(f) The minimum requirements for construction, materials and foundations of grease traps shall be the same as those required for septic tanks, as prescribed in N.J.A.C. 7:9A-8.2.

(g) The inlet and outlet of the grease trap shall be provided with "T" baffles extending to a depth of 12 inches above the tank floor and well above the liquid level.

(h) To facilitate maintenance, manholes extending to finished grade shall be provided. Covers shall be of gas-tight construction and shall be designed to withstand expected loads and prevent access by children.

(i) High strength wastewater pretreatment components shall be approved by the administrative authority only if the components are designed, constructed and certified by a septic system designer to actively treat and therefore reduce fats, oils and grease, total suspended solids, biochemical oxygen demand and chemical oxygen demand. The components shall be designed to meet the following effluent criteria:

Constituent	Concentration (mg/L)
Total suspended solids (TSS)	155
Five-day biochemical oxygen demand (BOD_5)	155
Fats, oils and grease (FOG)	70
Chemical oxygen demand (COD)	500

(j) The septic system designer certification of the high strength wastewater pretreatment components must specify how the grease removal components are to be installed and maintained to achieve the identified effluent design criteria.

(k) Grease removal components must be equipped with audio and visual alarms to identify when the storage capacity of the system has reached 75 percent. When the storage capacity reaches 75 percent, the operator of the system shall take immediate steps to maintain effluent criteria by ensuring that grease is removed from the system. Disposal of grease must be in compliance with all local, State and Federal requirements.

(l) Any grease removal components that are not operated and maintained in conformance with the original administrative authority approval or manufacturer's specifications shall be considered non-compliant with N.J.A.C. 7:9A-3.4.

7:9A-8.2 Septic tanks

(a) The use of a septic tank shall be required for all systems except as provided at N.J.A.C. 7:9A-8.3.

(b) The minimum capacity of the septic tank shall be determined in accordance with the following criteria:

1. When serving single family dwelling units, septic tanks shall have the minimum capacity of 250 gallons per bedroom. Expansion attics shall be considered additional bedrooms. In no case shall the capacity be less than 1000 gallons.

2. When serving installations other than single family dwelling units, the minimum capacity shall be 1.5 times (150 percent) the volume of sanitary sewage, Q, when Q, determined as prescribed in N.J.A.C. 7:9A-7.4, in less than 1,500 gallons per day. When Q is greater than 1,500 gallons per day, the minimum capacity in gallons shall be 1,125 plus 0.75Q. In no case shall the capacity be less than 1000 gallons.

3. Two or more septic tanks may be connected in series in order to obtain the minimum required liquid capacity providing that each tank is at least as large as the succeeding tank. When a multiple compartment tank is used, the requirements of (d)3 below shall be satisfied.

(c) When domestic garbage grinder units or sanitary sewage ejector pumps are installed or proposed, a multiple compartment septic tank is required and the liquid capacity of the septic tank(s), exclusive of air space, shall be at least 50 percent greater than the minimum capacity required in (b)1 above.

(d) Multiple compartment septic tanks shall be required for institutional and commercial installations where the daily volume of sewage determined as prescribed in N.J.A.C. 7:9A-7.4 is greater than 1,000 gallons or when sewage is conveyed from the building served to the septic tank by means of a sewage ejector pump. When multiple compartment tanks are used the following shall be required:

1. The total capacity of multiple compartment tanks shall not be less than 1000 gallons. The first compartment shall have a liquid capacity of two-thirds the total required liquid capacity determined as prescribed in (b) above.

2. Not more than two compartments shall be provided in tanks having liquid capacities of less than 1250 gallons. Tanks having liquid capacities of over 1250 gallons may be provided with more than two compartments.

3. Multiple compartments may be provided by partitions within a single tank as shown in Figure 11 of Appendix A, or by connecting individual tanks in series. When a single partitioned tank is used, vent holes shall be provided near the top of each partition to allow free exchange of evolved gases between compartments and the two compartments shall be connected by means of a pipe tee, baffle or septic solids retainer, as shown in Figure 11.

(e) Septic tanks shall be designed and constructed according to the following requirements:

1. Septic tanks shall be water-tight and constructed of sound and durable materials which are resistant to corrosion, decay, frost damage or to cracking or buckling due to settlement or backfilling. All joints below the liquid level of the tank or below the seasonally high water table shall be provided with a permanent water-tight seal.

2. Covers shall be designed and constructed so as not to be damaged by any load which is likely to be placed on them. Precast slabs used as covers shall be water-tight, a minimum of three inches in thickness and adequately reinforced.

3. The walls and base of poured-in-place concrete tanks shall not be less than six inches in thickness. The sides and bottom of precast concrete tanks shall be a minimum of three inches in thickness and shall be adequately reinforced.

4. Concrete used in the construction of septic tanks shall conform to the American Concrete Institute (ACI) standards for frost resistance (ACI 318-16-4.5.1) and water-tightness (ACI 318-16-4.5.2). In the case of built-in-place tanks, certification that these standards have been met shall be provided by the design engineer and the certification shall be signed, sealed and attached to the approved engineering design. In the case of precast tanks, certification shall be provided by the manufacturer and the certification displayed on the tank.

5. All inside concrete surfaces shall be sealed with two coatings of an appropriate inert coating to minimize corrosion. Coating of pre-cast tanks shall be applied by the manufacturer prior to delivery to the job site.

6. The base of poured-in-place tanks shall be cast in one piece and shall extend beyond the side and end walls of the tank. Such tanks shall not be emplaced until 48 hours after the base has been poured.

7. Pre-fabricated polyethylene septic tanks shall conform with the standards for materials, wall thickness, fastening of fittings and maximum deformation under load as prescribed by the Canadian Standards Association in CSA Standard CAN3-B66-M79.

8. Pre-fabricated fiberglass septic tanks shall conform to ASTM Standard D4021.

(f) A pre-fabricated septic tank constructed of any material which may be floated or shifted by water or ground cave-in shall be filled with water immediately after it is set in its proper position. When a septic tank is installed

below or partially below the level of the seasonally high water table, the design engineer shall show by means of appropriate calculations that the tank is of sufficient weight or will be otherwise secured or anchored so that it will not shift or float if emptied during the time of seasonally high groundwater. Perforating or otherwise damaging the water-tight integrity of a septic tank for the purpose of installation below the water table is prohibited.

(g) Septic tanks shall be placed upon a firm and stable foundation so that the potential for uneven settlement or shifting is minimized. Tanks shall be constructed or installed directly on undisturbed natural soil. If the excavation is dug too deep, it shall be backfilled to the proper elevation with sand. When the tank must be constructed or installed on a layer of fill material greater than one foot in thickness, the fill shall be properly emplaced and compacted as prescribed in N.J.A.C. 7:9A-10.4(f)3.

(h) Metal septic tanks are prohibited. Septic tanks may be constructed of the following materials:

1. Poured-in-place concrete;

2. Precast reinforced concrete;

3. Fiberglass;

4. Polyethylene; or

5. Other materials as approved by the Department.

(i) Septic tanks shall conform to the following specifications:

1. The depth below the liquid level of the tank shall not be less than 36 inches or more than 72 inches.

2. Inlets and outlets shall be arranged so that all flow is directed along the longest horizontal dimension of the tank.

3. Tanks which are rectangular in cross-section shall have an inside length at least twice the inside width. The inside length, measured from the inlet side to the outlet side, shall not be less than 72 inches. The inside width of the tank shall not be less than 36 inches.

4. All cylindrical tanks shall have a minimum inside length of 72 inches measured between the inlet side to the outlet side and a minimum width at the liquid level of 36 inches.

(j) Inlets and outlets of septic tanks shall conform to the following specifications:

1. Inlet and outlet connections of each tank or compartment shall be arranged so as to obtain effective retention of scum and sludge and shall be fastened with and constructed of, or coated with, materials which are resistant to corrosion by sulfuric acid. Where pipe tees are used, the tees shall be sanitary tees and shall be installed in a manner that will provide a lasting water-tight seal between the tee and the wall of the tank. For this purpose, a manufactured water-proof pipe coupling which is incorporated into the wall of the tank may be used, or an expanding grout which will adhere both to the tee and to the body of the tank where the tee is installed.

2. A baffle or a pipe tee, not less than four inches in diameter, is required at the inlet of the tank. The bottom of the baffle or the bottom of the vertical leg of the tee shall extend below the liquid level a distance equal to 25 to 33 percent of the liquid depth. The invert elevation of the inlet shall not be less than two inches higher than the invert elevation of the tank outlet or the outlet of the first compartment. The inverts of the inlets of subsequent compartments shall be a minimum of one inch higher than their outlets.

3. A septic solids retainer or septic effluent filter shall be installed and maintained in conjunction with all new septic tanks prior to the effluent distribution network and in accordance with all manufacturer's specifications. Septic solids retainers and septic effluent filters shall be certified by, and bear the mark of, NSF International (NSF) under NSF Standard 46. The Department recommends that filters be a minimum of six inches in diameter (or equivalent area) measured at the inlet to the filter. Additionally, the Department recommends that system designers provide a means in the design to prevent flow of solids, scum and floatables out of the tank when the filter is removed for maintenance. Outlet connections of an existing tank or each compartment

thereof and connections between new tank compartments or tanks installed in series shall be provided with a tee not less than four inches in diameter or a durable baffle equivalent in size. They shall be permanently fastened in place with the bottom opening extending below the liquid level by a distance equal to 25 to 40 percent of the total liquid depth. Outlet baffles or tees shall be provided with a gas deflection device adequately designed to prevent gases generated in the septic tank from rising through the outlet baffle or tee. The gas deflection device shall be constructed of, or coated with, materials which are resistant to corrosion by sulfuric acid and shall be securely fastened to the tee or the side of the tank. Figure 12 of Appendix A illustrates several acceptable gas deflection devices. In lieu of a baffle or tee connection, a septic solids retainer or septic effluent filter installed and maintained in accordance with this chapter may be used. Where a septic solids retainer or septic effluent filter is used, a gas deflection baffle is not required.

(k) The space between the liquid surface and the top of the outlet tee or baffle shall not be less than 15 percent of the total liquid depth.

(*l*) Access openings for septic tanks shall meet the following requirements:

1. Each septic tank or each compartment of a multiple compartment tank shall be provided with at least one access opening which shall be a manhole a minimum of 24 inches square or 24 inches in diameter.

2. All manholes shall be extended to and maintained at finished grade by means of a riser fitted with a removable watertight cover. Covers shall be bolted or locked to prevent access by children and shall be of cast iron when a concrete riser is used. Manhole covers shall be designed using materials that will ensure a water tight seal between the cover and the riser at all times as specified by a septic system designer and approved by the administrative authority. A permanent, non-corrosive marker a minimum of six square inches in size containing the following information shall be attached to the manhole cover or riser immediately below the cover:

i. The administrative authority name and permit number under which the system was installed;

ii. The date of installation;

iii. The type of system; and

iv. The total design criteria in gallons per day.

3. An inspection port extending to finished grade shall be provided over each tank or compartment inlet and outlet which is not directly below a manhole except for those outlets where a septic solids retainer or effluent filter is used. Inspection ports shall extend to finished grade, shall be constructed of four-inch cast iron or Polyvinyl Chloride (PVC), and shall have a locked or bolted cap. Outlets where a septic solids retainer or effluent filter is located shall be directly below a manhole or have an inspection port that allows for at grade access to that device to allow for unimpeded maintenance without entering the septic tank.

4. Manhole risers and inspection ports on fiberglass or polyethylene tanks shall be constructed of the same material as the tank.

(m) All tanks, including risers and inspection ports to the highest joint, shall be tested for watertightness after installation using hydrostatic or vacuum tests in accordance with the following:

1. Watertightness testing procedures and criteria for concrete tanks shall follow the methods described in American Standard Testing Method (ASTM) C-1227 standards incorporated by reference, as amended, or the National Pre-cast Concrete Association (NPCA) testing criteria and procedures specified in its Precast Concrete On-site Wastewater Tank Best Practices Manual incorporated by reference, as amended. The ASTM methods can be obtained at: http://www.astm.org/Standard/index.shtml and the NPCA methods may be obtained at: http://www.precast.org/technical-services-overview.

2. Tanks made of materials other then concrete shall be tested, after installation, in accordance with the methods described in ASTM C-1227 standards, if applicable, or other hydrostatic or vacuum testing methods approved by the tank manufacturer.

3. Water used for this testing shall be either from a potable water source or reclaimed water for beneficial reuse authorized by a NJPDES permit.

4. The use of an onsite potable well for purposes of supplying water for this testing is not recommended.

5. If an onsite potable well is to be used, withdrawal of water from the well shall be at a rate of less than 50 percent of the design yield of the well and in a manner that will avoid damage to the pump or any other part of the well.

(n) Backfill around septic tanks shall be free of large stones, roots or foreign objects, shall be placed in thin layers, not to exceed eight inches, and shall be thoroughly tamped in a manner that will not produce undue strain on the tank. In the case of pre-fabricated plastic or fiberglass tanks, backfill shall be no thicker than the maximum depth recommended by the manufacturer.

7:9A-8.3 Advanced wastewater pretreatment components

(a) The use of an advanced wastewater pretreatment device in addition to a septic tank, or in lieu of a septic tank provided a primary settling component is incorporated into the design, may be allowed or required, at the discretion of an administrative authority, for new construction, projects where there is an increase in the expected volume of sanitary sewage pursuant to N.J.A.C. 7:9A-7.4, or to alter an existing, malfunctioning system. For individual systems with expected volumes of sanitary sewage less than or equal to 1,500 gallons per day, advanced wastewater pretreatment devices shall have obtained an NSF Standard 40 and/or Standard 245 certification, bear the mark of NSF and must be used in accordance with all conditions of that certification in addition to the requirements in this chapter. For systems with expected volumes of sanitary sewage greater than 1,500 gpd or systems that receive waste flows that are not residential in nature, advanced wastewater pretreatment devices shall be from a manufacturer that has obtained an NSF Standard 40 and/or Standard 245 certification for the treatment technology, be certified by the manufacturer that the technology is designed to achieve secondary effluent standards for the actual or proposed waste strength that will be generated at the site and must be used in accordance with all requirements in this chapter. The Department shall maintain a list of advanced wastewater pretreatment devices that are applicable under this section that comply with the following:

1. Any advanced wastewater pretreatment device manufacturer that wishes to have their device listed by the Department shall submit a written request and a copy of an NSF Final Report. The written request shall include an acknowledgement by the manufacturer to comply with all applicable requirements of this chapter.

2. Listed manufacturers shall make available up-to-date training, design, installation and service manuals and materials to any administrative authority or the Department upon request.

3. All advanced wastewater pretreatment devices shall be used in accordance with the provisions of this chapter and all documentation in the NSF Final Report provided to the Department.

(b) Prior to submitting any design that includes an advanced wastewater pretreatment device to the administrative authority, a system designer shall:

1. Certify in the application that they are sufficiently knowledgeable of the technology(ies) to design the system;

2. Design systems that include advanced wastewater pretreatment devices in a manner which meets all manufacturer's minimum specifications and/or recommendations;

3. Design all advanced wastewater pretreatment devices so that the raw wastewater cannot be discharged without first being properly treated by the treatment unit as it was designed. The design shall provide that the liquid levels in the tanks or other treatment vessels shall be monitored by a properly functioning high level alarm and any other monitoring equipment or alarm as recommended by the manufacturer;

4. Utilize the manufacturer's recommendations for sizing of the advanced wastewater pretreatment whenever a discrepancy occurs between the estimated volume of sanitary sewage calculated in accordance

with N.J.A.C. 7:9A-7.4 and the manufacturer's recommended sizing of the advanced wastewater pretreatment device. Sizing of all other components of the system shall conform to this chapter.

5. For non-residential systems, obtain a letter from the manufacturer, or the manufacturer's representative, and provide it to the administrative authority, verifying the design's consistency with all manufacturer's minimum specifications and recommendations. The administrative authority may require the septic system designer to obtain a letter from the manufacturer, or the manufacturer's representative, for residential systems and provide it to the administrative authority, verifying the design's consistency with all manufacturer's minimum specifications and recommendations;

6. Include in the design of the system a control panel that tracks, at a minimum, pump elapsed time, cycle counts and high level alarm counts or other means to determine flow through the system and any other system information for troubleshooting purposes as recommended by the manufacturer.

i. Systems may be equipped with a telemetry control panel, attached to an Internet-based interface that provides continuous remote monitoring, information management and control of the advanced wastewater pretreatment device; or

ii. Systems that do not have a telemetry control panel shall use an active phone line equipped with an auto dialer to notify the authorized service provider of alarm conditions, including if power to any of the system equipment is disconnected;

7. Design the system so that all processing tanks, discharge tanks and related treatment unit(s) shall maintain the same minimum separation distances as required for septic tanks at N.J.A.C. 7:9A-4.3;

8. Include in the system design only advanced wastewater pretreatment devices that are watertight. All advanced wastewater pretreatment devices must be designed in a manner that considers all structural issues including, but not limited to, venting of the disposal area, load bearing, buoyancy and all other structural effects on the treatment unit for the intended installation;

9. Include in the design a septic tank prior to any advanced wastewater pretreatment devices unless otherwise specifically identified in the NSF Standard 40 or 245 certification and the manufacturer's recommendations or specifications. Effluent filters required at N.J.A.C. 7:9A-8.2 may be relocated to another point downstream of the septic tank or may be eliminated provided that this design consideration is specifically identified in the manufacturer's recommendations or specifications;

10. Include within any system that incorporates an advanced wastewater pretreatment device a method of sampling wastewater after the advanced wastewater pretreatment device to monitor effluent quality after final treatment has been achieved. This method of sampling must be achievable at final grade without excavation; and

11. Note in the design all installation requirements in (c) below, and all maintenance and monitoring requirements required by N.J.A.C. 7:9A-12.3.

(c) The following requirements are applicable to the installation of an advanced wastewater pretreatment device;

1. An authorized installer shall be physically present at all times during installation of an advanced wastewater pretreatment device and either install or directly oversee the installation of the advanced wastewater pretreatment device.

2. The authorized installer shall ensure that the property owner has been provided with a copy of the service contract and agrees to comply with the requirements therein by obtaining their written acknowledgement via signature prior to the installation of any system that incorporates an advanced wastewater pretreatment device.

3. All advanced wastewater pretreatment devices shall be installed in accordance with directions provided in the advanced wastewater pretreatment device manufacturer's installation manual and the approved system design.

4. The authorized installer shall be in possession of all necessary permits, approvals and licenses before attempting any portion of an installation. All documentation must be located at the installation site for the duration of the installation and made available upon request by the administrative authority or the Department.

5. The watertightness of any tanks specified in the design must be watertight tested at the installation site after the tank has been installed, in accordance with the same requirements identified for septic tanks at N.J.A.C. 7:9A-8.2(m).

(d) The following requirements are applicable for system start-up of any system containing an advanced wastewater pretreatment device:

1. The authorized service provider shall inspect the system following installation.

i. The authorized service provider shall complete a manufacturer's system start-up checklist; and

ii. The authorized service provider shall provide the completed start-up checklist to the administrative authority.

2. The authorized installer that installed the advanced wastewater pretreatment device shall be present at the time of start-up.

(e) The following requirements are applicable to the administrative authority that approved the installation of an advanced wastewater pretreatment device:

1. The administrative authority shall not approve any system incorporating an advanced wastewater pretreatment device unless all design, installation or maintenance documentation for any part of the proposed system has been received from the septic system designer.

2. All sites where an advanced wastewater pretreatment device has been installed shall be tracked to manage contact information, maintenance activities, and generate reports. The reports shall be submitted to the Department with the annual reports required at N.J.A.C. 7:9A-3.15 and shall provide the following information, at a minimum:

i. The type of advanced wastewater pretreatment devices installed;

ii. The location of each installed advanced wastewater pretreatment device;

iii. The type of use (for example residential or commercial);

iv. The type of disposal area (for example bed, trench, or drip dispersal);

v. The date when the advanced wastewater pretreatment device was installed and started up; and

vi. The date of each inspection/maintenance calls conducted.

3. The administrative authority shall not issue a certificate of compliance for any system incorporating an advanced wastewater pretreatment device unless a copy of a fully executed service contract has been received and the reporting information required in (e)2 above is recorded.

Subchapter 9. Effluent Distribution Networks

7:9A-9.1 General requirements for effluent distribution

(a) Discharge of effluent from the septic tank or grease trap to the disposal field and distribution of effluent within the disposal field shall be accomplished by one of the following methods:

1. The gravity flow method whereby the pretreatment unit discharges directly to a single distribution lateral, an inter-connected network of distribution laterals or to a distribution box discharging to two or more individual distribution laterals;