City of Seattle
Department of Construction and Inspections
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Phone: 206-684-8850

City of Seattle
Simple Infiltration Test Checklist

Call before you dig – Utility Locates 811

Project Address: _____ Date: _____

Permit Number: _____

This Infiltration Test was performed by:

Company Name: _____ Contact Name: _____

Phone Number: _____ Email Address: _____

☐ Include site map or drainage control plan, with test locations clearly marked.

The intent of this checklist is to provide a summary of stormwater BMP subsurface investigation and infiltration testing requirements associated with the Simple Subsurface Investigation. All projects and associated plans are also subject to the minimum requirements outlined in the City of Seattle Stormwater Manual and SMC Chapters 22.800 – 22.808, as well as the specific subsurface investigation and infiltration testing requirements outlined in Volume 3, Chapter 3 and Appendix D of the 2016 City of Seattle Stormwater Manual.

This checklist does not preclude the use of professional judgment to evaluate and manage risk associated with design, construction, and operation of infiltration BMPs.

See Appendix C for site constraints that may preclude infiltration facility feasibility for some BMPs. The Simple Infiltration Test is not allowed for projects with no off-site point of discharge (Section 4.3.2.1). These projects shall use a Small Pilot Infiltration Test (PIT).

Before you start call Utility Locates 811 to request locates of utilities at your site.

The Simple Subsurface Investigation involves an Infiltration Testing element and a Subsurface Investigation element. Although the Infiltration Testing is listed first below, the Infiltration Testing and Subsurface Investigation can be done in any order.

INFILTRATION TESTING:

1. Is the infiltration test within the footprint of the proposed infiltration facility? ☐ Yes ☐ No

2. If "no," is the test within 50 feet of the proposed infiltration facility? ☐ Yes ☐ No

Explain why: _____

3. What is the total proposed new plus replaced impervious area (not including permeable pavement surfaces) infiltrated on the site? _____ ft^2

4. Date and time of test(s): _____

- *If performed November through March, one test is required.*
- *If performed April through October, two tests are required.*
  - *Tests must be in the same hole within 2-days.*
  - *The beginning of each test must be spaced 24-hours apart.*

5. ☐ Dig an infiltration test hole at least 2-feet deep, measured from the proposed finished grade, and 2-feet across. It is recommended that the test hole depth be at the bottom of the facility to provide the best design information. (Note: this hole is separate from the hole in Step 11below)

6. Diameter of test hole (2-foot minimum): _____ feet

7. Depth of test hole (2-foot minimum): _____ feet

8. Describe soil type and texture (e.g., sand, clay, gravel.):_____

9. Pre-soak period

☐ **a)** Add water to the 12-inch mark. (Measure depth using a ruler, scale, or tape measure).

☐ **b)** Stabilize water depth for a minimum of 30-minutes by adding water until the depth is maintained at a minimum of 12 inches, then move on to step c.

c) Stop adding water, then record the number of inches the water has fallen in 1 hour: _____ inches

d) Record the number of inches the water has fallen from hour 1 to hour 2:_____ inches

e) What is the smaller of the two numbers in row 9c and 9d above? (check only one box below)

- ○ > 3-inches (Use Table 1 below – 15-minute intervals.)
- ○ Between 1-inch and 3-inches (Use Table 2 below – 30-minute intervals.)
- ◉ < 1-inch (Use Table 3 below – 60-minute intervals.)

This is your "testing period".

10. Testing period

Based on the answer to 9e above, use either Table 1, 2 or 3 on the Results and Certification page to record your data and:

☐ **a)** Refill the hole to the 12-inch mark.

☐ **b)** Immediately record the time and depth of water in the appropriate table below.

☐ **c)** Based on your time interval (answer to 9e above):

- ✓ Record the time and depth of water in the hole at the specified intervals.
- ✓ Complete the table by recording six measurements (in addition to the starting depth).
- ✓ If the hole empties prior to the six measurements, refill to the 12-inch mark and continue recording until you have completed the table.

☐ **d)** Using the depth of water recorded at each interval, calculate the infiltration rate and record the results:

- Table 1: Infiltration Rate = Change in depth between each interval x 4
- Table 2: Infiltration Rate = Change in depth between each interval x 2
- Table 3: Infiltration Rate = Change in depth between each interval x 1

☐ **e)** If performed April through October, repeat steps 9 and 10 in the same hole 24 hours after the beginning of the first infiltration test and record the results in the Infiltration Test #2 Result tables.

SUBSURFACE INVESTIGATION:

11. ☐ Dig a hole to the depth required per Table 5 below (2-feet below proposed facility in the wet season and 3-feet below the proposed facility in the dry season) and approximately 5-feet from the proposed infiltration facility. (See the footnote at the end of Table 5 – depth is measured from the bottom of the proposed infiltration facility.)

12. Record total depth of hole from surrounding ground surface: _____ feet

13. While digging the hole, did you:

a) Hit hard pan? (i.e. hardened soil that is like concrete) ☐ Yes ☐ No

b) Encounter standing water or seepage in the hole? ☐ Yes ☐ No

14. If you answered "yes" to either (13a) or (13b), infiltration is not feasible for this site. Test is finished.

INFILTRATION TEST RESULTS AND CERTIFICATION

Infiltration Test #1 Results

Table 1 (15-min)

Time (15-min)	Depth of Water (inches)	Infiltration Rate (in/hr)
	12	---

Table 2 (30-min)

Time (30-min)	Depth of Water (inches)	Infiltration Rate (in/hr)
	12	---

Table 3 (60-min)

Time (60-min)	Depth of Water (inches)	Infiltration Rate (in/hr)
	12	---

Infiltration Test #2 Results (Required if performed April through October – see step 4 above)

Table 1 (15-min)

Time (15-min)	Depth of Water (inches)	Infiltration Rate (in/hr)
	12	---

Table 2 (30-min)

Time (30-min)	Depth of Water (inches)	Infiltration Rate (in/hr)
	12	---

Table 3 (60-min)

Time (60-min)	Depth of Water (inches)	Infiltration Rate (in/hr)
	12	---

☐ The lowest infiltration rate from the tables above = _____in/hr (Measured infiltration rate)

- *If the lowest measured infiltration rate is less than the minimum rate associated with an infiltration BMP (see Table 4 below), that BMP cannot be used.*
- *If the measured infiltration rate is less than all minimum infiltration rates for infiltration BMPs, no further investigation is required.*

☐ Design infiltration rate = Measured infiltration rate x 0.5 = _____in/hr

SIGNATURES ARE REQUIRED

I certify that I have followed the procedures outlined in this document to determine the infiltration BMP feasibility and infiltration rate.

Infiltration Test performed by:

Print Name _____

Signature _____ Date_____

Subsurface Investigation performed by:

Print Name _____

Signature _____ Date_____

REFERENCE TABLES

Table 4. Minimum Measured Infiltration Rates (Taken from the 2016 City of Seattle Stormwater Manual, Vol. 3, Section 3.2 – Table 3.3)

Infiltration BMP	Minimum Measured Infiltration Rate for On-site List Approach (in/hr)	Minimum Allowed Measured Infiltration Rate for Meeting Flow Control, Water Quality Treatment, and On-site Performance Standards (in/hr)
Infiltration Trenches	5	5
Drywells	5	5
Infiltrating Bioretention without underdrain	0.6	0.6
Infiltrating Bioretention with underdrain	0.3	No minimum
Rain Gardens	0.3	Not applicable (only for On-site List Approach)
Permeable Pavement Facility	0.3	0.3b
Permeable Pavement Surface	0.3a	No minimum
Perforated Stub-out Connections	0.3	Not applicable (only for On-site List Approach)
Infiltration Basins	Not applicable	0.6
Infiltration Chambers	Not applicable	0.6

a Infiltration testing not required, only necessary to prove infeasibility.

b No minimum infiltration rate if underdrain is installed.

Table 5. Minimum Investigation Depth and Vertical Separation Requirements (Taken from the 2016 City of Seattle Stormwater Manual, Appendix D, Section D-2.3)

All BMPs			
		Minimum Vertical Separation, ft [a]	
Season	Minimum Investigation Depth (ft) [a]	Groundwater	Hydraulically-Restrictive Layer
Wet Season (November – March)	2	1	1
Dry Season (April – October)	3	2	1

[a] The minimum investigation depth and vertical separation shall be measured from the bottom of the facility. The bottom of the facility is defined as the deepest portion of proposed facility where infiltrating water is expected to move into the underlying soil