

(H-3) GROUNDWATER—(Applies to any lot or land on which new construction is proposed.) Disposal fields shall not be constructed in areas where the maximum ground water table, or bedrock or impervious strata is less than two feet below the bottom of trench. Maximum ground water table elevation shall be determined during the period of year when ground water table is at its highest elevation or from the ground water characteristic of the soil type as prepared by the U.S. Department of Agriculture, Soil Conservation Service.

(H-4) SURFACE WATER—The ground surface of and adjacent to a disposal area shall have sufficient slope to prevent the accumulation of surface water and prevent erosion. Provision shall be made to minimize the flow of surface water over the disposal area. Disposal fields shall not be constructed in the flood plain of any body of water.

(H-5) GROUND SLOPE—Disposal trenches shall not be installed on ground having a slope greater than 12 per cent (12 foot vertical to 100 feet horizontal). The disposal trenches shall be constructed approximately on the natural contour of the ground.

(H-6) MAN MADE AREAS—Each disposal field shall be constructed in natural and original ground when practicable. When disposal fields are installed in fill of two feet or more, the top of the filled area shall extend at least 25 feet in every direction beyond the limits of the disposal field and slope at a maximum of 10 per cent to the original ground, or the top of the fill must extend 50 feet in every direction beyond the limits of the disposal field and slope at not more than three horizontal to one vertical to the original ground. The fill shall be of earth having the approximate soil characteristics and a percolation value at least equal to that of the ground over which the fill is placed. Fill shall not be placed upon impervious material or a soil having a percolation rate greater than 60 minutes per inch. The original ground shall be scarified before any fill material is placed in the area. Fill shall not be placed in any body of water or any intermittent watercourse. Before the field is installed, the fill must be either mechanically or hydraulically compacted in eight (8) inch layers or allowed to settle for a period of six months. The percolation rate used for the design of systems in fill shall be the value found in the original ground which the fill is placed.

(H-7) Additional area should be reserved for expansion of the disposal field in the amount at least equal to the area of the disposal field.

The disposal area shall be located and constructed in soil having adequate permeability and suitable characteristics.

(I) CONSTRUCTION MATERIALS

(I-1) DISPOSAL TRENCH MATERIAL—The stone used in the subsurface absorption trench shall consist of crushed stone or gravel stone ranging from ¾ to 3 inches in size and free of fines, dust, ashes or clay. It shall extend the full width of the trench, shall be not less than 18 inches deep beneath the bottom of the percolation line, and shall extend at least two inches above the top of the line. The stones shall be covered with untreated building paper or by a 2 inch layer of hay or straw as the percolation lines progresses. Use of waterproof material for this purpose is prohibited.

(I-2) PERCOLATION LINES—Distribution pipes shall have a minimum diameter of four inches and shall be laid true to line and grade. All distribution pipes from the distribution box to the first section in the laterals shall be unperforated and shall be laid with water tight joints. The percolation pipe in the disposal trench may consist of agricultural tile, perforated plastic, or inverted vee plank trough. Agricultural tile shall be laid on grade boards securely nailed to stakes driven into the undisturbed earth forming the trench bottom. Openings between agricul-

tural tile joints shall be ¼ to ½ inches with the upper half of the joint covered with asphalt treated paper not less than three inches wide or by other acceptable methods. Perforated pipe shall be penetrated by holes providing minimum open area of 1.00 square inches per linear foot of pipe having a diameter ½ to ¾ of an inch. Perforated plastic pipe shall comply with Commercial Standard CS 228-61. Inverted wooden vee plank trough shall consist of one 2 inch by 12 inch, one 2 inch by 10 inch, and 1 inch boards extending the full length and width of the plank vee. The planks shall have notches two (2) inches wide and two (2) inches deep and spaced twelve (12) inches apart. The wood shall be treated with tar or creosote. The bottom boards shall provide a smooth waterway the full length of the trough. Tranverse cleats nailed to the planks shall be under the bottom boards. Any variation in the above type of materials shall first be accepted by the Bureau of Health.

(I-3) DISPOSAL TRENCHES—Disposal trenches shall be constructed in accordance with the following table:

Minimum lines per field when the length of percolation lines exceeds 100 feet	2
Maximum length of line	100 feet
Preferred length per line	60 feet
Minimum diameter of distribution line	4 inches
Maximum slope of percolation line	2 inches in 100 feet
Minimum width of trench bottom	2 feet
Minimum distance of undisturbed earth between trenches	10 feet
Maximum depth of invert percolation line	18 inches
Minimum depth of top of percolation line	10 inches
Minimum depth of stones below the invert of percolation line	18 inches

(I-4) VENTING OF DISPOSAL PIPES—Disposal fields receiving more than 2,000 gallons per day of sewage shall be vented by adequate sized piping at the down-stream end of the percolation pipes. Vents shall be properly screened.

(J) DISTRIBUTION BOX A distribution box shall be required when more than one absorption trench is needed.

Each lateral or percolation line shall be connected separately to the distribution box. The inverts of all outlets shall be rigidly set at the same level and approximately 2 inches below the invert of the inlet. A baffle at least 6 inches high and 12 inches long shall rest transverse to the distribution box inlet and 6 inches in front of it. Distribution boxes shall be provided with a means of access. The invert of the outlets of a distribution box shall be above maximum ground water elevation.

(K) DOSING TANKS Dosing tanks shall be provided where there are over 500 lineal feet of disposal trench.

Dosing tanks shall have sufficient capacity to distribute sewage equally to all parts of the distribution system at not less than 2 hours interval. Sufficent capacity shall be considered as equivalent to 75% of the interior volume of the percolation pipes.

Siphons and pumps shall be automatic and shall be of an alternating type when the total linear feet of disposal trench is over 1,000 feet. Alternating pumps or siphons shall discharge to separate disposal areas.

(L) Such other disposal systems may be used as may be accepted by the Department of Health and Welfare, Bureau of Health.

123. EXCAVATION. Each system of piping shall be laid in a separate trench when practicable. If water piping is laid in the same trench as a sewer or house drain it shall be laid at least one foot above the top edge of the sewer and offset at least 18 inches from the central line of the sewer and such sewer or house drain shall be constructed of extra heavy cast-iron soil pipe with approved leaded and calked joints and shall be tested as provided for house drains in Section 163.

Tunneling for distances not greater than six (6) feet is permissible in yards, courts, or driveways of any building site. When pipes are driven the drive pipe shall be at least one size larger than the pipe to be laid.

All excavations required to be made for the installation of a house-drainage system, or any part thereof within the walls of a building, shall be open trench work. All such trenches and tunnels shall be kept open until the piping has been inspected, tested, and approved.

124. HOUSE DRAINS UNDERGROUND. Whenever practicable all house drains shall be brought into the building below the basement or cellar floor.

125. MATERIAL. (a) The house drain when underground shall be of lead, brass, cast iron, or copper, or in the case of single family dwelling may be polyvinyl chloride (PVC), or acrylonitrile-butadiene-styrene (ABS), with tight solvent-welded joints, all of approved standards.

(b) The house drain when above ground shall be of cast iron, galvanized wrought iron or steel, lead, brass, copper, or Titanium-modified chromium Stainless Steel, or in the case of single family dwelling may be polyvinyl chloride (PVC) or acrylonitrile-butadiene-styrene (ABS), of standards listed under Article 4, Sections 38 to 43 or other type of pipe approved by the Department of Health and Welfare, Bureau of Health.

(c) Waste piping required to be acid proof may be high-silica corrosion resistant cast-iron, low-expansion chemical resistant glass, or fusion-welded polyethylene, or polypropylene, installed in strict accordance with manufacturer's recommendations in regard to joints, supports, and mechanical protection. Supports for horizontal runs of polyethylene shall be continuous. Plastic snap-type supports may not be used.

(d) The house sewer beginning 8 feet outside the building wall shall be of cast-iron, vitrified clay or cement-asbestos class 2400 or better, or ABS or PVC, of standards approved for DWV, or of other type of pipe approved by the Department of Health and Welfare, Bureau of Health.

126. LOCATION OF DRAINS AND SEWERS. No house sewer or underground house drain shall be laid parallel to or within three (3) feet of any bearing, which might be thereby weakened. The house sewer and drains shall be laid at sufficient depth to protect them from frost.

127. SIZE OF DRAINS AND SEWERS. The required size of sanitary house drains and sanitary house sewers shall be determined on the basis of the total number of fixture units drained by them in accordance with the following table: