

# SELF INSTALLER HANDOUT

## GENERAL

The septic tank system is designed to dispose of all household wastes. This includes laundry, bath and kitchen waste water. To work satisfactorily the system must be located in suitable soil, properly designed and properly installed. It is required that the septic system to be constructed in accordance with rules and regulations administered by the State Department of Environmental Quality (DEQ). This is to prevent construction of faulty systems that could cause contamination of groundwater or the discharge of sewage onto the ground surface. Both of these situations can create health hazards by exposing the public to disease causing organisms. If you, as the homeowner, chose to install your own system, you will be responsible for installing the system according to the regulations. You can find a link to the regulations, as well as other pertinent information, on the DEQ website at <http://www.deq.state.or.us/wq/onsite/products.htm>.

As the effluent enters the tank, solids settle out, primary treatment begins and liquid, flows into disposal trenches. Over a period of time solids will accumulate and the liquid capacity of the tank is reduced. When this happens, solids are flushed out of the tank and into the leachlines. This causes plugging of the drainlines and eventually causes the system to fail. Liquid wastes may also backflow into the house.

This is why a system may work well for years and then suddenly fail. To prevent this occurrence one should have a septic tank checked and pumped as needed. We suggest at least once every four years.

When the effluent leaves a functional septic tank, it is relatively free of solids. However, it is not free from organisms that can cause disease, such as typhoid fever, dysentery, and diphtheria, to name a few. Additional treatment takes place as the effluent flows through the soil. It is there that soil microorganisms further decompose, filter and cleanse the effluent thus preventing the contamination of groundwater.

As the effluent leaves the perforated drainage pipe it is rapidly dispersed throughout the gravel below. The void space between the gravel retains the waste and allows for storage capacity until it can enter the soil to be treated.

## PRELIMINARIES

After you have been granted a favorable site approval, your next step in installing an on-site sewage disposal system is to obtain a construction installation permit from the Klamath County On-Site Department. The permit fee, site development plan, and Klamath County Planning Department's Land Use Compatibility Statement (LUCS) must be submitted at this time.

When designing your site development plan, refer to the back side of the Site Evaluation Field Worksheet. This will indicate the location of the approved area on your property for on-site sewage disposal. The field worksheet is not to be considered as a site development plan, which requires more detailed information on your planned development and septic system installation.

## PREPARATIONS

After the required exhibits are submitted to this office, a construction installation permit may be issued. The permit will specify certain construction requirements which are "customized" to your proposed development and site condition. This will include the size of the septic tank, the type of system (equal, serial distribution, or pumping of septic tank effluent), total amount of disposal line required, minimum and maximum trench depth from the original ground surface, depth of gravel in the trenches, and other pertinent specifications. Trench depth is critical because of water tables and restrictive layers which may be present. Lines installed at improper depths will have to be redone.

Again, make sure you know the exact location of the approved disposal field area on your property, including both initial and replacement systems. Keep these areas free from development, excavation or fill material. If you are not sure, please call the Klamath County On-Site Program at 541-883-5121 ext. 3057. The disposal system must be installed by either the property owner or a DEQ licensed, bonded, sewage disposal system installer. A current list of local licensed installers is available from this department. If you are hiring an installer, be sure they review the permit and system specifications.

Stake out the corners of the home, the septic tank, the disposal trenches, and the curtain drain if one is required. In staking out the system, the following setbacks and guidelines must be observed:

1. REQUIRED SETBACK	SEPTIC TANK	DISPOSAL TRENCHES
Any building foundation	5'	10'
All wells	50'	100'
Rivers, streams, lakes	50'	100'
Intermittent streams	50'	50'
Property lines	5'	10'
Water lines	10'	10'

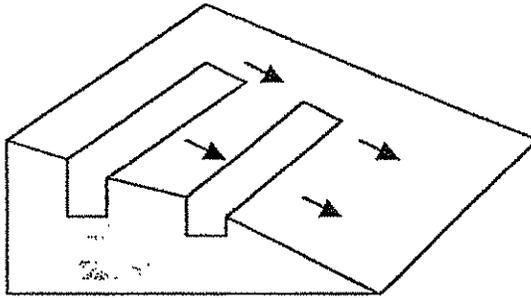
Any other required setback will be noted in the site evaluation report or on the installation permit.

2. You will need to consider the way in which *your* house or mobile home will be plumbed, keeping in mind that there must be a minimum fall of 1/4 inch per 1 foot between the house and the septic tank. There should be as few angles as possible in the line between the house and the tank to prevent clogged plumbing.

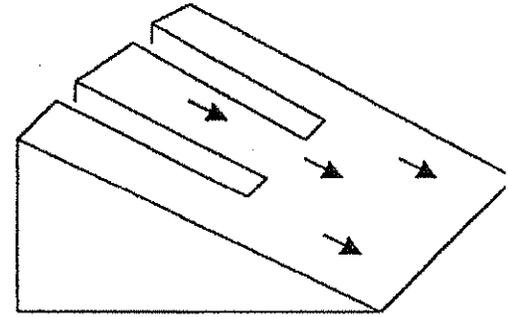
Be sure the tank you purchase is approved for use in the state of Oregon. Manufactured tanks must be at least 1,000 gallons and may be constructed of concrete, steel, polyethylene, or fiberglass. Contact this office for a list of approved manufacturers if you have a question. Find out from the septic tank manufacturer or installer the following tank dimensions: (1) length, (2) width, (3) height, and (4) distance from the top of the tank to the bottom of the outlet fitting. There is no minimum depth requirement for placement of the septic tank as long as a soil or similar protection cover is provided. All septic tanks are required to have manufacture approved watertight, lockable risers over the manhole to the ground surface. This is to facilitate pumping of the tank. The septic tank outlet must be 2

inches higher in elevation than the top of the drain media. (See installation of the system.)

3. The bottom of the disposal trenches and the drainlines in the trenches must be level and be staked out on the contour if a slope is present. They must not run up or down hill (see figure 1). The lines must be at least 10' apart on center, a minimum of 2' wide.



**Disposal lines contour the slope  
(CORRECT)**



**Disposal lines installed downhill  
(INCORRECT)**

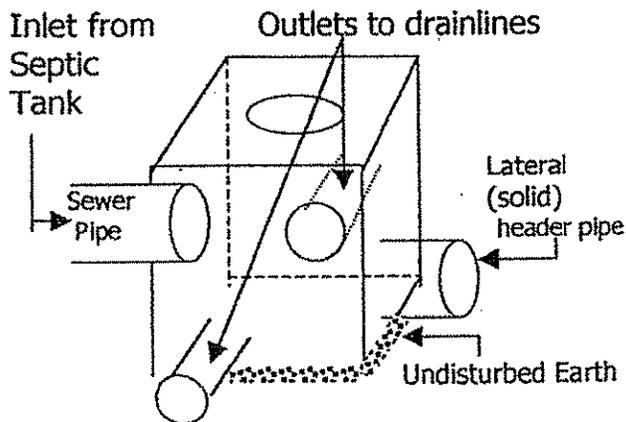
**Figure 1**

## **INSTALLATION OF THE SYSTEM**

1. Place the septic tank first. Be sure that the tank inlet is lower in elevation than the building's plumbing outlet. Remember, the drain line must drop at least 1" per 4 lineal feet of sewer line. For example: a septic tank located 10 feet from the house will require 2 ½" of drop in the line (10 x 0.25" per foot = 2.5"). Less drop may result in clogged plumbing. Contact the Klamath County Building Department if you have questions concerning the plumbing within the house and/or between the house and the septic tank. For depth of the septic tank take into account the approval location, and the maximum and minimum trench depths allowed for your drainlines. Read installation requirements supplied by the manufacturer for installation of the septic tank and the proper way to conduct a watertightness test at the site. A watertightness test is required after installation in accordance with OAR 340-073-025(3).
2. There must be a minimum of 5 feet of solid pipe between both the house and the septic tank, and the septic tank and the first distribution box. The effluent sewer line shall be installed with a minimum fall of 4" per one hundred feet (100'), but in no instance shall there be less than 2" of fall

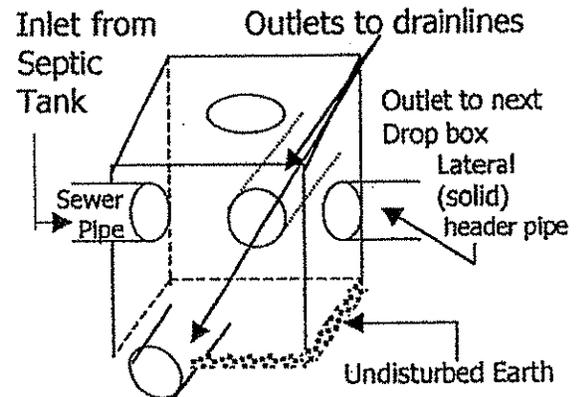
between the lowest portion of the septic tank outlet and the top of the drain media. The effluent sewer line is a heavy-weight 4" effluent sewer pipe. Your tank manufacturer should provide you with the necessary materials and directions for making proper joints between the tank fittings and the sewer pipes.

3. For a system installed on sloping ground with serial distribution, it is required that a drop box (figure 2B) be used. If installing on flat ground, a distribution box is required to achieve equal distribution. The distribution box or first drop box (see Figures 2A and 2B) must be lower in elevation than the septic tank outlet. The box must be level, seated on undisturbed soil, and be oriented with the highest fitting on the inlet side. A builder's level or water test can be used to determine if the box is level. The joints between the pipes and boxes must be watertight. Water test the box and the joint seals before backfilling around the box.



Distribution box – to be used on level ground. Effluent fills all lines equally from the distribution box. Portholes to drainlines are all at the same elevation.

**Figure 2A**



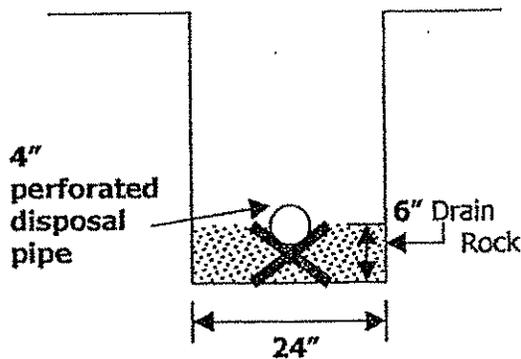
Drop box – to be used on sloping ground. Effluent fills one line at a time. Portholes to drainlines are lower in elevation.

**Figure 2B**

4. In systems utilizing distribution or drop boxes, approved solid (non-perforated or "header") piping must be used between each box, with a minimum of 4' of solid pipe between each d-box and the start of perforated disposal line (see Figures 3A and 3B). No gravel is to be placed around any of the solid lines or beneath the d-boxes. Approved perforated piping is to be used in the disposal trenches.

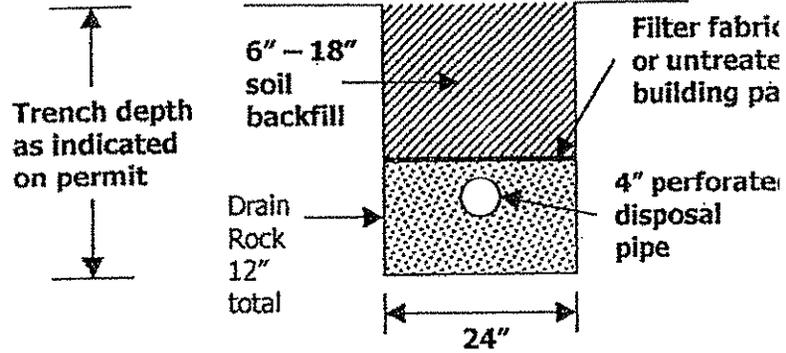
5. Disposal trenches must be dug such that the bottom of the trench is level. Your permit should specify the proper maximum and minimum depths for the trenches. Any more than 1" rise or fall in a line is not acceptable. A laser transit will most likely be needed in order to accurately achieve this.

6. After the trench is dug, grade stakes or 2x6's are placed in it such that their ties are 6" above the bottom of the trench (see Figure 4A).



**Pipe placement utilizing grade stakes**

**Figure 4A**



**Completed Disposal trench**

**Figure 4B**

7. The disposal field rock (filter material) must be clean washed gravel or crushed rock ranging in size from 3/4 to 2 1/2 inches. Place rock in the trench so that it is level with the top of the grade stakes. Perforated piping is then placed on the rock, with the holes positioned downward. Check to be certain that all piping is level and centered in the trenches. Place the remaining 6" of rock over the piping taking care that the pipes remain centered and joints are not dislodged in the trench. You should have 2" of rock over the top of the pipe, for a total of 12" of drainrock.

8. Approved filter fabric should then be placed over the drainrock the full length and width of the disposal trenches (see Figure 4B). Approved fabric includes both Cerex 25 by Monsanto and Type R 3201 by Dupont. The fabric is to prevent backfilled soil from filling in around the rock.

### FINAL INSPECTION/BACK FILLING

At this point, before back filling the system with soil, you are required to call the On-Site Sanitation Program at 883-5121 ext. 3057, for a final inspection. Also, a detailed and accurate as-built plan of the system, a list of all materials used in the construction of the system, and a written certification that the construction was in accordance with the permit and rules of the Commission must be submitted.

An Environmental Health Specialist will check the location of the system, setback distances, construction materials used, and elevations of inlets, outlets, trenches, etc. When the installation is approved, a Certificate of Satisfactory Completion will be issued. The system may then be back filled and connected to for use. If deficiencies are found, a correction notice will be issued and placed at the site. Another inspection may be necessary before the system can be back filled, and placed into service. If additional inspections are needed because deficiencies were not corrected properly, an extra fee may apply before the third inspection is made. Backfill shall be carefully placed to prevent damage to the system. A minimum of six (6) inches of backfill is required except in serial systems where twelve (12) inches is required. The backfill shall be free of large stones, frozen clumps of earth, masonry, stumps, waste construction materials, or other materials that could damage the system.

### CARE AND MAINTENANCE

There are several things that you can do to protect your system and prolong its life:

1. Have your tank pumped out by a licensed septic tank pumper every 3-5 years. Depending on the size of your household, water usage, and types of appliances, the amount of time between pumping may vary. Refer to your phone book yellow pages or request a list of licensed pumpers from this office.
2. Do not plant trees or deep rooted shrubs in tile area of tile disposal field. However, do seed tile disposal field area with grasses or other landscaping. The vegetation takes moisture from tile field and contributes to longevity of the system. Keep in mind that system operation requires both evaporation as well as percolation.
3. Protect the system from livestock, vehicular traffic, and heavy machinery. All of these can compact the soil and seal the drainfield, crush or damage system components, and eventually lead to system failure.
  4. A few other warnings include the following:
    - a. Do not flush excessive amounts of oil or grease down the drains.
    - b. Keep faucets and toilets from leaking and in good repair.
    - c. If you use a garbage disposal, solids may accumulate faster in your septic tank, check more frequently.
    - d. Plastic, rubber, chewing gum, and some paper products do not breakdown in a septic tank; use caution when disposing of them.

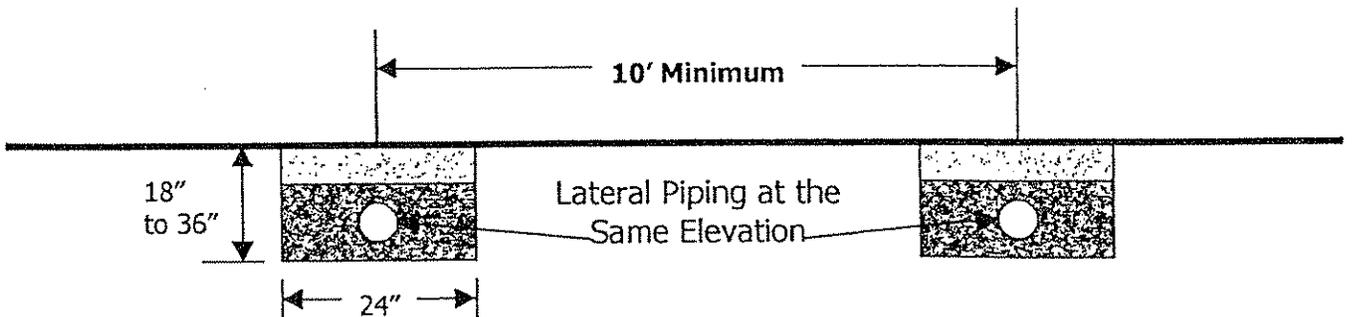
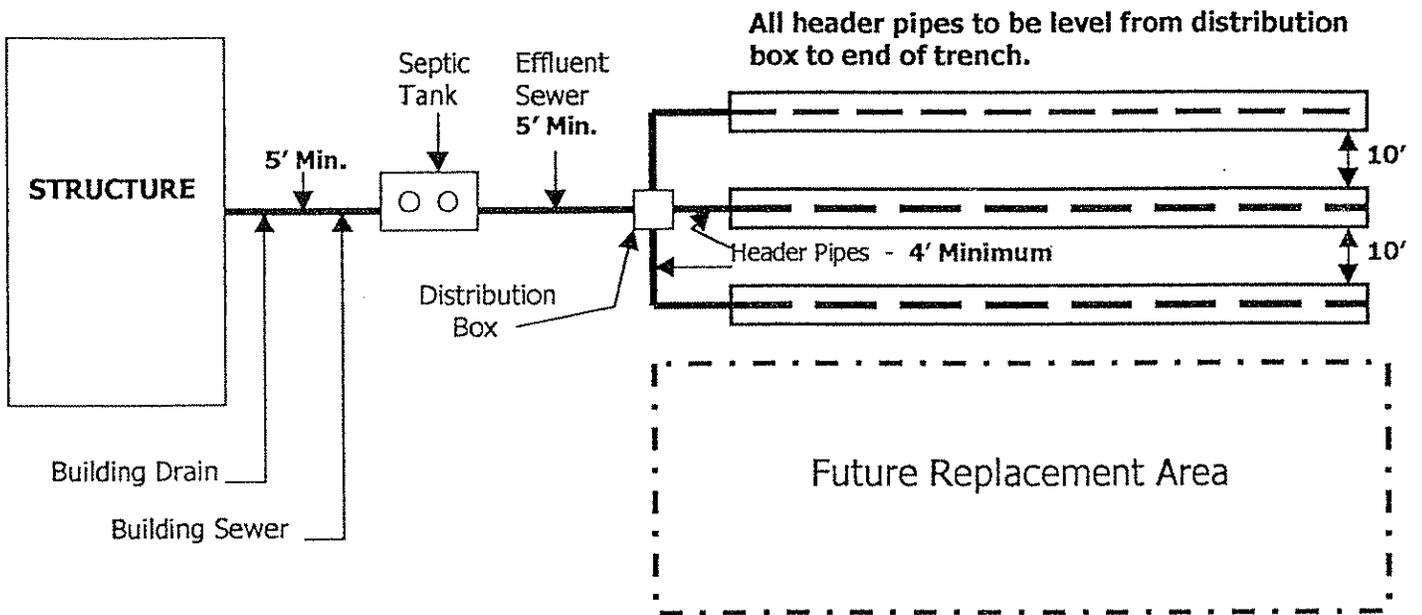
### IMPORTANT NOTE

This pamphlet is intended to be a guide to help homeowners to comply with construction and installation requirements, and maintain their on-site sewage disposal system. It is not a substitute for knowing the codes. If you encounter problems or have questions during the installation please do not hesitate to contact this office, or leave messages on our phone answering machine during non-working hours. You may also visit our web page at: [www.co.klamath.or.us](http://www.co.klamath.or.us) or the DEQ web page at: [www.deq.state.or.us/wq/onsite/products.htm](http://www.deq.state.or.us/wq/onsite/products.htm).

**ON-SITE SANITATION**  
**Klamath County Community Development**  
**305 Main Street**  
**Klamath Falls, OR 97601**  
**(541) 883-5121 ext. 3057**

**TYPICAL EQUAL DISTRIBUTION SYSTEM  
With Distribution Box)**

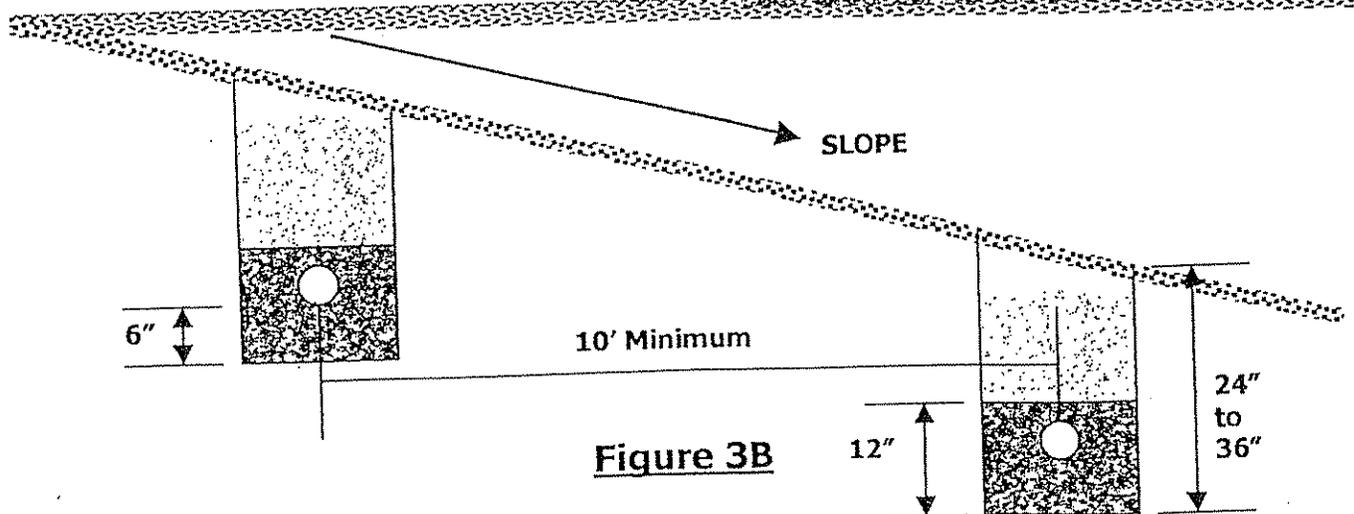
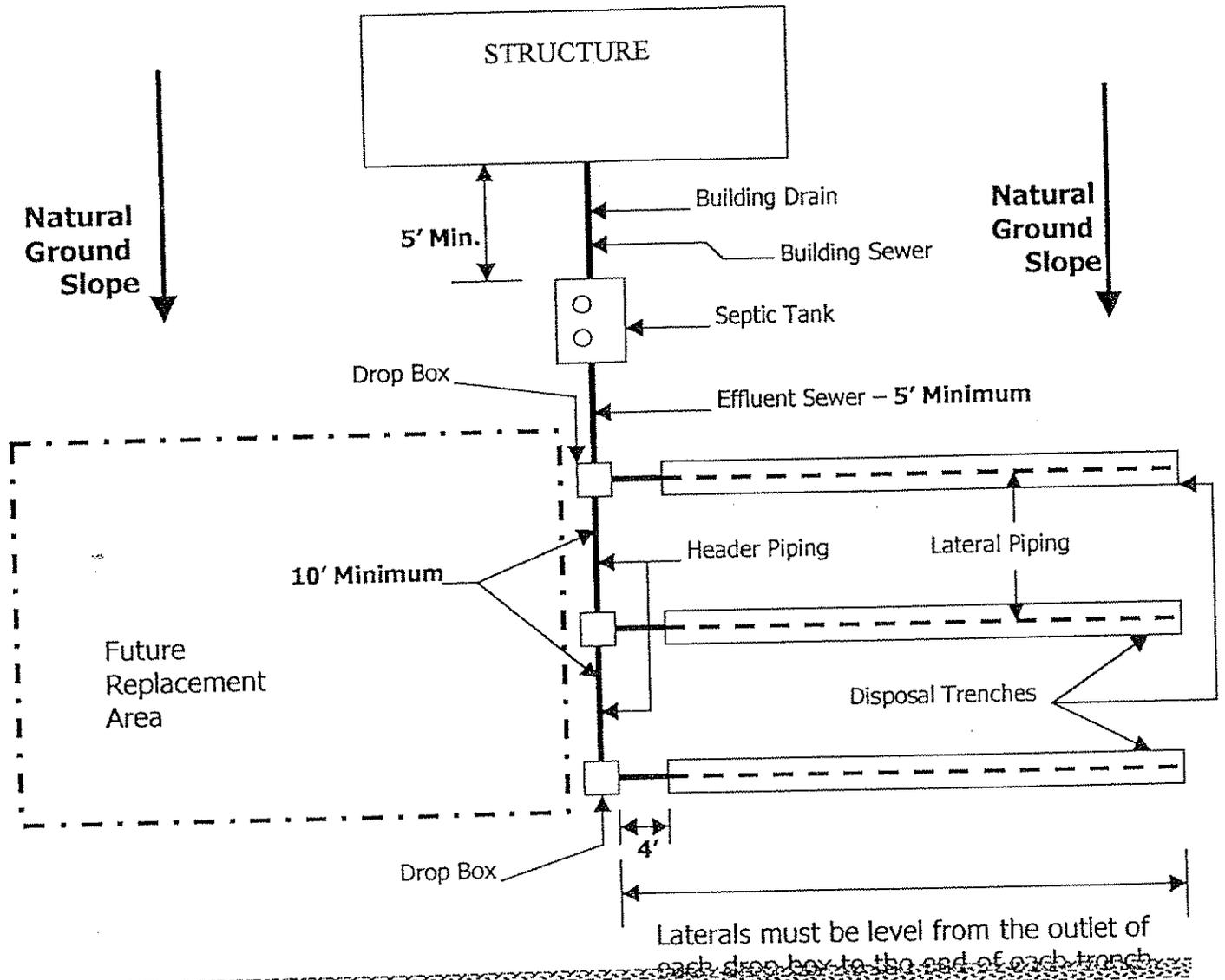
**LEVEL GROUND**



**Figure 3A**

**TYPICAL SERIAL DISTRIBUTION SYSTEM  
(With Drop Boxes)**

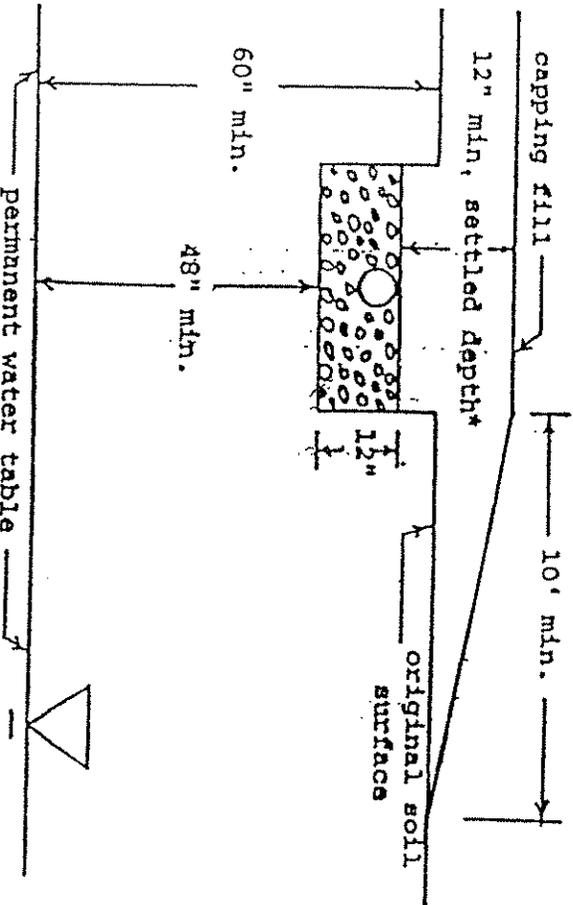
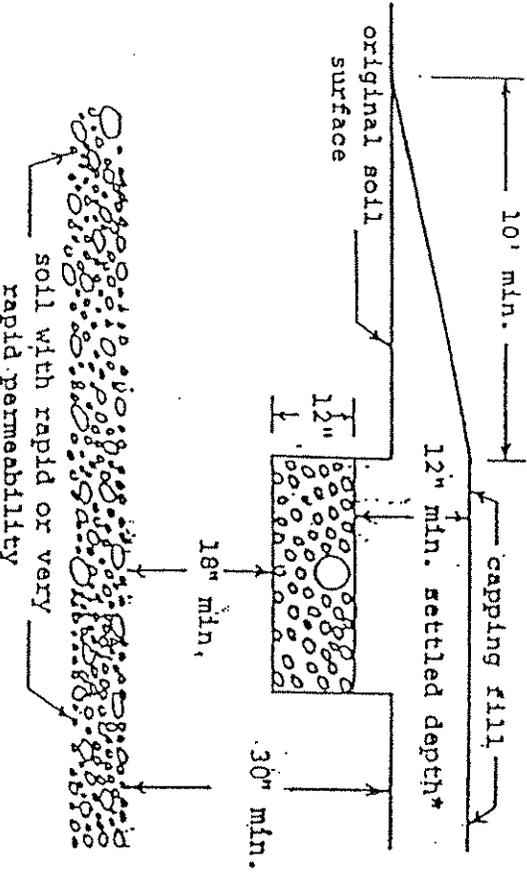
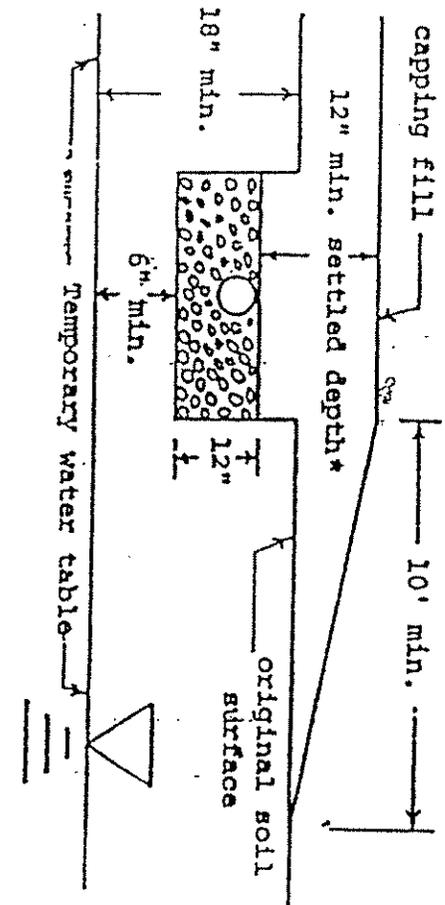
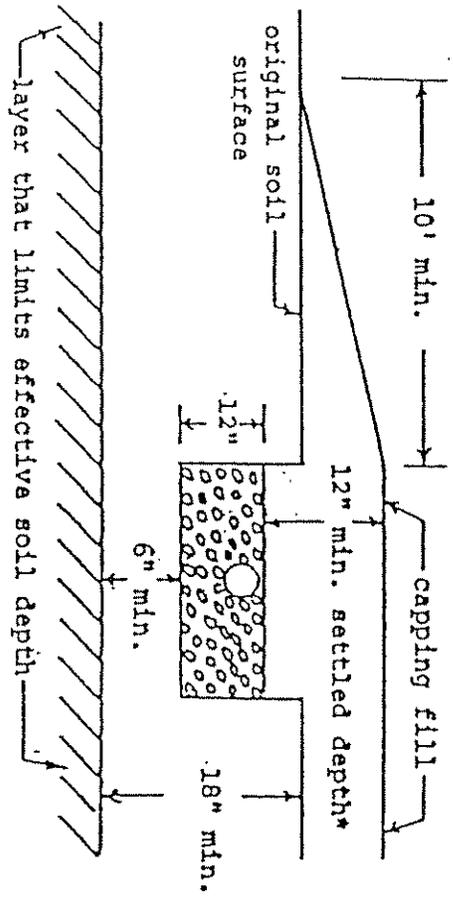
**SLOPING GROUND**



**Figure 3B**

DIAGRAM 10

CAPPING FILL



\*.16" Depth before Settling

# SAMPLE OF AS-BUILT

NO INCLUDE A LIST OF MATERIALS USED

