
Beacon Hill Water & Sewer District Standard Specifications

STEP Sewer Systems

Including:

Design Criteria

Standard Construction Drawings



BEACON HILL
WATER AND SEWER DISTRICT

REVISED
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Alternative sewer systems must meet the requirements set forth in the current version of the Washington Department of Ecology *Criteria for Sewage Works Design* (Orange Book).

Alternative Sewer Systems Design Criteria

1. Alternative Sewer Systems

- A. With the written approval of the District, the Owner’s Engineer may consider alternative collection methods for a variety of different applications.
- B. This design criteria is primarily for single-family residential Septic Tank Effluent Pumping (STEP) system. A site plan must be submitted to BHWSO for review and approval at the time of permit purchase and prior to installation or system connection. All other applications will be at the discretion of the District.

2. Pumps

- A. Pump shall be UL listed for the intended application,
- B. All pumps shall be installed with one (1) 3/8” diameter polypropylene lifting rope connected to a 3/8” stainless hook at the top of the riser. The rope shall extend 3’ beyond the top of the riser.
- C. A pump curve for the selected pump must be submitted to BHWSO for review and approval at the time of permit purchase and prior to installation or system connection.
- D. Effluent pumps installed in STEP systems shall have a removable polyethylene or PVC pump vault. They shall have (8) 1-1/4” diameter inlet holes around the perimeter of the vault. These holes shall be 27” from the bottom of the vessel.
- E. Any pump meeting specifications is acceptable. The following list is for example only:

Pumps

Pump	Distributor	Phone
a) GOULD	Ferguson Dale McGhee & Sons	(360) 425-5330 (360) 423-8493
b) ZOHLER	Ferguson Cutright Supply	(360) 425-5330 (360) 423-8666
c) HYDROMATIC (Residential)	Matzke Co., WM. A., Inc.	(253) 872-2029

3. Tank/Vessel Type and Sizing

- A. Each vessel and all appurtenances and connections once fully assembled and installed shall be tested for leakage according to requirements of Section 3 (E). A BHWSO inspector will witness the test. No vessel will be accepted if there is any noticeable leakage.
- B. Vessel configuration for single family STEP Pump Systems:
 - 1. The minimum size vessel for STEP system is 1000 gallons nominal capacity and shall be:
 - a. Reinforced Concrete Step Tank
 - 2. All STEP vessels shall have one baffle installed that divides the volume of the STEP vessel into two-thirds solids and one-third liquid pump chamber by volume.
 - 3. All penetrations shall have kor-n-seal boot or approved equal.
 - 4. All STEP vessels shall be properly vented to allow gasses to escape.
- C. The vessel shall NOT be installed in a driveway and if at all possible in non-traffic areas.
- D. The vessel shall have a minimum of 6" under and 12" on all the sides of approved compacted material. (5/8 minus gravel)
- E. Upon installation the vessel shall be filled to the riser with potable water. Concrete vessels shall be filled, for a period of 24 hours to allow for absorption. After this process the vessel shall be filled to a point above the base of the riser. BHWSO inspection is required to assure that there is no more than one-inch loss of water depth over a 24-hour period. Please notify the District 24 hours prior to requested inspection.
- F. The risers shall be at least 24 inches in diameter and installed at each tank end. Risers shall be a maximum of 24" tall and require District approval for variance. The riser shall be sealed with a 2 part epoxy grout in recess all around riser. There shall be a 24" diameter latching lid with stainless steel bolts and neoprene gasket.
- G. Any tank meeting specifications is acceptable. The following list is for example only:

Step Tanks

Tank	Distributor	Phone
a) CONCRETE	Sound Placement Services D&K Concrete Products Inc.	(360) 274-7675 (360) 573-4020

4. Pipeline (pressure)

- A. Each service line shall have at least one gate or ball valve and one check valve installed outside the vessel. These shall be accessible through a valve vault that shall **NOT** be installed in a driveway. There shall be a union installed inside the vessel for pump removal.
- B. Pipe shall be at least 2" Schedule 40 PVC, ASTM D1785. No 90 degree bends will be allowed.
- C. Pipe shall have a minimum 18" of cover from finished grade or 24" under ditches and at property line.
- D. Pipeline Bedding may be native material unless material is unusable as determined by District representative. In this case the District would require 5/8" minus gravel, four inches below the pipe and at least 12" above the pipe.

5. Pipeline (gravity)

- A. Gravity pipe from the house to the vessel shall be 4" ABS schedule 40 or PVC 3034.
- B. There shall be a 4" cleanout installed within the first section of pipe from the foundation of the house. Cleanout shall be constructed with a wye and 45-degree bend up, two way "T", or combination "T". **No Sani "T" will be allowed.**
- C. **No 90-degree bends are allowed.** Bends must have a minimum of one-foot separation. No Molded rubber couplings are allowed for plastic to plastic connection. Shielded rubber couplings may be allowed if authorized by BHWSO personnel.
- D. Gravity pipe shall be laid at a minimum grade of 1/4 " per foot for 4" diameter pipe. If there are more than two joints in gravity pipe, side sewer inspection and air test is required. Contact BHWSO office for details and requirements.

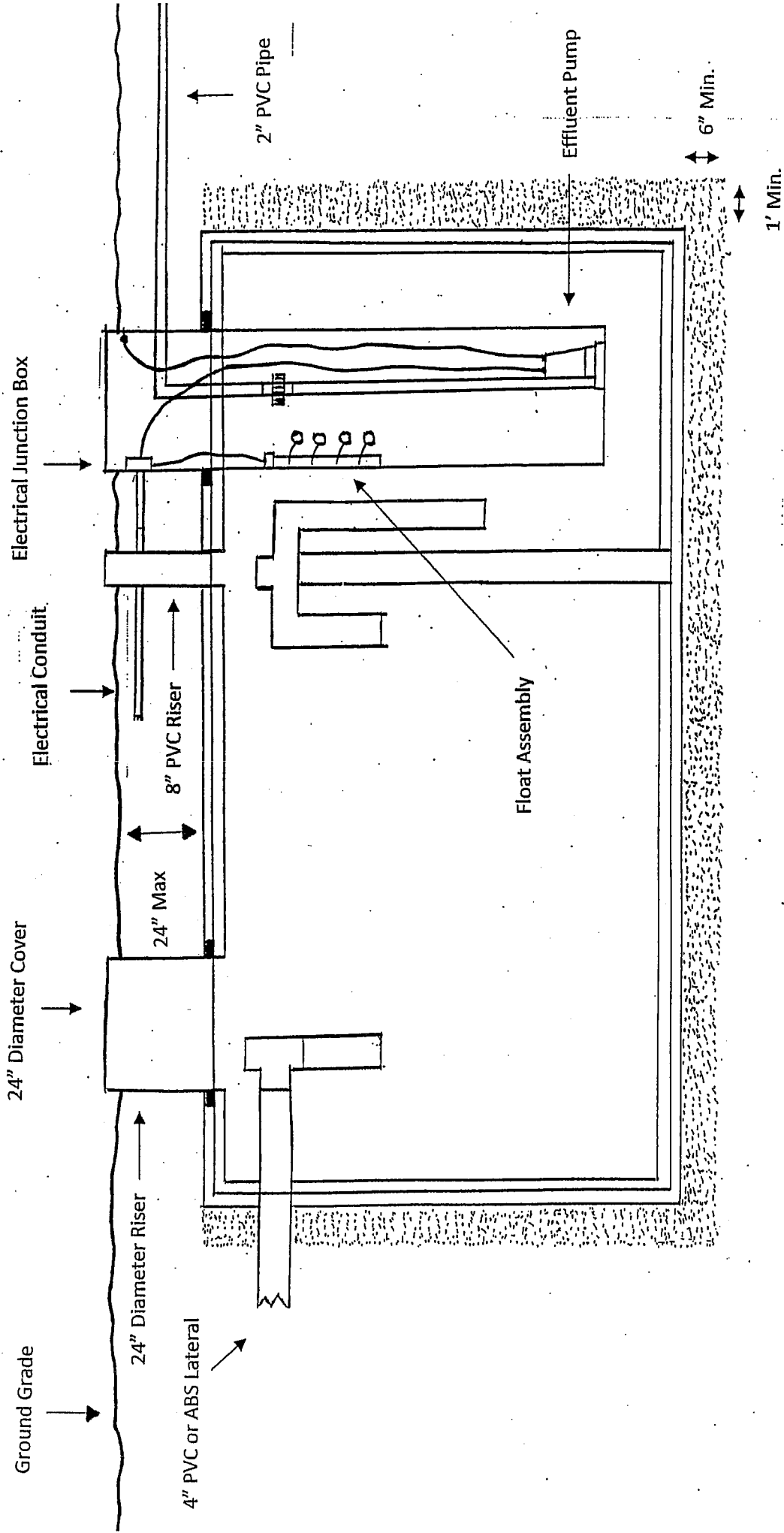
6. Control Panel/Level Control

- a. The control panel shall include both an audio and a visual alarm. The audio alarm shall have a silencing button to turn off the alarm until repairs can be made. Must have a High and Low level alarm.

- b. The system shall have a level sensing float mechanism that is pre-approved by the District. It shall include 4 floats: High Alarm, On, Off, & Redundant Off w/ alarm
- c. The control panel shall be listed for wet location use and is to be padlocked to prevent exposure to electrical hazard.
- d. Electrical conduit shall be Schedule 40 PVC and buried at a depth of at least 18”.

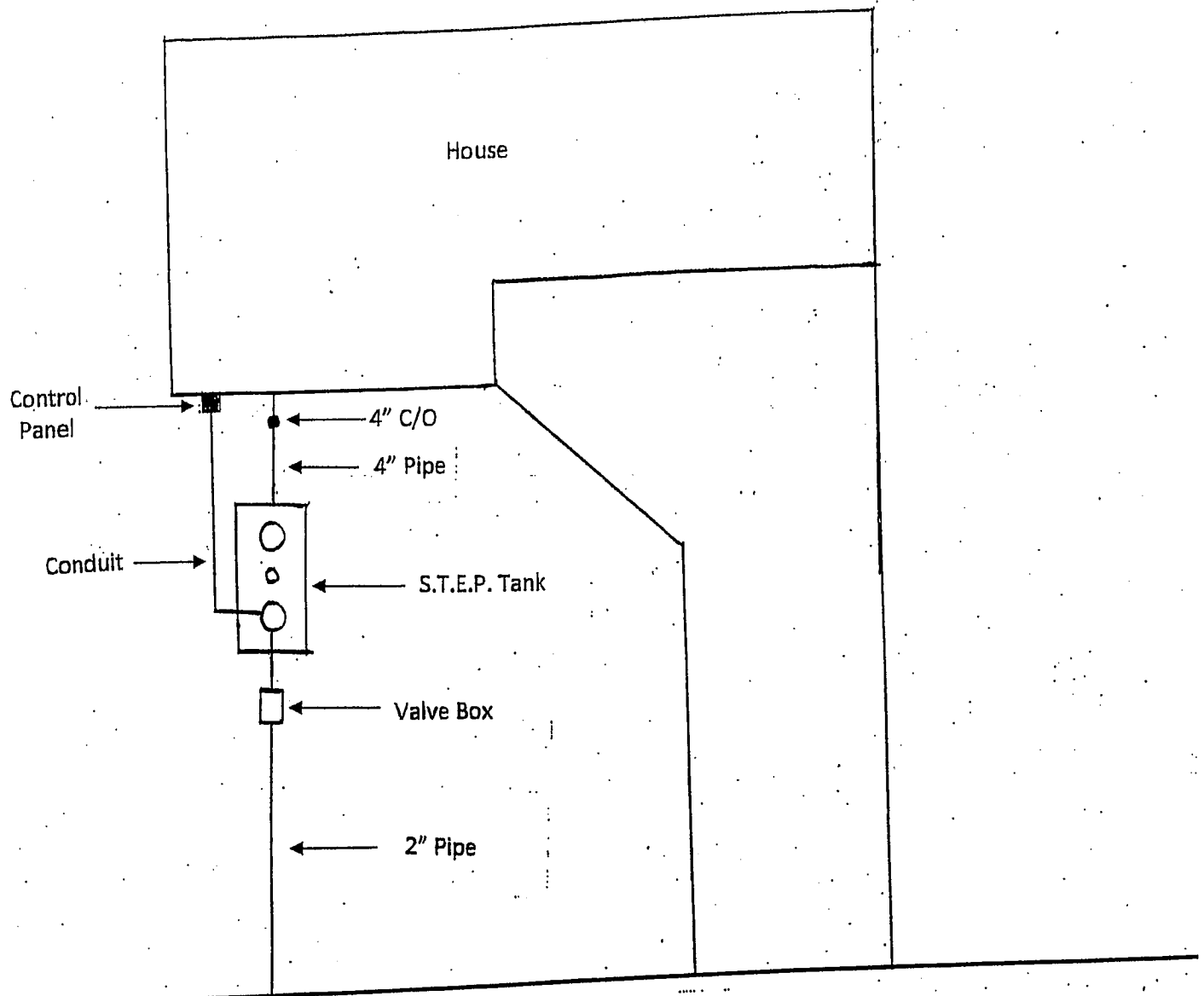
7. Provisions

- A. It shall be unlawful to construct, extend, relay, repair, and make connection to or the disconnection of any side sewer inside the property line without contacting the District. A determination will be made upon that contact as to whether a permit shall be required for the work to be done.
- B. Due to extraordinary debris entering BHWSD system during the process of connecting side sewer laterals. BHWSD must be notified prior to making connection. Property owners may be held responsible for failure to do so!
- C. No side sewer trench shall be filled or any sewer covered until the District has approved the work.
- D. Please contact the District 24 Hours before inspection is needed
- E. It is unlawful to divert or cause to be diverted any storm sewer, surface runoff, or underground drainage to any sewer, manhole or other appurtenant structure or portion of the sewer system. No person shall discharge or cause to be discharged any storm sewer, surface water, ground water, roof runoff, sub-surface drainage, cooling water, or unpolluted industrial process water to any portion of the sewer system. No roof drains or yard drains of any type shall be connected to the sanitary sewers in any manner.
- F. Before commencing any excavation, notice must be given to owners of all underground facilities through a one call number locator service. NW Utility Notification Center 1-800-424-5555 or 811.



Beacon Hill Water & Sewer District

Typical Concrete S.T.E.P. Tank



Notes:

1. Mount the control Panel on the side of the house facing the tank. District inspector may grant a variance from this requirement. The contractor or owner shall make a request for a variance and receive approval.
2. The tank or Valve box shall not be located in the driveway.
3. Shall obtain site plan approval prior to installation.
4. See standard Specifications and drawings for additional information.

Beacon Hill Water & Sewer District S.T.E.P. System Site Plan