City of SeaTac

On-Site Residential Drainage Requirements

Engineering Review Division (ER-4) September 2020

1. Buildings and building additions of 0-500 square feet that do not require any footing or roof drains do not need to provide on-site drainage.

2. Buildings and building additions of 0-500 square feet that require footing or roof drains may use an infiltration trench for control of ground water and storm water.

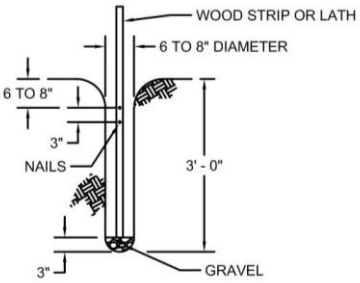
3. For all buildings, building additions, and residential parking spaces over 500 square feet, on-site storm drainage may be collected and conveyed to a publicly maintained storm drainage system. Alternatively, a percolation system may be utilized if soil conditions are acceptable.

4. In order for the City to approve the use of a percolation system in conjunction with a residential building application, the owner or contractor needs to perform a percolation test on the property in accordance with the procedures outlined below.

PERCOLATION TEST PROCEDURE:

Number and Location of Tests

A minimum of two percolation tests are to be performed within the area proposed for an absorption system. If soil conditions or size of absorption system warrant, more tests may be required. The exact number shall be determined by the Director of Public Works or his designated representative. The percolation tests should be spaced uniformly throughout the proposed absorption area.



TYPICAL PERCOLATION TEST HOLE
NOT TO SCALE

Preparation of Test Hole

The diameter of each test hole is to be 6 to 8 inches, dug or bored to a 3-foot depth. To expose a natural soil surface, scratch the sides of the hole with a sharp, pointed instrument and remove the loose material from the bottom of the test hole. Place three inches of gravel in the bottom of the hole to protect the bottom from scouring action when the water is added.

Soaking Period

Fill the test hole(s) with clear water and maintain full for a period of four hours the evening prior to the test. If accurate results are to be obtained, it is extremely important that the soil be allowed to soak for a sufficiently long period of time to allow the soils to swell. (In sandy soils with little or no clay, soaking is not necessary). If, after filling the hole twice with water and the water seeps completely away in ten minutes, the tests can proceed immediately. If the hole drains too fast for a hose to keep up, stop the test and use the "Test holes drained in ≤ 30 seconds" Table.

Measurements of Percolation Rate

On a piece of straight wood place two nails, three inches apart. (See figure 1). Fill test hole with clear water to the top nail. Start a timer and record the time it takes the water to reach the bottom nail. Repeat this procedure three times. Enter your results on the form provided below with a photo of each hole setup, and return to the City of SeaTac Public Works Engineering Review Division.

MATERIALS

The following materials are acceptable for use in on-site conveyance systems:

1. Concrete drain pipe

2. Zinc coated (galvanized) or aluminum coated (aluminized) corrugated iron or steel drain/underdrain pipe

3. Corrugated aluminum alloy drain/underdrain pipe

4. Polyvinyl Chloride (PVC) drain pipe **(REQUIRES A MINIMUM OF 3 FEET OF COVER OVER PIPE CROWN)**

5. Corrugated Polyethylene (LCPE) drain pipe (smooth interior wall)
   (Rolled corrugated tubing is not an approved material)

The following materials are acceptable for use in on-site infiltration systems:

1. Perforated corrugated aluminum alloy underdrain pipe

2. Perforated Polyvinyl chloride (PVC) underdrain pipe **(REQUIRES A MINIMUM OF 3 FEET OF COVER OVER PIPE CROWN)**

3. Perforated Corrugated Polyethylene (PE) underdrain pipe (Rolled corrugated tubing is not an approved material)

CITY OF SEATAC
PERCOLATION TEST RESULTS

BUILDING PERMIT NUMBER _____

OWNERS NAME AND ADDRESS _____

_____

_____

PHONE NUMBER __(_____)_____

EMAIL _____

TIMED RESULTS:

Test Hole No. 1	**Test Hole No. 2**
1. _____	1. _____
2. _____	2. _____
3. _____	3. _____

I certify that I conducted or witnessed the Percolation Test Procedure as stated in the City of SeaTac "Percolation Test Procedure" handout and the timed results as stated above are correct.

_____
(Contractor) (Owners) Signature Date

CITY OF SEATAC

GENERAL GUIDE FOR SIZING PERCOLATION TRENCHES

The following charts are to be used as general information for the sizing of percolation trenches. The actual sizing of the system is determined based on the existing soil conditions and percolation rate. The figures shown in the charts represent square footage of the area on the bottom of the trench. The minimum trench length for an infiltration trench shall be 10 linear feet.

Test holes drained in **≤ 30 seconds**	
Impervious Surface Area (SF)	**Minimum Percolation Trench Area (SF)**
250	4.25
500	8.5
1000	17
1500	25.5
2000	34
2500	42.5
3000	51

Test holes drained in **≤ 45 seconds**	
Impervious Surface Area (SF)	**Minimum Percolation Trench Area (SF)**
250	6.5
500	12.75
1000	25.5
1500	38.25
2000	51
2500	63.75
3000	76.5

Test holes drained in **≤ 60 seconds**	
Impervious Surface Area (SF)	**Minimum Percolation Trench Area (SF)**
250	8.5
500	17
1000	34
1500	51
2000	68
2500	85
3000	102

Test holes drained in **≤ 2 Minutes**	
Impervious Surface Area (SF)	**Minimum Percolation Trench Area (SF)**
250	17
500	34
1000	68
1500	102
2000	136
2500	170
3000	204

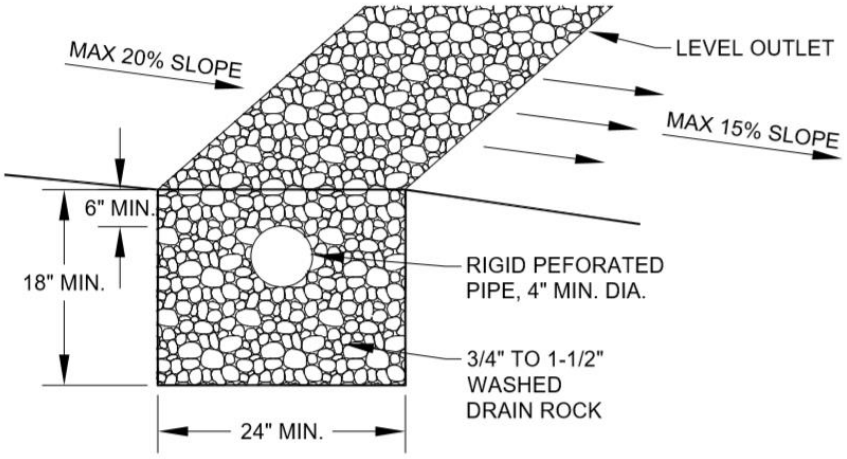
Test holes drained in **≤ 3 Minutes**	
Impervious Surface Area (SF)	**Minimum Percolation Trench Area (SF)**
250	25.5
500	51
1000	102
1500	153
2000	204
2500	255
3000	306

Test holes drained in **≤ 4 Minutes**	
Impervious Surface Area (SF)	**Minimum Percolation Trench Area (SF)**
250	34
500	68
1000	102
1500	170
2000	238
2500	306
3000	376

Test holes drained in **≤ 5 Minutes**	
Impervious Surface Area (SF)	**Minimum Percolation Trench Area (SF)**
250	42.5
500	85
1000	170
1500	255
2000	340
2500	425
3000	510

Test holes drained in **≤ 6 Minutes**	
Impervious Surface Area (SF)	**Minimum Percolation Trench Area (SF)**
250	68
500	102
1000	204
1500	306
2000	408
2500	510
3000	620

FIGURE C.2.4.B TYPICAL GRAVEL-FILLED DISPERSION TRENCH FOR BASIC DISPERSION



TRENCH SECTION
NTS

FIGURE C.2.2.A TYPICAL TRENCH INFILTRATION SYSTEM