KitsapCounty
Community Development

Residential Infiltration Pit (I-Pit)

An infiltration pit is a gravel-filled trench that allows stormwater runoff to soak into the ground. They are intended only for use in infiltrating runoff from roof downspout drains. They are not designed to directly infiltrate runoff from pollutant-generating impervious surfaces, such as driveways.

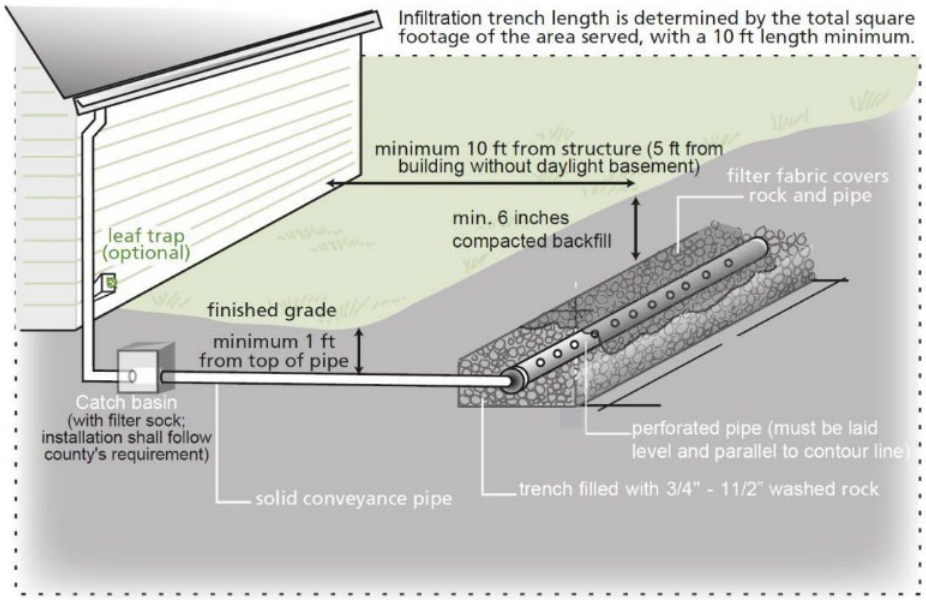

Figure 1: Illustration of a typical infiltration trench. Modified from "How to Manage Stormwater" by City of Portland Environmental Services

INFILTRATION TESTING

Infiltration pits are only suitable in well-draining soil. Soil investigation is an important first step to determine infiltration potential. The 2021 Kitsap County Stormwater Design Manual (KCSDM) Vol II chapter 5.3.2 step 3 identifies minimum testing requirements. In most cases, a licensed professional must perform infiltration testing. For Simple subsurface investigation, go to the 2019 Stormwater Management Manual for Western Washington, Vol V-5.4 Determining the Design Infiltration Rate of the Native Soils to perform an infiltration test.

SITE CONSTRAINTS

Horizontal Setbacks

- 10’ setback from property lines
- 5’ setback from structures with no basement, 10’ for structures with basement
- 30’ setback if located uphill of an on-site septic system
- 10’ setback if located to the side or downhill of an on-site septic system
- 100’ setback from open water features

Slopes

- Infiltration pits may not be located within 100’ of landslide hazard areas or within 50’ from the top of any slope steeper than 15%. A detailed slope stability analysis completed by a licensed engineer or engineering geologist can reduce these requirements.

Groundwater or Hardpan

- There must be a minimum of 12” of separation between the bottom of the infiltration pit and both hardpan and the seasonal high-water table.

Other constraints may apply, the full list can be found on 2021 Kitsap County Stormwater Design Manual (KCSDM) Vol II chapter 5.3.2.

If horizontal setbacks limit infiltration potential, an infiltration pit can be located under a driveway. The driveway must be paved with either concrete or asphalt, and a concrete catch basin must be used.

INFILTRATION PIT SIZING

If the infiltration pit has not been sized by a professional, a DCD stormwater reviewer can help size the facility based on the amount of impervious area being directed to the facility (total rooftop) and the soil type.

Infiltration pits sized by DCD have a standard depth of 18” of rock and 6” of fill on top. Other depths may be used when designed by an engineer.

Infiltration pits sized by DCD must meet the minimum calculated square footage. They may be any shape that meets the square footage requirement, as long the following criteria are met:

- Infiltration pits must be oriented parallel to topographic contours, with a level bottom
- The maximum length of the trench must not exceed 100’
- If multiple trenches will be installed, the minimum spacing between centerlines is 6’

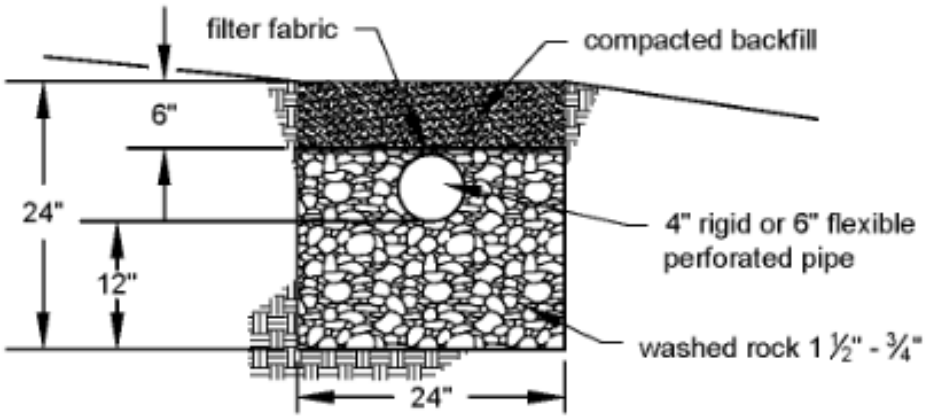

Figure 2: Illustrative detail of infiltration trench from DOE’s 2019 SWMMWW

INFILTRATION PIT CONSTRUCTION

Catch Basins

To prevent sediment and debris from entering the infiltration pit, a catch basin (CB) must be installed between the downspouts and infiltration pit. The following CBs can be used:

- A black manufactured ADS CB. (ADS pipe with a poured concrete bottom is not allowed.)
- A fiberglass septic tank riser with a welded bottom, minimum 24" diameter.
- A concrete CB: Type 30, Type 1, or Type 2. *(Must be used if location is subject to vehicular loading)*

Pipe

A minimum 4" diameter perforated PVC must be used. The perforated PVC pipe should be located a minimum of 8" above the bottom of the trench for 4" pipe and a minimum of 6" below the top of the rock.

Drain Rock

Round washed rock, 1 ½" – 1 ¾" in diameter shall be used in the trench.

Observation Wells

An observation well is recommended as it can be used for checking water levels, sediment accumulation, and pumping out the sediment for maintenance purposes.

More Questions?

Visit: Contact Us
Call: 360.337.5777
Email: help@kitsap1.com

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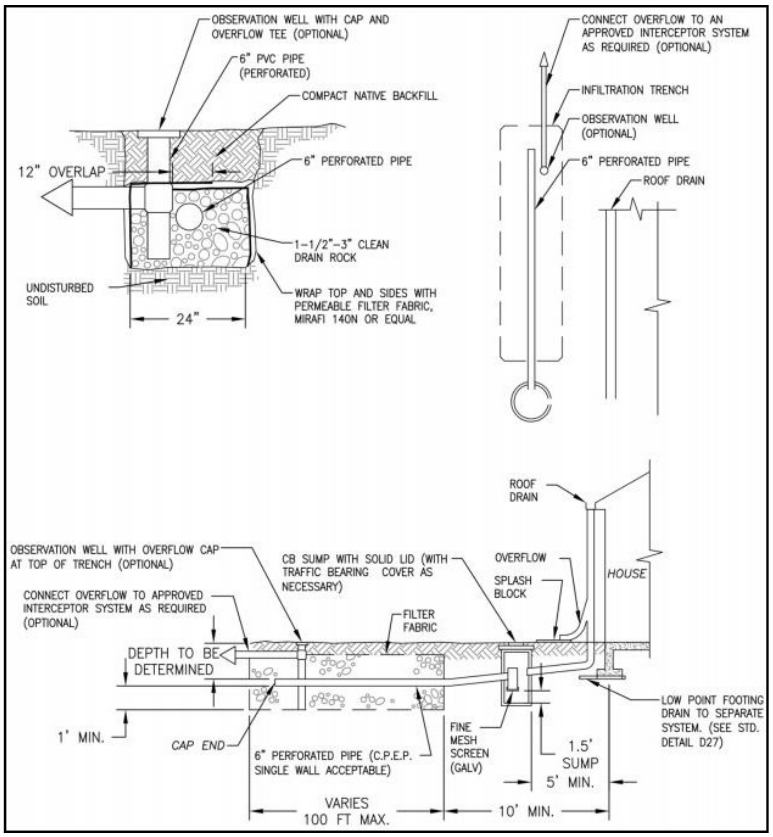
DIAGRAMS & PHOTOS



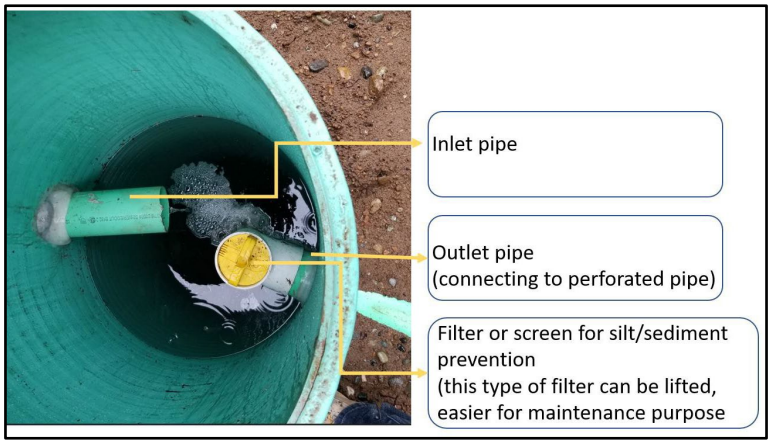


Figure 5: Closeup view of the catch basin

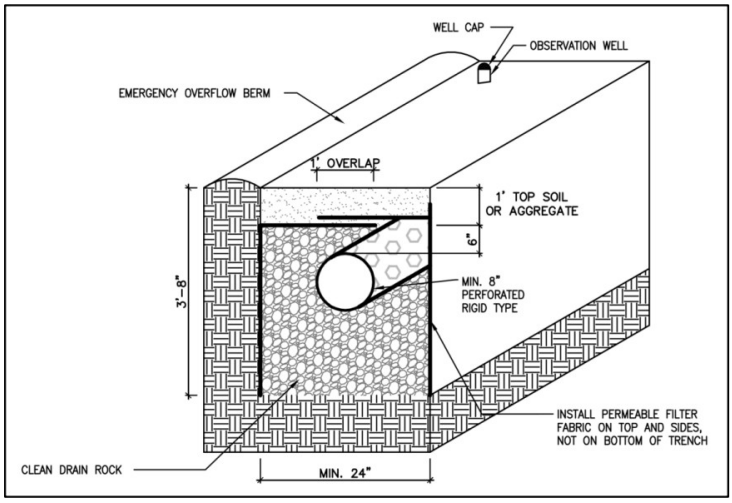


Figure3: Source and credits: Clark County, Community Development

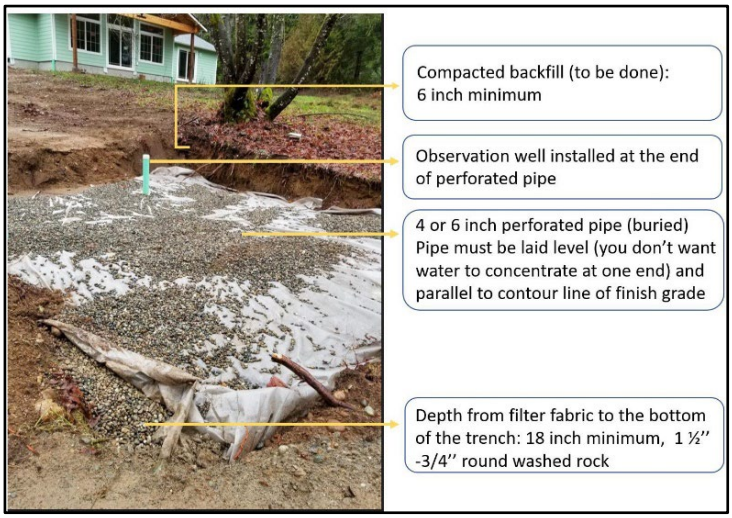


Figure 4: An example of an infiltration trench/I-pit