

*** Septic and Grease Interceptor Tanks**

Technical Standards
Section V-VI
Pg. 24-28

DPH Connecticut Department of Public Health
Keeping Connecticut Healthy

*** Septic Tanks (pg. 24)**



Concrete Tank

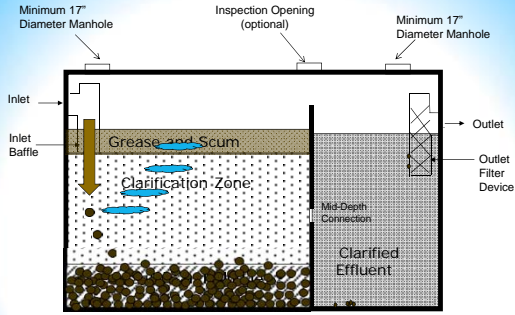
*** Septic Tanks (pg. 24)**



*** Septic Tank**

- * Required for all SSDS
- * Provides the primary treatment: separates, settles and digests
- * Approximate reduction of BOD 30%, nitrogen 10%, and phosphorus 30%
- * Tanks must be approved by CT DPH
- * All newly installed tanks require an effluent filter and must have two compartments

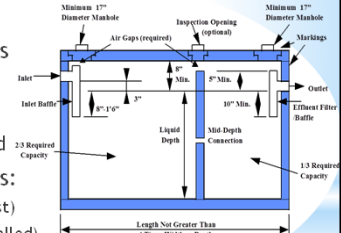
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Typical Septic Tank

*** Septic Tanks (pg. 24)**

- * Two compartments
- * 2/3 capacity inlet side
- * 1/3 capacity outlet side
- * Inlet and outlet baffles
- * Inlet submerged to a depth of 8 to 18"
- * A 1/2" air space above baffles must be provided
- * Inlet and outlet inverts:
 - * Outlet 3 inches lower (precast)
 - * Outlet 2-4 inches lower (installed)
 - * Tank outlet must be set higher than top of leaching system or high level overflow to avoid backup.



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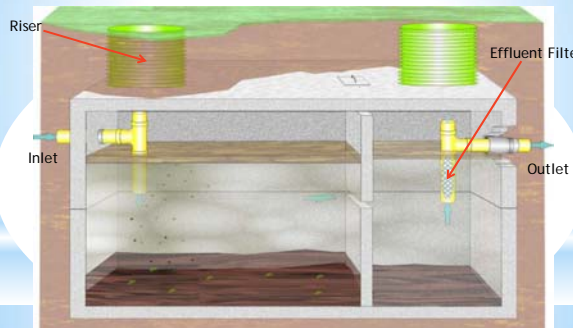
DPH * **Septic Tank Outlet**

Tank outlet above top of leaching gallery



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DPH * **Concrete Septic Tank**



DPH * **Concrete Septic Tanks**

- * 4000-psi (pounds per square inch) prior to shipment.
- * Must not be shipped prior to 14 days without support documentation.
- * Conform to ASTM C 1227 with a few exceptions noted.
- * Watertight tank seals required when specified.

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* **Monolithic Septic tank**

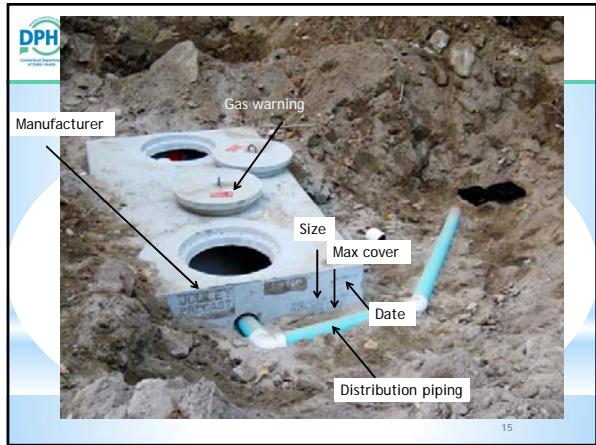
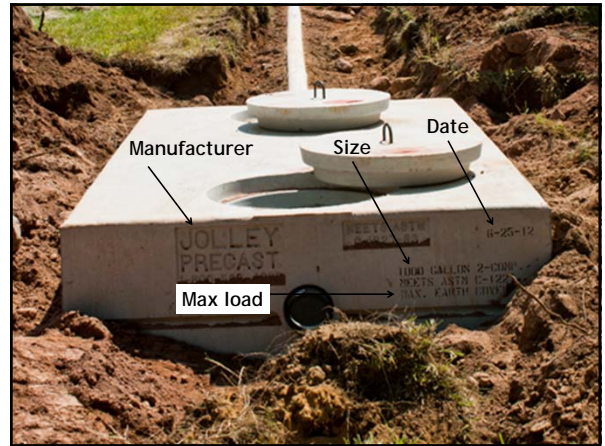


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DPH * **Septic Tank Markings (pg. 26)**

- * Located on outlet side of tank
- * Manufacturer or precaster name
- * Size (i.e., 1250 Gallons)
- * Date Manufactured (9/26/06) 4000-psi (pounds per square inch) prior to shipment. Must not be shipped prior to 14 days without support documentation.
- * Load Limits (Max. cover 3 feet)
- * Gas Warning

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* Non-Concrete Septic Tanks

- * Must be installed per manufacturers specifications.
- * Tank bottoms located in groundwater must have anti-buoyancy / flotation provisions.
- * Must meet IAMPMO standards
- * Tanks required to be marked with size and gas warning.
- * Appendix D may be updated prior to the next publication of the Technical Standards. Check the website.

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DPH * **Setting a Septic Tank**

The tank excavation is dug and elevations checked by the licensed installer prior to setting the septic tank.

Concrete tank
https://www.youtube.com/watch?v=RdsA_yqVBnI

Plastic tank
<https://www.youtube.com/watch?v=jk41XZUfLXs>

DPH * **Septic Tanks**

- * Proprietary leaching system (manufactured leaching structures) companies should be consulted if a repair plan does not include replacing an existing single compartment septic tank.
- * Septic tanks shall have a minimum of 6 inches of cover (fill or soil over the top of the tank).
- * Watertight tank seal required if specified by plan designer.

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Not water tight Water tight

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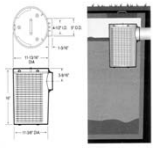
DPH * **Septic Tanks**

- * Septic tanks and grease interceptor tanks, including risers and cover assemblies installed in vehicular travel areas must be H-20 minimum rated.

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DPH * **Effluent Filter (Appendix B)**

- *Protects leaching system from solids
- *Must be cleaned at time of pump out.
- *Approved by DPH
- *Rated for different design flows that must be stipulated on the plan.



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DPH * **Effluent Filter**

The effluent filter is cleaned at the time of tank pump out

https://www.youtube.com/watch?v=H871q0WZ_Ow



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DPH * **Noxious Septic Tank Gas**



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DPH * **Septic Tank Access (pg. 25)**

- * 6 inches of cover required
- * Manholes
 - * 17 inches minimum diameter
 - * Access required for each compartment to allow for pumping of both compartments
 - * Depth not greater than 12 inches below finished grade
 - * Tanks in paved areas or sized 2000 gallons or larger (non-residential) must have manholes extend to grade

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DPH *Septic Tank Risers

- *Required on all new construction and at the time of cleaning for older tanks if manholes are greater than 12 inches below finished grade.
- *Risers and manhole extensions must be constructed to prevent storm water infiltration.
- *Covers to grade must be a minimum of 59 pounds or be equipped with a locking system.

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DPH *Septic Tank Risers

- *Septic tank covers should be kept on the tank when riser assemblies are utilized.
- *If the tank cover is removed and the riser cover weighs less than 59lbs, a secondary safety lid (SSL) or device must be provided below the riser cover.
- *DPH recommends SSL even with riser lids weighing more than 59lbs.

DPH *Secondary Safety Lid or Device

DPH *Secondary Safety Lid or Device

DPH * **Septic Tank Cleaning (pg. 26)**

- * Recommended every 3 to 5 years or as often as necessary to prevent build-up of sludge, grease and scum
- * Purpose is to remove sludge, scum, and solids
- * Clean filter and inspect baffles
- * Tanks to be cleaned by Licensed Septic Pumpers or Installer

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DPH * **Septic Tank Cleaning**

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DPH

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DPH * **Septic Tank Cleaning**

- * Septic Tank Pumping
 - * Lower liquid level first to avoid sludge/scum from flowing to leaching system
 - * Stir solids to allow for pumping
 - * All scum and sludge must be removed
 - * Baffles must be inspected for damage or clogging at time of pumping
 - * Avoid damaging system and clean up spills

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DPH * **Septic Tank Cleaning (pg. 26)**

- * Septic Tank Cleaning
 - * Backflow (liquid flowing back into the septic tank from the leaching structures) conditions at time of tank pump-out under normal use conditions represent a "malfunctioning" condition.
 - * Recommend further system assessment by PE or installer.
 - * "Failed" systems discharge effluent to ground surface or otherwise cause health hazards or nuisance conditions.

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DPH * **Tank Cleaning**

Why septic tanks need to be maintained:
<https://www.youtube.com/watch?v=MVx9WWSUvHw>

How a septic tank is pumped?
<https://www.youtube.com/watch?v=G5H07kPyQ4E>

DPH * **Performance Testing**

- * Leak testing
- * Vacuum Test
- * Water-Pressure Test

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DPH Leak tested using water pressure & observed for 24 hours

1 Water level down approx. 3/4" in 2 hrs.
2 Water level down approx. 2" in 6 hrs.
3 Water level down approx. 4" in 21 hrs.

12/27/2006
12/28/2006

No water was used in the home during the leak test, which confirmed the tank was leaking.

Barry-Eaton District Health Department

DPH **Infiltration & Exfiltration**

- * The tank was dug up & the location of the leak was revealed.
- * A new tank was installed & successful watertight testing performed.

12/28/2006

Barry-Eaton District Health Department

The sewage on the ground, sewage flowing back into the basement and into the sump pump at this site was caused by a leaking septic tank.

Barry-Eaton District Health Department

DPH * **Septic Tanks**

Ground Surface
Septic Tank
Leach Field
18" separation
Water table

When a septic tank leaks all of the work to maintain a separation between the groundwater is gone.

Barry-Eaton District Health Department

DPH * **Sizing Septic Tanks (pg. 27)**

- * Minimum size septic tank is 1,000 gallons
- * Sizing septic tanks for residential buildings are based on number of bedrooms.
- * 3 or fewer bedrooms 1,000 gallon tank

	Single-family	Multi-family
1-3 bedrooms	1,000 gallons	1,250 gallons
For Each Bedroom Beyond 3	Add 125 gallons per bedroom	Add 250 gallons per bedroom

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DPH * **Sizing Septic Tanks (pg. 27)**

- * Garbage grinder add 250 gallons to septic tank capacity (Note: not recommended)
- * Large tub 100 gallons add 250 gallons to septic tank capacity Large tub over 200 gallons add 500 gallons
- * Water Treatment Wastewater add 250 for discharges 50-150 gallons per cycle.
- * Water Treatment Wastewater add 500 for discharges greater than 150 gallons per cycle.



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DPH * **Sizing Septic Tanks for Residential Buildings**

- * 5 bedroom single-family house
- * 1000 gallons for three bedrooms
- * Add 125 for each bedroom after 3

1000 (first 3)
 + 2 x 125 (each bedroom after 3)
 1250 minimum gallons

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DPH * **Residential Buildings**

- * Calculations
- * 24 Bedroom apartment building (multi-family)
- * 1250 for the first 3 bedrooms

1,250 (first 3 bedrooms)
 + 5,250 (21 bedrooms times 250 for multi-family)
 6,500 gallons

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DPH * **Sizing Septic Tanks for Non-residential Buildings and Residential Institutions**

- * Minimum capacity equal to the 24 hour design flow (expected flows from the building), but not less than 1000 gallons
- * Restaurants without grease removal (repairs only): septic tank must increase capacity by 50%
- * If high peak flow conditions exist, a 2 hour minimum detention time must be used for sizing septic tank.

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DPH * **Sizing Septic Tanks for Non-residential Buildings and Residential Institutions**

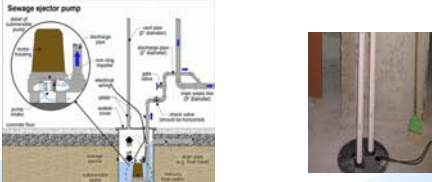
- * High Peak Flow Conditions
- * Theater: Monday-Friday 200GPD Saturday-Sunday 2000GPD
- * Peak Intermission Flow = 500 Gallons/30 minute

$$\frac{500 \text{ Gallons}}{0.5 \text{ hrs}} = \frac{X \text{ Gallons}}{2 \text{ hrs}}$$

X = 2,000 gallons

DPH * **Septic Tank Sizing: Ejector Pumps**

- * Tank size to increase by 50% if more than 25% of the design flow is to be ejected into the septic tank using a solids handling pump.
- * Usually only for basement fixtures



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*Grease Interceptor Tanks and Automatic Grease Recovery Units

Connecticut Department of Public Health
Keeping Connecticut Healthy

* Grease Interceptor Tanks (pg. 27)

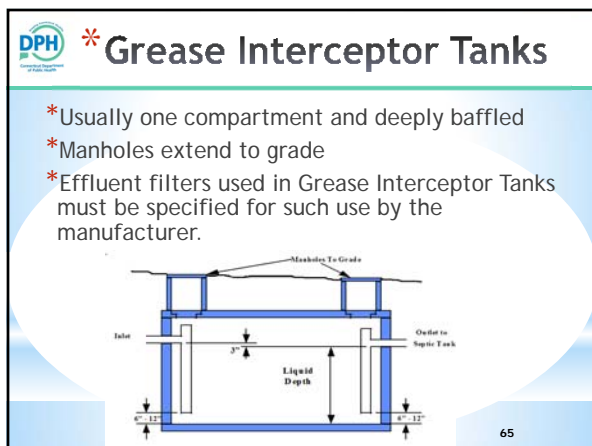
- * Required on all new food establishments with a design flow of 500 GPD or more.
- * A grease interceptor tank is a receptacle that kitchen wastewater flows through before entering the sanitary sewer lines or SSDS.
- * DEEP Fats, Oils and Grease (FOG) General Permit

* Grease Interceptor Tanks (pg. 27)

- * FOG is 10 to 15 percent less dense than water and won't mix (unless higher temperature)
- * FOG floats on top of water.
- * FOG fills the tank from the top down.
- * "Clean" water is pushed out the baffle at the bottom of the tank and into the sewer line.
- * The wastewater leaving the grease interceptor tank is directed to the septic tank.

* Grease Interceptor Tanks

- * Helps prevent grease from clogging the septic tank, piping and leaching system.
- * Allows grease to cool and solidify.
- * Receive only kitchen wastewater
- * Restroom wastewater is directed to the septic tank



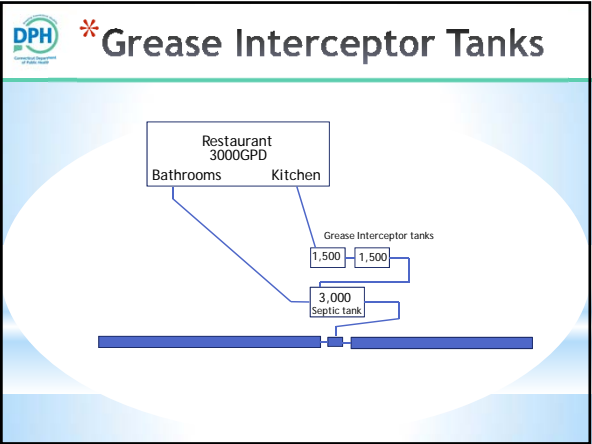
* Grease Interceptor Tanks

- Tank covers should be kept on the tank when riser assemblies are utilized.
- If the tank cover is removed and the riser cover weighs less than 59 pounds, a secondary safety lid or device (SSL) must be provided below the riser cover.
- DPH recommends SSL even with riser lids weighing more than 59lbs.

DPH * **Sizing Grease Interceptor Tanks**

- * Minimum Capacity equal to the 24 hour design flow volume in gallons
- * Not less than 1000 gallons
- * Design flow of 2,000 or more requires two grease interceptor tanks in series

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DPH * **Grease Interceptor Tanks** (pg. 27)

- * If a grease interceptor tank can't be installed, a mechanical automatic grease recovery unit (AGRU) shall be installed.
- * If neither a grease interceptor tank nor an AGRU can be installed, the septic tank size shall be increased by 50%.

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