



Washtenaw County Department of Public Health Division of Environmental Health

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GENERAL CONSTRUCTION REQUIREMENTS FOR ONSITE SEWAGE SYSTEMS

These general construction requirements are supplemental to individual permit conditions. Refer to the permit for site specific construction details and call with any questions prior to starting construction. Please note that it is the responsibility of the contractor or owner to call MISS DIG at 811 or 800-482-7171 prior to starting any excavation work!

GENERAL INFORMATION

- All Contractors must be certified through the Washtenaw County Environmental Health Division to install onsite sewage systems.
- Sewage permits are to be “posted” on site in a conspicuous location. They should be placed in a waterproof container such as a PVC tube labeled “*Sewage Permit*”, and mounted on a temporary post that can move from job to job.
- Sewage permits are valid for a period not to exceed two years (6 months for Time of Sale replacements). After a permit has expired, a renewal fee of 50% of the original permit cost will be assessed.
- Inspection requests should be called in by 9:30 a.m. of the day the inspection is desired, with an indication of when the job will be ready for inspection. Inspections will be made as soon as possible after the request time and every attempt will be made to conduct the inspection within 48 hours (excluding weekends and County holidays).
- Sewage system installation should be avoided during periods of freezing weather, heavy precipitation or when soils are excessively wet.
- An inspection disapproval (Red Tag) will result when: 1) The job is not ready for inspection when requested; or 2) The work performed does not conform to permit specifications/construction requirements; or 3) Any portion of the system is not open/accessible for the requested inspection or is covered without inspection.
- All materials needed for system installation should be ordered or delivered to the site prior to starting the excavation in order to eliminate unnecessary delays during construction.

SEWER LINE

- ***The sewer line from the house to the septic tank is a plumbing component & is not covered by this permit.***
- Minimum sewer line fall from tank to field is 1/8 inch per foot.
- Schedule 40 PVC pipe, or equal, is required between septic tanks and from the septic tank to the drainfield.
- Any sewer pipe installed under a driveway must be sleeved in a larger diameter pipe and be insulated.

SEPTIC TANKS

- Installation
 - Any newly installed septic tank shall be of masonry construction unless site conditions preclude such installation. Prior to installing any non-masonry tank, the Health Officer must approve the proposed tank type, and installation technique.
 - It is advised that the tank manufacturer be consulted in instances where the tank location is subject to vehicular traffic or burial deeper than 3 feet. Such cases may necessitate additional reinforcement of the tank(s) to avoid structural failure. Documentation from the manufacturer may be required indicating that the tank will withstand the anticipated conditions.
 - All septic tanks must be placed in an area and at an elevation that will allow for ease of maintenance and service.
 - All tanks must be placed on a stable, clean (free of debris and large stones) leveled surface, and be installed to manufacturer specifications.
- Inlets & Outlets
 - The invert inlet of a septic tank shall be a minimum of three inches above the liquid level in the tank. Precast inlet baffles are not required, or recommended.
 - An outlet tee or baffle shall extend below to the middle third of the liquid level and above the liquid level to within one inch of the top of the tank.
 - Septic tank lid(s) are required over all inlet/outlet baffle or tees.
 - All septic tank outlet/inlet seals must have pre-cast seals that meet *ASTM Standards C-923*. Mastic, tar, mortar, cement or other seals are not acceptable.

- Risers

- A riser to grade shall be installed on tank openings that require access for routine maintenance. On large non-residential tanks, additional access risers may be required to facilitate proper removal of accumulated solids. All dual compartment tanks shall have separate lids or a common one over the partition wall to provide easy access to both compartments. Septic tanks are to be installed with risers and lids flush with existing grade.
- Risers must be made of corrosion-resistant material, such as concrete, PVC, fiberglass, and HDPE, and must maintain structural integrity. Typical diameters range from 24" to 30". The diameter used must be compatible with the type of maintenance and service that is expected. If final grade to the top of the tank is 24" or less, a 24" diameter riser is generally sufficient for access. For deeper tanks, or duplex pump installations, a larger diameter riser may be warranted.
- The riser attachment to the tank must be watertight and be achieved in one of the following ways:
 - a. First ring of the riser is cast in the tank during the manufacturing process.
 - b. A non-masonry riser attached to the tank top with stainless steel fasteners and appropriate watertight seal. HDPE risers will not provide a watertight bond with concrete and therefore, butyl rubber or other waterproof, corrosion-resistant, pliable sealant must be used.
 - c. Concrete risers with butyl rubber or other waterproof, corrosion-resistant, pliable sealant.
- Riser lids must be waterproof, resistant to ultraviolet light, resistant to corrosion from septic tank gases and moisture, have a non-slip surface, and a minimum wheel load rating of 2,250 pounds as per International Building Code.
- Lids should contain a durable gasket material that fits tight to the riser to prevent odors, insects, water and soil infiltration.
- Lids must be secured to prevent unauthorized entry into the tank. If screws are used, they must be stainless steel. Typical Phillips or slotted-head screws are not recommended. Screws with hex heads or other designs that require a special tool to remove are recommended.
- Concrete or cast iron lids should be heavy enough to prevent access to children and meet *ASTM 1227 07-C* standards, which specify a concrete lid shall be a minimum weight of 59 pounds.
- To minimize the potential of a concrete lid from flipping when stepped upon, or easily slid to the side, the cover and top of riser should have a "step" shaped design verses a "wedge" or butt joint design.
- Other methods for lid security should be resistant to corrosion, weatherproof and protected from soil.
- Lids must have signage indicating hazardous conditions exist within the tank.
- ***A secondary form of security is required. Secondary devices shall be designed to prevent accidental falls into the tank if the primary lid is removed or damaged.*** Examples include an internal second concrete lid, grates, nets and other devices affixed into the riser. Concrete lids manufactured to fit over the tank opening within the riser must have a non-corrosive durable handle and a "step" shaped design to facilitate removal. To prevent injuries, the concrete lid should only be installed on tanks less than 18" in depth.

- Effluent Filters

- An effluent filter rated at 3 times the expected daily flow is required for:
 - a. All *alternative wastewater disposal systems* (AWDS) or *demonstration* wastewater disposal systems (DWDS)
 - b. A replacement *conventional* wastewater disposal system (CWDS), where existing tank capacity is undersized by less than 750 gallons (and tanks not replaced).
 - c. All pump systems
 - d. All commercial systems
 - e. If in the opinion of the Health Officer, site conditions warrant their use.
- Effluent filters must have a riser to grade and installed so that they are readily accessible for maintenance.
- Effluent filters for new tank installations shall be installed as the outlet device inside the last septic tank. With an existing septic tank, it may be necessary to install the effluent filter in a basin outside the septic tank (between tank and field).

- Tank Tightness Test

- Tank tightness testing is a method used to determine whether a septic tank and/or pump chamber leaks. This testing is required for all AWDS, DWDS and pump system installations where tanks are placed into saturated soils.
- The testing shall be conducted in accordance with ASTM Standard C1227:
 - Section 9.2.1 Vacuum Testing (*Seal the empty tank and apply a vacuum to 2 in. or 50 mm of mercury. The tank is approved if 90% of vacuum is held for 2 minutes*), or
 - 9.2.2 Water-Pressure Testing. (*Seal the tank, fill with water, and let stand for 24 hours. Refill the tank. The tank is approved if water level is held for 1 hour.*) In the event that a tank or chamber fails testing, repairs or replacement shall be required to the extent necessary to resolve the leaking condition.

DRAINFIELD EXCAVATION

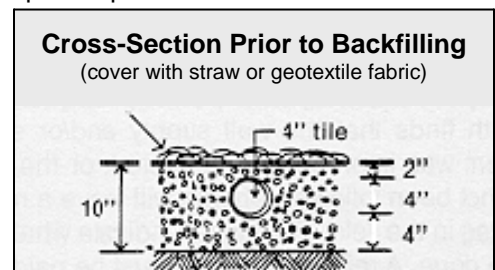
- All excavations require inspection. Excavations must be sized, located, and excavated in accordance with the permit conditions and approved plan.
- Any excavation into a wet formation must be de-watered for inspection purposes. Inspections for wet excavations should be scheduled with this office. Have backfill sand stockpiled on site.
- Excavations covered with excessive water, snow or silt will not be approved.
- All excavations must be performed with a toothed bucket so as not to smear soil – the floor of the excavation shall be loose and uncompacted. A bulldozed excavation will not be approved.
- All excavations shall be backfilled as soon as possible upon approval. All backfill sand must meet at least one of the following specifications:
 1. MDSH&T 2NS Sand
 2. MDSH & T Class I Granular Material
 3. Percent passing #4 sieve:..... 90 - 100%
Percent passing #60 sieve:..... 0 - 50%
Percent passing #100 sieve:..... 0 - 20%
Percent passing #200 sieve or less by washing:..... 0 - 5%

Note: Class II sand is not an approved drainfield backfill material. “Bank run” is not a graded material and may not meet the above standard. If the fill sand is not graded material, a sieve analysis may be required at the contractor’s expense.

DRAINFIELD CONSTRUCTION

- All drainfield installations require inspection. Construct according to permit details and these requirements.
- Drainfield pipe must be of approved type. A list of approved pipe is available upon request.
- All drainfield stone must meet the following 6-A stone specifications:
 - Percent passing 1½ inch sieve:..... 100%
 - Percent passing 1 inch sieve:..... 95 - 100%
 - Percent passing ½ inch sieve:..... 30 - 60%
 - Percent passing #4 sieve:..... 0 - 8%
 - Percent loss by washing:..... Less than 1%

Note: Crushed limestone is not acceptable as drainfield stone.



- 4-inch drainfield pipe shall be constructed on 4-foot centers and laid over a minimum of 4 inches of 6-A stone. 4 more inches of 6-A stone must be added around and beside the drainage pipe and continue to 2 inches above the pipe for a total of 10 inches (4 + 4 + 2) is required. (See diagram.)
 - **Note:** Any drainfield installation for commercial purposes must have a minimum of 6 inches below the pipe for a total stone depth of 12 inches.
- Drainfield stone must be level over the entire bed. Drainfields inspected with stone heaped over the pipe with less stone between rows will not be approved.
- A covering of straw or approved geo-textile fabric shall be placed on top of the stone before the final backfill with soil. A sufficient quantity of these materials must be on-site during the final inspection.
- The drainfield shall be laid so that the amount of soil cover, after final grading is complete, is between 12 and 24 inches.
- Split headers are required for drainfields with 8 or more lines to improve distribution among laterals.
- The header of the drainfield must be constructed of solid pipe, laid level and have solid, watertight joints.
- The perforated pipe (laterals) off the header shall slope not more than 1 inch in 50 feet.
- A “footer” must be installed to connect all laterals at the end of the drainfield and may be solid or perforated.

FINAL COVER AND GRADING

- Sandy loam soils should be used for drainfield cover to increase evaporation rates. Do not cover with clay.
- Vegetative cover over the drainfield should be established as soon as possible after construction in order to prevent soil erosion and promote aerobic conditions within the treatment area.
- Footing drains, downspouts, and water softener discharge are not to be connected to or routed toward any portion of the septic system.
- It is highly recommended that irrigation systems not be installed over drainfield areas.
- Important notes for system start-up:
 - Do not leave tanks or drainfield open for any extended period – silts and clays entering the system can significantly reduce the life of the system.
 - Do not flush oils, solvents or construction materials such as drywall or paint into the septic system.