PUBLIC HEALTH
ALWAYS WORKING FOR A SAFER AND HEALTHIER COMMUNITY

Chelan-Douglas Health District
200 Valley Mall Parkway, East Wenatchee, WA 98802
Personal Health: 509/886-6400 • FAX 886-6478
Environmental Health: 509/886-6450 • FAX 886-6449
Maternal Child Health: 509/886/6400 • FAX 886-6436

Onsite Sewer System Installer Licensing Process

There are 3 criteria that a person must meet in order to become licensed to install onsite sewer systems in Chelan and Douglas counties.

1. Make application, and pay the current fee.
2. Present a currently valid contractor's registration number. This may be either a general or subcontractor's registration, and may be your own, or that of your employer. This is to demonstrate that your work as a contractor will be licensed and bonded.
3. Pass a test on the regulations and standards pertaining to the installation of onsite sewer systems. The test has 2 parts. The first part is a graded written test. If passed, a provisional installation license will be issued. The second part requires two field evaluations of at least the first installation. The first field evaluation is of the trench excavations and the second is of the completed installation prior to cover. Both parts of the test must be passed before the Installer License will be issued.

Please note:
A score of 70% or greater is required on the written test before the field evaluation will be conducted.

An application and fee is required to take the test. The 2014 fee is $190.

Applicants scoring between 60% and 70% on first attempt at test may have one retest without re-applying.

The license must be renewed annually by September 30. The 2014 fee is $130. You will be mailed a notice when this is due.

The test is given without appointment at the Health District's office at 200 Valley Mall Parkway in East Wenatchee, Monday through Thursday, between 8:00 AM and 3:00 PM.

The categories covered on the written test are intended to have the applicant demonstrate the following:

Understanding Rules And Regulations

- Knowledge of WAC 246-272A, *Onsite Sewage Systems*
- Knowledge of *Onsite Wastewater Treatment Systems Manual*, USEPA

Understanding Design Plans

- Elements of site plan: design location and dimensions; topography and site features
- Standards and specifications; pump performance and hydraulics; treatment and disposal technologies
- Basic knowledge of soil profile descriptions
- Ability to make mathematical calculations of area, volume, rates and measures

Site Preparation

- Apply designer's plan to site; and identify conflicts that may relate to elevations or topography
- Equipment needs and limitations; materials and supplies; soil characteristics

Installation Procedures

- Ability to recognize soil characteristics in the field
- Knowledge of specifications and installation techniques for tanks, baffles, filters and screens, piping and fittings, sand media, proprietary treatment components, pumps and siphons, liner materials, and valves
- Knowledge of electrical requirements
- Knowledge of gravity dispersal: step downs; D-Box; level manifold, level trench bottoms
- Knowledge of sand filter and pump/siphon dosed system requirements
- Knowledge of timers
- Knowledge of bedding, testing, and pipe connection methodologies
- Knowledge of pump performance specifications: total dynamic head in pressurized systems
- Ability to make mathematical calculations and conversions

During the field evaluation, the applicant must demonstrate competence in the following areas:

1. Call for an inspection appointment on time
2. Approved design and permit on site
3. Follow the approved design.
4. Tank(s) level
5. Tank(s) watertight
6. Baffles
7. Trench preparation
8. Laser or Builder's Level on site
9. Demonstrate the use of the laser or builder's level.
10. Material to go into the trench and geotextile fabric on site
11. Proper setbacks met
12. Installation Report completed and submitted on time

- **A preconstruction conference is available on request.**

STUDY GUIDE

This study guide is intended to help installers prepare for the Installer Licensing Exam by pointing to the sections of the regulations and State and Federal guidance documents most relevant to installers. It is not a substitute for those documents.

Some of the following materials are referenced in cases where an issue is not addressed in the Washington Administrative Code (WAC 246-272A), and are the standards of practice for items not specified in regulation.

Study materials available on the internet:

- The Washington Administrative Code WAC 246-272A. Please pay special attention to sections 0250, 0260 and 0265. http://www.doh.wa.gov/Portals/1/Documents/Pubs/337-039.pdf.
- Recommended Standards and Guidance (RS&G) documents addressing specific systems such as Pressure Distribution. http://www.doh.wa.gov/CommunityandEnvironment/WastewaterManagement/FormsPublications#RS&G
- The EPA Design Manual (EPA) publication #625/R-00/008 (published 2002) http://water.epa.gov/aboutow/owm/upload/2004_07_07_septics_septic_2002_osdm_all.pdf
- CDHD Design Guidelines for Conventional Septic Tank and Drainfield Systems. http://www.cdhd.wa.gov/Septic/FormsAndApps/docs/SepticSystemDesignGuidelines.pdf

Study materials included in this handout are:

- Department of Ecology (DOE) "Criteria for Sewage Works Design" **(section C1-9)**
- EPA excerpt on septic tanks **(page 4-43 & 4-44)**
- Uniform Plumbing Code (UPC) "Building Sewers" (**section 1106)**
- Installation Report
- Final Inspection for OSS (Checklist)

The Washington On Site Sewage Association has classes available. The Association can be contacted @253-770-6594 or www.wossa.org

GENERAL NOTES

1. Installers are required to be licensed by this Health District before they can install in Chelan or Douglas County. (CDHD Code 4.20.060.A)
2. The installer must follow the approved design. If the approved design is different from the study guide, the design governs the installation. Any changes to the approved design must be authorized by both the Health District and the Designer. (0250)
3. The installer must follow the approved design to the scale specified in the design.
4. An appointment for inspection must be made with the inspector at least 2 working days prior to the desired date of the inspection.
5. All or any portions of the sewage disposal system must be inspected and approved before it is covered with soil. (0250)
6. The installer should shoot elevation grades and stake drainfield location prior to excavating.
7. Roof and surface water runoff or discharge must be directed away from or down slope from the sewage disposal system by means of footing and/or foundation floor drains or surface diversion ditches. (0230)
8. All pipe joints, including those in drainfield, must be glued and water tight with no exceptions. (0250)

BUILDING SEWER

(pipe from structure to the septic tank)

1. The recommended minimum grade on all parts of the building sewer is at least 1/8 inch fall per foot. (UPC)
2. If there are elbows or bends in the building sewer, they typically should be no greater than a 45 degree angle, or a 90 degree sweep may be used. It is recommended to install a clean out at any such elbow.
3. Any solid pipe under driving/parking or vehicular encroachment areas should meet or exceed the crush strength of ASTM 3034 and/or be bedded and enclosed in 5 or 6 inch PVC, steel, or concrete pipe which meets or exceeds the crush strength of ASTM 3034 . The pipe length should exceed the drive width.
4. If the pipe crosses any water line (domestic/irrigation), the Department of Ecology criteria must be followed. (DOE)
5. All of the onsite septic system must be watertight except for the dispersal component. (0250)

SEPTIC TANK

1. The septic tank must be set level on undisturbed soil, or by manufacturer's standards if other than concrete tank. If the native soil is rocky, the bed should be overexcavated and sand added to bed the tank. (EPA)
2. If the excavation is dug too deep, it should be backfilled to the proper elevation with sand to provide an adequate bedding for the tank. (EPA)
3. All pipe connections to the tank should be watertight with proper grade.
4. The tank should be accessible at grade unless a marker is placed at the finished grade. The top of the tank can be no more than 6 inches below finished grade. If this is not possible then risers must be installed so the riser lids are not deeper than 6 inches below finished grade. (0238)
5. If an effluent filter is installed, a riser to grade for access must be provided. (0238)
6. The tank must be a minimum of 5 feet from property lines, easements, building foundations, foundation drains, down gradient features and in-ground pools. It must be 10 feet from any pressurized water supply line. (Table IV)
7. The septic tank should be at least 5 feet from the drain field. (EPA)

LINE FROM SEPTIC TANK TO DRAINFIELD OR DISTRIBUTION BOX

1. The pipes should be bedded with ASTM readings face up and have glued and water tight joints.
2. The grade on gravity pipes must be a minimum of 1/8 inch downward fall per foot from the tank outlet. (UPC)
3. All pipe connections to the tank must be watertight with proper grade. (0250)
4. If the pipe crosses any water line (domestic/irrigation), the Department of Ecology criteria must be followed. (DOE)
5. Any solid pipe under driving/parking or vehicular encroachment areas should meet or exceed the crush strength of ASTM 3034. The pipe length should exceed the drive width.
6. When using a distribution box, the pipe must have a watertight connection (sealed, grouted, or manufactured fittings). (EPA)

DISTRIBUTION BOX (D-BOX)

1. The D-box should be set level on a concrete pad on undisturbed soil, 5 feet minimum from the beginning of trench, gravel, and perforated pipe.
2. All outlets in use should be equipped with flow equalizers (such as dial-a-flow inserts). The flow equalizers must be set to allow liquid to enter all lines with equal flow simultaneously.
3. All unused outlets must be water tight.

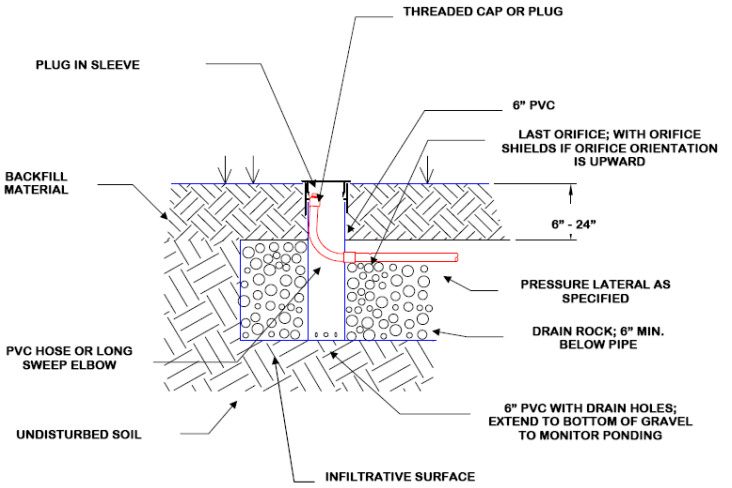
4. The D-box must be 5 feet minimum from the beginning of the drain field infiltration area, property lines, easement lines, and driveway. It shall be a minimum of 50 feet from private wells and open surface water (ditches, weir boxes, ponds, canals, lakes, streams, etc.) It must be 100 feet from public wells. (Table IV)
5. The inlet of the D-box should be equipped with a vented baffle (90 degree sweep with hole drilled or a PVC "t") to prevent short-circuiting.

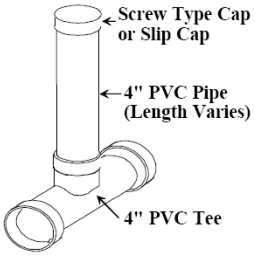
DRAINFIELDS, ABSORPTION BEDS, SSAS (SUB-SURFACE ABSORPTION SYSTEMS)

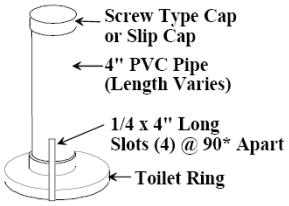
1. The installer must follow the approved design. Any changes to the approved design must be authorized in writing by both the Health District and the Designer. (0250)
2. Drainfields must run perpendicularly to the slope (across/right angles or 90 degrees) and may need to be contoured or curved to accomplish this. (EPA)
3. The trench bottom must be level and should be hand raked. (EPA)
4. If the soils are smeared, the sidewalls should also be hand raked.
5. The entire drainfield including pipe connections bedded in soil should be left open for inspection.
6. The ends of all perforated pipes should be capped and exposed for inspection.
7. If sidewalls and trench bottom are both smeared or compacted during excavation, both sidewalls and trench bottom should be roughed up.
8. Drainrock must be washed gravel or crushed rock ranging from .75 to 2.5 inches. (0010)
9. Drainfield lines must be covered with a minimum of 2 inches of gravel. (0234)
10. All drainfield connections must be watertight.
11. The drainfield must be installed in original, undisturbed soil. No cutting/filling can have taken place following the site evaluation in a proposed drainfield area. (0234)
12. The drainfield must be at least 6 inches into native soil. (0234)
13. A relief line or stepdown must have a 1 to 2 inch upsweep before entering the lower drainfield pipe . (CDHD Permit)

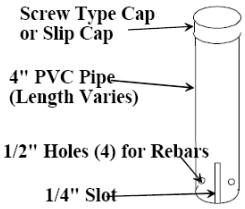
14. There must be a minimum of 6 inches of soil cover on the drainfield. (0234)

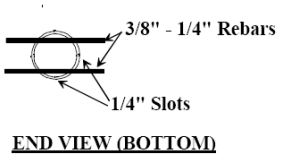
15. All pressure distribution laterals must be equipped with cleanouts and monitoring ports at the distal (far) ends. (Pressure Distribution RS&G, 3.8.5)
16. Monitoring ports have slots or holes drilled in them at the bottom to allow liquid to enter them. (Pressure Distribution RS&G, 3.8.5)
17. If an orifice is in the 12 o'clock position, an orifice shield is required. (Pressure Distribution RS&G, 3.8.4)
18. Rebar should be placed at ends of laterals if monitoring ports or upsweeps are below grade.
19. If the monitoring ports or pressure lateral upsweeps are at grade, it is recommended that irrigation boxes are used as covers.
20. The soil barrier over the drainfield must be filter fabric (for example, typar 3301 & 3341 or approved equivalent, 3.0 to 4.0 oz/square yard and spun-bonded (not woven) material without petroleum/oil properties). (0010)
21. Installation of dripline systems require certification. (Subsurface Drip RS&G, 2.8)











22. Some manufacturers require certification for installation of their product.
23. Drainfield and replacement areas must be protected from encroachment or damage such as vehicular and equipment traffic, a quantity of penned livestock, heavy weights or objects, impervious coverings (such as asphalt or concrete), or anything which can obstruct aeration of the system. (0270)

POST - CONSTRUCTION

1. A request for inspection is required to be made 2 working days prior to desired date.
2. A pressure system inspection requires a squirt test for the residual head.
3. ASTM C-33 sand must be used in sand-lined systems. The sand spec sheet must be provided to the Health District.
4. A drawdown measuring the amount of liquid level drop in a tank must be measured and the gallons calculated before the timer can be set.
5. A record drawing or as-built must be submitted by the installer to the Health District within 30 days of the inspection approval.
6. Record drawings must be accurate within 6 inches and the report must include all items listed in WAC 246-272A-0265.

covers, or by sealing existing covers with rubber-covered gaskets, rubber vents, and pick-hole plugs, or by installing watertight inserts under the existing manhole covers (inflow protectors). Inflow protectors should contain vacuum and gas release valves.

Chemical grouting is commonly used to eliminate infiltration.

C1-9 Special Requirements

C1-9.1 Required Separation Between Water Lines and Sanitary Sewers

The basic separation requirements apply to all gravity and pressure sewers of 24-inch diameter or less; larger sewers may create special hazards because of flow volumes and joint types, and accordingly require additional separation requirements. The special construction requirements given are for the normal conditions found with sewage and water systems. More stringent requirements may also be necessary in areas of high ground water, unstable soil conditions, and so on. Any site conditions not conforming to conditions described in this section will require assessment and approval of the appropriate state and local agencies.

C1-9.1.1 Horizontal and Vertical Separation (Parallel)

A minimum horizontal separation of 10 feet between sanitary sewers and any existing potable water lines, and a minimum vertical separation of 18 inches between the bottom of the water line and the crown of the sewer, shall be maintained. The distance shall be measured edge to edge. See Figure C1-2.

C1-9.1.2 Unusual Conditions (Parallel)

When local conditions prevent the separations described above, a sewer may be laid closer than 10 feet horizontally or 18 inches vertically to a water line, provided:

- It is laid in a separate trench from the water line.
- The elevation of the crown of the sewer line must be at least 18 inches below the bottom of the water line. When this vertical separation cannot be obtained, the sewer shall be constructed of materials and joints that are equivalent to water main standards of construction and shall be pressure tested to ensure watertightness (see C2-3.6) prior to backfilling. Adequate restraint should be provided to allow testing to occur.
- If sewers must be located in the same trench as a potable water line, special construction and mitigation is required. Both water lines and sewer lines shall be constructed with a casing pipe of pressure-rated pipe material designed to withstand a minimum static pressure of 150 psi. The water line shall be placed on a bench of undisturbed earth with the bottom of the water pipe at least 18 inches above the crown of the sewer, and shall have at least 5 feet of horizontal separation at all times. Additional mitigation efforts, such as impermeable barriers, may be required by the appropriate state and local agencies. See Figure C1-3.

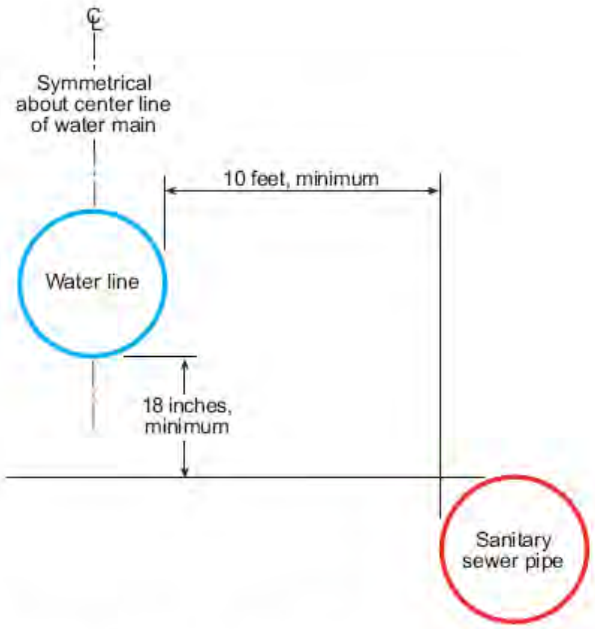


Figure C1-2. Required Separation Between Water Lines and Sanitary Sewers, Parallel Construction

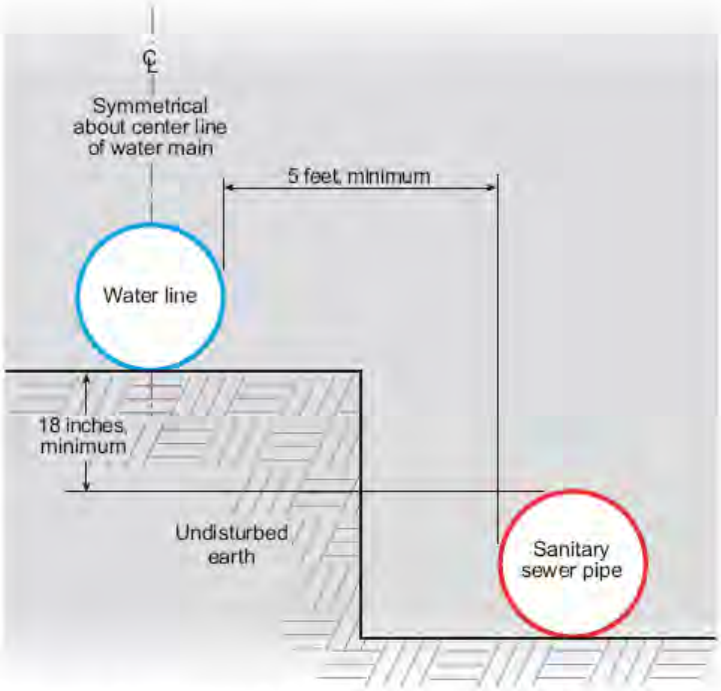


Figure C1-3. Required Separation Between Water Lines and Sanitary Sewers, Unusual Conditions Parallel Construction

C1-9.1.3 Vertical Separation (Perpendicular)

Sewer lines crossing water lines shall be laid below the water lines to provide a separation of at least 18 inches between the invert of the water line and the crown of the sewer.

C1-9.1.4 Unusual Conditions (Perpendicular)

When local conditions prevent a vertical separation as described above, construction shall be used as follows:

A. Gravity Sewers Passing Over or Under Water Lines

These gravity sewers shall be:

- Constructed of material described in Table C1-4. The one segment of the maximum standard length of pipe (but not less than 18 feet long) shall be used with the pipes centered to maximize joint separation.
- Standard gravity-sewer material encased in concrete or in a one-quarter-inch thick continuous steel, ductile iron, or pressure rated PVC pipe with a dimension ratio (DR) (the ratio of the outside diameter to the pipe wall thickness)of 18 or less, with all voids pressure-grouted with sand-cement grout or bentonite. Commercially available pipe skids and end seals are acceptable. When using steel or ductile iron casing, design consideration for corrosion protection should be considered.
- The length of sewer pipe shall be centered at the point of crossing so that the joints will be equidistant and as far as possible from the water line. The sewer pipe shall be the longest standard length available from the manufacturer.

Table C1-4. Water Main Standard Pipe Material

Type of Pipe	AWWA (ASTM) Standard		
	Pipe	Joint	Fittings
Ductile Iron	C 151 and C 104	C 111	C 110
Asbestos-Cement	C400 (Type II) Class 200	(D 1869)	C 110
Polyvinyl-Chloride	C 900*	(D 3139 and F 477)	C 110
Concrete Cylinder	C 303		
HDPE 3408	C906	Fused per C 906	C 906

* Pipe spec C900 for pipe up to about 12 inches in diameter; C905 for pipe more than 12 inches in diameter.

B. Water Lines Passing Under Gravity Sewers

Water lines shall be protected by providing:

- A vertical separation of at least 18 inches between the invert of the sewer and the crown of the water line.
- Adequate structural support for the sewers to prevent excessive deflection of joints and settling on and breaking of the water lines.

- The length of sewer pipe shall be centered at the point of crossing so that the joints will be equidistant and as far as possible from the water line. The sewer pipe shall be the longest standard length available from the manufacturer.
- A water line casing equivalent to that specified in C1-9.1.4A.

C. Pressure Sewers Under Water Lines

These pressure sewers shall only be constructed under water lines with ductile iron pipe or standard sewer pipe in a casing equivalent to that specified above in C1-9.1.4A for a distance of at least 10 feet on each side of the crossing.

C1-9.2 Pumpout Facilities at Marinas

Pumpout facilities and shoreside facilities for disposal of sanitary wastes from boats shall be installed at marinas at the time of initial construction or expansion of facilities, when the marina is of sufficient size and design to serve boats 17 feet or larger in overall length.

The facilities shall be designed according to "Design Criteria For Pumpout Facilities at New or Expanded Marinas," which is the criteria established by the Washington State Parks and Recreation Commission in its document, "Financial Assistance Application for Clean Vessel Funding Program."

The requirement for construction of sewage pumpout facilities shall be specified in the Water Quality Certification for the Corps of Engineers Section 10 permit.

Each marina shall prominently display signs stating that it is illegal to discharge untreated sanitary wastes into US waters and directing boaters to the pumpout facilities.

C1-9.3 Stream Crossing

The pipe and joints shall be tested in place, exhibit zero infiltration, and be designed, constructed, and protected against anticipated hydraulic and physical, longitudinal, vertical, and horizontal loads, erosion, and impact. Sewers laid on piers across ravines or streams shall be allowed only when it can be demonstrated that no other practical alternative exists. Such sewers on piers shall be constructed in accordance with the requirements for sewers entering or crossing under streams. Construction methods and materials of construction shall be such that sewers will remain watertight and free from change in alignment or grade. A minimum cover of 5 feet for stabilized channels and 7 feet for shifting channels should be provided.

Permits from other agencies or departments are required for work in or adjacent to waterways, and are described in Chapter G1.

C1-9.4 Inverted Siphons

Inverted siphons shall have not less than two barrels, with a minimum pipe size of 6 inches, and shall be provided with necessary appurtenances for convenient flushing and maintenance. The manholes shall be designed to facilitate cleaning and, in general, sufficient head shall be provided and pipe sizes selected to secure velocities of at least 3 fps for average flows. A rock catcher and coarse screen should be provided to prevent plugging of the siphons. The inlet and outlet details shall be arranged so that normal flow

Quality construction is critical to proper performance. Tanks must be properly designed, reinforced, and constructed of the proper mix of materials so they can meet anticipated loads without cracking or collapsing. All joints must be watertight and flexible to accommodate soil conditions. For concrete tank manufacturing, a "best practices manual" can be purchased from the National Pre-Cast Concrete Association (NPCA, 1998). Also, a *Standard Specification for Precast Concrete Septic Tanks* (C 1227) has been published by the American Society for Testing and Materials (ASTM, 1998).

Watertightness

Watertightness of the septic tank is critical to the performance of the entire onsite wastewater system. Leaks, whether exfiltrating or infiltrating, are serious. Infiltration of clear water to the tank from the building storm sewer or ground water adds to the hydraulic load of the system and can upset subsequent treatment processes. Exfiltration can threaten ground water quality with partially treated wastewater and can lower the liquid level below the outlet baffle so it and subsequent processes can become fouled with scum. Also, leaks can cause the tank to collapse.

Tank joints should be designed for watertightness. Two-piece tanks and tanks with separate covers should be designed with tongue and groove or lap joints (figure 4-24). Manway covers should have similar joints. High-quality, preformed joint sealers should be used to achieve a watertight seal. They should be workable over a wide temperature range and should adhere to clean, dry surfaces; they must not shrink, harden, or oxidize. Seals should meet the minimum compression and other requirements prescribed by the seal manufacturer. Pipe and inspection port joints should have cast-in rubber boots or compression seals.

Figure 4-24. Tongue and groove joint and sealer

Source: Ayres Associates

Septic tanks should be tested for watertightness using hydrostatic or vacuum tests, and manway risers and inspection ports should be included in the test. The professional association representing the materials industry of the type of tank construction (e.g., the National Pre-cast Concrete Association) should be contacted to establish the appropriate testing criteria and procedures. Test criteria for precast concrete are presented in table 4-14.

4.6.3 Construction considerations

Important construction considerations include tank location, bedding and backfilling, watertightness, and flotation prevention, especially with non-concrete tanks. Roof drains, surface water runoff, and other clear water sources must not be routed to the septic tank. Attention to these considerations

Table 4-14. Watertightness testing procedure/criteria for precast concrete tanks

Standard	Hydrostatic test		Vacuum test	
	Preparation	Pass/fail criterion	Preparation	Pass/fail criterion
C 1227, ASTM (1993)	Seal tank, fill with water, and let stand for 24 hours. Refill tank.	Approved if water level is held for 1 hour	Seal tank and apply a vacuum of 2 in. Hg.	Approved if 90% of vacuum is held for 2 minutes.
NPCA (1998)	Seal tank, fill with water, and let stand for 8 to 10 hours. Refill tank and let stand for another 8 to 10 hours.	Approved if no further measurable water level drop occurs	Seal tank and apply a vacuum of 4 in. Hg. Hold vacuum for 5 minutes. Bring vacuum back to 4 in. Hg.	Approved if vacuum can be held for 5 minutes without a loss of vacuum.

will help to ensure that the tank performs as intended.

Location

The tank should be located where it can be accessed easily for septage removal and sited away from drainage swales or depressions where water can collect. Local codes must be consulted regarding minimum horizontal setback distances from buildings, property boundaries, wells, water lines, and the like.

Bedding and backfilling

The tank should rest on a uniform bearing surface. It is good practice to provide a level, granular base for the tank. The underlying soils must be capable of bearing the weight of the tank and its contents. Soils with a high organic content or containing large boulders or massive rock edges are not suitable.

After setting the tank, leveling, and joining the building sewer and effluent line, the tank can be backfilled. The backfill material should be free-flowing and free of stones larger than 3 inches in diameter, debris, ice, or snow. It should be added in lifts and each lift compacted. In fine-textured soils such as silts, silt loams, clay loams, and clay, imported granular material should be used. This is a must where freeze and thaw cycles are common because the soil movement during such cycles can work tank joints open. This is a significant concern when using plastic and fiberglass tanks.

The specific bedding and backfilling requirements vary with the shape and material of the tank. The manufacturer should be consulted for acceptable materials and procedures.

Watertightness

All joints must be sealed properly, including tank joints (sections and covers if not a monolithic tank), inlets, outlets, manways, and risers (ASTM, 1993; NPCA, 1998). The joints should be clean and dry before applying the joint sealer. Only high-quality joint sealers should be used (see previous section). Backfilling should not proceed until the sealant setup period is completed. After all joints have been made and have cured, a watertightness test should be performed (see table 4-14 for precast concrete tanks). Risers should be tested.

Flotation prevention

If the tank is set where the soil can be saturated, tank flotation may occur, particularly when the tank is empty (e.g., recently pumped dose tanks or septic tank after septage removal). Tank manufacturers should be consulted for appropriate antiflotation devices.

4.6.4 Operation and maintenance

The septic tank is a passive treatment unit that typically requires little operator intervention. Regular inspections, septage pumping, and periodic cleaning of the effluent filter or screen are the only operation and maintenance requirements. Commercially available microbiological and enzyme additives are promoted to reduce sludge and scum accumulations in septic tanks. They are not necessary for the septic tank to function properly when treating domestic wastewaters. Results from studies to evaluate their effectiveness have failed to prove their cost-effectiveness for residential application. For most products, concentrations of suspended solids and BOD in the septic tank effluent increase upon their use, posing a threat to SWIS performance. No additive made up of organic solvents or strong alkali chemicals should be used because they pose a potential threat to soil structure and ground water.

Inspections

Inspections are performed to observe sludge and scum accumulations, structural soundness, watertightness, and condition of the inlet and outlet baffles and screens. *(Warning: In performing inspections or other maintenance, the tank should not be entered. The septic tank is a confined space and entering can be extremely hazardous because of toxic gases and/or insufficient oxygen.)*

Sludge and scum accumulations

As wastewater passes through and is partially treated in the septic tank over the years, the layers of floatable material (scum) and settleable material (sludge) increase in thickness and gradually reduce the amount of space available for clarified waste-

Uniform Plumbing Code:

Section 1106—Grade, Support and Protection of Building Sewers

(a) Building sewers shall be run in practical alignment and at a uniform slope of not less than one-fourth (¼) of an inch per foot (20.9 mm per m) toward the point of disposal.

Exception: When approved by the Administrative Authority and where it is impractical, due to the depth of the street sewer or to the structural features or to the arrangement of any building or structure, to obtain a slope of one-fourth (¼) of an inch per foot (20.9mm per m), any such pipe or piping four (4) inches (101.6mm) through six (6) inches (152.4mm) may have a slope of not less than one-eighth (1/8) of an inch per foot (10.5mm per m) and any such piping eight (8) inches (203.2mm) and larger may have a slope of not less than one-sixteenth (1/16) of an inch per foot (5.3mm per m).

(b) Building sewer piping shall be laid on a firm bed throughout its entire length, and any such piping laid in made or filled in ground shall be laid on a bed of approved materials and shall be adequately supported to the satisfaction of the Administrative Authority.

(c) No building sewer or other drainage piping or part thereof, which is constructed of materials other than those approved for use under or within a building, shall be installed under or within two (2) feet (.6 m) of any building or structure, or part thereof, nor less than one (1) foot (.3 m) below the surface of the ground. The provisions of this subsection include structures such as porches and steps, whether covered or uncovered, breezeways, roofed portecocheres, roofed patios, carports, covered walks, covered driveways and similar structures or appurtenances.

INSTALLATION REPORT per wac 246-272-14501(3)

—TO BE COMPLETED BY INSTALLER—

Please use a suitable scale, such as 1 inch = 30 ft. or 1 inch = 50 ft.

Please remember to *label* the items on the drawing. Please include:

- ❑ Arrow indicating North
- ❑ Property lines, easements, adjacent streets and roads
- ❑ Buildings, driveways and parking areas
- ❑ Water lines and/or wells, including neighbor's wells and abandoned wells
- ❑ Interceptor or curtain drains
- ❑ Surface water, irrigation ditches, drainage ditches
- ❑ Direction of slope
- ❑ Cuts, banks, fills, rock outcrops
- ❑ An area for future drainfield replacement. (Reserve area)
- ❑ Septic tank and drain-field layout, including trench lengths
- ❑ Attachments as needed: other drawings, details and specifications of pumps, controls and other components

CDHD PERMIT #: _____

NAME ON PERMIT: _____

INSTALLED BY: _____

COUNTY: _____

LOCATION: _____

As-built Drawing: A separate signed & dated drawing may be attached if available. Include all variations from the approved plans.

I certify that I completed this sewer system as shown above, and in compliance with the permit specifications and the regulations of the Chelan-Douglas Health District.

Signature, Installer Date

Reviewed and accepted by

Chelan-Douglas Health District Date

General:

Septic Tank Make & Model _____

Size: _____ gal.

Depth below finished grade: _____

Outlet filter on septic tank? ___ No ___ Yes: Make & Model: _____

Were tank(s) water-tested? ___ No ___ Yes: Water dropped _____ in. over _____ hours.

Trench width: _____ in. Total Trench Length: _____ ft. Trench depth: _____ in.

Changes from original grade in drainfield area?

___ No. ___ Yes: depth removed: _____ in. depth of fill: _____ in.

Monitoring ports installed: ___ No ___ Yes: (Please show location on drawing)

Pressure Distribution:

Pump-on time: _____ minutes. Pump-off time: _____ minutes.

Drawdown: _____ inches.

Pump chamber: Make: _____ Model: _____ Size: _____

Controller: Make: _____ Model: _____

Final electrical completion date: _____ Electrician: _____

Floats (from top down)

Function	Offset (from top of tank)
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Filter Sand? ___ No. ___ Yes. Source: _____

(Attach sieve test or other assurance sand meets WDOH specification.)

Notes and Information: _____

FINAL INSPECTION FOR OSS

Name_____ Location_____ Inspector_____ Date_____

I. Gravity systems

A. Septic tanks

1. __Check for signs of leakage—tank should be sealed and filled with water
2. __Check that baffles correctly installed
3. __Check for outlet filter if required
4. __Check for risers if required (maximum of 6 inches of cover)
5. __Measure distance of tank lids from house or other landmark

B. Drainfield

1. __Check length of trenches
2. __Check depth of trenches (every 50 ft)—maximum is 3 ft
3. __Check width of trenches
4. __Check location of observation ports (if required)
5. __Check depth of gravel (every 50 ft)
6. __Check for placement of filter fabric (if required)
7. __Check that laterals are level
8. __Measure distance between laterals
9. __Check for location of reserve drainfield
10. __Measure distance from septic tank—minimum 5 ft from tank, 10 ft from foundation
11. __Check setbacks from wells, property lines, etc.
12. __Check step downs if present—should be different locations, minimum 6 " soil cover

C. As Built form—to be completed and signed by installer

II. Pressure Systems

A. Pump tanks

1. __Check for signs of leakage—tank should be sealed and filled with water
2. __Check connections to septic tank and baffle
3. __Check float configuration and distances—need 75 % emergency storage at top
   - *Upper* float____inches *Middle* float_____inches *Lower* float_____inches (*from* _____)
4. __Check for proper operation of floats and alarms
5. __Check pump flow rate by timing for 1-2 minutes
   a. measure depth before and after pumping
   b. assume 21 gallons/inch for 1000 gallon tank
6. __Check timer settings
   - **ON**_____minutes **Off**_____hours
7. __Verify that the high water alarm does not turn the pump on.

B. Drainfield (see gravity checklist)

1. __Check depth, length and width of trenches or bed
2. __Orifices—check *size* (1/8 or 3/16 inch), *spacing* _____inches apart
3. __Sand--check for ASTM C-33 specifications, minimum depth 24 inches
4. __Observation ports—to original soil surface and bottom of gravel (sand-lined)
5. __Gravel—should be washed and clean
6. __Pressure (squirt) test
   a. *1/8 inch*—five ft (+/- 12 in/lateral or +/- 18 in. overall)
   b. *3/16 inch*—two ft (+/- 5 in/lateral or +/- 7.5 in. overall)

C. Miscellaneous

1. __If alternating drainfield, check for proper function of valve
2. __Check for any sewer line/water line crossing—minimum distance 10 ft apart
3. __Check that drainfield and tanks are located as stated in design
4. __For infiltrator system check splash plates, fencing beneath