



Using Rock-filled Trenches

To convey and infiltrate storm water

Why use a rock-filled infiltration trench?

Rock-filled trenches can hold and slowly infiltrate roof, sump pump or driveway runoff as well as areas where runoff stands for long periods in locations that are too narrow for a rain garden, such as in-between houses, next to driveways or in back yard drainage areas. Rain gardens are better where there's room, because the plants and compost-amended soil in them clean runoff while enhancing your property's landscape.

Rock filled trenches can also be used in place of a piped under drain system to help alleviate areas where standing water or saturation occurs for long periods (longer than 48 hrs). They can be covered by turf or decorative rock and incorporated to your property as a landscape feature.

- ☔ **Shallow *infiltration trenches*** (up to 12-24 inches deep) can slowly convey runoff along a shallow slope or drainage swale, away from buildings to a better discharge location such as a rain garden or a large landscape area with deep, compost-amended soil.
- ☔ **Deeper *infiltration trenches*** (greater than 24 inches deep) can hold a lot of water from big storms in the spaces between the rocks until it filters into the soil.

Where to use a rock-filled trench

- ☔ **Don't install any infiltration measure within 500 feet of steep slopes or landslide-prone areas.** Check your address with the steep slope and known landslide-prone
- ☔ **Don't locate over underground utilities or major tree roots.**
- ☔ **Shallow conveyance trenches** should collect water from roofs, driveways, or patios and carry that water away from buildings and your neighbors' property, at no more than a 15% slope (1 foot drop in 7 feet). (Slopes greater than 4% require check dams.)
- ☔ **Locate deeper infiltration trenches** at least 5 feet away from your side and back property lines, and **at least 10 feet away from any building.** If you or a neighbor have a basement deeper than 5 feet underground, add 2 feet more setback (to that 10 ft. minimum) for each foot the basement extends deeper than 5 feet.
- ☔ For infiltration trenches deeper than 24 inches, consult an Engineer.

Disclaimer: This sheet contains general principles only, which may not be appropriate or safe for every property or project. Use good common sense. You assume the risk and are responsible for all consequences of your modifications to drainage flow or your property, for legal compliance, and for necessary permits and authorizations. The City of O'Fallon is not responsible for your modifications and disclaims liability for your actions.

Non-Turf Infiltration Trench



This shallow **conveyance trench** is letting water soak into the soil, while it carries excess from big storms to a pipe running under the sidewalk, to a street drain.

Deeper, larger **infiltration trenches** are used on fairly level sites to hold roof or driveway runoff until it can all soak into the soil. A "rain garden" may be a better solution for many sites – see the Rain Garden fact sheet on the RainWise website below to compare, and consider what works best for your yard.

Hire professional assistance if needed, to advise you or to do the work.

Getting started on rock-filled conveyance or infiltration trenches

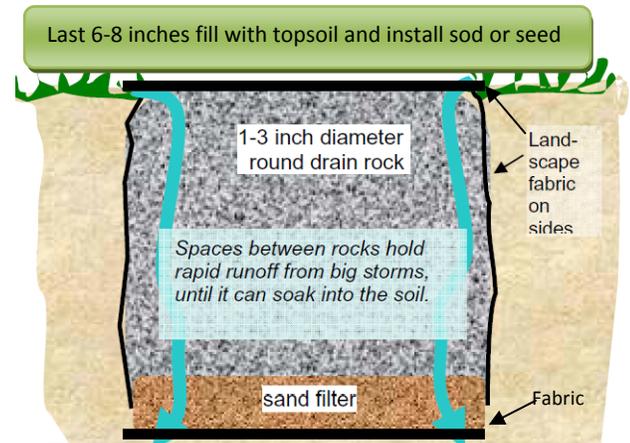
- ☔ **Determine where the water will flow.** Use a level or a running hose to determine which way the ground slopes from a driveway, roof downspout, sump pump or area with standing water or saturation you want to infiltrate into the trench.
- ☔ **Determine the size needed For Shallower Trenches (12-24 inches deep with minimum width of 1 foot).** Shallower conveyance trenches can be whatever width and length is needed to slowly carry runoff to a safe overflow area: to a storm drain, to a large lawn or landscape area, or to a rain garden or “dry well”
- ☔ **Determine the size needed For Deeper Trenches (>24 inches with minimum width of 1 foot).** To handle 98% of the annual runoff on soils with low infiltration rates (0.25 inches per hour), infiltration trenches (18 inches deep) need to have a top area that is 27% of the contributing area. For instance, if a downspout collects water from a 20 x 25 roof area that equals 500 square feet. $500 \text{ sq. ft.} \times 0.27 \text{ (27\%)} = 135 \text{ square feet}$. Consult an engineer for more sizing information, or if uncertain about the suitability of your site. .

Installing the trench

- ☔ **Dig the trench, and line sides with non-woven filter fabric** to keep dirt outside from moving in and clogging the rock spaces.
- ☔ **For a Turf Infiltration Trench, fill the trench to top or 6 to 8 inches from top with 1 to 3 inch diameter “clean rock”.** Line the bottom of the trench with sand or landscape fabric, install 1-3 inch rock, place more fabric on top of rock before you fill the rest with soil and vegetate with sod or seed. (See diagram)
- ☔ **For a Non-Turf Infiltration trench, fill the trench to the top 6-8 inches and install larger “decorative” or “clean rock”** that is a mixture of 4-8 inch in diameter. Line the bottom of the trench with sand or landscape fabric, fill with 1-3 inch diameter rock to 6-8 inches, then top off with larger rock. (See diagram and photo)
- ☔ **Direct driveway, sump pump, downspout runoff, etc. to trench.** A perforated pipe running from the downspout or sump pipe through the upper layer of rock is one way to spread flow along the length of the trench.
- ☔ **Be sure to provide for a safe overflow route** from the lowest point on the trench to a large lawn or landscape area, “dry well” or a rain garden or storm drain without flooding your neighbor’s property.

Suggested Private Drain System

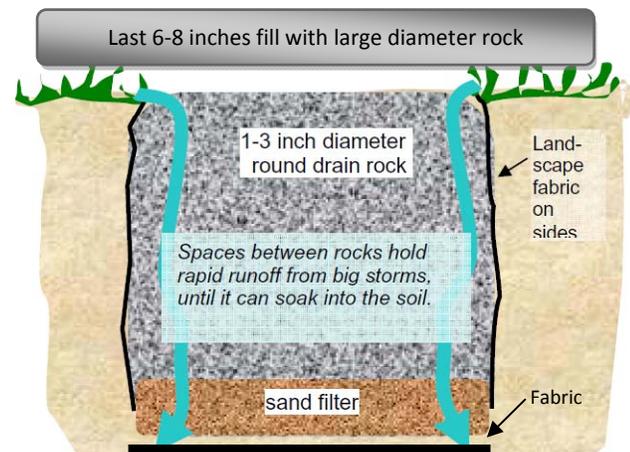
Turf Covered Infiltration Trench



If not using sand, line bottom with landscape fabric

Infiltration trenches should be about 18 inches deep, and wider than they are deep (see sizing at left). Place them away from buildings (see location on previous page). Direct runoff from roof downspouts, driveways, or patios into the trench. Provide a safe overflow route from their lowest point to a street drain, or onto a large lawn or landscape area, or into a rain garden.

Non-Turf Infiltration Trench



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Infiltration trenches should be about 18 inches deep, and wider than they are deep (see sizing at left). Place them away from buildings (see location on previous page). Direct runoff from roof downspouts, driveways, or patios into the trench. Provide a safe overflow route from their lowest point to a street drain, or onto a large lawn or landscape area, or into a rain garden.