

BMP T5.10B: Downspout Full Infiltration – Infiltration Trenches

Purpose and Description

Infiltration trenches are trenches fill with rock and containing perforated pipe that are designed to infiltrate runoff from roof downspout drains. They cannot be used to directly infiltrate runoff from pollutant-generating surfaces. Alternatives to rock-filled trenches, such as preformed chambers, are acceptable if equivalent storage volume is provided.

Cross Reference Guide

See [BMP T5.10A](#), Downspout Full Infiltration - Drywells

Applications, Limitations and Setbacks

Geotechnical analysis is an important first step to determining the feasibility of using downspout infiltration trenches. The required site analysis includes an initial assessment of the type of site soils, and the infiltration potential. See [Section 2.3 in Book 1](#) for guidance regarding required site soils analysis.

Roof downspout infiltration trenches are deemed feasible without infiltration testing when a qualified professional determines that USDA textural classes consisting of coarse sand to medium sand, loam, or cobbles and gravels are present in the infiltration zone. If other soils are present in the infiltration zone consider a rain garden or bioretention facility instead.

Items that make roof downspout infiltration trenches infeasible include:

- Less than one foot of clearance exists between the proposed bottom of the trench and the seasonal high groundwater table.
- The downspout full infiltration system cannot meet the setbacks specified below.
- The downspout full infiltration system cannot meet the design criteria specified below.

Setbacks

- See [BMP T5.10A](#) for setback information.

Design Criteria

- The following minimum lengths per 1,000 square feet of roof area based on soil type may be used for sizing downspout infiltration trenches:
 - Coarse sands and cobbles: 20 linear feet
 - Medium Sand: 30 linear feet
 - Fine sand, loamy sand: 75 linear feet.

- Sandy loam: 125 linear feet
- Loam: 190 linear feet
- Maximum length of trench is 100 feet from the inlet sump. If the minimum length is greater than 100 feet, flow should be split into parallel trenches.
- Minimum spacing between parallel trench centerlines is 6 feet.
- Filter fabric shall be placed over the drain rock prior to backfilling. Filter fabric should not be used where it can impede the flow into the soil.
- Infiltration trenches may be placed in fill material if the fill is placed and compacted under the direct supervision of a geotechnical engineer or professional civil engineer with geotechnical expertise, and if the measured hydraulic conductivity of the compacted fill material is at least 8 inches per hour. Trench length in fill shall be 60 linear feet per 1,000 square feet of roof area.
- Infiltration trenches should not be built on slopes steeper than 25%.
- A geotechnical analysis and report is required on slopes over 15% or if located within 200 feet of the top of slope steeper than 40%, or in a landslide hazard area.
- Choking stone or filter fabric (geotextile) shall be placed on top of the drain rock and filter fabric shall be placed on trench sides prior to backfilling. Filter fabric shall not be placed on the bottom of the trench.

Runoff Modeling Representation

If roof runoff is infiltrated according to the requirements of this section, the roof area may be removed from the project area used for sizing stormwater facilities.

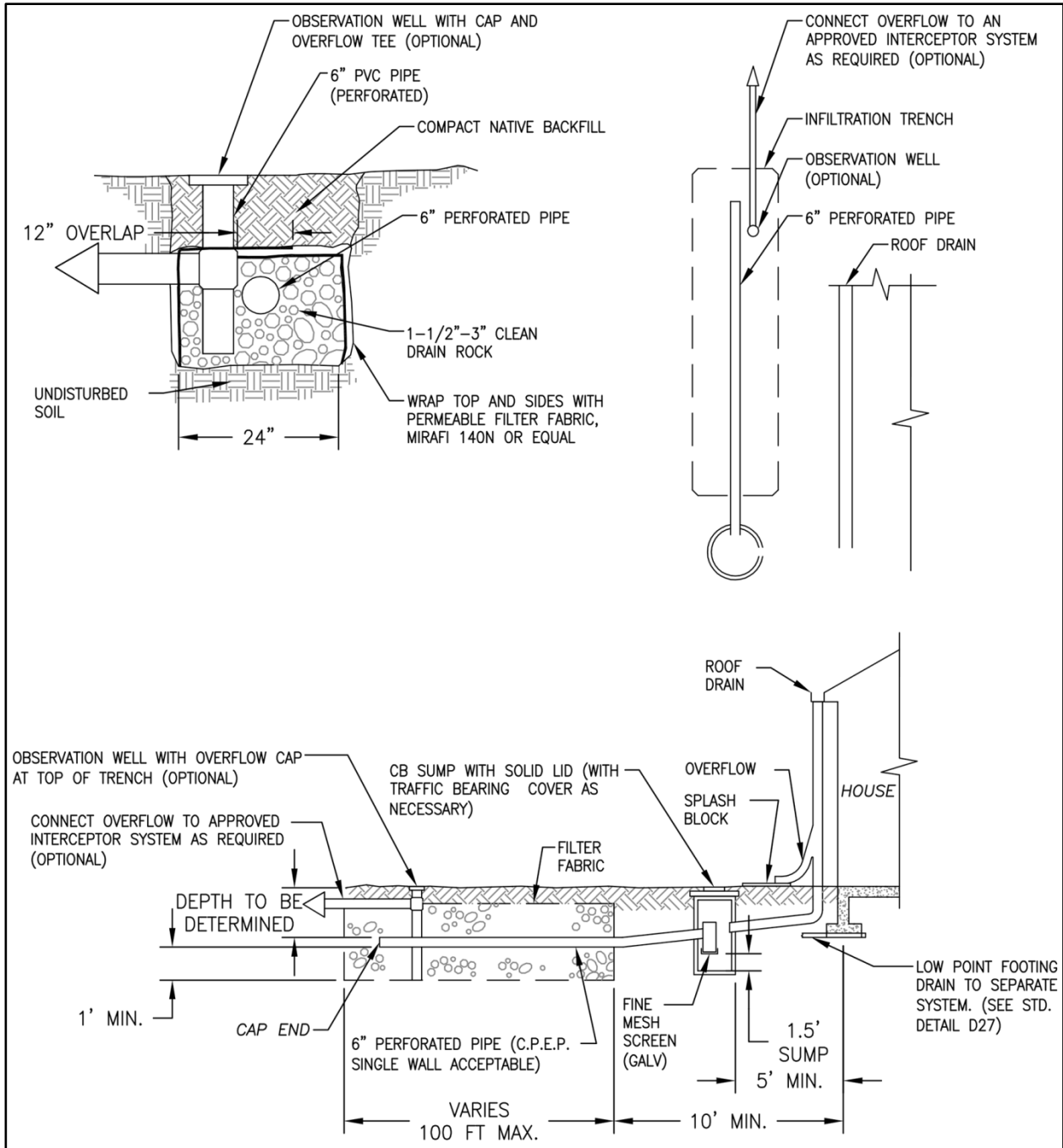


Figure 2.2: Typical Downspout Infiltration Trench

(Source: modified from Clark County)