

POLICIES & PROCEDURES

Title:	Construction Standards for Intermittent Sand Filters	Page 1 of 2
Number:	[Administrative] Policy OS-13	Effective Date: March 17, 2025
Applies To:	Design and Construction of Intermittent Sand Filters	Supersedes: N/A
Approved:	Eric Evans, Assistant Environmental Health Director	Next Review: As Needed

A. Purpose

The purpose of this policy is to establish specific construction standards for Intermittent Sand Filters intended, or required, to protect onsite sewage systems.

B. Policy Statement

All design and construction of intermittent sand filters shall follow the guidelines of this policy.

C. Application Standards

- 1. Location Requirements
 - i. The minimum setback requirements for intermittent sand filters are the same as required for sewage tanks.
- 2. Installation Issues
 - i. If the containment vessel includes a 30-mil PVC liner, the liner must be protected by a three inch layer of sand beneath the liner.
 - **ii.** In order to prevent differential settling when the sand filter is put into service, the filter media must have a uniform density throughout.
 - **iii.** A geotextile filter fabric must be placed on the gravel bed. If cover soil is used, it must be capable of maintaining vegetative growth while not impeding the passage of air (sandy loam or coarser).
 - iv. Two observation ports must be installed in the sand filter. One observation port must be installed to the bottom of the drainrock/top of the media interface. A second observation port must be installed to the bottom of the underdrain. If the effluent exits the sand filter through a pumpwell, the pumpwell may be used as the second observation port.
- 3. Design Standards
 - i. Filter Bed
 - **1.** Coarse Sand Media Specification-The filter media must meet items a, b and c below:
 - a. Particle Size Distribution

Sieve	Particle Size	Percent
		Passing
3/8 inch	9.50 mm	100
No. 4	4.75 mm	95 to 100
No. 8	2.36 mm	80 to 100
No. 16	1.18 mm	45 to 85
No. 30	0.6 mm	15 to 60
No. 50	0.3 mm	3 to 15
No. 100	0.15 mm	0 to 4

b. Effective Particle Size (D10) > 0.3 mm.

- c. Uniformity Coefficient (D60/D10) < 4.0.
- 2. Filter Bed Sizing
 - **a.** The loading rate to the sand filter must not exceed 1.0 gallons/day/square foot, using appropriate daily wastewater flow design estimate.
 - **b.** The surface area of the filter bed must be determined by dividing the design flow estate by the loading rate.
 - c. The media depth must be a minimum of 24 inches.
- **3.** The filter bed is contained either in a flexible, membrane-lined pit, or a concrete vessel. Design and construction must conform to the containment standards set forth in Section 6 of this policy.
- 4. Wastewater Distribution
 - i. Pressure distribution is required and must comply with the pressure distribution policy. This requirement applies to all pressure distributionrelated components.
 - **ii.** A minimum of one orifice for every six square feet of infiltrative surface area, evenly distributed, is required.
 - **iii.** The wastewater must be applied to the layer of drainrock atop the filter media, or sprayed upward against the top of gravelless chambers.
- 5. Treated Wastewater (Filtrate) Collection and Discharge-Filtrate may be collected and discharged from the bottom of the sand filter by either a gravity-flow underdrain, or a pumped-flow pumpwell system. When sand filters are membrane-lined, gravity flow under-drains must exit through a watertight boot.
- 6. Concrete Containment Vessel
 - i. Above-ground tank
 - 1. Walls must be designed as follows:
 - a. At least six inches thick.
 - **b.** Four feet or less in height (or be designed by a qualified professional engineer).
 - **c.** Have rebar reinforcement. 3/8" diameter rebar on two-foot centers horizontally and vertically, with continuous lengths wrapped around the corners.
 - 2. Floors must be designed as follows:
 - a. At least 3.5 inches thick.
 - **b.** Reinforced with steel mesh (CRSI standard #6-1010) to prevent cracking and to maintain watertightness.
 - 3. Tank is to be designed, constructed and sealed to be watertight.
 - **4.** Septic designer must test and certify that the vessel is watertight.
 - ii. Below-ground tank
 - 1. Any below-ground tank must be water-tight. The design of any such tank is to be approved by a qualified professional engineer and, where required by local and/or state regulation, the local health officer. The septic designer must test and certify that the vessel is watertight.
- 7. Constructed Wood Containment Vessel
 - i. Above-ground wood vessel
 - 1. Any above-ground constructed wood containment vessel tank must be watertight. A 30-mil PVC liner must be used. The design of any such tank is to be approved by a qualified professional engineer, and, where required by local and/or state regulation, the local health officer.
 - ii. Below-ground wood vessel
 - 1. Walls
 - a. Constructed of 1/2" plywood.
 - **b.** Have a 2x4 or 2x2 rim.
 - c. Have a 30-mil PVC liner.
 - 2. Tank is to be designed, constructed, and sealed to be watertight.
- **8.** Under-Drains-For concrete tanks or synthetic membrane-lined pits, either gravity under-drains or pumpwells may be used.