PRINCE® PIPES

BIOFIT

Septic Tanks for Wastewater Management

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Introduction

The **PRINCE BIO-FIT** septic tanks have been meticulously designed to offer a superior alternative to traditional septic tanks. Conventional septic systems often suffer from problems such as corrosion & leaks, resulting in groundwater pollution.

In contrast, **PRINCE BIO-FIT** septic tanks are engineered to eliminate these problems while providing a host of exceptional features. A septic tank is a hollow, horizontal, continuous-flow sedimentation tank that serves as the initial stage of treatment in decentralized wastewater systems. Septic tanks promote the settling of heavier solids, the floating of fats and grease, and the anaerobic digestion of sewage solid waste. It also allows for the storage of digested and to-be-digested solids present in sewage until they are removed.

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Functioning of Biofit Septic Tank

In the septic tank, solids are separated from the wastewater. Heavier solids settle at the bottom, lighter solids and fats float to the top, and there is a clear layer in between. This process reduces the solid content of the wastewater by up to 80%. The settled solids are called sludge, the floating thick layer is known as scum, and the clear layer is called well clear. While the liquid in the clear layer is not highly treated, it is much clearer than the wastewater that initially entered the tank as larger particles have moved into the sludge/scum layers.

Another important role a septic tank plays is to store these accumulated solids until they are treated in the system.

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Features

- **Single-piece construction** – PRINCE BIO-FIT septic tanks are crafted using the roto moulding technique, creating a single-piece product that is watertight and airtight.
- **Distinctive design** – PRINCE BIO-FIT septic tanks have a distinctive single-piece, two-compartment design.
- **Exceptional strength** – The robust design, featuring a unique rib structure of the septic tank, ensures unparalleled structural integrity, making it exceptionally sturdy and capable of meeting various loading and handling demands.
- **Easy and fast installation** – PRINCE BIO-FIT septic tanks are ready to use & light in weight, ensuring a straightforward and speedy installation process. Minimal excavation is required, saving considerable time, energy, and costs.
- **Watertight and airtight** – Septic tanks exhibit a crucial characteristic that sets them apart in the realm of wastewater management: their watertight and airtight qualities. This feature serves a vital role in maintaining anaerobic conditions within the tank, safeguarding the delicate ecological balance necessary for effective sewage treatment. PRINCE BIO-FIT septic tanks prevent the infiltration of groundwater and act as stalwart guardians against potential pollution of the soil and groundwater. The meticulous design ensures that septic systems operate efficiently, effectively processing and treating wastewater while simultaneously protecting the ecosystem that lies beyond its confines.
- **Strong chemical resistance** – Unlike traditional tanks, polyethylene remains unaffected by soil and sewage chemicals and gases. This means that the septic tank do not rust, corrode, or need an additional external coating. Polyethylene septic tanks are completely safe from issues like hydrogen sulphide (H_2S), a common concern with masonry, concrete, or hume pipe septic tanks.
- **Exceptional longevity** – Septic tanks crafted from polyethylene are designed to endure up to 50 years, aligning with the typical lifespan of a building, provided ideal conditions are met.
- Polyethylene septic tanks are leak-free, ensuring there is no exfiltration and preventing root penetration.

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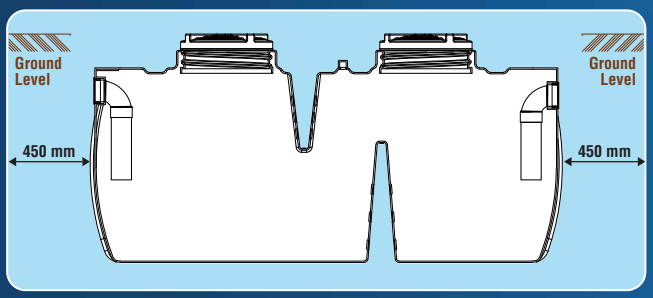
Product Specifications & Range Offered

Septic Tank Size	Recommended Users	No of Flush / day*	Length	Width	Height	Manhole Size	No. of Manholes	Compart-ments	Dia-inlet & outlet pipe	Air vent dia
(in Litres)			(mm)	(mm)	(mm)				(mm)	(mm)
1000	5	8 to 11	2000	910	1000	450	2	2	110	75
1500	8	11 to 16	2300	1010	1100	450	2	2	110	75
2000	10	16 to 22	2560	1100	1150	450	2	2	110	75

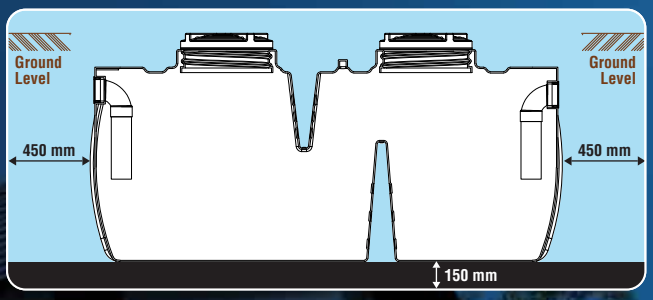
*Considering sedimentation time of 36hrs to 48hrs.

Installation procedure for horizontal septic tanks

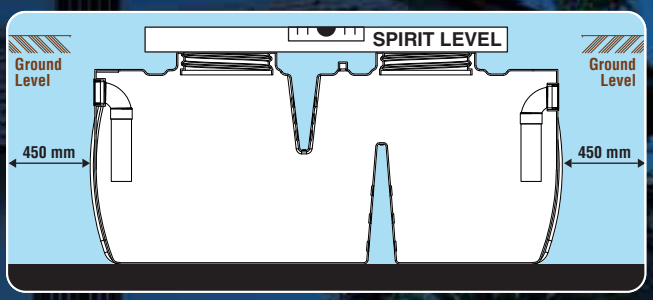
1. **Excavation:** Begin by excavating a pit approximately one and a half feet larger than the plan size of the septic tank. The depth of the pit should be determined based on the position of the inlet and outlet pipes, ensuring the required gradient and disposal point. Considering 150-200mm depth for bedding.



2. **Bed preparation:** Create a 150-200mm thick bedding of granular material, preferably sand, with proper compaction to form an even, flat, and sufficiently solid foundation for the septic tank. Ensure that there are no sharp objects or stones protruding from the base, as they could damage the tank.



3. **Placement of the septic tank:** Lower the septic tank into the pit, making sure it is placed perfectly and aligned parallel to the horizontal and vertical axes of the septic tank. Use a spirit level long scale for precision and position the septic tank with respect to the inlet pipe connection, with the outlet pipe of the septic tank facing towards the soak pit.



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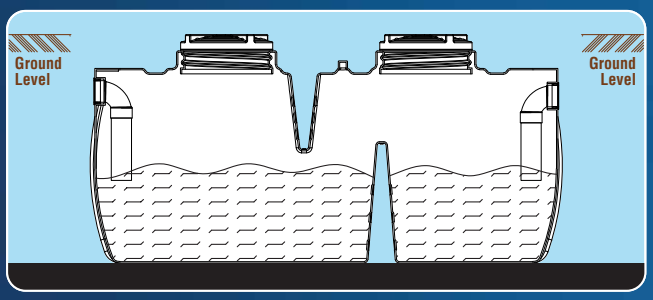
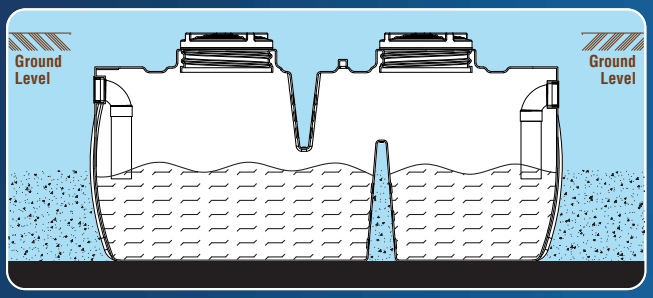
Installation procedure for horizontal septic tanks

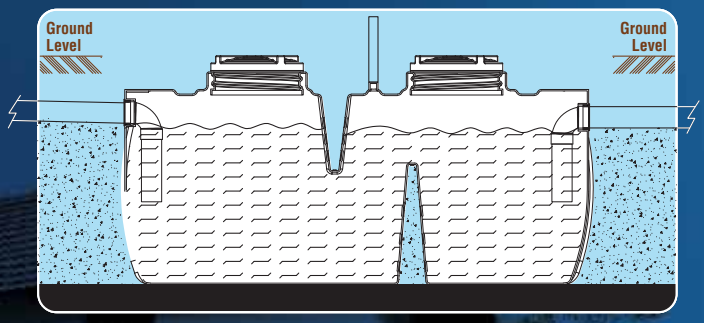
4. **Filling the septic tank with water:** Fill the septic tank with water up to ¼ to ½ of its capacity, a process made easier due to its durable polyethylene construction. This serves the dual purpose of supporting soil compaction while preserving the septic tank's structural integrity, ensuring longevity and reliable performance.



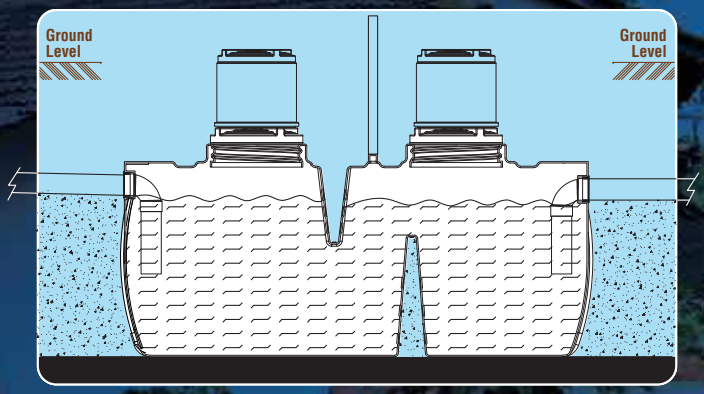
5. **Backfilling the pit:** Commence backfilling in layers, each with a maximum thickness of 250-300mm. Use sand or soft murum for backfilling. Do not use excavated materials containing rock, peat or clay. Ensure that the haunch portion below the septic tank is filled properly with the backfilled material and compacted carefully. Simultaneously fill the tank with water and ensure that the backfilling level never surpasses the rising water level within the tank. For black cotton, loamy, or marshy soils, it is advised to use sand, stone dust or gravel as a backfill material.



6. **Pipe connection:** Fill the septic tank with water and continue backfilling. When the backfilling level reaches the underside of the outlet pipe, make the pipe connections, including the vent pipe connection. Use a vent pipe with a minimum diameter of 75mm (2½"). Maintain a fall ratio of 1:40 to 1:60 between the drain head and the inlet point of the septic tank (1:40 means for each 1 unit fall over a 40 units run).



7. **Extension piece:** Use an extension piece if the septic tank's top entry point is below the ground level.



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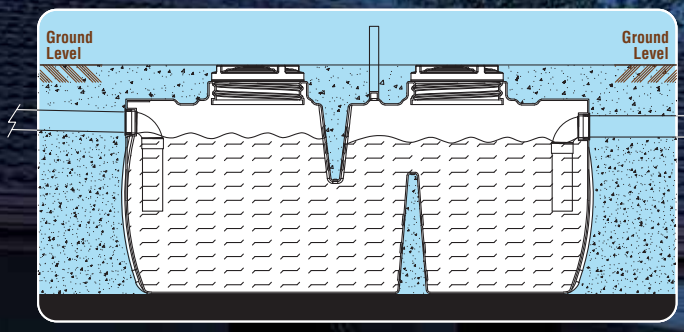
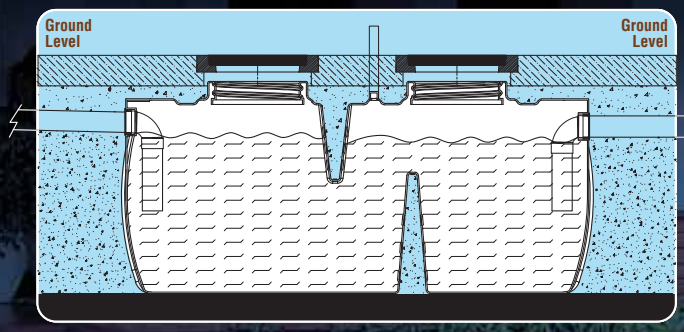
8. **Complete backfilling:** After making the necessary pipe connections, finish backfilling up to the top level of the tank. In cases of pedestrian movement above the backfilled septic tank, standard flooring materials like PCC or paver blocks can meet the requirement.



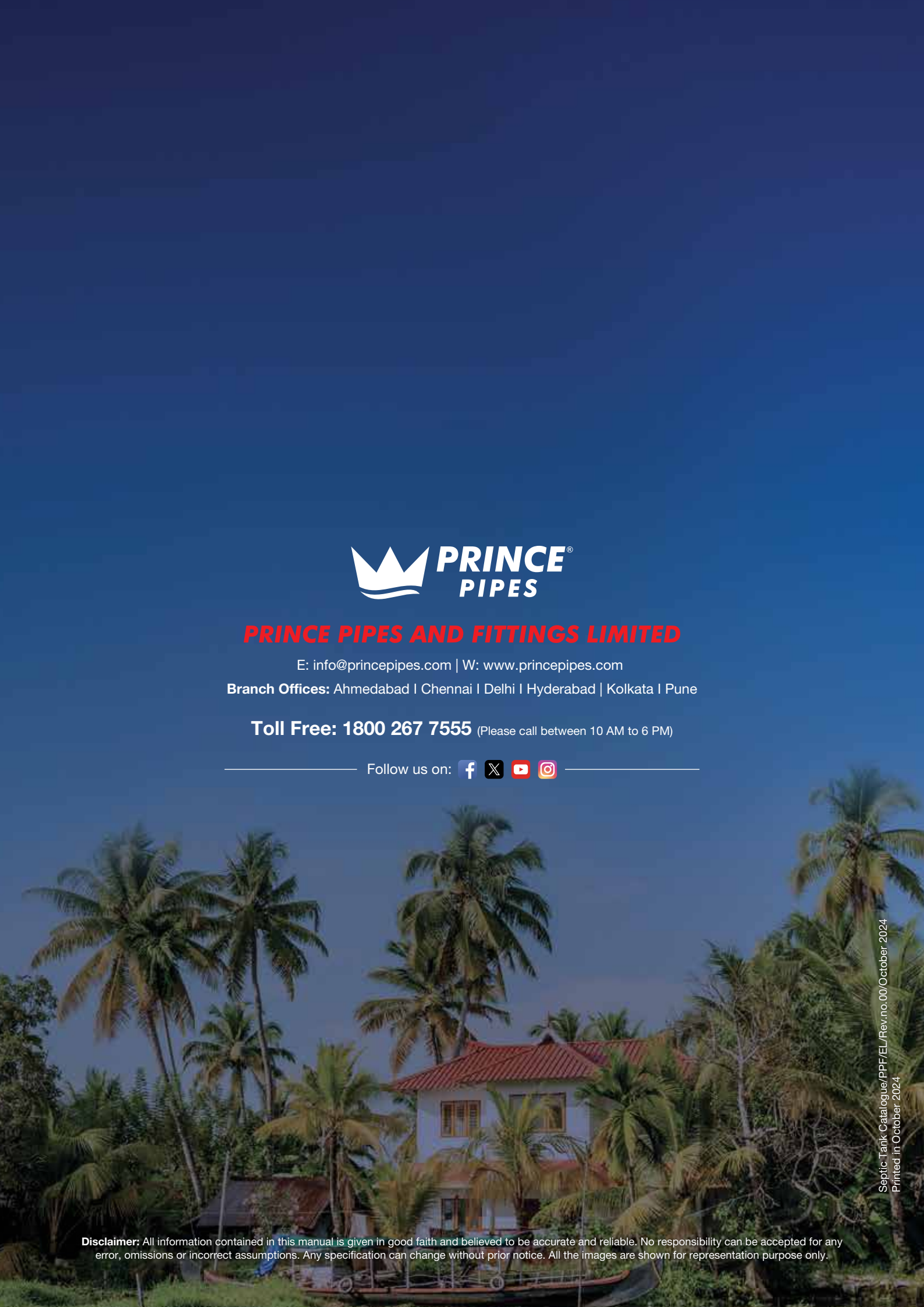
9. **Top cover installation:** Choose an appropriate cover based on the site-specific loading conditions and position the cover atop the tank. For areas with pedestrian traffic and no vehicular loads, it is advisable to use the lightweight plastic cover supplied with the septic tank. In cases of vehicular traffic, opt for an FRP/GRP-reinforced plastic cover with an appropriate load-bearing capacity. A minimum of a 150mm thick PCC layer beneath the cover frame, extending across the full width of the tank, is recommended.



Efficient disposal of septic tank effluents

Effluents released from septic tank may carry disease-causing pathogens and contaminants, posing potential risk to both human health and the environment. To ensure the protection of these vital aspects, it is imperative that these effluents undergo careful and safe disposal. This is typically achieved implementing dispersion trenches or soak/seepage pit, allowed by the natural breakdown of contaminants through the action of beneficial bacteria.

Both dispersion trenches and soak/seepage pits are designed to allow septic effluent to gradually percolate into the surrounding soil, where it is further treated by soil organisms, helping to purify the wastewater before it reaches groundwater. These pits and dispersion trenches are essential to ensure the effective and environmentally friendly disposal of septic tank effluent.



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