

1 RCNY §8001-01

CHAPTER 8000

Plumbing Code

§8001-01 Individual Private On-Site Sewage Disposal Systems

- (a) **Applicability and scope.** This rule governs the construction and installation of new individual private on-site sewage disposal systems and alteration and maintenance of existing individual private on-site sewage disposal systems. This rule applies to on-site wastewater treatment systems serving residential (one- and two-family) and non-residential (other than one- and two-family) properties receiving less than 1,000 gallons of sewage per day which does not include industrial wastes or other wastes as defined in the Code of Federal Regulations, the Clean Water Act, the Safe Drinking Water Act, the Insecticide, Fungicide and Rodenticide Act, the Toxic Substances Control Act, the New York State Environmental Conservation Law and the New York Code of Rules and Regulations.

Exception: Pursuant to ECL § 17-0803 and 6 NYCRR 750-1.4, the New York State Department of Environmental Conservation (DEC) has the authority to issue permits for a new or modified disposal system discharging any amount of sewage with the presence of such industrial waste or other wastes, or for a residential or non-residential use whose total discharge of sewage is 1,000 gallons or more per day. DOB will not issue a permit to construct and use any such system until a DEC State Pollutant Discharge Elimination System (SPDES) permit is provided to the department.

- (b) **References.** See 10 NYCRR Part 75 and Appendix 75-A of the New York State Department of Health (NYS DOH) rules, DEC's Design Standards for Intermediate Sized Wastewater Treatment Systems (March 5, 2014) and Section 701.2 of the New York City Plumbing Code (PC).

- (c) **Definitions.** For the purposes of this section, the following terms have the following meanings:

ABSORPTION AREA. An area to which wastewater is distributed for infiltration to the soil.

AGGREGATE. Washed gravel or crushed stone $\frac{3}{4}$ - $1\frac{1}{2}$ inches in diameter.

APPLICATION RATE. The rate at which septic tank effluent is applied to a subsurface absorption area, for design purposes, expressed in gallons per day per square foot (GPD/sq. ft.).

BAFFLE. A flow deflecting device used in septic tanks and distribution boxes to inhibit the discharge of floating solids, reduce the amount of settle-able solids that exit, and reduce the exit velocity of the wastewater.

CESSPOOL. A covered excavation in the ground that receives the discharge of domestic sewage or other organic wastes from a drainage system, so designated as to retain the organic matter and solids, but permitting the liquid to seep through the bottom and sides.

CLEANOUT. An opening providing access to part of the sewage system.

DAILY FLOW RATE (Q). The design flow of the system expressed in units of Gallons Per Day (GPD).

DISTRIBUTION BOX. A chamber into which the septic effluent discharges and from which the sewage enters the subsurface distribution lines.

DISTRIBUTION LINE. The perforated pipe used to distribute wastewater to the absorption area.

GAS DEFLECTION BAFFLE. A device on the outlet of a septic tank which deflects gas bubbles away from the outlet and reduces the carryover of solid particles from the septic tank.

GPD. Gallons per day.

GPF. Gallons per flush. Unit used to describe amount of water used in each toilet flush.

GPM. Gallons per minute. Unit used to describe flow rate of plumbing fixtures.

GROUNDWATER. Subsurface water occupying the saturation zone from which wells and springs are fed.

INDIVIDUAL PRIVATE ON-SITE SEWAGE DISPOSAL SYSTEM. A system designed for use apart from a public sewer for the disposal of sewage by means of piping and a septic tank or tanks that discharge into a disposal field or seepage pit and serving properties discharging less than 1,000 gallons of sewage per day.

INFILTRATION. The flow or movement of water into the interstices or pores of a soil through the soil interface.

INVERT. The floor, bottom, or lowest point of the inside cross section of a pipe.

PERCOLATION. The movement of water through the pores of a soil or other porous medium following infiltration through the soil interface.

PIPING. Piping includes fittings, valves, and other accessories or appurtenances required to make a complete installation.

REGISTERED DESIGN PROFESSIONAL. An architect or engineer licensed and registered under the New York State Education Law.

SEEPAGE PIT. A covered pit with open jointed or perforated lining into which the septic tank effluent is discharged. The liquid portion of the sewage seeps into the surrounding porous soil. The remaining solids or sludge is retained in the pit.

SEPTIC TANK. A watertight receptacle that receives the discharge of a drainage system or part thereof, and is designed and constructed so as to separate solids from the liquid, digest organic matter during a period of detention, and allow the liquids to discharge into the soil outside of the tank through a system of open-joint or perforated piping, or seepage pit.

SEWAGE. The combination of human and household waste with water which is discharged to the home plumbing system including the waste from a flush toilet, bath, sink, lavatory, dishwashing or laundry machine, or the water-carried waste from any other fixture, equipment or machine.

STACK. A general term for any vertical line of soil, waste, vent or inside conductor piping that extends through at least one story with or without offsets.

WASTEWATER. Any water discharged from a house through a plumbing fixture to include, but not limited to, sewage and any water or waste from a device (e.g., water softener brine) which is produced in the house or property.

WATERCOURSE. A visible path through which surface water travels on a regular basis. Drainage areas which contain water only during and immediately after a rainstorm are not considered a watercourse.

WELLPOINT. A well used to measure groundwater levels.

WETLAND. An area(s) of marshes or swamps which have been designated as such by DEC or other agency having jurisdiction. Marshes or swamps that have not been classified by an agency as a wetland cannot be treated for design purposes as a wetland.

- (d) **Construction documents and permit requirements.** It is unlawful to construct, replace or substantially alter an individual private on-site sewage disposal system without a permit issued by the department. Such system must meet the requirements of this section or 10 NYCRR Part 75 and Appendix 75-A.

Exception:

Applications for permits to construct and maintain private sewage disposal systems serving tax lots or zoning lots containing 15 or more dwelling units must be submitted to the New York City Department of Health and Mental Hygiene (DOHMH) unless such agency determines by reason of physical or engineering difficulties, estimated cost of construction or other pertinent considerations, that it is more practicable to construct individual systems, in accordance with 24 RCNY 143.11 of the New York City Health Code.

- (1) **Connection to city sewer.** No permit will be issued for an individual private on-site sewage disposal system where a public sanitary or combined sewer is available and connection thereto is feasible as determined by the New York City Department of Environmental Protection (DEP) in accordance with Section 107.11 of the New York City Building Code (BC) and PC Section 106.6.
- (2) **Field testing.** No permit will be issued until the sand column meets the requirements of subdivision (g) of this section and an absorption test has been performed in accordance with subdivision (h) of this section.
- (3) **Applicant.** All construction documents filed in connection with a permit application for a new, replacement of, or substantially altered individual private on-site sewage disposal system must be prepared by a registered design professional.

Exception:

Applicants for plumbing work consisting of in-kind repairs or replacements of “like-for-like” components may be licensed master plumbers.

- (4) **Construction documents.**

- (i) **Lot diagram.** A lot diagram must indicate all information as appropriate to the nature and extent of the work proposed including the size, height and location of proposed plumbing work; all existing structures on the zoning lot and their distances from lot and street lines; the established grade and existing curb elevations; and the proposed final grade elevations of the site shown by contours or spot grades at reasonable intervals. The lot diagram must be drawn using an accurate boundary survey to the city datum and must be attached to the application.
- (ii) **Application.** An application for a permit must include all necessary forms and construction documents as required by the department. These include but are not limited to:
 - (A) Two complete topographical surveys with original seal and signature by a licensed surveyor.
 - (B) Three site plans, sealed and signed by a registered design professional, showing the following: lot dimensions, location of existing dwelling and proposed expansion, septic tank, seepage pit and drywell and proposed expansions, if any, their distance in relation to stream, lake, water course or DEC designated wetlands.
 - (C) A fee as specified in Section 101-03 of these rules.

- (D) Alteration plan showing existing building.
 - (E) Computations showing existing hydraulic load on the existing septic system and the proposed hydraulic load as a result of the expansion.
 - (F) Calculations showing the daily flow rate (Q).
 - (G) Calculations showing the proposed tank capacity, in gallons.
- (iii) **Documents required from other agencies.** Prior to construction document approval for an individual on-site private sewage disposal system, the applicant must submit applicable documents from other agencies having jurisdiction over such system, including:
- (A) DEP Certification of unavailability or non-feasibility per PC Section 106.6.1.2.
 - (B) A copy of the site connection proposal certified by the DEP Bureau of Water and Sewer Operations.
 - (C) A DEC permit for systems located in freshwater wetlands, coastal wetlands and coastal zone erosion hazard areas per 28-104.9.
 - (D) City Planning Commission. Certification for systems located within a special natural area district per New York City Zoning Resolution Article X, Chapter 5.
 - (E) Board of Standards and Appeals. Waiver for the construction of systems located within the bed of a mapped street per NYS General City Law 35.
- (e) **Waivers.** Where there is a practical difficulty in carrying out the provisions of this section, the Commissioner may issue a waiver where such waiver is consistent with the general purpose and intent of 10 NYCRR Part 75 and 75-A.
- (f) **On-site location limitations.** All systems must meet the following requirements, as applicable.
- (1) **Discharge of effluent.** Individual private on-site sewage disposal systems must be located, designed, constructed, installed, altered or operated in a manner that will prevent the discharge of effluent onto the surface of the ground or into any watercourse or groundwater;
 - (2) **Location and access.** The entire system must be located outside the building footprint, within the lot line of the premises for which the system is installed, and in front of the building. Clear access must be provided to the disposal system for servicing.
Exception: Installing a system in a location other than the front yard requires a waiver from the commissioner. In such case dry piping, with trap, properly plugged, must be carried from the house plumbing stack through the front foundation wall to preclude the need for rearranging plumbing when sewers become available.
 - (3) **Site grading.** The slope of the finished grade above the proposed individual private on-site sewage treatment system may not be greater than 15 percent.
 - (4) **Separation of piping.** Separation of sewage and water piping must comply with Sections PC 603 and 703.
 - (5) **Minimum separation.** The minimum permissible distance between the various components of the sewage system and between the components and various encumbrances must comply with Table 1.
Exception: The separation distance between the outer perimeter of the aggregate collar of the seepage pit or the outer perimeter of the sand collar of the outermost edge of the sand filter field and the front property line adjacent to the street may be zero feet provided that one of the following conditions is met:
 - (i) Ten feet of horizontal clearance to any water main in the street is maintained via a direct measurement; or
 - (ii) A watertight pipe/sleeve is installed around the water main in the street if it is located within ten feet of an absorption facility; or
 - (iii) The presence of at least two feet of relatively impermeable soil which has a percolation rate greater than 120 minutes/inch is verified as being located between the water main in the street and the seepage pit through performance of a percolation test in the on-site soil at the approximate depth of the water main in the street. Percolation test documentation must be submitted by the applicant for inclusion in the permit file when two feet of relatively impermeable on-site soil is used in lieu of ten feet of horizontal clearance or a water main protective sleeve.

TABLE 1

**MINIMUM DISTANCES BETWEEN SEWAGE SYSTEM COMPONENTS
AND BETWEEN COMPONENTS AND ENCUMBRANCES**

	Building Foundation Wall	Property Line	Sand Filter Field	Seepage Pit	Drywell	Water Service Line	Water Course/ Wetland
Septic Tank	10 ft	10 ft	5 ft	5 ft	---	---	---
Sand Filter Field	20 ft	10 ft	20 ft	20 ft	20 ft	10 ft	100 ft
Seepage Pit	20 ft	10 ft	20 ft	20 ft	20 ft	10 ft	100 ft
Drywell	10 ft	5 ft	20 ft	20 ft	---	---	---

- (6) **Minimum lot area and frontage.** The minimum lot area and frontage requirements are 10,000 square feet and 100 feet respectively.

Exception: The minimum lot area and frontage requirements do not apply to a tax lot for which title was recorded in the applicable county clerk's office prior to August 1, 1968 where recorded dimensions of such lots are less than 10,000 square feet and/or the frontage of which is less than 100 feet, provided that only one individual private on-site sewage disposal system is permitted on each such lot.

- (g) **Sand column construction.** All sand columns required for individual private on-site sewage disposal systems must be constructed in accordance with this section and tested in accordance with subdivision (h) of this section. Sand column construction is subject to special inspection.

- (1) **Sand column dimensions.** A sand column must be constructed by excavating a hole not less than three feet in width and seven feet in length. Necessary measures must be taken to prohibit surface water from entering the excavation.
- (2) **Minimum depth of sand column.** The excavation must continue vertically until a suitable permeable soil stratum of virgin, sandy material is reached. Where an unsatisfactory impermeable stratum is encountered, the excavation must extend through such stratum. The excavation for the proposed absorption test sand column must extend to a minimum depth of five feet into that permeable soil stratum. The minimum depth of the sand column must be 15 feet when measured from ground surface. The area at the bottom of the excavation must be a minimum of 21 square feet and confirmed by visual inspection. The depth of the permeable sand stratum and surface, trapped, or perched water must be recorded by a special inspector.
- (3) **Support of excavation.** The applicant may use a caisson or other means for the construction of the sand column if water enters the excavation or if a "flowing clay" stratum is penetrated.
- (4) **Serpentine rock.** If serpentine rock is encountered, the special inspector must document the presence of the serpentine rock, submit a laboratory test report and certify that he/she or the contractor has taken all required safety measures to protect the environment and the public health.
- (5) **Backfilling the excavation.** When the required depth for the sand column has been reached, as determined by the applicant, the excavation must be immediately backfilled with clean, coarse concrete sand that complies with ASTM C 33. A certified report from a testing laboratory signed by the supplier must be submitted to the department and serve to verify that the sand backfill delivered to the site meets ASTM C 33. The special inspector must witness the placement of the sand into the sand column and must verify that the material is consistent with ASTM C 33. Measures to prevent cave-ins must be taken prior to and during backfilling.

- (h) **Soil and groundwater testing.** Soil and groundwater testing is subject to special inspection and must include a field investigation consisting of the following:

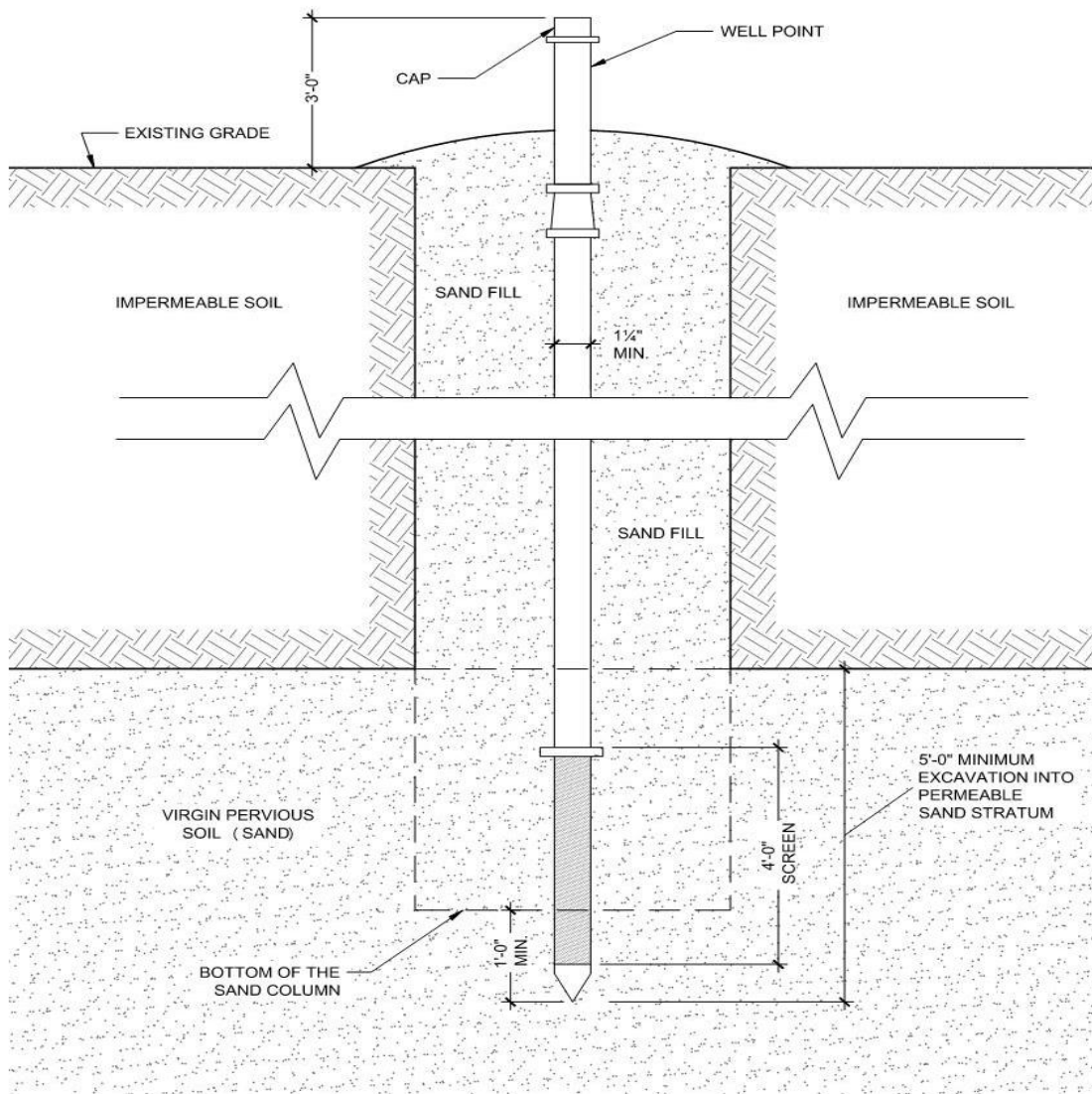
- (1) **Field Testing.** The following tests must be performed at the site of a proposed individual private on-site sewage disposal system:
 - (i) **Groundwater depth verification.** Groundwater depth verification must be conducted on sand columns constructed at the site of a proposed subsurface disposal system in accordance with subdivision (g) of this section. The depth of the groundwater is determined by installing a wellpoint

within the sand column at the time of sand column construction. Wellpoint construction must be in accordance with paragraph (2) of this subdivision. Groundwater verification must be conducted in accordance with paragraph (3) of this subdivision.

(ii) **Absorption test/percolation test (AT/PT).** AT/PT must be conducted on sand columns constructed at the site of a proposed subsurface disposal system in accordance with subdivision (g) of this section. The number of AT/PT must be in accordance with paragraph (4) of this subdivision. The results of the test must be documented by the special inspector on forms provided by the department.

(2) **Wellpoint construction.** A pipe with a minimum diameter of 1-1/4 inches must be inserted through the sand column to serve as a wellpoint to test the groundwater level. The pipe must be driven or placed into the column to a depth of at least one foot below the bottom of the sand column with sufficient piping to extend three feet above the existing grade. The bottom four feet of the pipe must have a screen with holes of a sufficient size to admit water and exclude the surrounding sand. (See Figure 1.)

Figure 1
WellPoint



(3) **Groundwater verification.** The presence of accumulated water in the wellpoint pipe, indicating groundwater level, must be determined by the department representative and the special inspector using an approved probe. The special inspector shall also note the type of water table - perched, apparent, or artesian. The wellpoint must be maintained for 72 hours so that the level of water accumulation can be monitored and measured. A reading of the water level in the wellpoint must be taken 72 hours after the setting of the wellpoint and must be performed as follows:

(i) **Timing.** The groundwater level in a wellpoint must be performed between March 15th and June 30th.

- (ii) **High tide.** The groundwater level must be determined during the time of daily high tide between March 15th and June 30th, in the following tidal areas:
 - (A) On Staten Island, the areas on the Raritan Bay and Arthur Kill sides of Hylan Boulevard and Arthur Kill Road.
 - (B) In all other locations, if the individual private on-site sewage disposal system is to be constructed within 1,000 feet of the shoreline or tidal wetland line, whichever is closest to such systems. This subparagraph applies only to those systems where the bottom of the sand column is within three feet of mean sea level.
- (iii) **Acceptable sand column.** If no water is found in the wellpoint after 72 hours have elapsed, the sand column is deemed a dry hole and the site is acceptable for installation of a seepage pit system.
- (iv) **Additional check if water is found.** If water is found in the wellpoint after 72 hours have elapsed and the water level is no higher than five feet below the impervious soil layer, or three feet below the impervious soil layer in tidal areas, as specified in subparagraph (ii) of paragraph (3) of this subdivision, the department representative must check again for the presence of water after a gallon of water is poured down the wellpoint.
 - (A) If the department representative observes the complete exit of the gallon of water from the wellpoint within 30 minutes, then the sand column is considered a dry hole, and the site is acceptable for installation of a seepage pit system.
 - (B) If the gallon of water does not exit the wellpoint within 30 minutes, the applicant must remove, examine, clean and reset the wellpoint in the sand column and perform the groundwater verification again in accordance with this subdivision.
- (v) **Unacceptable site.** If water is found in the wellpoint, following resetting, a seepage pit system is not appropriate for the site.
- (vi) **Invalid sand column.** If a reading cannot be taken for any reason, the sand column is invalid and cannot be used for further testing.
- (4) **Number of AT/PT for seepage pit and sand field systems.** The number of AT/PT must be as specified in subparagraphs (i) and (ii), below. The commissioner may require additional AT/PT to confirm the suitability of subsurface conditions.
 - (i) **Seepage pit type system with one sand column.** Where a seepage pit-type system is designed with one sand column a minimum of one AT/PT must be conducted within the sand column. Sand columns must be constructed in accordance with subdivision (g) of this section. AT/PT must be conducted in accordance with paragraph (5) of this subdivision.
 - (ii) **Seepage pit and sand filter type systems with two sand columns.** Where a system is proposed and two sand columns are required per subdivision (g) of this section each sand column is subject to the AT/PT described in paragraph (5) of this subdivision. The requirements to install a wellpoint set forth in paragraph (2) of this subdivision are not applicable to the second sand column.

Exception: In those cases where the second sand column is within 25 feet of the first sand column, AT/PT testing is not required subject to the submission by the applicant of the following:

 - (A) Proof that satisfactory excavation, wellpoint and AT/PT were performed on sand column 1 and witnessed by the department; and
 - (B) Data prepared by a special inspector confirming compliant construction of the second sand column.
 - (iii) **Seepage pit and sand filter type systems with sand column depth of 35 feet or deeper.** Where a system is proposed with one or more sand columns having a depth of 35 feet or deeper, all required AT/PT(s) must be performed on two consecutive days.
- (5) **AT/PT on sand column backfill material.** Where a sand column is constructed in accordance with subdivision (g) of this section, an AT/PT must be performed on the clean sand backfill. An acceptable sand column must pass a four-hour AT/PT following a pre-soak performed onsite in the following manner:
 - (i) **Timing; supervision; forms.** The AT/PT may be performed any time during the year provided the air temperature is above freezing. The AT/PT must be performed under the supervision of a department employee as well as subject to continuous special inspection. The result of the AT/PT must be filed on forms provided by the department, stating the suitability of the site and the capacity of the subsoil for the proposed use.
 - (ii) **Scheduling.** At the time of scheduling an AT/PT, the registered design professional must inform the department of the date and time the pre-soak will start, the date and time that the saturation point will be reached, and the start of the four-hour test.
 - (iii) **AT/PT procedure.** The pre-soak and four-hour test must be performed in the following manner:
 - (A) The sand column must be pre-soaked prior to the scheduled AT/PT. The required volume of water for the pre-soak is 80 gallons for every foot of dry depth, as determined using a water level sensor or other analogous device. Where the base of the sand column exceeds 21 square feet, the volume must be increased proportionately.

- (B) The pre-soak must be conducted by using a one-inch diameter or larger hose. Where the hose is connected to a potable water supply, a certified reduced pressure zone (RPZ) backflow preventer must be used.
- (C) Following the pre-soak, the four-hour AT/PT must absorb twice the daily flow rate (Q) as determined by Table 2. In no case may the absorption rate be less than 1.5 gallons per minute (GPM). The rate of water flow into the sand column during the AT/PT must be recorded using a calibrated water meter with all necessary control valves. Where connected to a potable water supply, a certified reduced pressure zone backflow preventer must be used.

TABLE 2

SEEPAGE PITS - REQUIRED ABSORPTIVE AREA FOR SEEPAGE PIT SYSTEMS (SQUARE FEET)

Percolation Rate (min/inch)	Daily Flow Rate (Q) (GPD) ^{a, b}															
	220	260	300	330	390	440	450	520	550	600	650	660	750	780	900	<1000
1 - 5	183	217	250	275	325	367	375	433	458	500	542	550	625	650	750	845
6 - 7	220	260	300	330	390	440	450	520	550	600	650	660	750	780	900	1020
8 - 10	244	289	333	367	433	489	500	578	611	667	722	733	833	867	1000	1130
11 - 15	275	325	375	413	488	550	563	650	688	750	813	825	938	975	1125	1275
16 - 20	314	371	429	471	557	629	643	743	786	857	929	943	1071	1114	1280	1450
21 - 30	367	433	500	550	650	733	750	867	917	1000	1083	1100	1250	1300	1500	1690
31 - 45	440	520	600	660	780	880	900	1040	1100	1200	1300	1320	1500	1560	1800	2030
46 - 60	489	578	667	733	867	978	1000	1156	1222	1333	1444	1467	1667	1733	2000	2255
Over 60	Unsuitable															

^a For one and two-family properties, minimum daily flow rate (Q) is based on the efficiency of water fixtures employed multiplied by the number of bedrooms:

Water saving fixtures (post 1991) 1.6 GPF max. water closets and 3.0 GPM max. faucets/showerheads: 110 GPD per bedroom.

Standard fixtures (1980 - 1991) 3.5 GPF max. water closets and 3.0 GPM max. faucets/showerheads: 130 GPD per bedroom.

Standard fixtures (prior to 1980) 3.5+ GPF max. water closets and 3.0+ GPM max. faucets/showerheads: 150 GPD per bedroom.

^b Where daily flow rate (Q) differs from values shown, round up to the next value indicated in the table.

- (D) Readings must be observed and recorded by the special inspector at intervals of 60 minutes or less for the duration of the test. Records of readings must be maintained on site during testing. In no case may the absorption rate be less than 1.5 gallons per minute (GPM). The test must be terminated if there is an absorption rate which does not meet the requirements of subparagraph (iii) at any time during the four-hour test. In such case, the sand column is deemed unacceptable.

(iv) AT/PT failure and retesting. If the sand column fails the AT/PT, the registered design professional has the option to:

(A) Clean out the sand column to any depth, pre-soak and re-test, or

(B) Construct a second sand column, pre-soak and perform the AT/PT on the newly constructed sand column. The original sand column must be entirely backfilled.

The retest must be performed on the following day. If a lot fails the AT/PT twice, the lot is considered unbuildable.

(6) AT/PT termination. The AT/PT must be terminated if any of the following conditions occur:

(i) Water flow stops. If the water flow stops for any reason for 15 minutes in a test that has no sign of failure.

(ii) Termination of test. If the special inspector terminates the test for any reason before reaching 50% of the saturation.

(iii) Malfunctions. If the meter or the water supply system malfunctions and cannot be repaired within 15 minutes in a test that has no sign of failure.

(iv) Failure to protect potable water. If the special inspector does not use the required properly tested and certified reduced pressure zone backflow preventer where connection is made to a potable water system.

(v) Unforeseen circumstances. If the AT/PT is impossible to complete for any unforeseen circumstance.

(7) AT/PT failure criteria. The AT/PT is deemed a failure if any of the following conditions occurs:

- (i) **Average rate.** If the average rate for any given hour falls below 1.5 GPM while maintaining a steady water puddle on the top of the hole during the four-hour test.
 - (ii) **Percolation rate.** If the percolation rate is faster than one minute per inch unless the site is modified by blending with a less permeable soil to reduce the infiltration rate throughout the area to be used.
 - (iii) **Overflow or leakage.** If the water consistently overflows or leaks outside the perimeter of the hole during pre-soak or during the four-hour AT/PT.
 - (iv) **Vertical flow.** If the water penetrates the clay perimeter of the hole instead of flowing vertically into the sand column at any time during the four-hour AT/PT.
 - (v) **Interruption of test.** If the registered design professional or his/her representative manipulates the water flow rate or stops the water at any time during a test.
- (i) **Design and construction standards for all types of systems.** Systems must be designed and constructed in accordance with the provisions of this section.
- (1) **Piping.** All piping associated with the installation of individual private on-site sewage disposal systems must be shown on construction documents. In addition, the following requirements apply:
- (i) **House drain connection slope.** The slope of a house drain connection to a septic tank must not be less than 1/4" per foot and must be extra heavy cast iron pipe, not less than four inches in diameter.
 - (ii) **Outlet pipe slope.** The slope of an outlet pipe from a septic tank to an absorption facility or distribution box must not be less than 1/8" per foot and must be constructed of plastic, extra strength vitrified clay or other noncorrosive material. The use of cast iron, ductile iron or concrete pipe is prohibited.
 - (iii) **Bends and venting.** The piping must be laid in accordance with Section PC 306. The house drain must have no more than two bends. Any bend 45 degrees or greater must be equipped with a cleanout and a properly fitted plug. The house connection must allow for venting of gases from the septic tank. Cleanouts must be provided in accordance with Section PC 708.
- (2) **Septic tanks.** The following requirements apply to all septic tanks unless otherwise specified:
- (i) **Design criteria.** The following requirements apply to all septic tanks regardless of material:
 - (A) Driveways or other facilities may not be constructed above tanks unless the tank is specially designed and reinforced to safely carry the load imposed.
 - (B) All septic tanks must be enclosed.
 - (C) Septic tank capacities for one and two-family properties must be based upon the number of household bedrooms. Table 3 specifies minimum tank capacities and minimum liquid surface areas. For the purpose of calculating the required capacity of a tank, a finished attic is considered an additional bedroom.

Table 3
Minimum Septic Tank Capacities for One- and Two-Family Homes

Number of Bedrooms	Minimum Tank Capacity (gallons)	Minimum Liquid Surface Area (sq. ft)
1,2,3	1,000	27
4	1,250	34
5	1,500	40
6	1,750	47

Note: Tank size requirements for more than 6 bedrooms is calculated by adding 250 gallons and 7 square feet of surface area for each additional bedroom. A garbage grinder shall be considered equivalent to an additional bedroom for determining tank size.

- (D) Septic tank capacities for sites other than one and two-family homes must be sized based on the daily flow rate (Q) of the proposed occupancy. Table B-3 of the New York State Design Standards for Intermediate Sized Wastewater Treatment Systems specifies the typical per-unit hydraulic loading rates for various occupancies and uses. When an establishment includes several different types of uses from the table, each use must be computed separately and the daily flow rate (Q) is the sum of the individual rates. The minimum effective tank capacity must be calculated in accordance with Table D-2 of the New York State Design Standards for Intermediate Sized Wastewater Treatment Systems, as follows:

$$\text{Minimum Effective Tank Capacity (gal)} = 1.5 \times Q$$

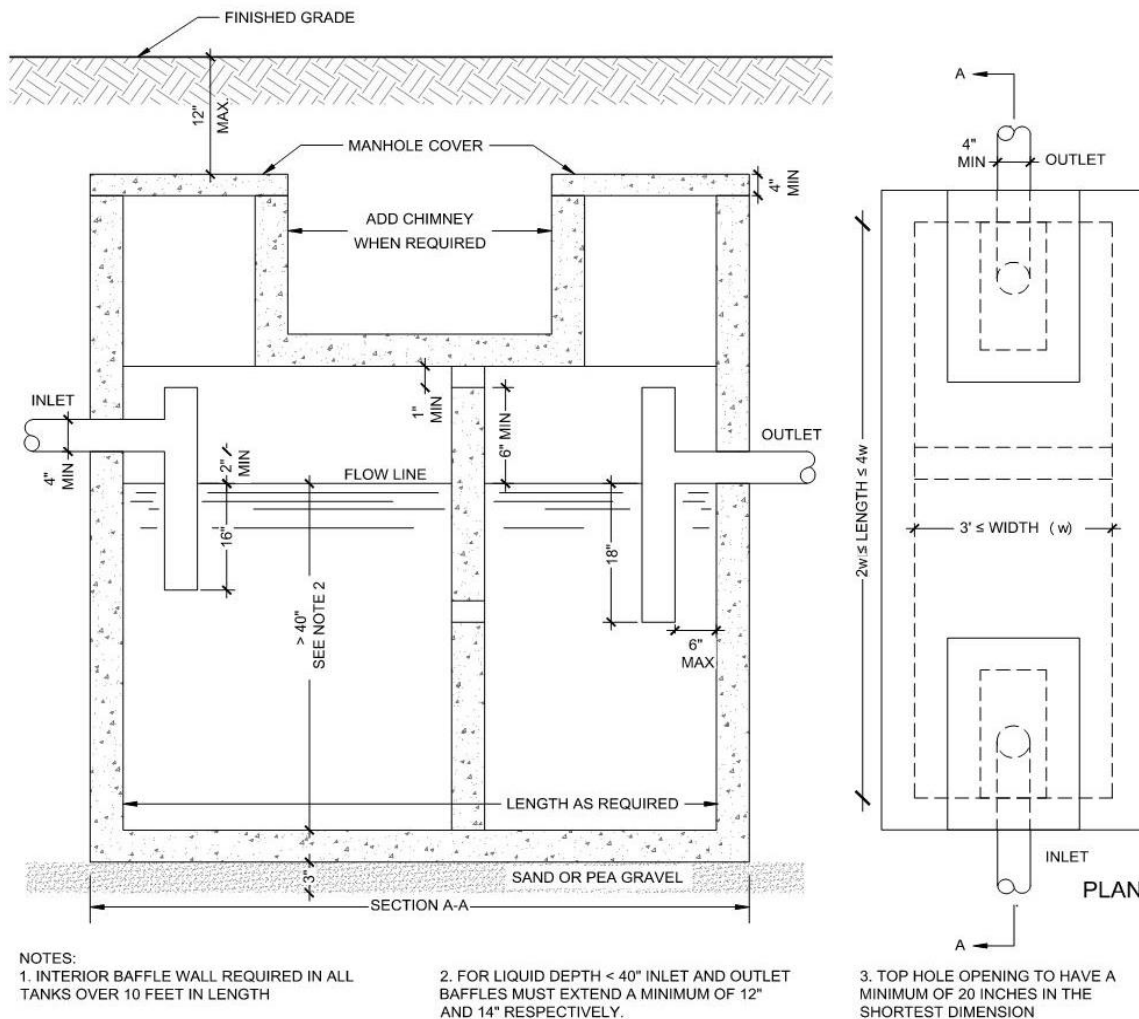
Where a non-residential facility has a significant delivery period, it may be necessary to increase tank size and guidance is provided in section D.6 of the New York State Design Standards for

Intermediate Sized Wastewater Treatment Systems. Additionally, no tank may have a capacity less than 1,000 gallons.

- (E) An additional 250 gallons of capacity and seven square feet of surface area is required when a garbage grinder is to be installed at the time of construction or in the future. A gas deflection baffle or other acceptable outlet modification, and a dual compartment tank or two tanks in series must also be provided.
- (F) A tank must contain a minimum depth of 30 inches for liquid. The maximum depth for determining the allowable capacity of a tank is 60 inches. A tank deeper than 60 inches may provide extra sludge storage, but no credit may be given toward tank capacity when such a tank is used.
- (G) The minimum distance between the inlet and the outlet in a tank must be six feet. A tank must meet the minimum surface area requirement for the tank capacity specified in Table 3. The effective length of a rectangular tank must not be less than two nor greater than four times the effective width.
- (H) Installed tanks must be able to support at least 300 pounds per square foot (psf).
- (I) A tank must have a top opening with a minimum of 20 inches in the shortest dimension to permit cleaning and maintenance.
- (J) A tank must have inlet and outlet baffles or sanitary tees or other devices to prevent the passage of floating solids and to minimize the disturbance of settled sludge and floating scum by sewage entering and leaving the tank. An outlet design, such as a gas deflection baffle, is required in a tank. An inlet and outlet baffle must extend a minimum of 12 inches and 14 inches, respectively, below the liquid level in a tank with a liquid depth of less than 40 inches, and 16 and 18 inches respectively, in a tank with a liquid depth of 40 inches or greater. The distance between an outlet baffle and the outlet must not exceed six inches. A baffle must be constructed of durable material not subject to corrosion, decay or cracking.
- (K) There must be a minimum of one-inch clearance between the underside of the top of a tank and the top of all baffles, partitions and/or tees to permit venting of tank gases through the building stack. Multi-chamber and multi-tank systems must also be designed to permit the venting of tank gases.
- (L) There must be a minimum drop in elevation of two inches between the inverts of the inlet and outlet pipes.
- (ii) Construction.** The following requirements apply to all septic tanks regardless of material:
 - (A) A tank must be watertight and constructed of durable material that is not subject to corrosion, decay, frost damage or cracking. A tank must be constructed of concrete, fiberglass or polyethylene.
 - (B) A tank must be placed on a three-inch bed of sand or pea gravel to provide for proper leveling and bearing. Additional instructions provided by the manufacturer must also be followed.
- (iii) Dual-compartment tanks.** Dual compartments are recommended for all tanks and are required on all tanks with an interior length of ten feet or more. In addition to meeting the requirements of subparagraph (i) of paragraph (2) of this subdivision, dual-compartment tanks must be designed as follows:
 - (A) The first compartment (inlet side) must account for 60-75% of the required total design volume.
 - (B) The baffle separating the compartments must extend from the bottom of the tank to at least six inches above the invert of the outlet pipe.
 - (C) Compartments must be connected by a four-inch vertical slot at least 18 inches in width, a six-inch elbow, or two four-inch elbows located at a distance below the liquid level equal to 1/3 the distance between the invert of the outlet and the bottom of the tank. At least one access cover must be provided into each compartment.
 - (D) For the purposes of Table 3, the capacity and surface area must be based upon the total capacity and surface areas of both compartments.
- (iv) Tanks in series.** In addition to meeting the requirements of subparagraph (i) of paragraph (2) of this subdivision, tanks in series must be designed as follows:
 - (A) The first tank must account for 60-75% of the required total design volume.
 - (B) Tanks must be connected by a single pipe with a minimum diameter of four inches.
 - (C) For the purposes of Table 3, the capacity and surface area must be based upon the total capacity and surface areas of all the tanks and chambers.
- (v) Concrete tanks.** In addition to meeting the requirements of subparagraph (i) of paragraph (2) of this subdivision, concrete tanks must be designed as follows:
 - (A) The concrete tank must have a water surface at the flow line that is rectangular in plan with the length at least 2 times but no more than four times the width. (See Figure 2.)
 - (B) Concrete must have a minimum compressive strength of 4,000 pounds per square inch (psi) at 28 days set.

- (C) Wall thickness must be a minimum of three inches unless the design has been certified by a New York State licensed professional engineer as complying with all appropriate requirements for thin-wall construction. All walls, bottom and top must contain reinforcing to assure support for 300 psf.
- (D) The design of the concrete tank must be certified by a New York State licensed professional engineer as adequate for the expected loads. Specifications for installation and backfill must be established by the applicant.
- (E) All joints, pipe penetrations and access ports must be sealed so that the concrete tank is watertight. Joints below the liquid level must be tested for watertightness prior to backfilling. A hydrostatic air pressure or vacuum test must be performed to confirm watertightness. This test must be performed under the supervision of a special inspector.
 - 1. If a hydrostatic test is used, it must be run for 28 hours. A tank that shows no water loss during such time period is watertight.
 - 2. If a vacuum test is used, it must apply five inches of mercury vacuum for ten minutes. A concrete tank that demonstrates no detectable vacuum loss during such time period is watertight.
- (F) The walls and floor of a cast-in-place concrete tank must be poured at the same time (monolithic pour).

Figure 2
Typical Concrete Septic Tank

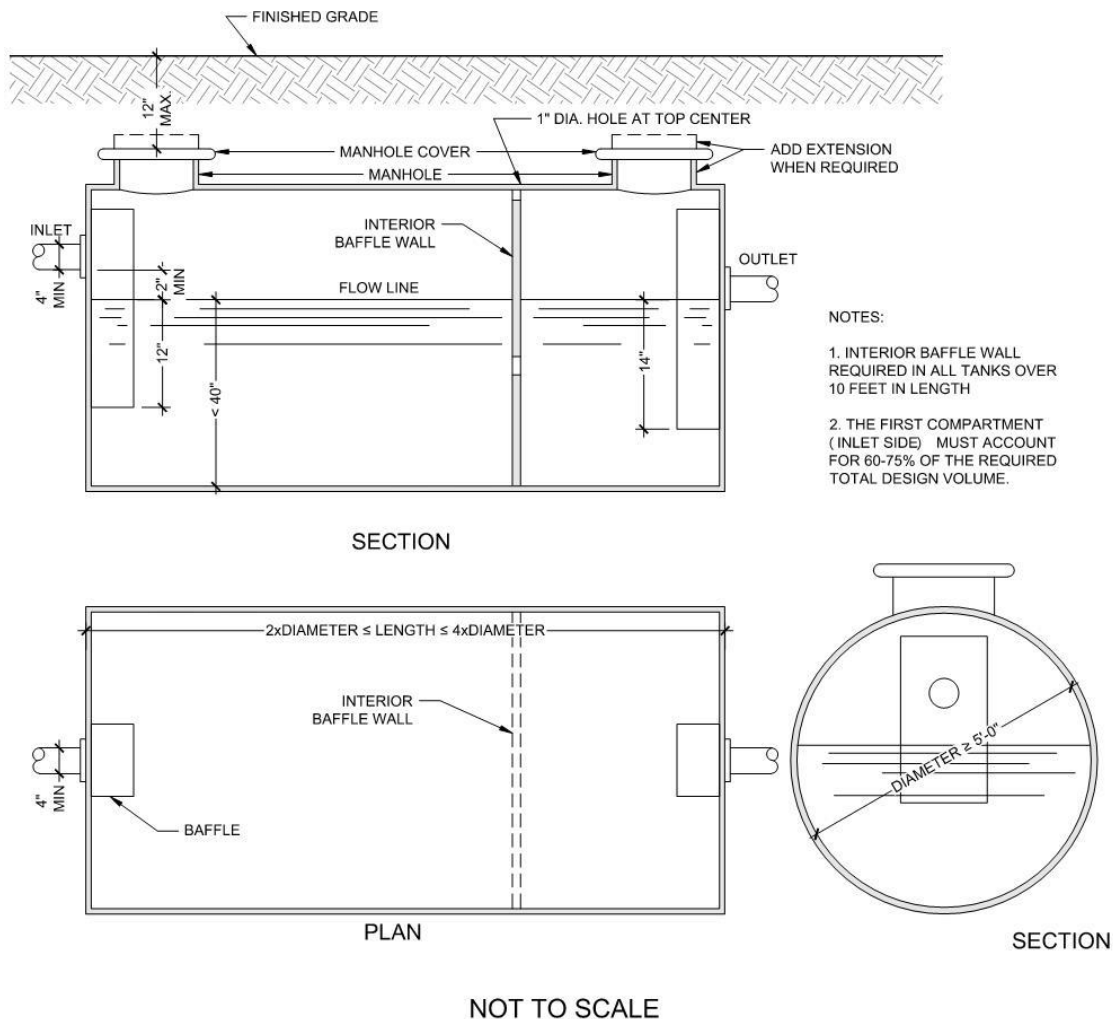


NOT TO SCALE

(vi) Fiberglass and polyethylene tanks. In addition to meeting the requirements of subparagraph (i) of paragraph (2) of this subdivision fiberglass and polyethylene tanks must comply with the following:

- (A) A fiberglass or polyethylene tank must not be installed in areas where the groundwater level can rise to the level of the bottom of the septic tank.
 - (B) The manufacturer's installation instructions must be followed during installation, bedding, and backfilling of a fiberglass or polyethylene septic tank so as to prevent damage to tank walls and bottom.
 - (C) A fiberglass or polyethylene tank must be delivered to the site completely assembled.
 - (D) All pipe penetrations and access ports must be sealed so that the tank is watertight. A hydrostatic air pressure or vacuum test must be performed to confirm watertightness. This test must be performed under the supervision of a special inspector.
 - 1. If a hydrostatic test is used, it must be run for 28 hours. A tank that shows no water loss during such time period is watertight.
 - 2. If a vacuum test is used, it must apply five inches of mercury vacuum for ten minutes. A tank that demonstrates no detectable vacuum loss during such time period is watertight.
- (vii) Metal septic tanks.** In addition to meeting the requirements of subparagraph (i) of paragraph (2) of this subdivision metal septic tanks must be designed as follows:
- (A) Metal tanks must be labeled indicating conformance with UL 70.
 - (B) Any damage to the interior or exterior tank coating must be refinished with an equivalent coating of material prior to placement or backfill.
 - (C) Metal tanks must have a minimum diameter of five feet. The length must be at least two but not more than four times the diameter.
 - (D) See Figure 3 for typical metal tanks.

Figure 3
Typical Metal Septic Tank



(3) Associated system components.

- (i) **Manholes.** Manholes must comply with one of the following:
 - (A) All manholes in paved areas must have a cast iron watertight frame and a cover that can be locked to prevent tampering that is flush with the finished paved surface.
 - (B) All manholes in other than paved areas that are more than 12 inches below final grade must have an extension collar over each opening. Extension collars may not be brought flush with the ground surface unless the cover of the access opening can be locked to prevent tampering. If the cover of an access opening cannot be locked to prevent tampering, the extension collar must be terminated 12 inches below existing grade.
 - (C) Where drop manholes are used on sloping sites with gravity distribution to reduce the velocity of flow to lower distribution lines, drop manholes must comply with the following:
 - 1. Baffles are required at the inlet end of the manhole and approximately four inches from the inlet.
 - 2. The inverts of all outlets in each manhole must be at the same level.
 - (ii) **Manhole covers.** Manhole covers must comply with the following:
 - (A) A septic tank must have one access opening with a manhole cover over the inlet, and one access opening with a manhole cover over the outlet of the tank as per Figures 2 and 3.
 - (B) The top of the manhole cover must either be set within 12 inches of the finished grade or, where a cover is located more than 12 inches below the finished grade, an extension collar must be provided over each access opening to bring the manhole cover to a point within 12 inches of the finished grade.
 - (C) The manhole cover must be installed so as to prevent unauthorized entry and must be accessible for inspection, maintenance and cleaning. No person other than a licensed master plumber or person engaged in sewer services (one who renders sewer services, including but not limited to installing, altering, repairing, cleaning and pumping sewers and septic tanks as part as one's regular business or employment) may remove or open the cover of any tank unless otherwise authorized during an emergency by an officer or employee of a city agency.
 - (D) Manhole covers must be designed for a live load of at least 300 pounds per square foot.
 - (E) Concrete manhole covers, when used, must be reinforced and at least four inches thick.
 - (F) An access opening with cover must be at least 20 inches square for non-concrete tanks and at least 24 inches in diameter for concrete tanks.
- (4) **Seepage pit design and construction.**
- (i) **Design requirements.** A seepage pit system must be designed in accordance with the following requirements:
 - (A) Seepage pit units must have a liquid capacity (volume below inlet line) at least two times that of the septic tank.
 - (B) Seepage pits must contain a sand column constructed in accordance with subdivision (h) of this section. A second sand column must be provided if the permeable stratum at the bottom of the test hole for the seepage pit is deeper than 15 feet.
 - (C) Seepage pits must include an absorptive area. The required absorptive area is the interface area between the outside of the aggregate collar in the pit and the surrounding sand collar which transmits the effluent to the sand column below. As shown in Figure 4, the aggregate collar must be at least one foot in width, and the sand collar must be at least two feet in width.
 - (D) The percolation rate, determined by the AT/PT on the concrete sand used in backfilling the test hole and absorption facilities, must be used to calculate the minimum required absorptive area in the seepage pit for a given sewage application rate and daily flow rate (Q) in accordance with Table 2.
 - (E) In addition Table 4 applies to seepage pit designs which utilize cylindrical rings. The bottom area of the seepage pit cannot be included in calculating the required absorptive area. For those designs utilizing Table 4, the effective diameter of a seepage pit is the outside diameter of the aggregate ring surrounding the inside perforated concrete rings. Effective depth is measured from the invert of the seepage pit inlet to the floor of the seepage pit.

TABLE 4
CYLINDRICAL SEEPAGE PITS -
REQUIRED ABSORPTIVE AREA (SQ FT)

Diameter of Seepage Pit (feet)	Effective Strata Depth Below Frost Line (below inlet)									
	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'
3	9.4	19	28	38	47	57	66	75	85	94
4	12.6	25	38	50	63	75	88	101	113	126
5	15.7	31	47	63	79	94	110	126	141	157
6	18.8	38	57	75	94	113	132	151	170	188
7	22	44	66	88	110	132	154	176	198	220
8	25.1	50	75	101	126	151	176	201	226	251
9	28.3	57	85	113	141	170	198	226	254	283
10	31.4	63	94	126	157	188	220	251	283	314
11	34.6	69	104	138	173	207	242	276	311	346
12	37.7	75	113	151	188	226	264	302	339	377

Absorptive Area for Cylinder = $3.14 * D * h$

Absorptive Area for Rectangular Pit = $(2W + L) h$

h = effective depth (invert of inlet to bottom of seepage pit)

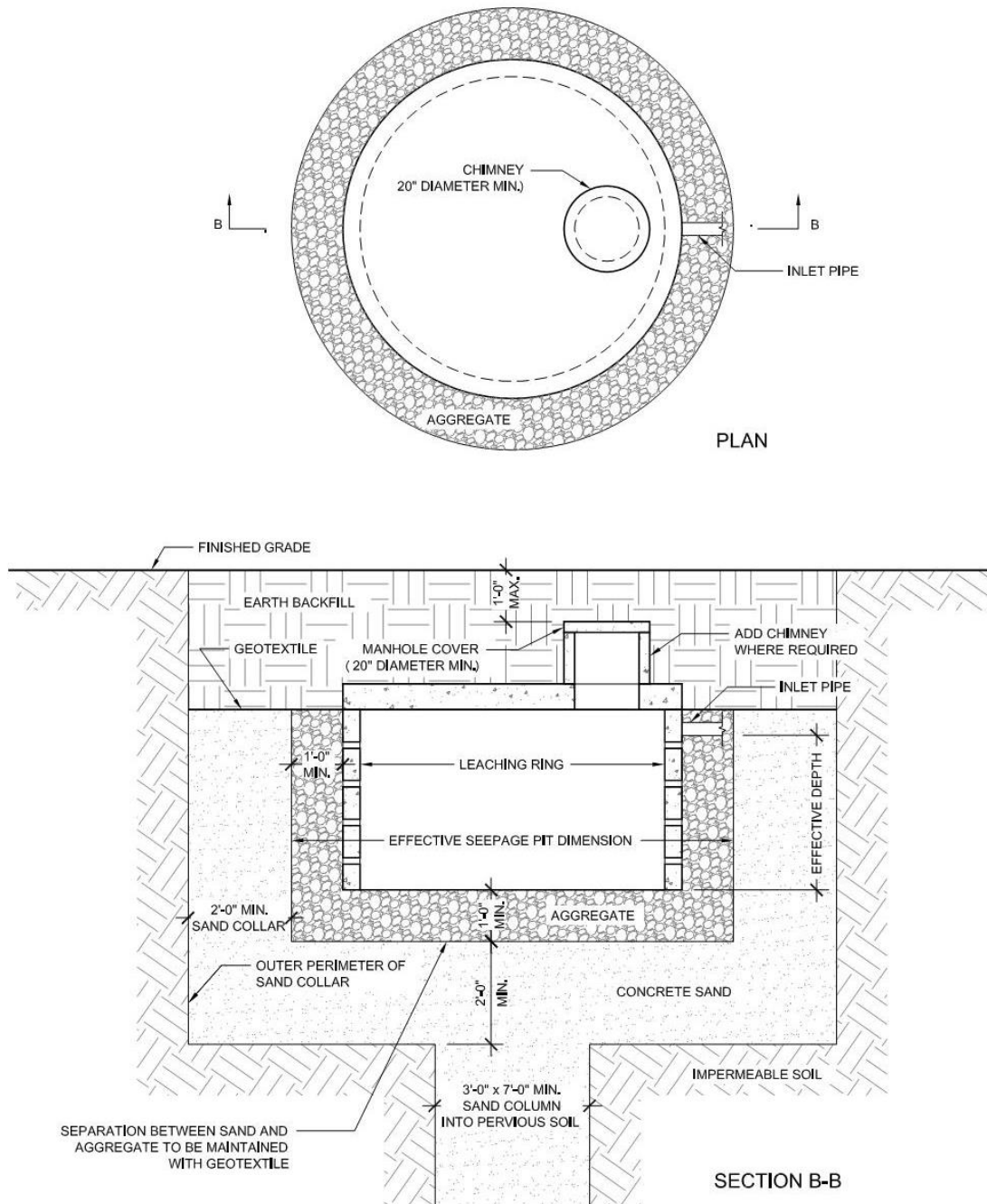
D = outside diameter in feet

W = outside width in feet

L = outside length in feet

- (F) If more than one seepage pit of circular design is required to dissipate the effluent from a septic tank, the separation distance between the outside edges of the sand collars of the seepage pits must be 3 times the effective seepage pit dimension of the largest pit. The effective seepage pit dimension must be the distance between the opposite outer perimeters of the sand collar. For the purpose of determining separation distances, a seepage pit is permitted to contain multiple leaching rings.
- (G) For seepage pits of non-circular shapes, the separation distance between the outer edges of the sand collars of the seepage pits must be 3 times the average of the length times the width. Either separation distance must be measured as the soil, undisturbed when construction is complete, between pit excavations. For the purpose of determining separation distances, a seepage pit is permitted to contain multiple leaching rings.
- (H) See Figure 4 for depiction of typical seepage pit.

Figure 4
TYPICAL SEEPAGE PIT WITH SINGLE RING



NOT TO SCALE

- (ii) **Construction requirements.** A seepage pit system must be constructed in accordance with the following requirements:
- (A) A seepage pit must contain either perforated precast reinforced concrete rings or perforated cast-in-place reinforced concrete rings. The concrete used must have a minimum compressive strength of 3,000 psi. Seepage pits must be designed with sufficient structural stability to withstand lateral soil forces as well as vertical loads.
 - (B) A seepage pit cover slab must be made of either precast reinforced concrete or cast-in-place reinforced concrete. An access way with an opening of at least 20 inches in the shortest dimension with a cover must be provided for inspection and cleaning. The cover of the access way must be structurally sound so as to withstand anticipated loads.
 - (C) Seepage pits must be built upon a two-foot thick foundation of concrete sand meeting the requirements of ASTM C 33 and Table 5, as shown in Figure 4. The foundation must cover the

entire bottom of the seepage pit excavation regardless of over excavation and must underlay all components including the sand collar.

- (D) Inlet pipes to the seepage pits must be solid piping with a minimum diameter of four inches on a minimum slope of 1/8 inch per foot. Seepage pits may not be connected in series. When more than one seepage pit is required, a distribution box must be provided and installed in accordance with subparagraph (iv) of paragraph (5) of this subdivision.
- (E) No trees or shrubs may be planted within ten feet of the perimeter of a seepage pit.

Table 5

Specification for Sand and Aggregate

Specification for Concrete Sand Used in the Sand Collar around the Seepage Pit and in the Sand Columns (ASTM C-33)

Sieve Size	Percent Passing (Weight %)
3/8 " (9.5 mm)	100
No. 4 (4.75 mm)	95-100
No. 8 (2.36 mm)	80-100
No. 16 (1.18 mm)	50-85
No. 30 (600 um)	25-60
No. 50 (300 um)	10-30
No. 100 (150 um)	0-10
No. 200 (75 um)	0-3

Specification for Filter Sand Used in Sand Filter Field

U.C. < 4

D10 = .25 to 1.0 mm

100% passing 1/4" sieve

Specifications for Aggregate Used in Seepage Pit and Sand Filter Field (ASTM D 448)

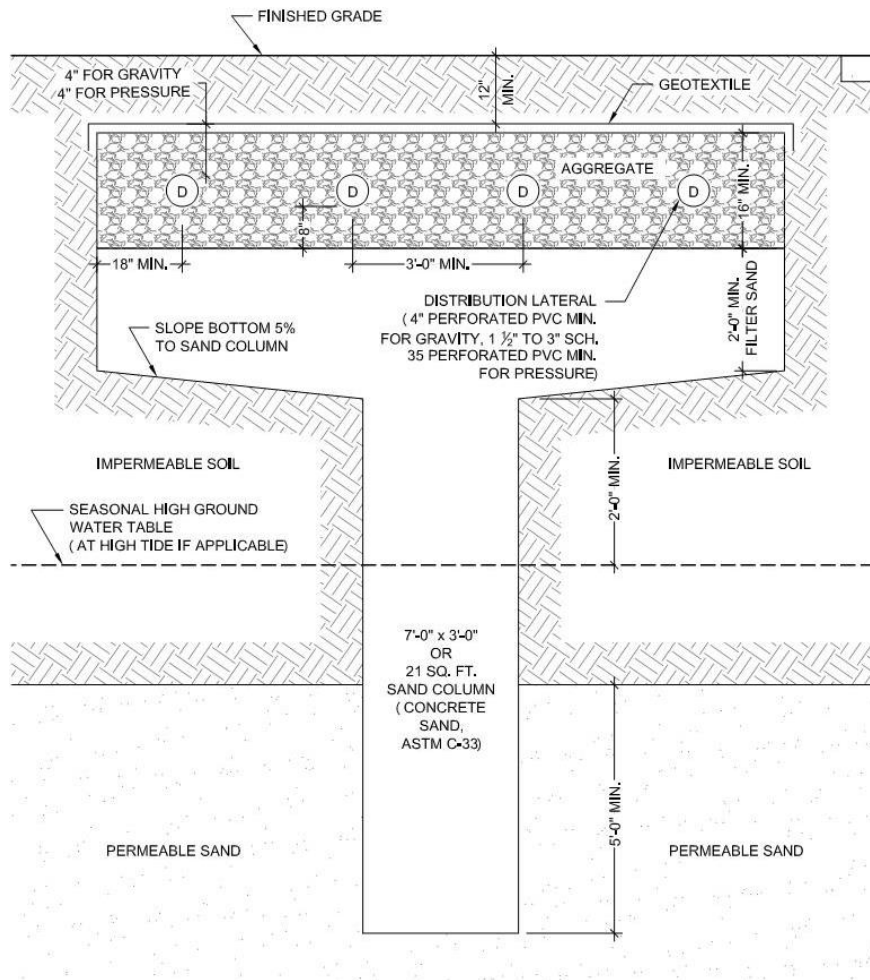
	% By Weight Passing
100	1 1/2 inch
75 to 90	1 inch
35 to 50	3/4 inch
less than 100	1/2 inch

- (5) **Sand filter field.** Where a seepage pit is not permissible because groundwater is encountered in the sand column, a sand filter field type septic system may be used. The system must contain a septic tank, sand filled columns and either a gravity system with a distribution box or a sand filter field designed to accommodate a pressure distribution pump chamber. The system must be designed and installed in accordance with the following requirements:

- (i) **Testing.** Testing for sand filter field systems must comply with paragraph (1) of subdivision (h) of this section.
- (ii) **Sand columns.** A minimum of two sand columns is required under sand filter field systems. Construction of the sand column must comply with subdivision (g) of this section.
- (iii) **Septic tanks.** Septic tanks must comply with the requirements of paragraph (2) of this subdivision.
- (iv) **Distribution box and piping.** A distribution box must precede all gravity sand filter field systems. The distribution box and related piping must comply with the following requirements:
- (A) The box must be of concrete or steel. If steel, it must be 12-gage minimum, bituminous-coated in accordance with UL 70.
- (B) The floor area of the box must be sized to allow for maximum head of sewage for equal distribution to all outlet lines.
- (C) The top of the box must be at least 9 inches above the invert of the outlet lines.
- (D) To minimize frost action and reduce the possibility of movement once installed, distribution boxes must be set on a bed of sand or pea gravel at least 12 inches thick.

- (E) A baffle at the inlet must be provided to prevent short circuiting of the flow.
- (F) The box must be high enough so that the cover is within 12 inches of the finished grade.
- (G) All outlet inverts must be set two inches below the inlet invert.
- (H) There shall be a minimum two inch clearance between the inverts of the outlets and the bottom of the box to prevent short-circuiting and reduce solids carry-over.
- (I) Lines from the distribution box to the disposal field must be not less than four inches in diameter and must be laid with tight joints on a uniform slope not less than 1/8 inch per foot.
- (J) Gravity perforated distributors must be four inches in diameter SDR 35 PVC, sloped $\frac{1}{16}$ to $\frac{1}{32}$ inch per foot, less than or equal to 50 feet long, and spaced three feet on center and 1½ feet from sidewalls. Perforations must be $\frac{5}{8}$ inch in diameter and placed at the 4 o'clock and 8 o'clock positions every six inches along the length of the pipe.
- (K) Perforated distributors must be laid in an eight-inch deep bed of aggregate meeting the requirements of ASTM D 448 and Table 5.
- (L) The distributor aggregate must be covered with Mirafi 140 or equivalent permeable geotextile under at least 12 inches of soil which must be seeded or sodded with grass.
- (M) At least two feet of filter sand meeting the requirements of ASTM C 33 and Table 5 must be placed under the aggregate and distribution pipes in the sand filter field.
- (N) The application rate of septic tank effluent to the sand filter field, using gravity flow, must not exceed one GPD/sf.
- (v) **Pressure distribution pump chamber and related piping.** Where a sand filter field cannot rely on gravity to distribute waste, a pressure distribution system designed by a professional engineer must be used. The design must incorporate the following requirements:
 - (A) Pressure perforated and capped distributors must be 1½ to three inches in diameter, installed level, less than or equal to 100 feet in length, and spaced three feet on center and 1½ feet from trench sidewalls.
 - (B) The minimum dose volume is ten times the delivery and distributor pipe volume. The filter must be uniformly dosed at least twice daily based upon the daily flow rate (Q).
 - (C) Distributor perforations must be sized to deliver a minimum of one GPM of effluent at a head of two feet.
 - (D) The discharge head must be not less than two feet and not more than six feet.
 - (E) Perforated distributors must be laid in an eight-inch deep bed of aggregate meeting the requirements of ASTM D 448 and Table 5.
 - (F) The distributor aggregate must be covered with Mirafi 140 or equivalent permeable geotextile under at least 12 inches of soil which must be seeded or sodded with grass.
 - (G) At least two feet of filter sand meeting the requirements of ASTM C 33 and Table 5 must be placed under the aggregate and distribution pipes in the sand filter field.
 - (H) The application rate of septic tank effluent to the sand filter field, using pressure distribution, must not exceed 1.15 GPD/sf.
- (vi) **Sand filter field.** The bottom of the sand filter field must have a slope equal to or greater than 5 percent toward the sand filled columns. (See Figure 5.)

Figure 5
TYPICAL SAND FILTER FIELD



NOT TO SCALE

(vii) Daily flow. Daily flow rate (Q) for one- and two- family properties must be in accordance with water conservation fixtures (i.e., 150 or 130 or 110 GPD per bedroom as noted in Table 6).

TABLE 6**SAND FILTER FIELD DESIGN FLOW**

Sewage Application (GPD/SF)	Daily Flow Rate (Q) (GPD) ^{a,b}															
	220	260	300	330	390	440	450	520	550	600	650	660	750	780	900	<1000
1.15	191	226	261	287	339	383	391	452	478	522	565	574	652	678	783	885
1	220	260	300	330	390	440	450	520	550	600	650	660	750	780	900	1015

^a For one and two-family properties, minimum daily flow rate (Q) is based on the efficiency of water fixtures employed multiplied by the number of bedrooms:

Water saving fixtures (post 1991) 1.6 GPF max. water closets and 3.0 GPM max. faucets/showerheads: 110 GPD per bedroom.

Standard fixtures (1980 - 1991) 3.5 GPF max. water closets and 3.0 GPM max. faucets/showerheads: 130 GPD per bedroom.

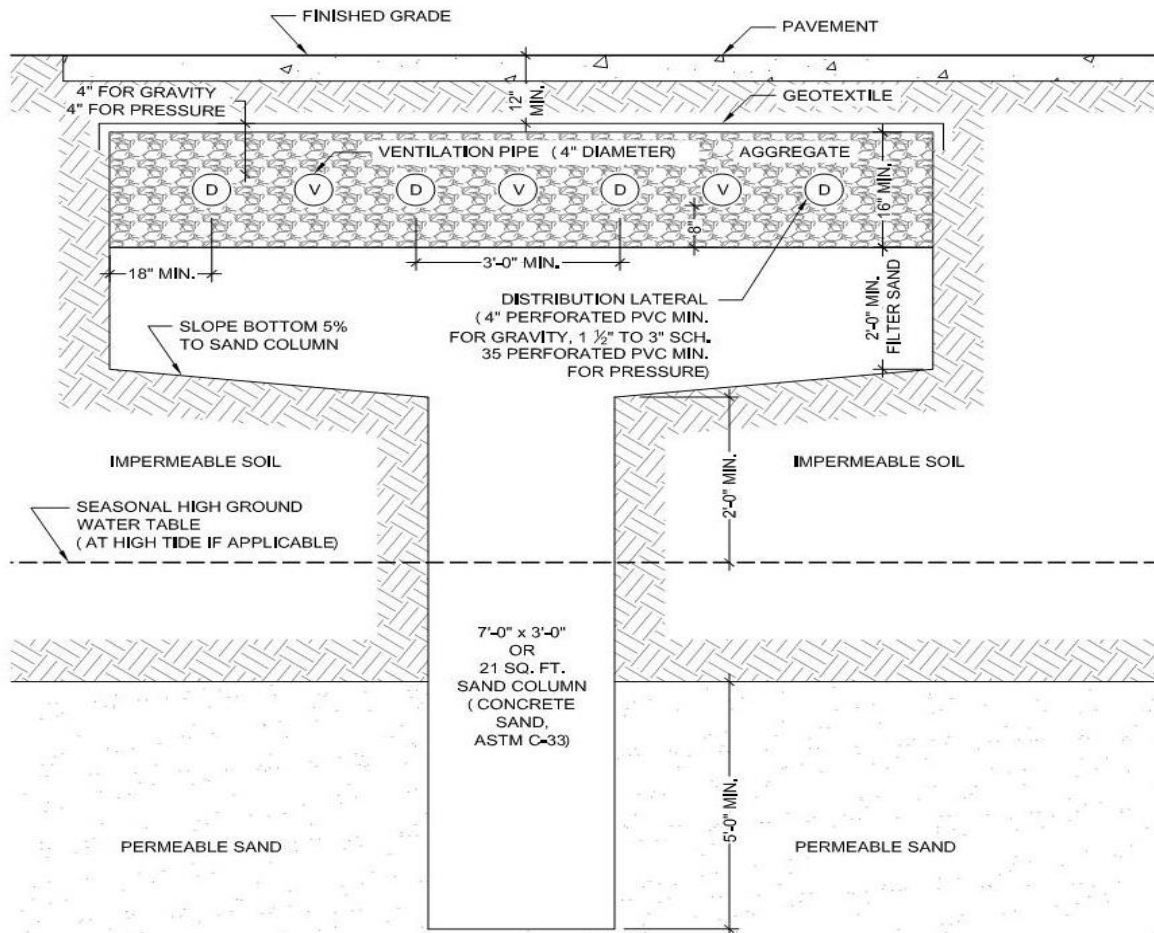
Standard fixtures (prior to 1980) 3.5+ GPF max. water closets and 3.0+ GPM max. faucets/showerheads: 150 GPD per bedroom.

^b Where daily flow rate (Q) differs from values shown, round up to the next value indicated in the table.

(viii) Driveways and paved areas. Driveways and paved areas may not be located above absorption facilities including subsurface sand filters unless the requirements listed below are met:

- (A) Lateral vent piping must be installed between each distribution lateral. A minimum spacing of 18 inches must be provided between vent piping and distribution laterals. Lateral vent pipe must be four-inch SDR 35 perforated PVC or equally acceptable material.
- (B) The lateral vent pipes must connect to a vent pipe. The vent pipe must be a minimum of four inches in diameter and must not be connected to the house vent stack.
- (C) See Figure 6 for typical sand filter field beneath paved areas.

Figure 6
TYPICAL SAND FILTER FIELD (BENEATH PAVED AREAS)



NOT TO SCALE

(ix) **Serpentine rock.** Sand filter fields are required whenever serpentine rock is proposed as the medium for the ultimate disposal of the effluent. Sand columns must be dry with a minimum of four feet of filter sand above serpentine rock. Sand filter field system over serpentine rock must be designed and installed in accordance with the following requirements:

(A) The system design must include at least six feet of vertical separation between finished grade and the serpentine rock.

(B) Sand filter fields located above dry sand columns at locations where serpentine rock is less than six feet below finished grade must be modified to provide a minimum of four feet of sand filter both horizontally and vertically from distributor aggregate to serpentine rock.

(6) **Alternative systems.** Alternative subsurface treatment systems must comply with the requirements contained in Chapter II Subchapter I Part 75 Appendix 75-A.9 of 10 NYCRR 75.

(7) **Repairs.** A permit is required for repair to any system or associated components, including the repair or replacement of any type of absorption field that involves relocating or extending an absorption area to a location not previously approved, the installation of a new subsurface treatment system at the same location, or the use of an alternative system. A licensed master plumber may file a Limited Alteration Application (LAA) with the department for plumbing work consisting of in-kind repairs or like-for-like replacements.

Exception. Cesspools may not be repaired. Cesspools must be replaced with an acceptable system in accordance with the requirements of this section.

(8) **Expansion of existing septic systems.** Where an alteration is proposed that will result in an increase in the number of bedrooms in one- and two-family properties or the daily flow rate (Q) in all other properties, thereby increasing the load on that system, the requirements of this paragraph apply.

Exception. Cesspools may not be expanded. Cesspools must be replaced with an acceptable system in accordance with the requirements of this section.

- (i) **Evaluation of existing septic system.** A special inspector must perform an inspection of the individual private on-site sewage disposal system to demonstrate that the existing system is functioning properly. A report of the inspection must be submitted to the department with the application for expansion of the system. The inspection must include:
 - (A) Inspection of the premises to verify that there is no evidence of surface failure of the existing system;
 - (B) Inspection of all piping leading from the residence to the system. If piping is damaged it must be replaced prior to testing;
 - (C) Inspection of the interior of the system to verify that the system is free of structural damage and debris; and
 - (D) Inspection of additional parts of the system.
 - (ii) **Cleaning and pumping of existing septic systems.** Prior to testing the septic tank as required by subparagraph (iii) of this paragraph, a septage hauler with a valid permit from the DEC must pump all sludge and debris from the septic tank and remove such contents from the site.
 - (iii) **Infiltration testing of existing septic systems.** A test of the system must be performed by flowing a volume of water equal to the estimated daily design volume plus the estimated volume of the system, but not less than 3,000 gallons. Following this initial charge of water a continuous stream of dyed water must be pumped into the system at a rate of 1.5 gallons per minute for a period of not less than four hours. The special inspector must observe the test and verify that the system is functioning, continuously accepting water without backflow and that no dyed water is observed above ground surface. Dyed water observed breaking the ground surface is a failed test. Where applicable, the infiltration test must be performed during high tide.
 - (iv) **Damaged or malfunctioning septic systems.** Where testing and inspection indicate that a system has been damaged or has failed the infiltration test, a permit application must be filed with the department for the repair or replacement of the system. A new infiltration test must be conducted on the repaired system to verify if expansion is feasible.
 - (v) **Application.** A registered design professional must submit an application showing the details of the proposed expanded system. Existing portions of the individual private on-site sewage disposal system which are found to be in good working order may be incorporated into the expanded system. The expanded system must comply with the requirements of this section.
- (j) **Abandoned septic systems.** The following requirements apply:
- (1) **Abandoned existing septic systems.** An individual private on-site sewage disposal system must be abandoned and a connection made to a newly constructed sanitary or combined sewer when such sewer fronts the subject property. Connection must be made within six months of the sewer being placed into service.
 - (2) **Waste removal and backfilling of abandoned septic systems.** When an individual private on-site sewage disposal system is abandoned after a sewer connection is made, all septic tanks, dosing tanks, seepage pits, distribution boxes, cesspools and any other structure that may have held sewage or sewage solids must be pumped free of wastes. Wastes must be removed by a septage hauler licensed by the DEC. All component portions of the abandoned system must be exposed and backfilled with gravel or sand. The site of the abandoned system must be returned to a level, finished grade.
- (k) **Maintenance and operation.** The following requirements apply:
- (1) **Maintenance.** The owner must maintain the septic system in good working order and must have the septic system inspected and pumped as needed.
 - (2) **Use.** An individual private on-site sewage disposal system must be used only for the disposal of sewage.
 - (i) **Detrimental or dangerous materials.** Ashes, cinders or rags; flammable, poisonous or explosive liquids or gases; oil, grease or any other insoluble material capable of obstructing, damaging or overloading the building drainage or sewer system, or capable of interfering with the normal operation of the sewage treatment processes, may not be deposited, by any means, into such systems.
 - (3) **Discharge of groundwater and storm water.** Groundwater infiltration and/or storm water run-off from sources including but not limited to basement floors, footings, garages, roofs, or heating and cooling systems must not be discharged to the individual private on-site sewage disposal system and must be diverted away from the vicinity of the absorption area.
 - (4) **Repair of leaks.** All plumbing leaks from fixtures connected to individual private on-site sewage disposal systems must be repaired promptly to prevent hydraulic overloading of the system and the development of a surface discharge.
 - (5) **Malfunctioning septic systems.** Malfunctioning systems must be repaired immediately. A permit application must be filed with the department for the repair or replacement of the system. Conditions that constitute a malfunctioning system include but are not limited to:

- (i) **Contamination.** Evidence of contamination of groundwater or surface water bodies by sewage or effluent;
 - (ii) **Ponding.** Ponding or breakout of any wastewater, sewage, septic tank effluent or any liquid from the existing on-site system onto the surface of the ground;
 - (iii) **Seepage.** Seepage of sewage or effluent into portions of buildings below ground; or
 - (iv) **Sewage back-up.** Back-up of sewage into the building connected to the system which is not caused by a physical blockage of the internal plumbing.
- (6) **Department notice of need for special inspector.** The department may issue a notice directing the owner of an individual private on-site sewage disposal system to engage a special inspector to verify the condition of the system. The special inspector must observe and document the results of dye tests or other diagnostic measures on fixtures connected to the suspected malfunctioning systems. The special inspector must furnish inspection reports to the department.
- (l) **Plot plans.** Where a new individual private on-site sewage disposal system is installed the applicant of record must prepare a plot plan. The plot plan must contain the location of all pertinent components comprising the individual private on-site sewage disposal system and maintenance and inspection schedule. Where a drywell is installed it must be indicated on the plot plan. The plot plan must be permanently affixed to the inside wall adjacent to the fresh air outlet pipe.
- (m) **Restrictive declaration.** Where a new individual private on-site sewage disposal system is installed the owner must file a restrictive declaration noting the existence and maintenance requirements of an individual on-site private sewage system on the property with the City Register or County Clerk, and the page number and liber number must be identified in the permit application and on the temporary and permanent certificate of occupancy. Where an individual private on-site sewage disposal system is abandoned pursuant to paragraph (1) of subdivision (j) the restrictive declaration must be terminated in accordance with the department's procedures.
- (n) **Special Inspections.** Special inspections are required for the installation of individual private on-site sewage disposal systems in accordance with Table 7.

Table 7
SPECIAL INSPECTION

CATEGORY	TOPIC	SECTION
Sand column construction	Minimum depth of sand column	8001-01 (g)(2)
	Serpentine rock	8001-01 (g)(4)
	Backfilling the excavation	8001-01 (g)(5)
Soil and groundwater testing	Absorption test/percolation test (AT/PT)	8001-01 (h)(1)(iii)
	Groundwater verification	8001-01 (h)(3)
	Number of AT/PT for seepage pit and sand field systems.	8001-01 (h)(4)
	AT/PT on sand column backfill material	8001-01 (h)(5)(i)
	Acceptance criteria for absorption tests	8001-01 (h)(5)(iii)(B)
	AT/PT termination	8001-01 (h)(6)
Design and construction standards for all types of systems	Septic tanks, Concrete tanks	8001-01 (i)(2)(v)(E)
	Septic tanks, Fiberglass and polyethylene tanks	8001-01 (i)(2)(vi)(D)
	Evaluation of existing system	8001-01 (i)(8)(i)
	Infiltration testing of existing individual private on-site sewage disposal systems	8001-01 (i)(8)(iii)
Maintenance and operation	Dye tests or other diagnostic measures to verify the condition of the system	8001-01 (k)(6)

- (o) **Referenced standards.** These standards are adopted in full, except to the extent there is a conflict with this section, in which case the provisions of this section will apply.

Standard	Name	Year
American Standard Test Method (ASTM) Standards:		
C 33	Specifications for concrete aggregates	2003
D 448	Standard classification for sizes of aggregate for road and bridge construction	2003a
D 1586	Specifications for penetration test and split-barrel sampling of soils	1999
Underwriters Laboratories (UL) Standard		
70	Standard for septic tanks, bituminous coated metal	2001