

COUNTY OF SUFFOLK



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INTERIM STANDARDS

APPROVAL OF PLANS AND CONSTRUCTION - SEWAGE DISPOSAL SYSTEMS FOR SINGLE-FAMILY RESIDENCES

Note: These September 21, 2016 revisions have been prepared to allow innovative/alternative onsite wastewater treatment systems (I/A OWTS) without the need for Board of Review variances. Additional I/A OWTS revisions are currently being drafted, and will include specifications on pressure-dosed shallow leachfields. There will be additional opportunities for stakeholder meetings and input as standards are further refined.

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STANDARDS
APPROVAL OF PLANS AND CONSTRUCTION --
SEWAGE DISPOSAL SYSTEMS FOR SINGLE-FAMILY RESIDENCES

5-101 INTRODUCTION

- A. The purpose of these standards is to assure a safe and sanitary means of disposing of household wastewater. Properly designed, maintained and operated sewage disposal systems minimize the possibility of disease transmission and the potential for contamination of ground and surface waters.
- B. These are Standards for the Suffolk County Department of Health Services for the Administration of Section 760-502 of Article 5 (Sewage Disposal), Sections 760-605, 606, and 609 of Article 6, Section 760-710 of Article 7, and Article 19 of the Suffolk County Sanitary Code. Facilities designed and constructed in compliance with these Standards will be in compliance with these sections of the Suffolk County Sanitary Code.
- C. The information presented in these Standards applies to buildings used as a single-family residence(s) and associated accessory buildings, and only addresses sewage as herein defined. Other solid, liquid or gaseous emissions are subject to a separate review and approval by the Department. For details relating to other than single-family residences, refer to “Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other Than Single-Family Residences.”

5-102 DEFINITIONS APPLICABLE TO THESE STANDARDS

Absorption Area - An area to which wastewater is distributed for infiltration to the soil.

Alternative System - A subsurface sewage disposal system which contains components or design elements not explicitly described in these Standards.

Backfill - 1) The operation of refilling an excavation, usually after some structure or pipe has been placed therein; 2) the material placed in an excavation in the process of backfilling.

Building Sewer - The sewer line which extends from the building to the sewage disposal or sewer system.

Conventional Septic System or Conventional Onsite Wastewater Treatment System (OWTS) - An onsite sanitary system consisting of a septic tank and any associated interconnecting piping, a leaching structure(s), leaching pools, or leaching galleys and any associated interconnecting piping that does not have any active or mechanical means of treatment or any supplemental filtration components.

Department - The Suffolk County Department of Health Services.

Design Flow - The volume of sewage to be used for the purpose of designing the size of the sewage

disposal system.

Design Professional - A person licensed or registered in the State of New York and authorized by the State Education Law to design the systems described in these Standards.

Groundwater - The subsurface water occupying the zone of saturation below the established water table.

Hydraulic Loading - The daily design volume of sewage discharged from the site.

Innovative and Alternative Onsite Wastewater Treatment System(s) (I/A OWTS) - Onsite decentralized wastewater treatment system(s) that, at a minimum, is designed to reduce total nitrogen in treated effluent to 19 mg/l. An I/A OWTS can serve more than one parcel, but shall not be considered sewerage, community sewerage systems, or modified subsurface sewage disposal (denitrification) by the Department under Article 6 of the Sanitary Code.

Leaching Area - The effective sidewall and/or bottom absorption area in a leaching structure, pool, galley.

Leaching Pool or Galley - A covered pit constructed with a perforated, reinforced concrete wall through which septic tank and/or I/A OWTS effluent will infiltrate the surrounding soil.

Leaching Structure - A perforated structure placed below grade and conforming to these standards or 10NYCRR, Appendix 75-A from which septic tank and/or IA OWTS effluent will infiltrate the surrounding soil.

Maintenance Provider - A private entity hired by a Property Owner to provide operation and maintenance and contractual service of an I/A OWTS.

Operation and Maintenance (O&M) - The act of performing tasks specified by the Department and / or the manufacturer of the I/A OWTS including, but not limited to, cleaning, inspection, and adjustment of control settings to ensure proper operation of I/A OWTS and related components.

Operation and Maintenance Contract - A signed contract between the Property Owner and the Maintenance Provider setting forth all required Operation and Maintenance procedures and monitoring schedules along with effective dates of the contract.

Perched Groundwater - Groundwater which is separated from the main body of groundwater by an aquiclude (e.g. a clay lens).

Sewage - The combination of human and household waste with water which is discharged to the home plumbing system including the waste from a flush toilet, bath, sink, lavatory, dishwashing or laundry machine, or the water-carried waste from any other fixture, equipment or machine, together with such groundwater infiltration and surface water as may be present.

Septic Tank - A watertight chamber used for the settling, stabilizing and anaerobic decomposition of sewage.

Sewage Disposal System - Any plumbing or conveyances which result in or are capable of resulting in a discharge of sewage. This includes, but is not limited to, building sewers, septic tanks, leaching structures, sumps, tile fields, holding tanks, treatment works, outfalls, and connecting piping. The term may also refer to a part of a larger disposal system.

Sewer Line - A pipe designed to convey sewage.

Sewer System - (also referred to as sewerage system, public sanitary sewer, municipal sewage disposal system, privately owned communal sewerage system, and communal sewage disposal system) Pipe lines, conduits, pumping stations, and force mains, and all other constructions, devices, and appliances appurtenant thereto, used for conducting sewage, to a point of ultimate disposal.

Single-Family Residence - A dwelling unit; one or more rooms with provision for living, cooking, sanitary and sleeping facilities arranged for the use of one family.

Subsurface Sewage Disposal System - A sewage disposal system designed to treat and dispose of septic tank, I/A OWTS or other treatment facility effluent by application of the effluent to a soil surface at a depth below the surface of the ground.

Registration - The approval process by which a Property Owner completes and submits routine documentation required by the Department so as to certify his/her/its ownership and use of an I/A OWTS.

Responsible Management Entity - The Department, which shall administer and conduct a comprehensive set of activities and have the legal authority and technical capacity to ensure the long term operation, maintenance, and management of all I/A OWTS.

Treatment Works - A facility designed for the purpose of removing certain constituents from sewage by mechanical, chemical or biological means, and stabilizing, and disposing of sewage.

5-103 PROHIBITIONS OF SUBSURFACE SEWAGE DISPOSAL SYSTEMS

- A. The installation of a subsurface sewage disposal system(s) is prohibited when the site to be developed is within a sewer district or has an approved sewer system and treatment works available and accessible.

5-104 PLANS/PERMITS/APPROVALS REQUIRED

A. PLANS/PERMITS REQUIRED TO CONSTRUCT

- 1. Written approval of a site plan/survey is required before start of construction of any new sewage disposal system. Plans shall be prepared by a Design Professional and shall conform to guidelines issued by the Department. These site plans/surveys, once signed and approved by an authorized representative of the Department, become a permit to construct. Refer to the instructions included with the appropriate residential application for your project. Plan

approval is not required for additions (overflows) to existing residential sewage disposal systems, but these Standards shall be used as a guideline for construction.

2. Permits are required for all new sewage disposal systems and modifications to existing systems including, but not limited to, those servicing new single-family residences, home additions, and accessory structures.
3. Permits are required for all new I/A OWTS and modifications to existing I/A OWTS including, but not limited to, those servicing new single-family residences, existing single-family residences, home additions, and accessory structures.
4. In addition to providing for the public health and the environment, there must be reasonable assurance that a system will be able to remain in satisfactory service without incurring large capital reinvestment over the lifetime of the facility.
5. The Design Professional retained to design the sewage disposal system shall be responsible for all aspects of the system design. That responsibility includes gathering all design information as necessary, making the site evaluation, and creating the design. These Standards shall not be construed as providing sufficiently detailed guidance as to relieve the Design Professional from undertaking whatever additional steps or measures that may be necessary to achieve an appropriate design.
6. Permits from other agencies, where such permits may affect placement of the sewage disposal systems, shall be submitted to the Department prior to the Department's issuance of a permit to construct. Such permits include, but are not limited to, wetlands or natural resources permits from the New York State Department of Environmental Conservation, the Army Corps of Engineers, and/or the appropriate local regulatory authority (e.g. delegated agents for administration of New York State Environmental Conservation Law (NYSECL) Articles 15, 24, 25; Wild, Scenic & Recreational Rivers; Town Natural Resources Permits; etc.).

B. CERTIFICATION OF CONSTRUCTION REQUIRED (FINAL APPROVAL)

1. Sewage disposal systems for single-family residences in Suffolk County shall be constructed to conform to these Standards. Applicants are required to obtain Department certification of conformance to these Standards.
2. Prior to backfilling, the installed sewage disposal system shall be inspected and authorized for backfilling by a representative of the Department. In the case of buildings to be served by sewers, the Sewer District is usually the designated representative of the Department. Otherwise, the Department shall be notified at least forty-eight (48) hours in advance of scheduled backfilling. Failure to contact the Department to observe the backfilling process may result in re-excavation of backfill. No approval or permit will be made or issued by the Department unless there is compliance with these requirements.
3. Certification of completed construction will be granted to the applicant on "as built" plans which are to be submitted after the final satisfactory field inspection is completed. These plans

shall include accurate measurements from permanent, fixed reference points to each component of the sewage disposal system and the water supply well or public water service line. These plans are to be signed and sealed by a design professional.

4. In addition to the submission of “as-built” plans, the applicant is responsible for submitting all other documents required to obtain “Final Approval” from the Department. Refer to bulletin on “Instructions for Obtaining Final Approval for Single Family Residences,” Bulletin Number WWM-041(latest revision) and the Permit Conditions provided with the Department’s approved plans for construction (form WWM-058), for more details. Occupancy of a building or discharge to any sewage disposal system is prohibited without the final approval/certification of construction issued by the Department.

5-105 SITING OF SUBSURFACE SEWAGE DISPOSAL SYSTEMS

A. PRIORITY FOR SEWAGE DISPOSAL SYSTEM

Because the failure of a sewage disposal system has the potential for significant public health impacts, first priority during planning shall be given to the location of sewage disposal systems over the location of other improvements on the property.

1. *CONSIDER ALL FACTORS CAREFULLY.* The design professional is responsible to carefully consider the significance of the existing and proposed topography, soils, locations of existing and proposed water supply wells, surface waters and wetlands, groundwater conditions, and the planned locations of other improvements such as foundations, driveways, and construction on adjacent properties, property lines and other limitations of a physical or legal nature.
2. *A SUPERIOR SITE SHALL NOT BE FOREGONE.* A disposal site available prior to development which is adequate for installation of a disposal system which can conform to these standards, or be more in compliance with these standards than other potential disposal sites, shall not be sacrificed to enhance the siting of other improvements being considered for the site.

B. SITE CONDITIONS PROHIBITED. Sewage disposal systems shall not be located:

1. In areas with a surface elevation lower than the 10-year flood level;
2. In any area subject to imminent erosion, which cannot be controlled so as to protect the sewage disposal system;
3. In areas where the maximum high groundwater level is less than one foot below the original ground surface;
4. In areas with slopes greater than 15%;
5. In areas where the existing subsoils contain meadow mat, bog, silts, clays, or other impervious material extending below the groundwater table;
6. In areas where groundwater conditions are not conducive to the proper functioning of subsurface sewage disposal systems;
7. In a swale;

8. Where the topography concentrates runoff onto or into the area where the system is proposed;
9. Where surface water discharges would be induced to artificially raise the groundwater level below the system;
10. In any area or under any part of a building, roadway, driveway, or other improvement that does or may prevent reasonable access for repair or maintenance of the system. (Note systems may be approved to be located under a driveway at the discretion of the Department if proven absolutely necessary.)

C. **SITE CONDITION REQUISITES.** Sewage disposal systems shall be located:

1. On land owned in fee by the Applicant;
2. On the same parcel as the building to be serviced or as specified in Section 5-114 of the Innovative and Alternative Onsite Wastewater Treatment Systems Standards for condominiums, apartments, and cooperatives;
3. In an unimproved area which allows adequate access for maintenance and fifty percent expansion of the leaching facilities. Deepening the system is not permitted in lieu of providing this expansion area;
4. In the “front yard.” A location other than the front yard will be considered in order to protect drinking supply wells and to accommodate unique site conditions (i.e. steep slopes, existing house connection locations, etc.), provided it is in conformance with the other aspects of these Standards and reasonable permanent access is available for maintenance and repair of the system;
5. At least sixty-five (65) feet from bluffs or landward of the dwelling;
6. In conformance with the minimum separation distances for subsurface sewage disposal systems presented in Table 1.

5-106 SUBSOIL AND GROUNDWATER CRITERIA FOR SUBSURFACE SYSTEMS

A. **SOIL INVESTIGATION**

Subsoil conditions shall be shown on the plan. The nature of the soil shall be determined by excavation of one or more test holes or borings at the site of the proposed subsurface sewage disposal system. Test holes/borings must be in the vicinity of the proposed leaching structure(s). The soil investigation shall be subject to the following conditions:

1. The soils in a test holes/borings shall be classified using the ASTM Unified Soil Classification System (ASTM D-2487) as a reference. The test hole/borings shall be carried to a depth of six feet in excess of the proposed leaching structure bottom or, in the case of unusual soil, until a strata of six feet of sand and gravel is reached (defined as SP or SW by ASTM standards). The test holes/borings shall be a minimum of seventeen (17) feet deep or six feet into groundwater.

A test hole/boring log and grade elevation at the test hole/borings location shall be indicated on the plan.

2. The design professional, by providing this information on the submitted plan, is considered as certifying the results. Test holes/borings listed as “by others” are unacceptable unless independently certified by a design professional. Test holes/borings undocumented as to date, time and location of test are not acceptable.
3. Additional test holes/borings witnessed by a representative of the Department may be required prior to approval to construct in areas of unusually poor soils or where data on record with the Department indicates inconsistent conditions.
4. When installing leaching structures, unsuitable soils shall be removed and replaced with sand and gravel, acceptable to the Department, a three foot collar extending down into a minimum six foot strata of acceptable sand and gravel. In those areas where these criteria cannot be met, consult the Department.
5. When installing a leaching structure in sand and gravel (defined as SP or SW by ASTM standards) a minimum of 300 square feet of leaching area shall be provided for up to a four bedroom residence and 400 square feet of leaching area for a five to six bedroom residence. Dwellings greater than six bedrooms shall provide an additional 75 square feet of leaching area for each bedroom.

B. SOIL PERCOLATION TESTS

1. For leaching structures, other than leaching pools or leaching galleys, that are not to be installed in sand and gravel (defined as SP or SW by ASTM standards) acceptable to the Department, soil percolations tests may be used to design the system.
2. Soil percolation tests must be performed in accordance with Department guidelines, 10NYCR, Appendix 75-A and the NYSDOH “Residential Onsite Wastewater Treatment Systems Design Handbook.”
3. Soil percolation test results must be certified by a Licensed Professional Engineer or Licensed Registered Architect and submitted to the Department for review.
4. A maximum leaching rate of 1.20 gallons per day per square feet of leaching is permitted when using soil percolation test results to determine a leaching rate to calculate leaching area in lieu of installing leaching structures in sand and gravel (defined as SP or SW by ASTM standards).
5. A flow of 110 gallons per day per bedroom shall be used to determine the required leaching area when using soil percolation test to determine leaching rate of soils. The minimum leaching area required shall be designed for a four-bedroom residence or a five to six-bedroom residence. For residences with more than six bedrooms, add an additional 110 gallons per day per bedroom.

6. In some case the Department may require reduced application rates based on an evaluation of leaching structure technology.
7. A percolation test is only an indicator of soil permeability and must be consistent with the soil classification of the site as determined from the test holes.

C. GROUNDWATER INVESTIGATION

Groundwater elevation, if encountered shall be shown on soil test logs submitted on plans. All sanitary systems must be designed based upon the highest expected groundwater elevation, and noted as such on the plans. The plans are subject to the following conditions:

1. In areas subject to tidal action, groundwater elevations shall be measured at mean high tide and be so noted on plans.
2. In cases where groundwater elevation is less than seven feet below surface elevation a grading plan is required to be shown on the plans. The grading plan shall indicate plan and profile views of the disposal system, the residence first floor, all waste pipe inverts, the top and bottom of sanitary structures, highest expected groundwater, the top and bottom of any retaining walls, and final grade elevation. The plan view shall indicate final grade by showing one foot contour lines for at least twenty (20) feet from the edge of the sanitary system. A grading plan may also be required for sites containing steep slopes.

D. DEPARTMENT INSPECTION PRIOR TO INSTALLATION

In the case of unacceptable soil and/or groundwater conditions, inspection of the excavation by a representative of the Department is required prior to the installation of the leaching structure.

5-107 MINIMUM SYSTEM REQUIREMENTS

A. SEPTIC TANK CAPACITY

Septic tank minimum capacity shall be provided in accordance with Table 2A. The maximum liquid depth permitted in the septic tank is specified in Table 2B.

B. I/A OWTS CAPACITY

I/A OWTS minimum capacity shall be provided in accordance with Table 3.

C. LEACHING POOL AND LEACHING GALLEY LEACHING AREA

The minimum leaching area is specified in Tables 4, 5 and 6.

5-108 CONSTRUCTION MATERIAL REQUIREMENTS

A. DEPARTMENT APPROVAL REQUIRED

All materials used in the sewage disposal system shall be approved by the Department prior to use.

B. APPROVAL PROCEDURE

1. Drawings of products which meet the functional design criteria of this code and which contain thereon the signed, dated manufacturer's certification as to the structural integrity of the designed and manufactured product for the purpose intended shall be filed with the Department.
2. Once approved, a copy of the product drawing shall be kept on file in the Department. Products so approved are approved for general use and do not require further or repeated product submittal or approval unless such approval is withdrawn by the Department.

C. PRODUCT IDENTIFICATION

All materials shall be identified as to manufacturer and have the identification visible at the time of inspection.

D. GUIDELINES USED BY THE DEPARTMENT

Compliance with the National Sanitation Foundation, The American Society of Testing and Materials, the International Association of Plumbing and Mechanical Officials and/or The American Water Works Association requirements and specifications shall be used as a guideline in reviewing applicable materials of construction for approval by the Department.

5-109 SEPTIC TANK REQUIREMENTS

A. SEPTIC TANK CAPACITY

1. The liquid capacity of a residential septic tank shall be based on the number of bedrooms. The minimum tank capacity shall be one thousand gallons (1,000) for 4 bedrooms or less. The minimum tank capacity shall be one thousand five hundred gallons (1,500) for 5 and 6 bedrooms. Each additional bedroom shall require an additional two hundred and fifty (250) gallons. See Tables 2A and 2B.
2. Garbage grinders are strongly discouraged under this article. A residence with a garbage grinder shall require an increase in septic tank capacity by two hundred and fifty (250) gallons and an additional 75 square feet of leaching area.
3. Hot tubs and whirlpools that discharge directly to the onsite sewage disposal system are discouraged under this article. A residence with a hot tub or whirlpool shall require an increase in septic tank capacity by two hundred and fifty (250) gallons and an additional seventy-five (75) square feet of leaching area.

B. GENERAL SEPTIC TANK REQUIREMENTS

1. Septic tanks shall be constructed of precast concrete, fiberglass, polyethylene, polypropylene, thermoplastics, or other materials in accordance with 10NYCRR, Appendix 75-A. The use of steel septic tanks shall be prohibited under this article.
2. Typical concrete septic tank configurations are shown in Figures 1, 2, & 3. Alternate tank configurations may be accepted if designed in accordance with 10NYCRR, Appendix 75 A.
3. All septic tanks shall have (2) compartments meeting the following requirements:
 - a. The first compartment shall have a liquid volume of 50-75 percent of the required liquid volume.
 - b. All single unit septic tanks shall be divided into two compartments divided by a traverse wall. The inlet compartment shall have 50-75 percent of the total capacity.
 - c. The interior compartment wall (traverse wall) shall not extend to the interior roof without providing for venting equivalent to the area of a four (4) inch diameter pipe. Recommend providing four inch air gap at the top of the wall.
4. Septic tanks shall be watertight and constructed of sound and durable materials that are not subject to excessive corrosion or decay.
 - a. All septic tanks must be certified as watertight by manufacturer and/or design professional using either vacuum testing or water pressure testing methods as follows:
 - i. Vacuum testing: Seal the empty tank and apply a vacuum to four (4) inches (100mm) of mercury. The tank is approved if 90% of vacuum is held for two (2) minutes.
 - ii. Water testing: Seal tank; fill tank with water to outlet invert elevation, let stand for 24 hours. Refill the tank. The tank is approved if water level is held for 10-hour. Water pressure testing is recommended to be done onsite after installation.
5. Access to each tank or compartment of the tank shall be provided by an access cover with an inside dimension of at least twenty inches diameter. All openings shall meet the following requirements:
 - a. Openings shall be provided over all inlet and outlet pipes.
 - b. Access covers over the outlet pipe shall be brought to grade. Access covers over the inlet pipe should be brought to within twelve inches of finished grade. Access covers at finished grade over all manhole openings are strongly encouraged. Access covers set at finished grade shall be locking, watertight, insect proof, flat, skid proof and be approved for sewage use. Refer to section 5-111 for further cover and riser requirements.
 - c. Where extensions are required, they shall be watertight.
 - d. Covers and risers/chimneys shall conform to section 5-111 and be of tight fit or lid shall be tamper resistant and mechanically fastened.
 - e. Septic tank manufacturers shall provide a label of non-corrosive material in prominent location at each access opening to warn “entrance into tank may be fatal.”
6. Inlets and outlets shall be constructed to the following standards:

- a. At least one inlet and one outlet shall be provided through the appropriate end or side wall of each tank. Where more than one inlet or outlet is required for multiple building sewer connections, the tank shall be manufactured with the appropriate number of openings to access the inlets and outlets.
 - b. The outlet invert shall be a minimum of three inches below the inlet invert. However, the Department recommends the outlet invert be at least six inches below the inlet invert.
 - c. The outlet invert shall be a minimum of four feet above the tank bottom, unless otherwise designated in accordance with Department standards or 10NYCR, Appendix 75-A.
 - d. It is recommended that inlet and outlet pipes or penetrations be connected to the tank with a watertight sealed flexible joint and the pipe gasket be fastened to the pipe with stainless steel retractable clamp or other means approved by the Department.
7. When a septic tank is approved to be installed in a driveway or parking area, the tank shall be designed and/or installed to withstand HS-20 or H-20 loading as designated by AASHTO.
 8. Unless otherwise stated, tanks shall be designed based upon 10NYCRR, Appendix 75-A.

C. PRE-CAST CONCRETE SEPTIC TANKS

1. Precast reinforced concrete septic tanks shall conform to American Society for Testing and Materials (ASTM) "Standard Specification for Precast Concrete Septic Tanks C-1227-10a" (Latest Revision).
2. Concrete shall have a minimum compressive strength of 3,000 pounds per square inch (psi) at 28-days set.
3. Precast concrete tanks shall have a wall thickness of a minimum of three inches.
4. Precast concrete sections shall be sealed with one (1) inch butyl rubber joint sealant which conforms to ASTM C-990 (Latest Revision).
5. The traverse wall separating compartments shall extend from the bottom to at least 6 inches above the liquid level and be constructed of reinforced precast concrete.
6. The opening in the traverse wall shall be 8 inches in height and at least 24 inches wide. The center shall be 18 inches below the liquid level. There shall be a minimum of 4 inch air gap at the top of the traverse wall.
7. There shall be a minimum one-foot air space measured from the outlet invert to the bottom of the tank cover.
8. All sewer pipes shall penetrate the vertical sidewall of the tank and may be sealed with grout or other means acceptable to the Department such as watertight sealed flexible joint and the pipe

gasket fastened to the pipe with stainless steel retractable clamp(s).

9. All joints shall be sealed so that the tank is watertight and certified as to water tightness after installation. Tanks that are cast in place must be certified by a licensed professional engineer and, as a minimum, have the floor and walls monolithically poured.
10. Whenever practical, concrete septic tanks shall not be located within groundwater. For installations that are placed within groundwater, the bottom and side portions, up to 18 inches above highest recorded groundwater elevation, of the septic tank shall be monolithically constructed. In cases where this is not practicable, the septic tank unit shall be water-proofed up to 18 inches above the highest recorded groundwater elevation and leak tested to ensure water tightness prior to operation.
11. In cases when concrete tanks are installed in groundwater, the design professional shall submit buoyancy calculations to prove the weight of the tank (with or without anchoring or the addition of ballast) will be at least 1.5 times more than the weight of the water displaced. The buoyancy calculations shall be done using highest expected groundwater elevation with the tank empty.

D. NON-CONCRETE SEPTIC TANKS

1. All walls, floors, roof and access covers shall resist a minimum applied force of 300 pounds per square foot (psf).
2. Unless otherwise stated in this standard, non-concrete prefabricated septic tanks shall conform to the International Association of Plumbing and Mechanical Officials (IAPMAO) "American National Standard for Prefabricated Septic Tanks" ANSI Z1000-2007 and any updates thereto.
3. In addition to the separation distances stated in Table 1, these tanks shall not be installed within eight (8) feet of a driveway or parking area unless a permanent fence or other permanent traffic barrier is installed.
4. Each non-concrete septic tank shall be identified by the manufacturer with the following information permanently marked at the inlet end of the tank:
 - a. Manufacturer name or logo
 - b. Capacity and number of openings
 - c. The date manufactured
5. Precast concrete covers and risers are not permitted to be used on non-concrete septic tanks.

E. SEPTIC TANK INSTALLATION STANDARDS

1. All applicable recommendations provided by the manufacturer shall be implemented.
2. The septic tank shall be installed level in all directions (with a maximum tolerance in any direction of +/- one quarter inch) on a minimum three inch thick bed of properly leveled and

compacted sand (free from rocks) or pea gravel. Backfill shall be placed around the septic tank in such a manner as to avoid damage. Backfill shall be free of large stones, stumps, and construction debris.

3. All outlets from the septic tank shall be provided with an 18 inch drop 'T' or equivalent baffle approved by the Department extending into the liquid on third the liquid depth.
4. Gas deflection baffles are recommended for installation below each effluent drop 'T'. Refer to The New York Stated Health Department "Residential Onsite Wastewater Treatment Systems Design Handbook" latest edition for details.
5. A maximum of three leaching structures are permitted to be piped directly from the septic tank. When four or more leaching structures are required, a distribution leaching structure or box/manhole shall be used to apportion the flow to the leaching structures.
6. Outlets shall be located at the maximum possible flow path from the inlet.
7. The top of the septic tank shall not be located greater than two and half feet or less than one foot below final grade. For septic tanks with domes, the top of the dome shall not be located greater than two and half feet or less than one foot below final grade.

5-110 LEACHING STRUCTURE/SYSTEM REQUIREMENTS

A. GENERAL LEACHING STRUCTURE REQUIREMENTS

1. The bottom of any leaching structure shall be at least three feet above the highest expected/recorded groundwater elevation at the proposed system's location and at least two feet for shallow alternative systems approved by the Department.
2. For leaching structures installed in sand and gravel (defined as SP or SW by ASTM standards), the design of the leaching structure shall be based upon a minimum of 300 square feet of leaching area for up to a four bedroom residence and 400 square feet of leaching area for a five to six bedroom residence. Residences greater than six bedrooms shall provide an additional 75 square feet of leaching area for each bedroom. In cases where percolation tests are performed the application rate must be based on the percolation rate according to section 5-106 of this standard.
3. When leaching structures are installed in sand and gravel (defined by SP or SW by ASTM standards), the effective leaching area of a leaching structure shall be installed entirely in sand and gravel, acceptable to the Department.
4. The bottom and sidewall area of the leaching structures shall be free of debris before backfilling.

B. LEACHING POOL DESIGN AND CONSTRUCTION

1. A typical leaching pool is shown in Figure 4. Typical leaching pool layouts are shown in Figure 6.
2. The leaching area of a leaching pool shall be based on sidewall area and installed in sand and gravel acceptable to the Department. Minimum size disposal systems for sand and gravel conditions are given in Tables 4 and 5.
3. The minimum leaching pool system for a zero to four bedroom single-family residential project are described in Table 4 (also see Figure 6).
4. The minimum leaching pool system for a five or six bedroom single-family residence are described in Table 5.
5. The leaching pools shall be piped directly from the septic tank, I/A OWTS or a distribution structure (See Figure 6).
6. Leaching pools are to be constructed of precast reinforced concrete (or equal) leaching structures with solid domes and/or slabs. Reinforced concrete shall have a minimum compressive strength of 3,000 pounds per square inch (psi) at 28-days set.
7. Leaching pools shall be a minimum of eight feet in outside diameter.
8. When more than one leaching pool is used, all leaching pools shall be of nominally equal size.
9. Access openings with a minimum diameter of twenty (20) inches shall be provided for each leaching pool as shown in Figure 4.
10. Leaching pool covers shall be at least one foot below grade, but not more than two feet. For deeper systems, “dummy” rings shall be used to bring the top of the slab or dome to within four feet of final grade.
11. The maximum permissible depth of a precast concrete leaching pool is twenty-five (25) feet below grade.
12. Leaching pool “chimneys” and covers should conform to the requirements specified in section 5-111.

C. LEACHING GALLEY DESIGN AND CONSTRUCTION

1. A typical leaching galley layout is shown in Figure 5. Leaching galleys in the same row shall have a separation distance of 2 feet, and leaching galley rows shall have a separation distance of 4 feet between rows.
2. The leaching area of a leaching galley shall be based on sidewall area and installed in sand and gravel acceptable to the Department. Minimum leaching galley designs for sand and gravel conditions are given in Table 6.

3. The leaching galleys shall be piped directly from the septic tank, I/A OWTS or a distribution structure (See Figure 5).
4. Leaching galleys are to be constructed of precast reinforced concrete (or equal). Reinforced concrete shall have a minimum compressive strength of 3,000 pounds per square inch (psi) at 28-days set.
5. Leaching galleys shall have a length of 8.5 feet and width of 4.75.
6. When more than one leaching galley is used, all leaching galleys shall be of nominally equal size.
7. Access openings with a minimum diameter of twenty (20) inches shall be provided for each leaching galley as shown in Figure 5.
8. Leaching galley covers shall be at least one foot below grade, but not more than two feet.
9. Consult the Department about the maximum effective depth of the leaching galley.
10. Leaching galley “chimneys” and covers should conform to the requirements specified in section 5-111.
11. The top of the leaching galley shall not be located greater than two and half feet or less than one foot below final grade.

D. OTHER LEACHING STRUCTURE/SYSTEM DESIGN AND CONSTRUCTION

1. Other leaching structures/systems approved by the Department or complying with 10 NYCRR Appendix 75-A and listed in the NYSDOH “Residential Onsite Wastewater Treatment Systems Design Handbook,” Appendix C may be used for single-family residences.
 - a) Plans for use of these leaching structures/systems must be prepared by a Licensed Professional Engineer or Licensed Registered Architect.
 - b) Consult the Department to determine the acceptable leaching area (sidewall or bottom area) of the proposed leaching structure.
 - c) These leaching structure/systems must be designed in accordance with Department guidelines and/or the NYSDOH “Residential Onsite Wastewater Treatment Systems Design Handbook.”
 - d) They must be installed according to manufacturer’s recommendations.
 - e) In addition to Department inspections, the Licensed Professional Engineer or Licensed Registered Architect may be required to supervise the installation of the leaching

structure/system and certify that the system was built in accordance with the approved plan and submits as-built plans of the system.

- f) An effluent filtering mechanism or effluent filter with a label indicating compliance with NSF Standard 46 or equivalent must be installed directly preceding the leaching structure or the septic tank and/or I/A OWTS discharge pipe to the leaching system.

5-111 COVER AND CHIMNEY/RISER REQUIREMENTS

Chimneys/risers and covers shall be required for access into septic tanks, I/A OWTS, manholes and leaching structures for inspection, maintenance, and sewage removal. All chimney/riser and cover connection points shall be of watertight construction.

a) COVERS

1. General Requirements:

- a) Covers shall be a minimum of 20 inches in diameter.
- b) Covers over three feet in diameter shall not be permitted.
- c) Covers shall not allow water to pond on them. Covers shall be flat, with no noticeable upward dome. A crown or dome of no more than 1/8th inch is allowable.
- d) Covers shall have a non-skid finish. Self-lubricating plastics, such as polyethylene, shall not be considered non-skid without addition of non-skid coating.
- e) Covers shall form a watertight seal with the top of the chimney/riser. Covers shall be capable of withstanding a truck wheel load (36 square inches) of 2500 pounds for 60 minutes with a maximum vertical deflection of 1.5 inches.
- f) Covers to grade shall be locking or provided with tamper-resistant stainless steel fasteners and a tool for fastener removal. Tamper-resistant fasteners include recessed drives, such as hex, torx, and square. Fasteners that can be removed with common screwdrivers, such as slotted and Philips, or fasteners that can be removed with standard tools, such as pliers or crescent wrenches, are not considered tamper-resistant.
- g) To prevent tripping hazard, fasteners shall not extend above the surface of the lid.
- h) Penetrations through the cover to allow for pumping of the system without the need for removing the access cover are not permitted.

2. Buried Covers

- a) All covers for pre-cast concrete structures, when not required to be brought to

grade, shall be of precast reinforced concrete (or equal).

3. Cast-Iron Covers

- a) All cast-iron covers shall be set at finished grade, be locking, watertight, insect-proof and be approved for sewage use.

4. Thermoplastics Covers:

- a) All thermoplastics covers shall be set at finished grade, be locking, watertight, insect-proof, flat, skid proof, and be approved for sewage use.
- b) All thermoplastics covers must have UV protection.

b) CHIMNEY AND RISERS

1. Chimneys and risers shall have a minimum diameter of 24 inches.

2. Precast Chimneys:

- a) Chimneys must be constructed of reinforced concrete.
- b) Concrete shall have a minimum compressive strength of 3,000 pounds per square inch (psi) at 28-days set.
- c) Chimneys must have a minimum wall thickness of 2 inches.

3. Non-Precast Risers:

- a) Risers shall be constructed of non-corrosive material and designed to be buried in soil.
- b) Risers shall have a minimum stiffness of 10 psi, when tested according to ASTM D2412. Risers shall be capable of withstanding a truck wheel load (36 square inches) of 2500 pounds for 60 minutes with a maximum vertical deflection of 0.5 inches.
- c) All attachment components shall be constructed of waterproof, non-corrosive materials, such as PVC, ABS, fiberglass, or stainless steel. Adhesives and sealants shall be waterproof, corrosion resistant and approved for the intended application.
- d) The riser-to-tank connection shall be watertight and structurally sound. The riser-to-tank connection shall be capable of withstanding a vertical uplift to prevent riser separation due to tank settlement, frost heave, or accidental vehicle traffic over the tank.

5-112 DISTRIBUTION BOX AND MANHOLE REQUIREMENT

A. MANHOLES OR CLEANOUTS

All house connections shall be provided with a clean-out at the face of the building. Also, manholes or cleanouts (see 5-113 A.5, 8) shall be provided on sewer lines wherever there is a grade change or

alignment change further than ten feet from the foundation and otherwise at intervals not exceeding 75 feet. Refer to Figure 8 for cleanout detail. This requirement does not apply to pipes under pressure. The following additional criteria apply to the design and construction of manholes:

1. The bottom of the manhole shall be coved or benched. The bench shall be the same width as the diameter of the pipe and shall extend upward at least three-quarters the diameter of the pipe.
2. The manhole shall have a minimum inside diameter of four feet unless otherwise permitted by the Department.
3. There shall be a coupling on the sewer line located within four feet of the manhole on both the inlet and outlet side.
4. A minimum drop of 0.1 foot shall be provided between the inlet and lowest outlet invert elevation.
5. If the manhole is more than four feet in depth, rungs shall be provided every twelve inches.
6. The manhole shall be provided with a 24-inch diameter, locking, watertight, flat, skid-proof, and insect-proof cover to grade, located so as to be over the rungs, if any are necessary. Refer to section 5-111 for cover requirements.
7. For sewer lines connecting to community sewerage systems, the house connection shall not be piped directly to a system manhole. Consult the proper sewer authority, e.g. sewer district, for other design criteria.

B. DISTRIBUTION STRUCTURES

The following criteria apply to the design and construction of distribution boxes. Refer to Figure 9 for concrete distribution box detail.

1. All outlets from the distribution structure shall be at the same level to insure the even distribution of flow.
3. To minimize frost action and reduce the possibility of movement once installed, distribution structures must be set on a bed of sand or pea gravel at least 12 inches thick.
4. The drop between inlet and outlet inverts shall be at least two inches. A baffle is required at the inlet side of the box when the pitch of the pipe from the septic tank to the box exceeds one-half inch per foot.
5. The distribution structure shall have a minimum inside diameter of four feet.
6. Distribution structures with bottoms more than four feet in depth from finished grade are not permitted.

7. The distribution structure shall be provided with a 24-inch diameter, locking, watertight, flat, skid-proof, and insect-proof cover to grade. Refer to section 5-111 cover requirements.

C. MANHOLE AND DISTRIBUTION BOX/MANHOLE CONSTRUCTION REQUIREMENTS

1. Pre-Cast Concrete Manholes and Distribution Boxes/Manholes

- a) Reinforced pre-cast concrete shall have a minimum compressive strength of 3,000 pounds per square inch (psi) at 28-days set.
- b) Pre-Cast concrete manholes and distribution boxes/manholes shall be constructed in accordance with ASTM C-478 (latest revision).
- c) The base sections of the manholes and distribution boxes/manholes (bottom slab and 1 foot of sidewall) shall be monolithically cast.
- d) Flexible rubber sleeves for the inlet and outlet wall penetrations shall be cast in place and shall conform to ASTM C-923 (latest revision).
- e) Whenever practical, concrete manholes and distribution boxes/manholes shall not be located within groundwater. For installations that are placed within groundwater, the bottom and side portions, up to 18 inches above highest recorded groundwater elevation, of the unit shall be monolithically constructed. In cases where this is not practicable, the structure shall be water-proofed up to 18 inches above the highest recorded groundwater elevation and leak tested to ensure tightness prior to operation.
- f) In cases when a concrete structure is installed in groundwater, the design professional shall submit buoyancy calculations to prove the weight of the structure (with or without anchoring or the addition of ballast) will be at least 1.5 times more than the weight of the water displaced. The buoyancy calculations shall be done using highest expected groundwater elevation with the manhole empty.

2. Non-Concrete Manholes and Distribution Boxes/Manholes

- a) All walls, floors, roof shall resist an applied force of 300 pounds per square foot (psf).
- b) Fiberglass manholes shall be constructed in accordance with ASTM D3753 (latest revision).
- c) High Density Polyethylene (HDPE) manholes shall be constructed in accordance with ASTM F1759 (latest revision).
- d) These non-concrete structures shall not be installed in areas where the groundwater level can rise to the level of the bottom of the manhole(s) unless the following criteria are met:
 - i. The structures shall be manufactured to accommodate an anchoring system.

- ii. The design professional submits buoyancy calculations.
- iii. Calculations shall be done with highest expected/recorded ground water level plus 2 feet.
- iv. A safety factor of 1.5 is required to be utilized in buoyancy calculations.
- v. For installations within a 100 year flood plain or in SLOSH zones 1 and 2 calculations shall be done with water to the top of the manhole.

5-113 SEWER LINE REQUIREMENTS

- A. The following criteria apply to the design and construction of sewer lines for subsurface sewage disposal systems:
- 1. All sewer lines shall be a minimum of four inches in diameter.
 - 2. There shall be a length of cast-iron sewer line extending through the foundation to a point a minimum of two feet beyond the foundation wall.
 - 3. The sewer line from the building cast-iron pipe to the septic tank and to the leaching pool(s) shall meet or exceed commercial standards class for 2400 sewer pipe, or ASTM standards for plastic sewer pipe with a minimum SDR 35 rating.
 - 4. Slip-ring connectors of the proper type shall be used at the cast-iron joint. 4 inch by 4 inch flexible rubber couplings are not permitted. When attempting to couple to pre-existing, non-conforming house connections consult the Department.
 - 5. The sewer line from the building to the septic tank shall have a minimum pitch of one-quarter inch per foot and a clean-out or manhole every seventy-five (75) feet. Refer to Figure 6 for a clean-out detail.
 - 6. The sewer line from the septic tank to the leaching pool(s) shall have a minimum pitch of one-eighth inch per foot.
 - 7. Sewer line trench(es) shall be firmly tamped. All backfill shall be firmly tamped by hand about the pipe. The pipe(s) shall be securely grouted/secured at the point of entry into the septic tank, I/A OWTS, manhole(s), distribution and leaching structure(s).
 - 8. There shall be no bends in the sewer lines to the septic tank. If bends are unavoidable, then, for bends within the first ten feet from the house foundation, the sewer line shall be constructed of cast-iron from the house foundation up to and including the bend. Long sweep elbows shall be used and bends shall not exceed forty-five (45) degrees as measured along the axis of the starting pipe. For bends further than ten feet from the house foundation an

approved manhole or clean-out shall be installed. For projects with multiple bends, consult the Department prior to installation.

9. All sewer lines shall be straight. When sections of pipes are used, they shall be of the same material and connected with couplings of the same material. The couplings shall be securely installed and watertight. Directional changes through the use of appurtenances may be permitted if absolutely necessary.
10. When using more than one leaching structure, all sewer lines from the distribution box/septic tank to the leaching structure shall be set at the same elevation within the distribution box/septic tank. A maximum of three leaching structures are permitted to be piped directly from the septic tank or I/A OWTS. When four or more leaching structures are required, a distribution leaching structure or manhole shall be used to apportion the flow to the leaching structures.
11. Sewer lines are not permitted to penetrate domes or chimneys/risers.

5-114 INNOVATIVE AND ALTERNATIVE ONSITE WASTEWATER TREATMENT SYSTEM (I/A OWTS)

A. General Requirements

1. Only I/A OWTS technologies approved for Experimental, Pilot, Provisional, or General Use in accordance with the Department's standards for "Approval and Management of Innovative and Alternative Onsite Wastewater Treatment Systems" may be proposed for installation and use on parcels as a means of sewage disposal.
2. Plans for use of an I/A OWTS must be prepared by a Licensed Professional Engineer or Licensed Registered Architect.
3. In addition to Department inspection, the Licensed Professional Engineer or Licensed Registered Architect may be required to supervise the installation of the I/A OWTS and certify that the system was built in accordance with the approved plan, and must submit as-built plans of the system.
4. The installer must hold a current Liquid Waste License pursuant to Chapter 563 Article VII (Septic Industry Businesses) and Endorsement J (Innovative and Alternative Treatment System Installer) through the Suffolk County Department of Labor, Licensing and Consumer Affairs, pursuant to Suffolk County Code § 563-79(II) (J). The Department of Labor, Licensing, and Consumer Affairs maintains a list of licensed I/A OWTS Maintenance Providers.
5. All I/A OWTS must be registered with the Department in accordance with Article 19 of the Suffolk County Sanitary Code prior to the Department granting certification of completed construction on "as built" plans.

6. An executed Operation and Maintenance Contract between the Maintenance Provider and Property owner must be submitted to the Department prior to approval of the I/A OWTS registration by the Department in accordance with Article 19 of the Suffolk County Sanitary Code.
7. All installed I/A OWTS are required to have an initial 3-year warranty and operation/maintenance service contract.
8. When an I/A OWTS requires a vent, the unit shall be vented to the roof of the residence being served. Vent pipes shall extend a minimum of 6 inches above the roof line and the top of the vent shall have a minimum horizontal separation of 12 inches to the sloped portion of the roof. In cases where it is not practical to vent the system to the residence roof, a vent pipe may be piped to the exterior side of the residence and terminate a minimum of 18 inches above grade. These vent pipes shall be located a minimum of 3 feet from any window or doorway and must terminate with a carbon filter device. All vent pipes must have a minimum diameter of 2 inches.
9. Installation and use of the I/A OWTS must conform to the Department's approved I/A OWTS guidance document prepared in accordance with the standards for "Approval and Management of Innovative and Alternative Onsite Wastewater Treatment Systems."

B. I/A OWTS Minimum Design Requirements

1. The minimum rated daily treatment capacity of these units shall be in accordance with Table 3.
2. I/A OWTS must meet the minimum separation distances stated in Table 1 or approved separation distances stated in the Department's approved I/A OWTS guidance document prepared in accordance with the standards for "Approval and Management of Innovative and Alternative Onsite Wastewater Treatment Systems."
3. I/A OWTS tanks shall be constructed of precast concrete, fiberglass, polyethylene, polypropylene, thermoplastics, or other materials in accordance with Department standards and 10NYCRR, Appendix 75-A. The use of steel tanks is prohibited.
4. When an I/A OWTS requires a septic tank for pretreatment the septic tank shall be designed in accordance with sections 5-107 and 5-109 of this standard.
5. I/A OWTS's that utilize a leaching structure/system other than a leaching pool or leaching galley system shall have an effluent filtering mechanism as part of the manufactured product or an effluent filter with a label indicating compliance with NSF Standard 46 or equivalent installed on the system outlet prior to discharge to the leaching structure/system.
6. Unless otherwise specified, the leaching structure/system that follows an I/A OWTS shall be designed in accordance with section 5-107 and 5-110 of this standard.
7. At a minimum, all I/A OWTS treatment tanks shall have 20-inch covered access openings to

grade located over the inlet and outlet. Covers shall be either 20-inch diameter watertight and insect-proof locking cast iron covers or thermoplastic covers at final grade. All covers and chimneys/risers shall be designed in accordance with section 5-111 of this standard.

8. When a I/A OWTS is approved to be installed in a driveway or parking area, the unit shall be designed and/or installed to withstand HS-20 or H-20 loading as designated by AASHTO.
9. Garbage grinders shall not be permitted when an I/A OWTS is utilized as means of sewage disposal. In addition, water softeners shall not discharge into an I/A OWTS.
10. Under this standard the maximum permitted design capacity of a single I/A OWTS unit for single-family residences shall be less than 1,000 gallons per day.
11. I/A OWTS tanks shall be watertight and constructed of sound and durable materials that are not subject to excessive corrosion or decay.
 - a. All tanks must be certified as watertight by manufacturer and/or design professional using either vacuum testing or water pressure testing methods as follows:
 - i. Vacuum testing: Seal the empty tank and apply a vacuum to four (4) inches (100mm) of mercury. The tank is approved if 90% of vacuum is held for two (2) minutes.
 - ii. Water testing: Seal tank; fill tank with water to outlet invert elevation, let stand for 24 hours. Refill the tank. The tank is approved if water level is held for 10-hour. Water pressure testing is recommended to be done onsite after installation.
12. Due to similar wastewater characteristics, I/A OWTS approved under this standard may be installed to serve attached or detached single-family residences, which are located on a single parcel. I/A OWTS installed to serve multiple single-family residences located on a single parcel of land such as condominiums, apartments complexes, or co-operatives must meet the following:
 - a) The maximum I/A OWTS unit design flow shall be less than 1,000 gallons per day.
 - b) The site must meet the Suffolk County Sanitary Code Article 6 Population Density Equivalent requirements.
 - c) A single entity must maintain the Operation and Maintenance Contract for the I/A OWTS such as a homeowners association for a condominium or a single-property owner for an apartment complex.
 - d) The I/A OWTS unit must be designed to be traffic bearing to meet the requirements of AASHTO H-20 or HS-20 loading.
 - e) The I/A OWTS must be designed to function during power outages.

- f) All other components of the sewage disposal installation such as the leaching structures, house connections, septic tanks, manholes, sewer lines must meet the Departments “Standards for Approval of Plans and Construction For Sewage Disposal Systems For Other Than Single-Family Residences.” Plans for these types of proposals must be submitted in accordance with the Department requirements for Other Than Single-Family Residences.
- g) Subsurface sewage disposal systems (such as an I/A OWTS) for recreation/community buildings, clubhouses or other non-residential structures located on a parcel containing condominiums, an apartment complex, or co-operatives must be designed in accordance with the Departments “Standards for Approval of Plans and Construction For Sewage Disposal Systems For Other Than Single-Family Residences.”

C. I/A OWTS Tank Construction Material Requirements

1. Concrete Tanks

- a) Reinforced concrete shall have a minimum compressive strength of 3,000 pounds per square inch (psi) at 28-days set.
- b) Wall thickness shall be a minimum of three inches unless the design has been certified by a New York Licensed Professional Engineer as complying with all appropriate requirements for thin wall construction. All walls, bottom and top shall contain reinforcing to resist an applied force of 300 pounds per square foot (psf).
- c) Pre-cast concrete sections shall be sealed with one (1) inch butyl rubber joint sealant which conforms to ASTM C-990.
- d) All sewer pipes shall penetrate the vertical sidewall of the tank and shall be sealed with grout or other means acceptable to the Department such as watertight sealed flexible joint and the pipe gasket fastened to the pipe with stainless steel retractable clamp(s).
- e) All joints shall be sealed so that the tank is watertight. The Manufacturer or licensed design professional shall certify water tightness after installation. See section 5-114, B.10. Tanks that are cast in place require prior approval from the Department and must be certified by a Licensed Professional Engineer. At a minimum, the floor and walls of a concrete tank must be monolithically poured.
- f) Whenever practical, concrete I/A OWTS shall not be located within groundwater. For installations that are placed within groundwater, the bottom and side portions, up to 18 inches above highest recorded/expected groundwater elevation, of the I/A OWTS unit shall be monolithically constructed. In cases where this is not practicable, the I/A OWTS unit shall be water-proofed up to 18 inches above the

highest recorded /expected groundwater elevation and leak tested to ensure tightness prior to operation.

- g) In cases when concrete tanks are installed in groundwater, the design professional shall submit buoyancy calculations to prove the weight of the tank (with or without anchoring or the addition of ballast) will be at least 1.5 times more than the weight of the water displaced. The buoyancy calculations shall be done using highest expected/recorded groundwater elevation with the tank empty.

2. Non-Concrete Tanks

- a) All walls, floors, roof and access covers shall resist an applied force of 300 pounds per square foot (psf).
- b) Unless otherwise stated in this standard, non-concrete prefabricated tanks shall conform to the International Association of Plumbing and Mechanical Officials (IAPMAO) “American National Standard for Prefabricated Septic Tanks” ANSI Z1000-2007 material requirements and any updates thereto.
- c) Non-concrete tanks shall not be installed in areas where the groundwater level can rise to the level of the bottom of the tank(s) unless:
 - i. The tank is manufactured to accommodate an anchoring system.
 - ii. The design professional submits buoyancy calculations.
 - iii. Calculations shall be done with highest expected/recorded ground water level plus 2 feet.
 - iv. A safety factor of 1.5 is required.
 - v. For installations within a 100 year flood plain or in SLOSH zones 1 and 2 calculations shall be done with water to the top of the tank.
 - Particular care must be taken during installation, bedding, and backfilling of these units so as to prevent damage to tank walls. The manufacturer's installation instructions shall be followed.
 - All tanks should be sold by the manufacturer completely assembled. If, because of size, the tank is delivered to the site in sections, all joints shall be sealed with watertight gaskets.
 - All tanks shall be tested for water tightness after installation using a method specified by the manufacturer and approved by the Department.
- d) In addition to the separation distances stated in Table 1, non-concrete tanks shall not be installed within 8 feet of a driveway or parking area unless a permanent fence or other permanent traffic barrier is installed.

D. I/A OWTS Installation Standards

1. Install I/A OWTS tanks according to manufacturer's recommendations. All applicable recommendations provided by the manufacturer shall be implemented.
2. The I/A OWTS tank shall be installed at level in all directions (with a maximum tolerance in any direction of +/- one quarter inch) on a minimum 3-inch thick bed of properly leveled and compacted sand (free from rocks) or pea gravel.
3. I/A OWTS Tanks shall be provided with a single outlet. A distribution box/manhole or distribution leaching structure may be required for all systems with multiple leaching structures unless an alternative design is approved by the Department.
4. The top of the I/A OWTS tank shall not be located greater than 2.5 feet or less than one foot below final grade.

E. Provisions for Sampling I/A OWTS

Each I/A OWTS must have a sampling point acceptable to the Department where composite and/or grab samples of the system effluent can be acquired by the Department, manufacturer, or third party that provide representative samples of the effluent discharge. In some cases, the Department may require the installation of a sampling manhole or other sampling structure. In those cases, sampling manholes or structures shall be designed according to the following:

1. General Requirements:
 - a) At a minimum all sampling manholes shall have 20-inch covered access openings to grade located over the inlet and outlet. Covers shall be either 20-inch diameter watertight and insect-proof locking cast iron covers or thermoplastic covers at final grade. All covers shall be designed in accordance with section 5-111 of this standard.
 - b) Extension Collars (chimneys or risers) may be used for the purpose of bringing the covers to grade provided that they are firmly affixed in place. The extension collar (chimney or riser) shall be designed in accordance with section 5-111 of this standard.
 - c) When sampling manholes are approved to be installed in a driveway or parking area, the manhole shall be designed to be traffic bearing to meet the requirements of AASHTO H-20 or HS-20 loading.
 - d) The outlet invert elevation shall be a minimum of 0.1 foot below the inlet invert elevation.
 - e) Sampling manholes shall have an inside diameter of 2 feet or an inside area of 2 foot by 2 foot.

- f) There shall be a maximum retention depth below the outlet invert elevation of six inches.
- g) All sewer pipes penetrating the sampling manhole shall be accomplished with flexible rubber sleeve and stainless steel tightening devices.
- h) Maximum depth for sampling manhole shall be 4 feet.

2. Concrete Sampling Manholes

- a) A typical pre-cast sampling manhole is shown in Figure 7.
- b) Reinforced concrete shall have a minimum compressive strength of 3,000 pounds per square inch (psi) at 28-days set.
- c) Pre-cast sampling manholes shall be constructed in accordance with ASTM C-478 (latest revision).
- d) The base sections of the sampling manholes (bottom slab and 1 foot of sidewall) shall be monolithically cast.
- e) Flexible rubber sleeves for the inlet and outlet wall penetrations shall be cast in place and shall conform to ASTM C-923 (latest revision).
- f) Whenever practical, concrete sampling manholes shall not be located within groundwater. For installations that are placed within groundwater, the bottom and side portions, up to 18 inches above highest recorded groundwater elevation, of the sampling manhole unit shall be monolithically constructed. In cases where this is not practicable, the sampling manhole shall be water-proofed up to 18 inches above the highest recorded groundwater elevation and leak tested to ensure tightness prior to operation.
- g) In cases when concrete manholes are installed in groundwater, the design professional shall submit buoyancy calculations to prove the weight of the tank (with or without anchoring or the addition of ballast) will be at least 1.5 times more than the weight of the water displaced. The buoyancy calculations shall be done using highest expected groundwater elevation with the manhole empty.

3. Non-Concrete Sampling Manholes

- a) All walls, floors, roof shall resist an applied force of 300 pounds per square foot (psf).
- b) Fiberglass sampling manholes shall be constructed in accordance with ASTM D3753 (latest revision).

- c) High Density Polyethylene (HDPE) sampling manholes shall be constructed in accordance with ASTM F1759 (latest revision).
- d) These manholes shall not be installed in areas where the groundwater level can rise to the level of the bottom of the manhole(s) unless:
 - i. The manhole shall be manufactured to accommodate an anchoring system.
 - ii. The design professional submits buoyancy calculations.
 - iii. Calculations shall be done with highest expected ground water level plus 2 feet.
 - iv. A safety factor of 1.5 is required.
 - v. For installations within a 100 year flood plain or in SLOSH zones 1 and 2 calculations shall be done with water to the top of the manhole.

4. Other Sampling Structures

- a) Plans may be submitted with an alternative sampling structure(s) (e.g. sampling traps, etc.).
- b) Plans for use of an alternative sampling structure must be prepared by a Licensed Professional Engineer or Licensed Registered Architect.
- c) The design professional must ensure the sampling structure provides adequate retention and access for collection of samples (composite and grab samples). In addition, the sampling structure shall permit adequate flushing of the retention area.
- d) In addition to Department inspections, the Licensed Design Professional may be required to supervise the installation of the sampling structure and certify that the system was built in accordance with the approved plan, and submit as-built plans.

F. Electrical Requirements

1. Control Panels

- a) The control panel box must be placed outside on a suitable pedestal near the structure that it serves. Alternatively, the panel box may be mounted on an outside wall of the structure (preferable a utility room, and not a living space).
- b) Exterior panel placement enables the system to be serviced at any time, eliminating the need to access the inside of the building.
- c) The panel box must be within view of the system location to help facilitate operation and maintenance.

- d) The control panel shall be placed at a comfortable height for access.
- e) The panel shall meet National Electrical Manufacturers Association (NEMA) 4X specifications.
- f) The conduit must have appropriate seals to prevent gases and moisture from reaching the control panel or junction boxes.
- g) Each system shall be equipped with a functioning warning system which will activate audible and visual alarms that can be readily seen and heard by the occupants of the building served. The Department recommends a telemetry device be installed to provide immediate remote alarm notification to the O&M provider covered by the O&M agreement.
- h) Systems which are not designed to flow by gravity must be equipped with a control panel with means of connecting a portable generator to operate the system during a power outage.

2. Pumps, Blowers, Level Sensors, and Controls

- a) The electrical junction box serving the pump motor and floats must be watertight and located outside the I/A OWTS tank chamber.
- b) All pumps and float trees must be accessible and serviceable from access openings.
- c) The floats shall be attached to a Schedule 40 PVC float tree that can be easily removed for service or adjustment. The floats shall not be attached to the force main.
- d) The Department shall observe the pump system operate through a normal operating cycle. The Licensed Professional Engineer or Licensed Registered Architect shall have the system fully checked and run through several cycles prior to requesting a final Department inspection. Testing the system without water is not acceptable.
- e) Inspection for leakage of the force main fittings will be made during the pump test procedure.

5-115 ALTERNATIVE SYSTEMS

- A. The treatment systems addressed thus far in these Standards are considered conventional or I/A OWTS and may be used on sites with adequate soil percolation and vertical/horizontal separation distances unless otherwise prohibited. Many sites are not suitable for such systems. The purpose of these Standards is to assure proper treatment of sewage rather than to restrict use of land. In cases where conventional systems are not suitable, alternative designs of sewage disposal systems may be considered by the Department on a limited experimental basis or for replacement systems on difficult sites provided:

1. The system shall be designed by a Licensed Professional Engineer.
 2. It is clearly demonstrated that the proposed system is physically equivalent or better than the conventional systems, in respect to storage capacity, leaching area, land area utilization, grading, accessibility, maintainability, reparability, life expectancy, energy usage, effluent quality and reliability.
 3. An engineering report determines that the proposed design is most suitable for the building site and that the proposed sanitary system will function properly without causing any health hazard and will minimize the impact on the surrounding environment.
 4. The design professional supervises the installation of the system and certifies that the system was built in accordance with the approved plan and submits as-built plans of the system.
- B. Alternative systems, on an experimental basis, are inappropriate for realty developments or subdivisions and will not be approved for same.

5-116 OTHER SYSTEMS

- A. In the event it is determined that any of the following types of disposal systems are necessary, they will be considered by the Department provided an onsite subsurface sewage disposal system is provided, capable of meeting the requirements of these Standards and the following special conditions:
1. *Holding tanks.* Such tanks shall meet the same construction requirements as a septic tank, except that the holding tank shall not have an “outlet.” Volume of the tank shall be determined by the Department.
 2. *Composters.* These units shall be installed in accordance with the manufacturer’s instructions. The units shall have a label indicating compliance with the requirements of the National Sanitation Foundation (NSF) Standard 41 or equivalent. Only units with a five-year warranty or more shall be installed.

5-117 SEPARATION OF WATER AND SEWER LINES

- A. The following criteria shall apply to the installation of sewer lines in respect to water lines:
1. PARALLEL INSTALLATION
 - a) Water lines shall be laid at least ten feet horizontally from any sewer line. The distance shall be measured edge to edge.
 - b) If it is not practical to maintain a horizontal separation of ten feet, the Department may allow a deviation on a case-by-case basis. Such deviation may allow for the installation of the sewer line to be a minimum of 5 feet to waterline, provided that the bottom of the water line is at least 18 inches above the top of the sewer line.

- c) If the vertical separation as described in item b above cannot be obtained, the Department may allow a deviation on a case-by-case basis. Such deviation may allow for the installation of the sewer line to be a minimum of 5 feet to a sleeved water line, provided that the bottom of the water line is at least 12 inches above the top of the sewer line and both are constructed of pressure rated pipe and shall be pressure tested to assure water tightness prior to backfilling.

2. CROSSINGS

- a. The crossing of water and sewer lines should be avoided unless proven absolutely necessary. In such cases:
 - 1) sewer lines shall be laid below the water line and provide a separation of at least eighteen inches between the bottom of the water line and the top of the sewer line; and
 - 2) sewer line joints shall be at least ten feet from the point of crossing.
- b. When local conditions prevent placement of the water line above the sewer line, the following additional conditions apply:
 - 1) a vertical separation of at least eighteen (18) inches shall be provided between the bottom of the sewer line and the top of the water line; and
 - 2) water line joints shall be at least ten feet from the point of crossing; and
 - 3) sewer lines shall be constructed of materials and joints that are equivalent to water main standards of construction for the entire length of the sewer line and shall be pressure tested to assure water-tightness prior to backfilling.

5-118 FINAL GRADING AND BACKFILLING

A. FINAL INSPECTION

At the time of completion, the system shall be left visible for inspection. Prior to inspection, the bottom of the pipe trench shall be backfilled with granular material and stabilized to provide a firm bedding. The property lines shall be “staked” in order to ascertain that the system is located on the property in accordance with these Standards.

B. BACKFILL & GRADING

The completed system shall be backfilled and covered with suitable soil following approval to do so by the Department. The property shall be graded so as to minimize surface drainage into the system. A maximum five percent slope shall be maintained for a minimum of twenty (20) feet horizontally from the nearest edge of the sanitary system before tapering off to prevent seepage of the leachate

through the toe or edge of the slope. Steep grades further than twenty (20) feet from the sanitary system shall be stabilized pursuant to local codes.

C. RETAINING WALLS

1. In cases where the maximum five percent slope cannot be maintained, the utilization of retaining walls, or other means, may be approved. In such cases, the retaining walls, or other means, shall be designed by a Licensed Professional Engineer or Registered Architect and be shown as part of a grading and plot plan. The plan shall be reviewed and approved by the Department prior to construction.
2. Retaining walls shall be designed in accordance with good engineering practice and applicable building and/or zoning codes. In addition, retaining walls cannot be closer than ten feet from the nearest part of the sewage disposal system. Retaining walls within twenty (20) feet of a sanitary system shall be waterproof concrete. Note retaining walls not intended to contain sewage are permitted to be 5 feet, minimum from sanitary structures.

5-119 SEWAGE EJECTOR SYSTEMS

- A. All systems should be designed to flow by gravity. Only when absolutely necessary should pumps be used. In such cases, the sewage ejector system shall be designed by a licensed professional engineer and plans must be reviewed and approved by the Department prior to construction.
- B. Minimum requirements shall include:
 1. Dual pump system with easy access and removal; with a locking cover to grade (Refer to section 5-111 of this standard.)
 2. High-level alarm with interlock to annunciate upon startup of second pump
 3. Electronic control to alternate pump selected as lead pump
 4. Freeze protection
 5. Refer to Section 5-114 F for electrical requirements for control panels, pumps, etc.
 6. The pump station should be installed following the septic tank. In cases where the pump station is installed before the septic tank the pumps shall be grinder type sewage pumps and all electrical components shall be explosion proof and conform to the requirements for Class I, Division 1, Group D of the National Electric Code.
 7. Pump station and other related appurtenances located above the highest recorded groundwater table.
 8. When a sewage ejector system is approved to be installed in a driveway or parking area, the unit shall be designed and/or installed to withstand HS-20 or H-20 loading as designated by AASHTO.
 9. All sewer pipes penetrating the Sewage Ejector System Basin shall be accomplished with flexible rubber sleeve and stainless steel tightening devices.

C. Sewage Ejector System Basin Construction Requirements

i. Pre-Cast Concrete Sewage Ejector System Basin

- a. Reinforced pre-cast concrete basins shall have a minimum compressive strength of 3,000 pounds per square inch (psi) at 28-days set.
- b. The base sections of the sewage ejector system basin (bottom slab and 1 foot of sidewall) shall be monolithically cast.
- c. Flexible rubber sleeves for the inlet and outlet wall penetrations shall be cast in place and shall conform to ASTM C-923 (latest revision).
- d. Whenever practical, the basin shall not be located within groundwater. For installations that are placed within groundwater, the bottom and side portions, up to 18 inches above highest recorded groundwater elevation, of the unit shall be monolithically constructed. In cases where this is not practicable, the structure shall be water-proofed up to 18 inches above the highest recorded groundwater elevation and leak tested to ensure tightness prior to operation.
- e. In cases when the concrete basin is installed in groundwater, the design professional shall submit buoyancy calculations to prove the weight of the structure (with or without anchoring or the addition of ballast) will be at least 1.5 times more than the weight of the water displaced. The buoyancy calculations shall be done using highest recorded /expected groundwater elevation with the manhole empty.

ii. Non-Concrete Sewage Ejector System Basin

- a. All walls, floors, roof shall resist an applied force of 300 pounds per square foot (psf).
- b. These structures shall not be installed in areas where the groundwater level can rise to the level of the bottom of the manhole(s) unless:
 - i. The structure is manufactured to accommodate an anchoring system.
 - ii. The design professional submits buoyancy calculations.
 - iii. Calculations shall be done with highest expected ground water level plus 2 feet.
 - iv. A safety factor of 1.5 is required.
 - v. For installations within a 100 year flood plain or in SLOSH zones 1 and 2 calculations shall be done with water to the top of the manhole.

5-120 VARIANCES

- A. The Commissioner of the Department of Health Services, on written application, may grant a variance, in accordance with Section 760-220 of the Suffolk County Sanitary Code, from a specific provision of these Standards in a particular case, subject to appropriate conditions, where such variance is in harmony with the general purpose and intent of the Standards, and when such application for a variance has been considered by a Review Board appointed by the Commissioner.
- B. The Commissioner may impose more stringent requirements in a specific case when necessary to ensure an adequate and satisfactory sewage and waste disposal system.

5-121 APPROVAL BY THE COMMISSIONER OF HEALTH SERVICES

In accordance with Article 2 and Article 6 of the Suffolk County Sanitary Code, the foregoing are Standards for Sewage Disposal Systems for Single-Family Residences approved by the Suffolk County Commissioner of Health Services and include the required details for submission of plans and other information to the Suffolk County Department of Health Services to assure conformity to the approved Standards. These Standards are effective September 21, 2016.

September 21, 2016

Date

Signature on File

James L. Tomarken, MD, MPH, MBA, MSW
Commissioner of Health Services

(Amended 11/13/1995, 1/9/2004, 9/21/2016)

TABLE 1 - MINIMUM SEPARATION DISTANCE TO SEWAGE DISPOSAL SYSTEMS (IN FEET)

Table of Minimum Horizontal Separation Distances From:	Septic Tank, I/A OWTS Pump Station, or Manhole	Leaching Structure/System (including expansion)	Sewer Line, Force Main
Building with Cellar/Basement	10 ft.	10 ft.	5 ft.
Building on Slab	5 ft.	10 ft.	5 ft.
Porches, decks, house overhangs, cantilevers, etc.	5 ft.	5 ft.	5 ft.
Water Service Line/Laterals/Mains ¹	10 ft.	10 ft.	10 ft.
Underground Utilities	5 ft.	5 ft.	5 ft.
Surface Waters ²	75 ft.	100 ft.	50 ft.
Public Water Well	200 ft.	200 ft.	50 ft.
Private Well ³	75 ft.	100/150 ft.	50 ft.
Road Storm Drains/Stormwater Recharge Basin ⁴	20 ft.	20 ft.	10 ft.
On-site Drywells/Drainage Structures ⁴	10ft	10ft	10ft
Catch Basins (non-leaching)/Drainage Pipe ⁵	5 ft.	10 ft.	5 ft.
Leaching Pool	8 ft.	8 ft.	5 ft.
Septic Tank, Pump Station, or Manhole ⁶	5 ft.	8 ft.	5 ft.
Property Lines	5 ft.	5 ft.	5 ft.
Swimming Pool	20 ft.	20 ft.	5 ft.
Retaining Wall (water proof) ⁷	10 ft.	10 ft.	5 ft.
Fuel Storage Tanks (below ground)	10 ft.	10 ft.	10 ft.
Bluffs	65 ft.	65 ft.	65 ft.

NOTES:

1. If proven to be absolutely necessary, water lines may be approved within 10 feet of a sewage disposal system, provided the water line is protected from contamination or disturbance (e.g. Installation of line inside a larger diameter line for protection).
2. Distances between leaching structure and wetlands are subject to approval by the New York State Department of Environmental Conservation & the local municipality prior to issuance of Suffolk County approval.
3. Distances between leaching structure and wells are based upon the depth of the well (s) involved or realty subdivision requirements. Refer to "Standards and Procedures for Private Water Systems". For separation to Geothermal Wells see General Guidance Memorandum #25
4. A minimum of 10 foot separation is required between water service line/laterals/mains and the edge of all stormwater drainage leaching structures.
5. A minimum of 5 foot separation is required between water service line/laterals/mains and the edge of all stormwater drainage non-leaching structures and associated piping.
6. Multiple unit septic tanks shall be considered one structure and therefore individual components may be installed at lesser separation distances.
7. Retaining walls not intended to contain sewage are permitted to be 5 ft, minimum from sanitary structures

TABLE 2A - MINIMUM SEPTIC TANK CAPACITIES

Number of Bedrooms	Minimum Tank Capacity (gallons)	Minimum Liquid Surface Area (sq. ft.)
0, 1, 2, 3 or 4	1,000	27
5 or 6	1,500	41
7 or 8	2,000	55

NOTES:

Tank size requirements for more than six bedrooms shall be calculated by adding 250 gallons and seven square feet of surface area for each additional bedroom. A garbage grinder shall be equivalent to an additional bedroom for determining septic tank capacity.

TABLE 2B – MAXIMUM SEPTIC TANK LIQUID DEPTH

Tank Diameter	Maximum Liquid Depth
8 ft.	5 ft.
10 ft.	6 ft.
12 ft.	7 ft.

TABLE 3 – MINIMUM INNOVATIVE AND ALTERNATIVE ONSITE WASTEWATER TREATMENT SYSTEMS (I/A OWTS)

Number of Bedrooms	Minimum I/A OWTS Rated Treatment Capacity (gallons per day)
1, 2, or 3	400
4	440
5	550
6	660

NOTES:

I/A OWTS size requirements for more than six bedrooms shall be calculated by adding 110 gallons per day per bedroom for each additional bedroom. A garbage grinder is not permitted to be connected to an I/A OWTS.

TABLE 4- MINIMUM LEACHING SYSTEM DESIGN FOR A ZERO TO FOUR BEDROOM RESIDENTIAL PROJECT

Depth to Groundwater	Minimum Leaching System (300 ft ² sidewall area)
Over 17 feet	1 pool; 12' deep, 8' dia. or systems below
11 to 17 feet	2 pools; 6' deep, 8' dia. or system below
9 to 11 feet	3 pools; 4' deep, 8' dia.
less than 9 feet	Design Alternative System

NOTES: A distribution box is required for all multiple pool systems unless an alternative design is approved by the Department. For other designs involving larger diameter pools or deep systems (sewer lines greater than 4 feet below grade) contact the Department

TABLE 5 - MINIMUM LEACHING SYSTEM DESIGN FOR A FIVE TO SIX BEDROOM RESIDENCE

Depth to Groundwater	Minimum Leaching System (400 ft ² sidewall area)
Over 21 feet	1 pool; 16' deep, 8' dia. or systems below
13 to 21 feet	2 pools; 8' deep, 8' dia. or systems below
11 to 13 feet	3 pools; 6' deep, 8' dia. or system below
less than 11 feet	Design Alternative System

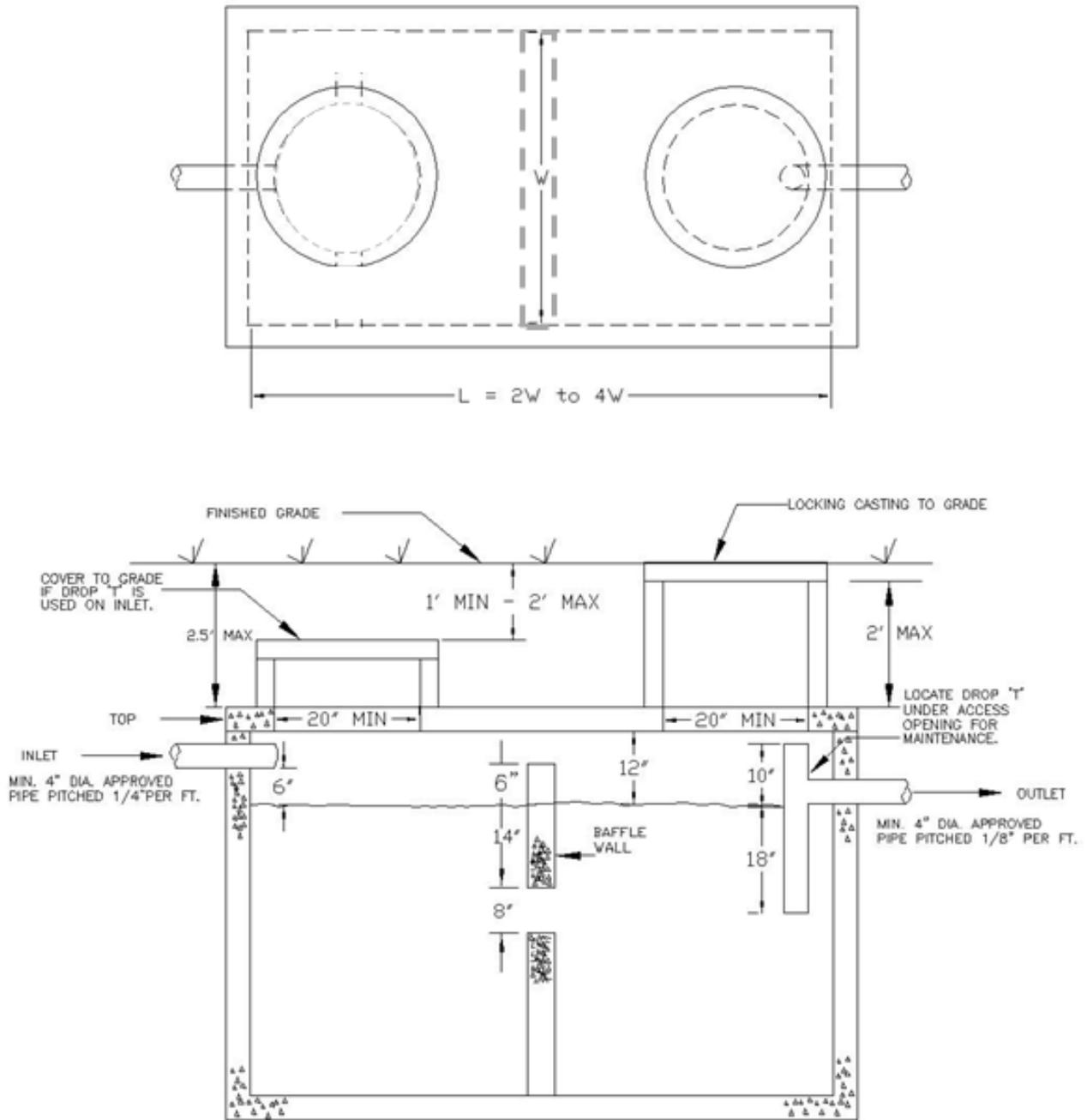
NOTES: A distribution box is required for all multiple pool systems unless an alternative design is approved by the Department. For other designs involving more than six bedrooms, deep systems (sewer lines greater than 4 feet below grade) or larger diameter pools contact the Department.

TABLE 6 – LEACHING GALLEY DESIGN FOR ZERO TO FOUR BEDROOMS (300 ft² sidewall area) AND FIVE TO SIX BEDROOM (400 ft² of sidewall area) RESIDENTIAL PROJECTS

Dimensions (ft)			Area (sf)			Capacity			300sf	400sf
Height	Width	Length	Side	Front	Bottom	Vol (ft ³)	Vol (gal)	SF/Unit	# Units	# Units
2	4.75	8.5	17	9.5	40.38	80.75	604.05	53	6	8
2.5	4.75	8.5	21.25	11.88	40.38	100.94	755.06	66.25	5	7
3	4.75	8.5	25.5	14.25	40.38	121.13	906.08	79.5	4	6
3.5	4.75	8.5	29.75	16.63	40.38	141.31	1058.09	92.75	4	5
4	4.75	8.5	34	19	40.38	161.5	1208.1	106	3	4

FIGURE 1

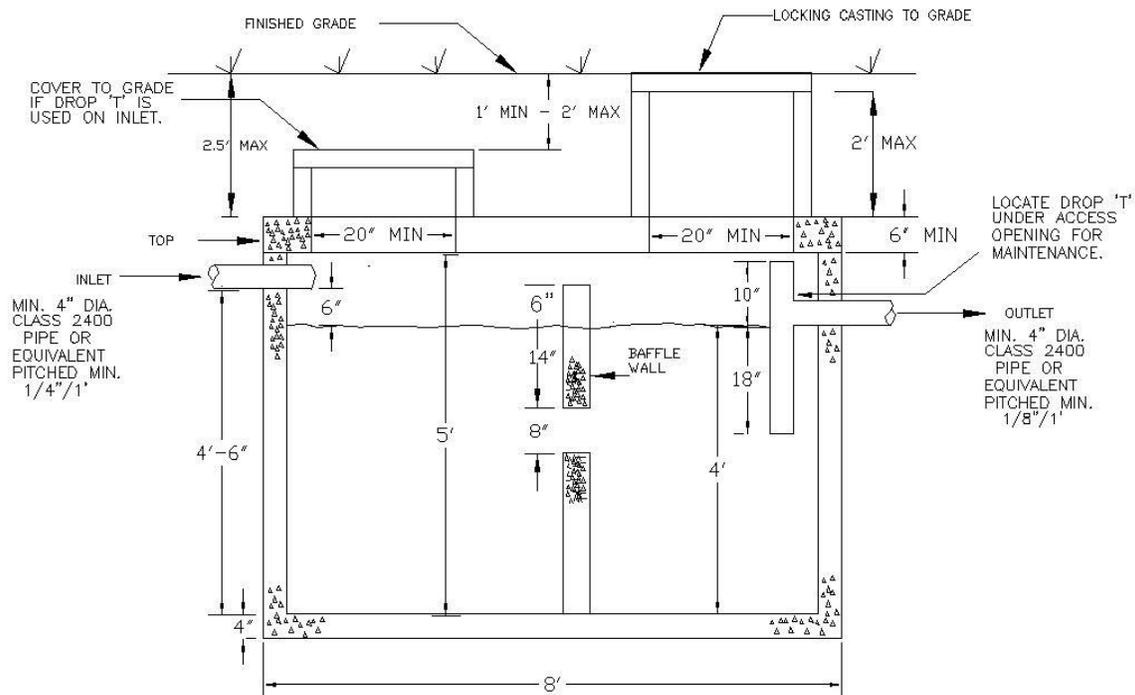
TYPICAL CONCRETE RECTANGULAR SEPTIC TANK*



*See Section 5-109 for Actual Design Details

FIGURE 2

TYPICAL CONCRETE CYLINDRICAL 1250 GALLON SEPTIC TANK WITH SLAB

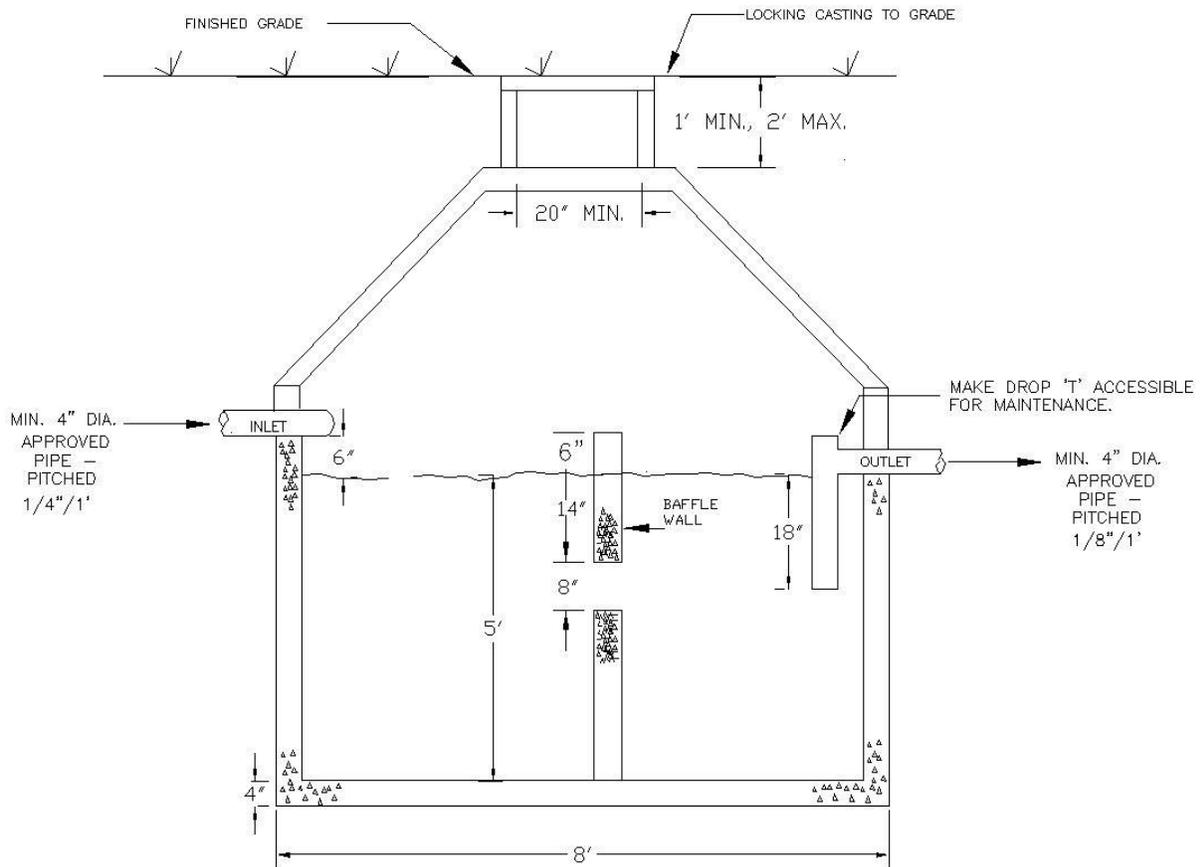


TYPICAL DETAILS OF CONSTRUCTION

1. A MINIMUM OF 4 INCHES APPROVED REINFORCED PRECAST CONCRETE BOTTOM AND 3 INCH WALLS.
2. AN 8 FEET IN DIAMETER BY 5 FEET HIGH APPROVED REINFORCED PRECAST CONCRETE SOLID RING.
3. AN APPROVED REINFORCED PRECAST CONCRETE 6 INCH THICK SLAB TOP IN LAWN AREAS.
4. DROP T's MUST BE PINNED OR OTHERWISE FIRMLY ATTACHED.
5. LIQUID DEPTH MUST BE 4 FEET.

FIGURE 3

TYPICAL CONCRETE CYLINDRICAL 1500 GALLON SEPTIC TANK WITH DOME



TYPICAL DETAILS OF CONSTRUCTION

1. A MINIMUM OF FOUR INCHES CONCRETE BOTTOM.
2. AN 8 FEET IN DIAMETER BY 6 FEET HIGH APPROVED REINFORCED PRECAST CONCRETE SOLID RING.
3. AN APPROVED REINFORCED PRECAST CONCRETE SOLID DOME OR SLAB MIN. 6" THICK.
4. THE OUTLET AND INLET PIPES MUST BE LOCATED WITHIN THE SOLID RING.
5. DROP T MUST BE PINNED OR OTHERWISE FIRMLY ATTACHED.
6. LIQUID DEPTH MUST BE 5 FEET.

FIGURE 4

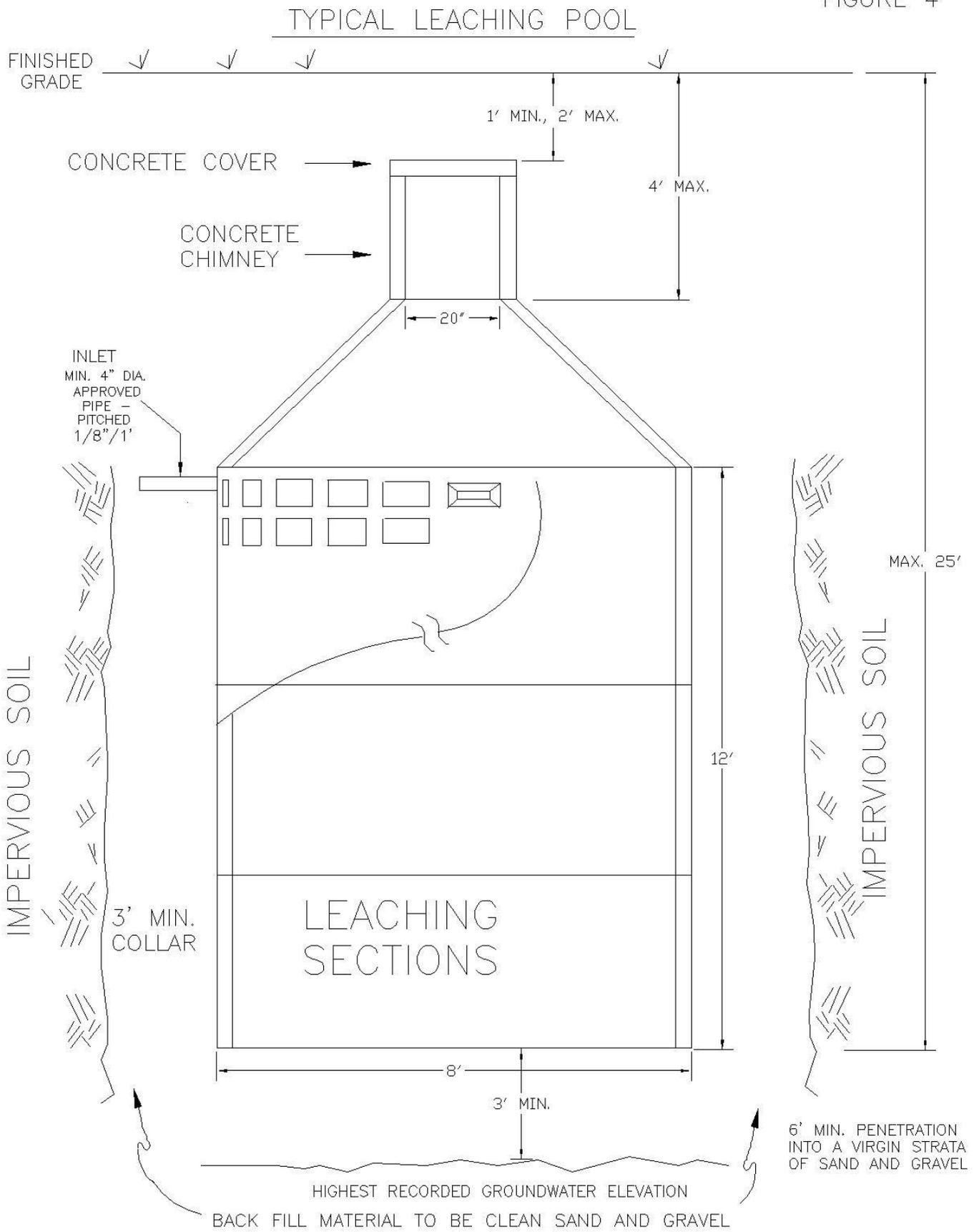
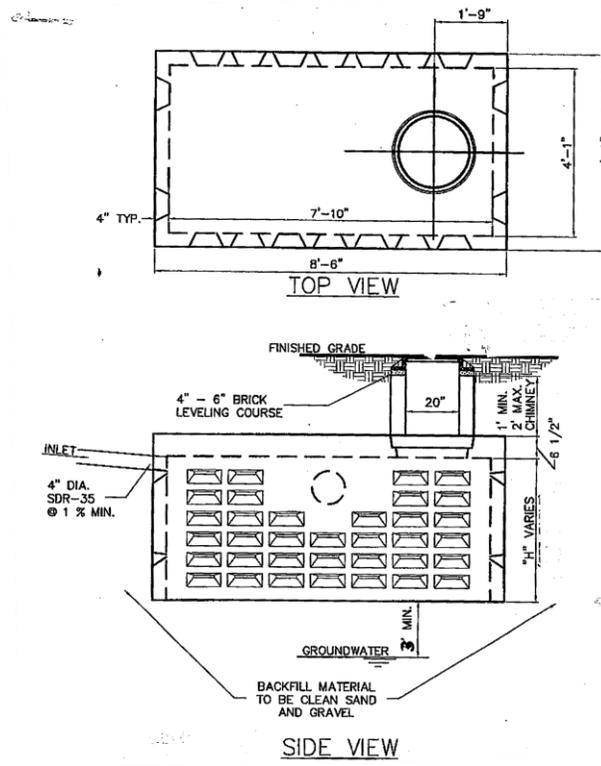


FIGURE 5

TYPICAL LEACHING GALLEY AND LEACHING GALLEY LAYOUT

Typical Leaching Galley



Typical Leaching Galley Layout

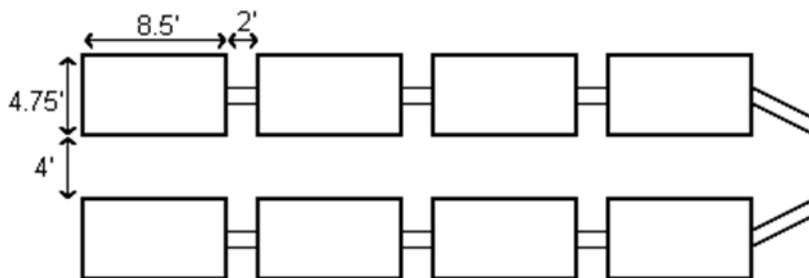


FIGURE 6

THE THREE TYPICAL MINIMUM SEPTIC TANK AND LEACHING POOL SYSTEMS FOR A ONE TO FOUR BEDROOM RESIDENCE

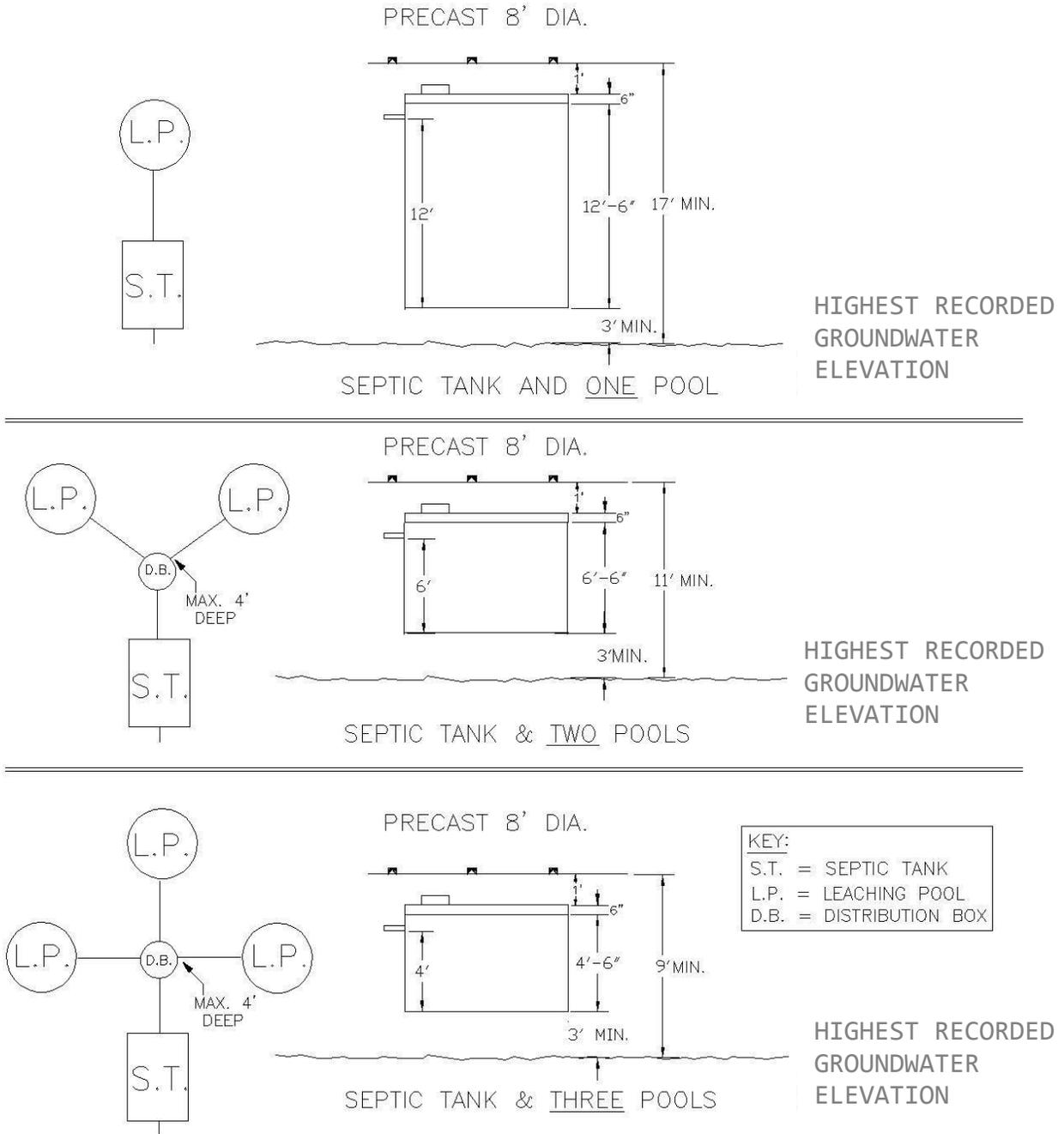
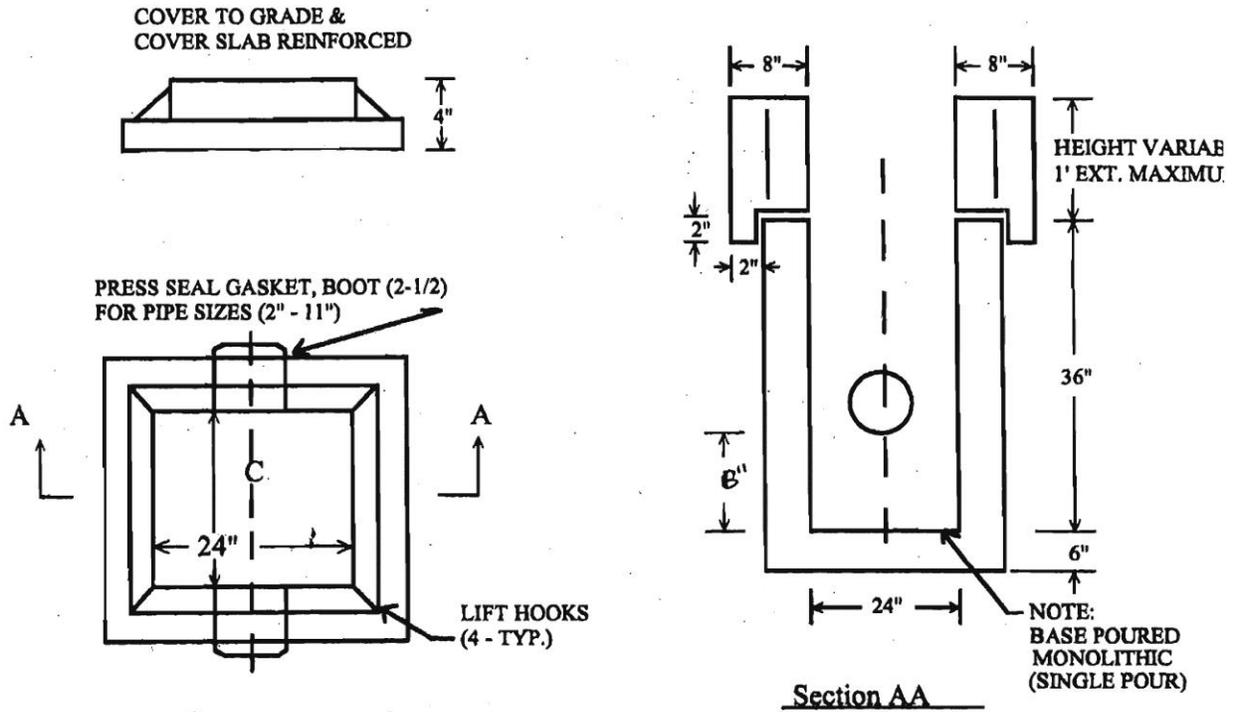
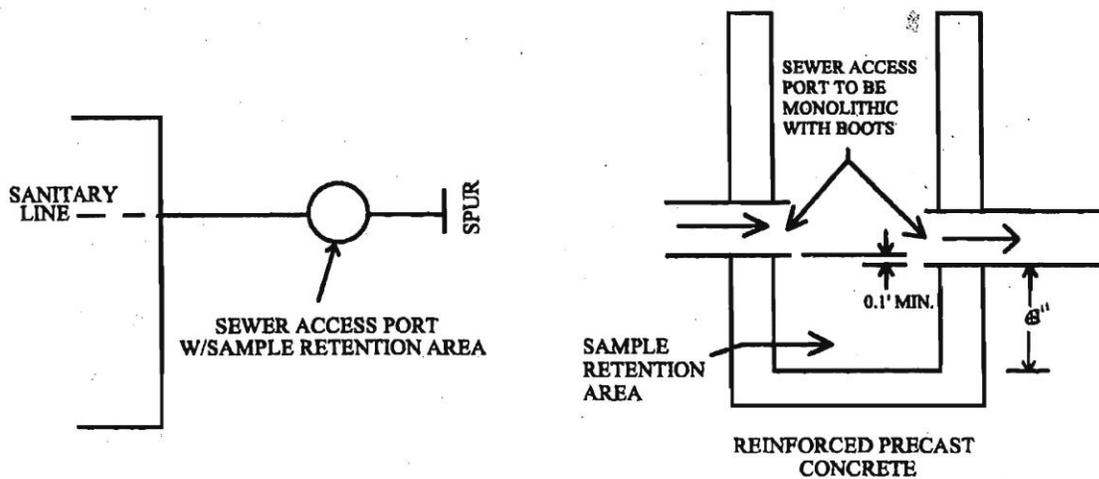


FIGURE 7

TYPICAL CONCRETE SAMPLING MANHOLE DETAIL



1. 2'X2' SEWER ACCESS PORT TO 4' MAXIMUM WORKING DEPTH
2. WORKING DEPTH = TOP OF MANHOLE COVER TO LOWEST PIPE INVERT



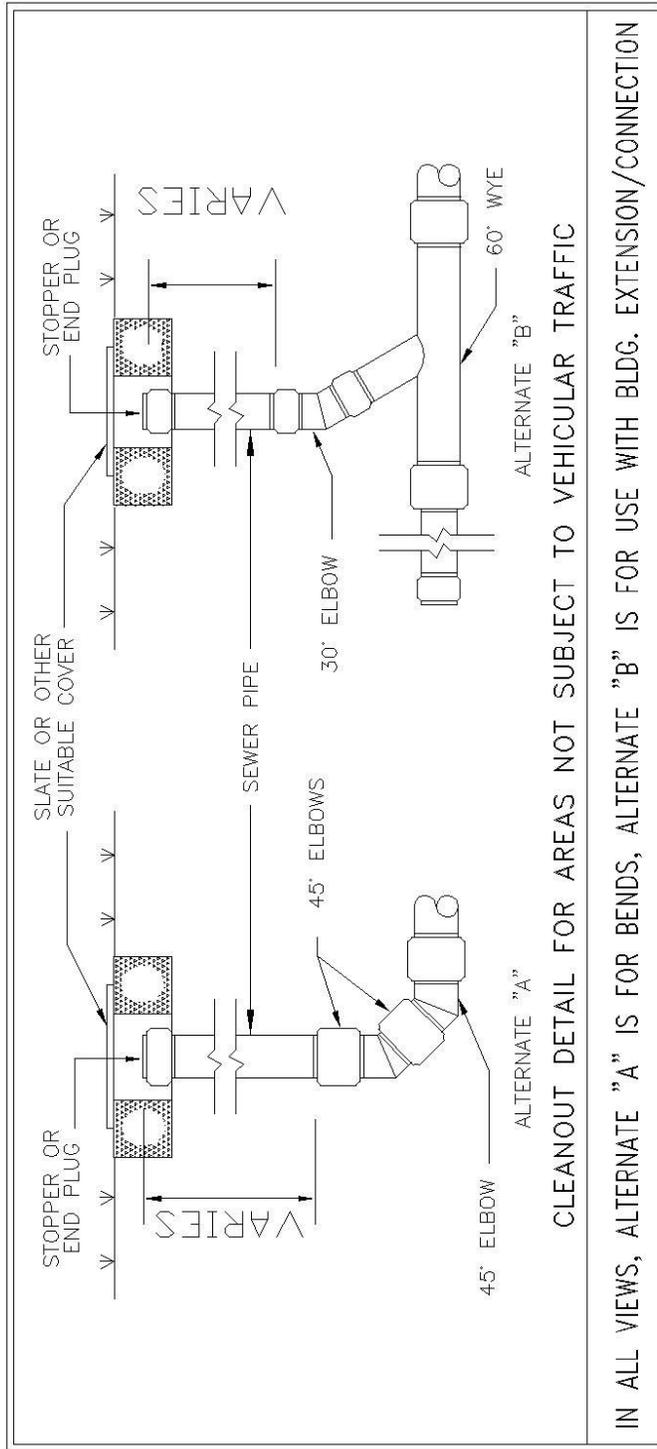


FIGURE 8
CLEANOUT DETAIL

FIGURE 9
TYPICAL CONCRETE DISTRIBUTION BOX

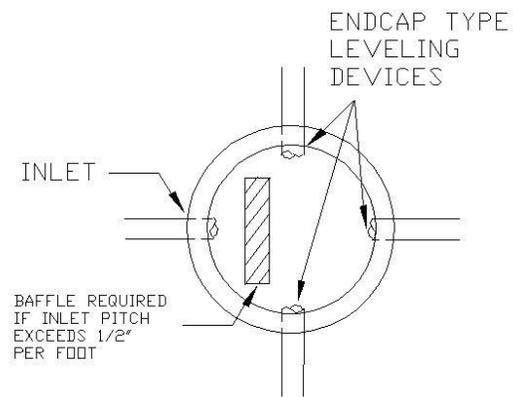
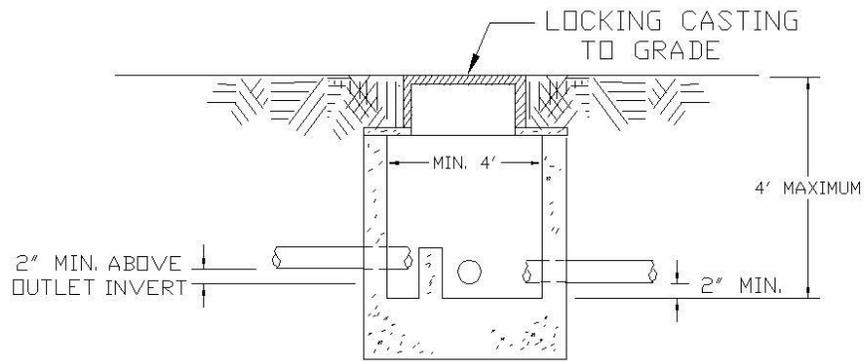


FIGURE 10

ALTERNATIVE TO DISTRIBUTION BOX

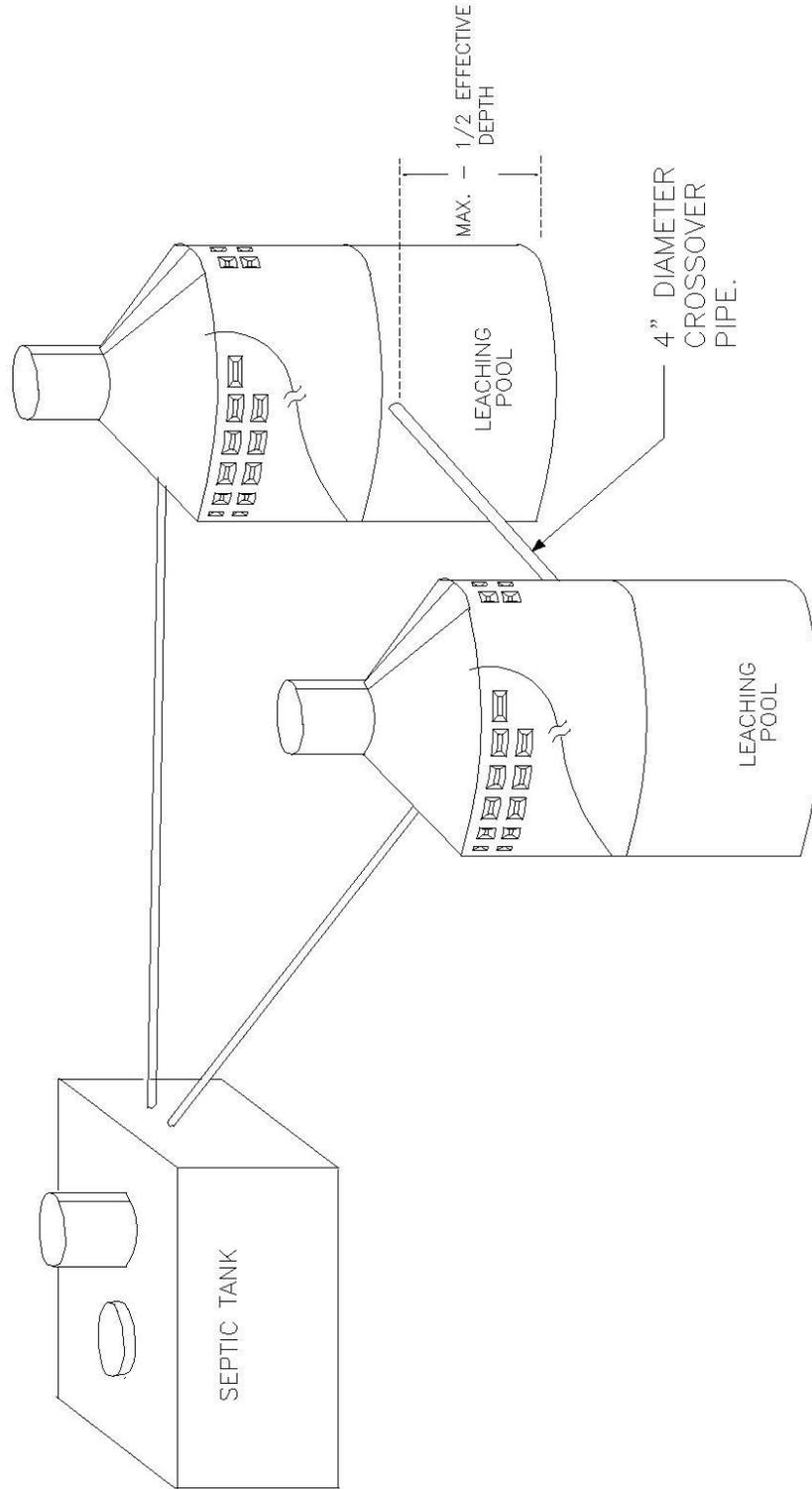
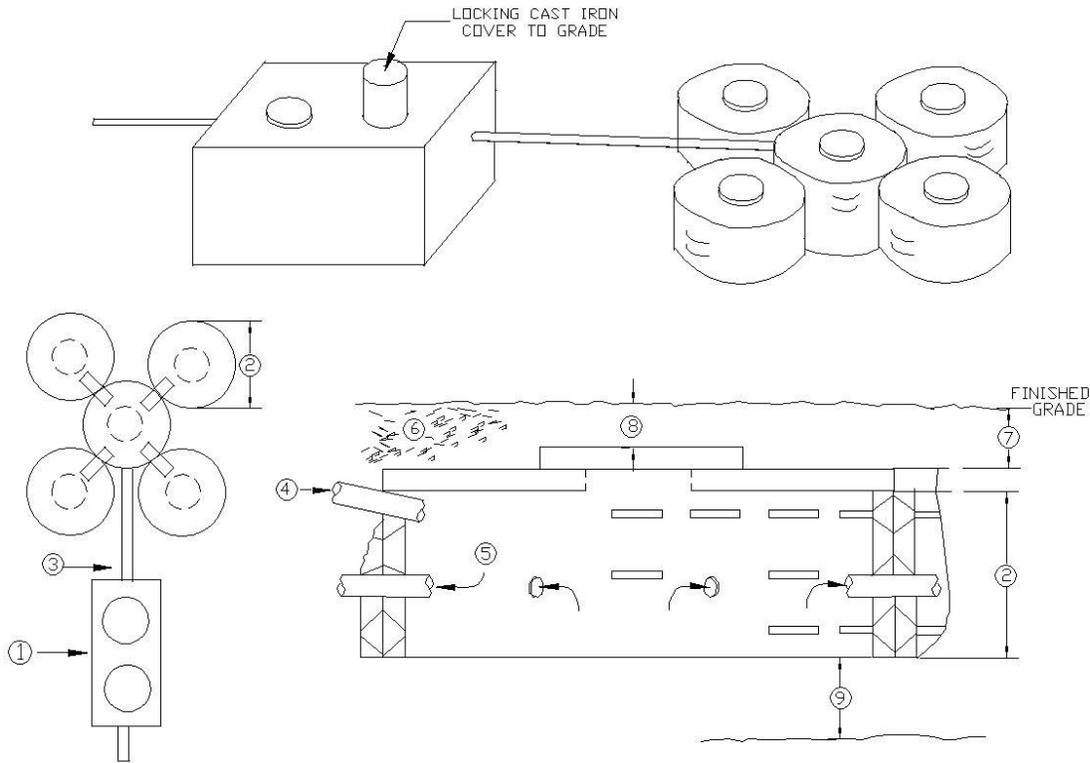


FIGURE 11

ALTERNATE SEWAGE DISPOSAL SYSTEM FOR HIGH GROUNDWATER CONDITIONS FOR ONE TO THREE BEDROOM RESIDENCE.

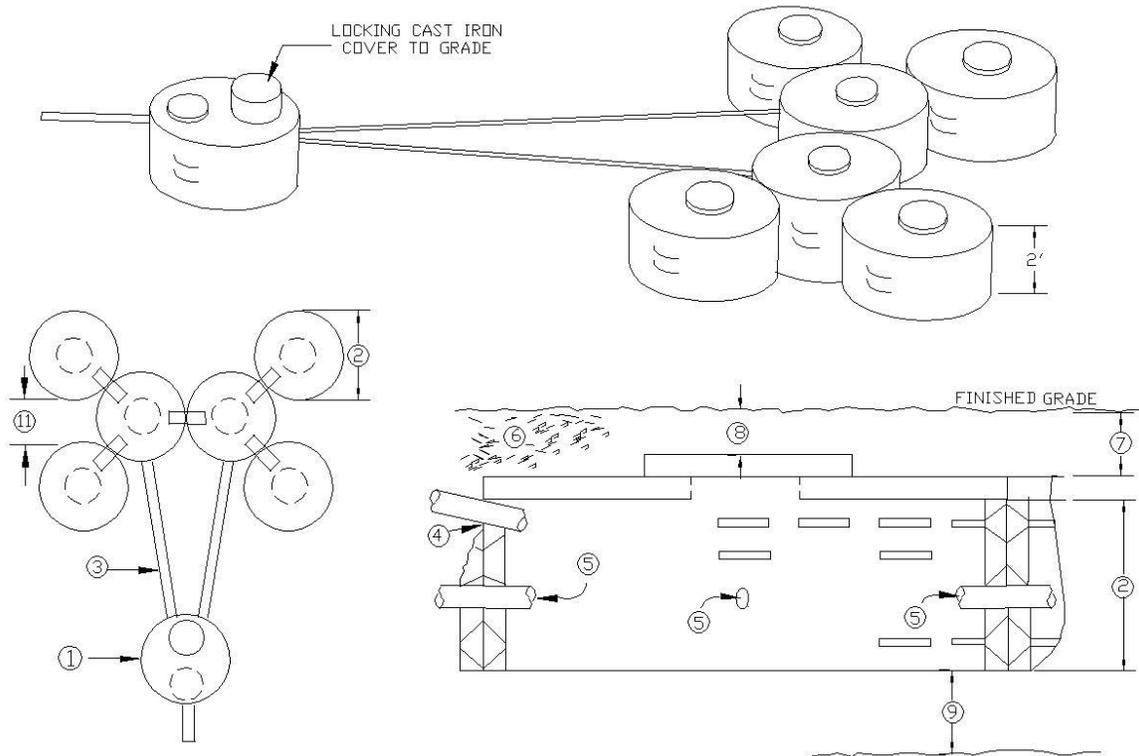


DETAILS OF CONSTRUCTION

1. USE ONE (1) 1000 GALLON REINFORCED PRECAST CONCRETE SEPTIC TANK.
2. USE FIVE (5) 8 FT. DIAMETER, 2 FT. HIGH PRECAST CONCRETE LEACHING RINGS.
3. USE 4 INCH DIAMETER, APPROVED SEWER PIPE THROUGHOUT.
4. THE WASTELINE FROM THE SEPTIC TANK SHOULD ENTER THE MIDDLE RING AS HIGH AS POSSIBLE.
5. USE FOUR CROSS-OVER PIPES BETWEEN THE MIDDLE RING AND THE FOUR OUTSIDE RINGS, 8 INCHES ABOVE THE BOTTOM.
6. BACKFILL MATERIAL SHALL BE COARSE SAND AND GRAVEL.
7. SLABS SHALL BE A MINIMUM 12" BELOW GRADE.
8. SOLID CONCRETE COVER SHALL BE BETWEEN 6" AND 12" BELOW GRADE.
9. BOTTOM OF POOL SHALL BE A MINIMUM OF 2 FEET ABOVE HIGHEST RECORDED GROUNDWATER ELEVATION

FIGURE 12

ALTERNATE SEWAGE DISPOSAL SYSTEM FOR HIGH GROUNDWATER
CONDITIONS FOR A FOUR BEDROOM RESIDENCE

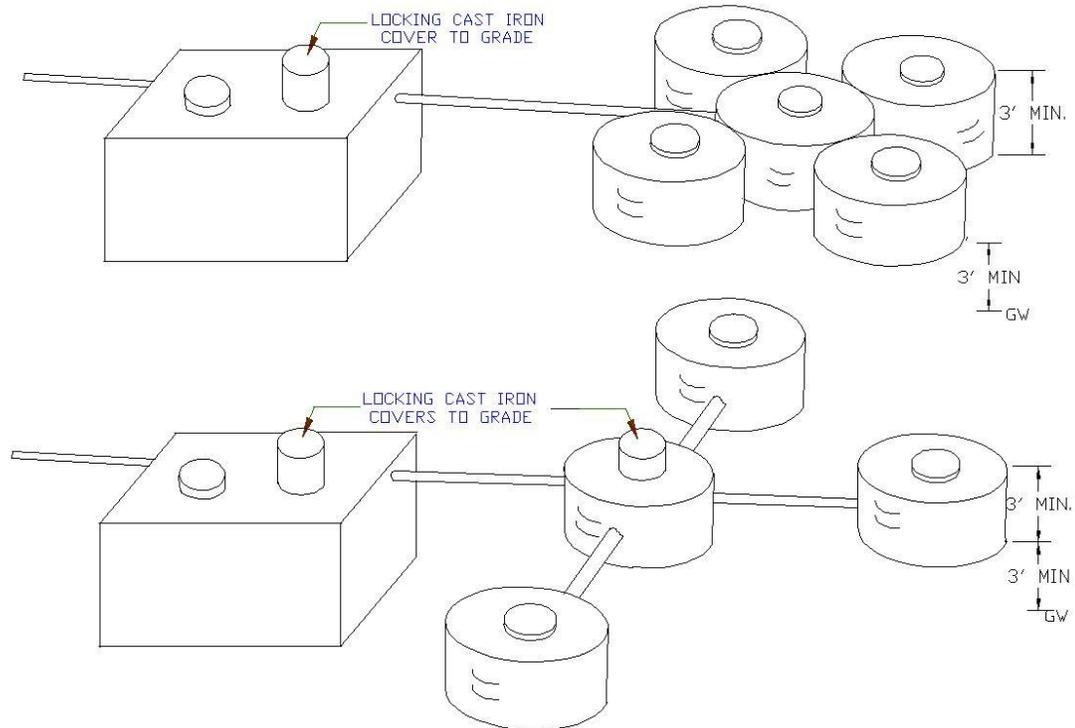


DETAILS OF CONSTRUCTION

1. USE ONE (1) 1,200 GALLON REINFORCED PRECAST CONCRETE SEPTIC TANK.
2. USE SIX (6) 8 FT. DIAMETER, 2 FT. HIGH PRECAST CONCRETE LEACHING RINGS.
3. USE 4 INCH DIAMETER, APPROVED SEWER PIPE THROUGHOUT.
4. THE WASTE LINES FROM THE SEPTIC TANK SHOULD ENTER THE MIDDLE RINGS AS HIGH AS POSSIBLE.
5. USE A CROSS-OVER PIPE BETWEEN THE MIDDLE RINGS AND THE FOUR OUTSIDE RINGS, EIGHT (8) INCHES ABOVE THE BOTTOM.
6. BACKFILL MATERIAL SHALL BE COARSE SAND AND GRAVEL.
7. SLABS SHALL BE A MINIMUM 12" BELOW GRADE.
8. SOLID CONCRETE COVER SHALL BE BETWEEN 6" AND 12" BELOW GRADE.
9. BOTTOM OF POOL SHALL BE A MINIMUM OF 2 FEET ABOVE HIGHEST RECORDED GROUNDWATER.
10. SHOW AREA FOR 50% EXPANSION OF THE LEACHING POOLS WHICH MAXIMIZES SIDEWALL AREA.
11. MAXIMIZE THE DISTANCE BETWEEN THE FOUR (OUTER) SATELLITE POOLS.
12. ALTERNATIVE SYSTEMS WILL NOT BE APPROVED ON REALTY DEVELOPMENTS OR SUBDIVISIONS.

FIGURE 13

SEWAGE DISPOSAL SYSTEM FOR HIGH GROUNDWATER
CONDITIONS FOR UP TO A FOUR BEDROOM RESIDENCE

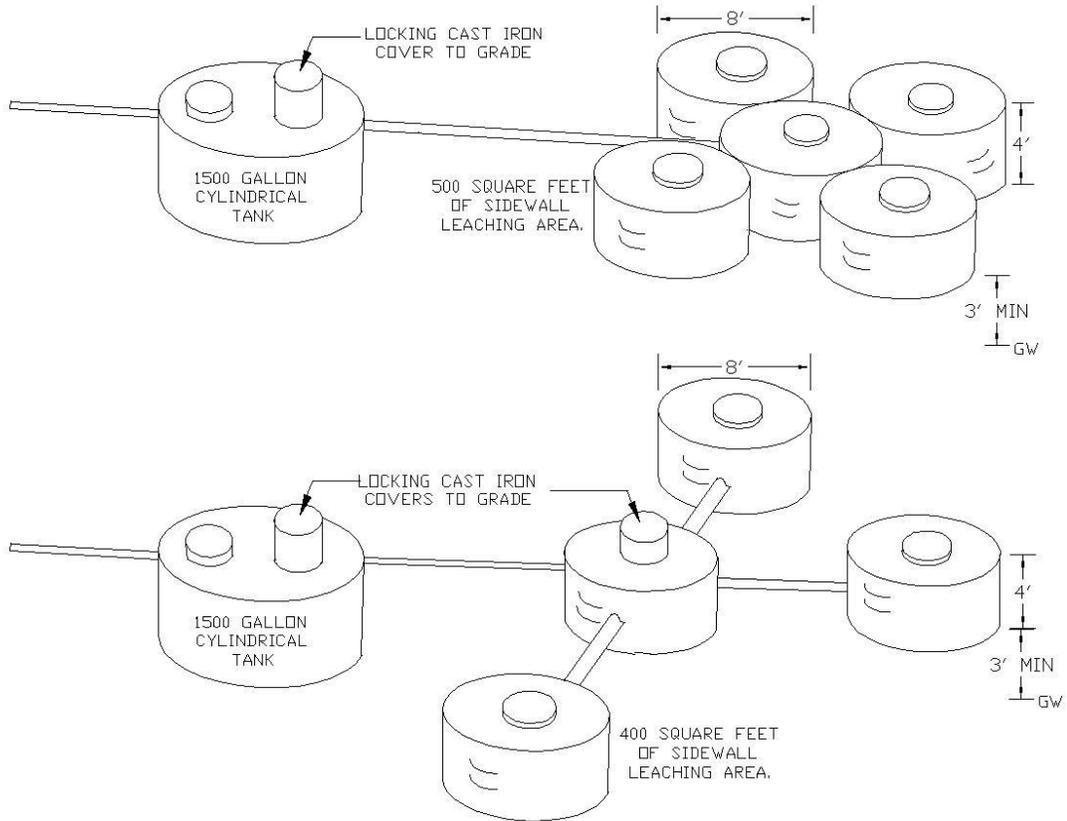


DETAILS OF CONSTRUCTION

1. BOTTOM OF POOL SHALL BE A MINIMUM OF 3' ABOVE HIGH SEASONAL GROUNDWATER.
2. SHOW AREA FOR 50 % EXPANSION OF THE LEACHING POOLS.
3. USE ONE (1) 1,000 GALLON REINFORCED PRECAST CONCRETE SEPTIC TANK.
4. USE FIVE(5) 8 FT. DIAMETER, 3 FT. HIGH PRECAST CONCRETE LEACHING RINGS OR FOUR(4) 8 FT. DIAMETER, 3 FT. HIGH PRECAST CONCRETE LEACHING RINGS, SPACED 8' APART
5. USE 4 INCH DIAMETER, APPROVED SEWER PIPE THROUGHOUT.
6. THE WASTELINE FROM THE SEPTIC TANK SHOULD ENTER THE DISTRIBUTION POOL AS HIGH AS POSSIBLE.
7. ALL CROSS-OVER PIPES ARE TO BE STRAIGHT 4" DIAMETER PVC SDR 35, WITHOUT DROP 'T'S AND MUST BE LEVEL, 1 1/2' ABOVE THE BOTTOM OF THE LEACHING RINGS.
8. BACKFILL MATERIAL SHALL BE COARSE SAND AND GRAVEL.
9. SLABS SHALL BE A MINIMUM OF 12" BELOW GRADE.
10. SOLID CONCRETE COVER SHALL BE BETWEEN 6" AND 12" BELOW GRADE.

FIGURE 14

SEWAGE DISPOSAL SYSTEM FOR HIGH GROUNDWATER
CONDITIONS FOR A FIVE TO SIX BEDROOM RESIDENCE

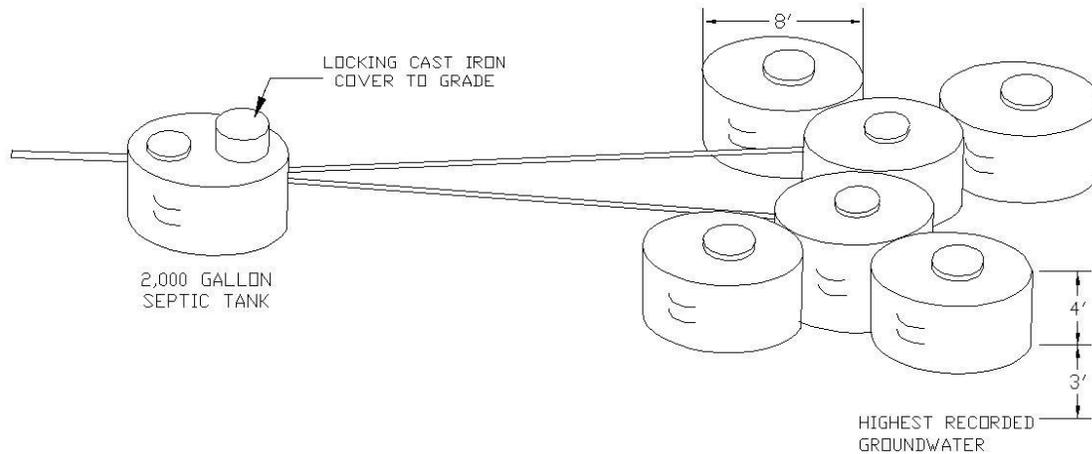


DETAILS OF CONSTRUCTION

1. BOTTOM OF POOL SHALL BE A MINIMUM OF 3' ABOVE HIGHEST RECORDED GROUNDWATER.
2. SHOW AREA FOR 50 % EXPANSION OF THE LEACHING POOLS.
3. USE ONE (1) 1,500 GALLON REINFORCED PRECAST CONCRETE SEPTIC TANK.
4. USE FIVE(5) 8 FT. DIAMETER, 4 FT. HIGH PRECAST CONCRETE LEACHING RINGS OR FOUR(4) 8 FT. DIAMETER, 4 FT. HIGH PRECAST CONCRETE LEACHING RINGS, SPACED 8' APART
5. USE 4 INCH DIAMETER, APPROVED SEWER PIPE THROUGHOUT.
6. THE WASTELINE FROM THE SEPTIC TANK SHOULD ENTER THE DISTRIBUTION POOL AS HIGH AS POSSIBLE.
7. ALL CROSS-OVER PIPES ARE TO BE STRAIGHT 4" DIAMETER PVC SDR 35, WITHOUT DROP 'T'S AND MUST BE LEVEL, 1 1/2' ABOVE THE BOTTOM OF THE LEACHING RINGS.
8. BACKFILL MATERIAL SHALL BE COARSE SAND AND GRAVEL.
9. SLABS SHALL BE A MINIMUM 12" BELOW GRADE.
10. SOLID CONCRETE COVER SHALL BE BETWEEN 6" AND 12" BELOW GRADE.

FIGURE 15

SEWAGE DISPOSAL SYSTEM FOR HIGH GROUNDWATER
CONDITIONS FOR A SEVEN TO EIGHT BEDROOM RESIDENCE



DETAILS OF CONSTRUCTION

1. BOTTOM OF POOL SHALL BE A MINIMUM OF 3 FEET ABOVE HIGHEST RECORDED GROUNDWATER.
2. SHOW AREA FOR 50% EXPANSION OF THE LEACHING POOLS WHICH MAXIMIZES SIDEWALL AREA.
3. USE ONE (1) 2,000 GALLON REINFORCED PRECAST CONCRETE SEPTIC TANK.
4. USE SIX (6) 8 FT. DIAMETER, 4 FT. HIGH PRECAST CONCRETE LEACHING RINGS.
5. USE 4 INCH DIAMETER, APPROVED SEWER PIPE THROUGHOUT.
6. THE WASTE LINES FROM THE SEPTIC TANK SHOULD ENTER THE MIDDLE RINGS AS HIGH AS POSSIBLE.
7. ALL CROSS-OVER PIPES ARE TO BE STRAIGHT 4" DIAMETER PVC SDR 35, WITHOUT DROP 'T'S AND MUST BE LEVEL, 1 1/2' ABOVE THE BOTTOM OF THE LEACHING RINGS.
8. BACKFILL MATERIAL SHALL BE COARSE SAND AND GRAVEL.
9. SLABS SHALL BE A MINIMUM 12" BELOW GRADE.
10. SOLID CONCRETE COVER SHALL BE BETWEEN 6" AND 12" BELOW GRADE.