Filter Strip

A filter strip is a densely vegetated strip that treats sheet flow from nearby impervious surfaces. They are often planted with turf grass, but may also include other native grasses, shrubs and small trees.

The main challenge in efficient operation of a filter strip is maintaining the sheet flow from the impervious area. Oftentimes, concentrated flows develop, which allow for virtually no treatment by the filter strip. In order to ensure pollutant removal takes place, sheet flows must be maintained. This can be accomplished by utilizing a level spreader to distribute flow across the width of the filter strip.

Filter strips are ideally suited to treat runoff from highways, roads and parking lots. In addition, they are often used as pretreatment devices for runoff before it enters other BMPs.

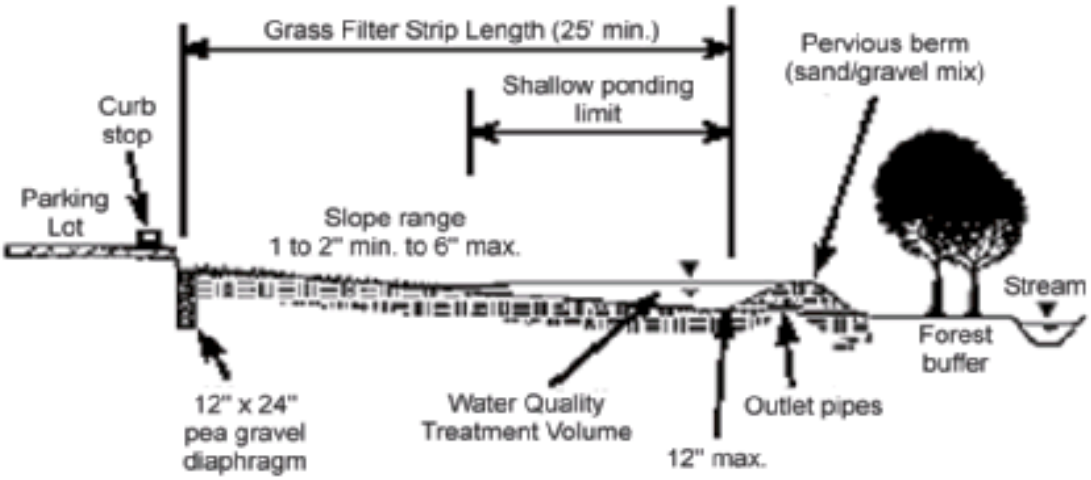
Advantages

- Allows for infiltration of soluble nutrients and pesticides into the soil
- Well-suited for residential areas
- Can be useful as sediment filters during construction
- Simple and inexpensive to install
- Require little maintenance

At-a-Glance Summary

Benefits	
Major	●
Moderate	◍
Minor/None	○

Flow attenuation	◍
Runoff volume reduction	◍
Pollutant Removals	
Total Suspended Solids	◍
Floatables	◍
Heavy metals	○
Oil and grease	◍
Fecal coliform	○
BOD	○
Total Phosphorous	○
Nitrogen	○
Costs	○
Maintenance	○



Source: Minnesota Urban Small Sites BMP Manual

Limitations

- Not applicable for hilly or highly impermeable areas, because they cannot handle high-velocity runoff
- Minimal data exists on their effectiveness
- Poor retrofit options because they consume a large amount of space, yet they can only treat a small drainage area
- Only effective if sheet flow can be maintained throughout the filter strip

Maintenance

General maintenance activities for filter strips include:

Activity	Schedule
Inspect pea gravel diaphragm for clogging and remove built-up sediment. Inspect vegetation for rills and gullies and correct. Seed or sod bare areas. Inspect to ensure that grass has established. If not, replace with an alternative species.	Annual Inspection (Semi-Annual the First Year)
Mow grass to maintain a 3" to 4" height.	Regular (frequent)
Remove sediment build-up within the bottom when it has accumulated to 25% of the original capacity.	Regular (infrequent)

Source: www.stormwatercenter.net "Fact Sheet: Filter Strip"

Costs

Limited data is currently available regarding the costs of filter strips, but a rough estimate for seed and sod is approximately 30 cents per square foot for seed and 70 cents per square foot for sod. If an area was already slated to be seeded or sodded, then additional expenses to install a filter strip would only include design and the installation of the berm and gravel diaphragm. Typical maintenance costs generally run $350/acre/year (www.stormwatercenter.net).

Design Requirements

- All flow should enter the filter strip as sheet flow, spread over the width of the strip and not exceed 1 to 2 inches in depth.

- Filter strips should be at least 15 feet long, though 25 feet is preferred when applicable.

Filter Strip

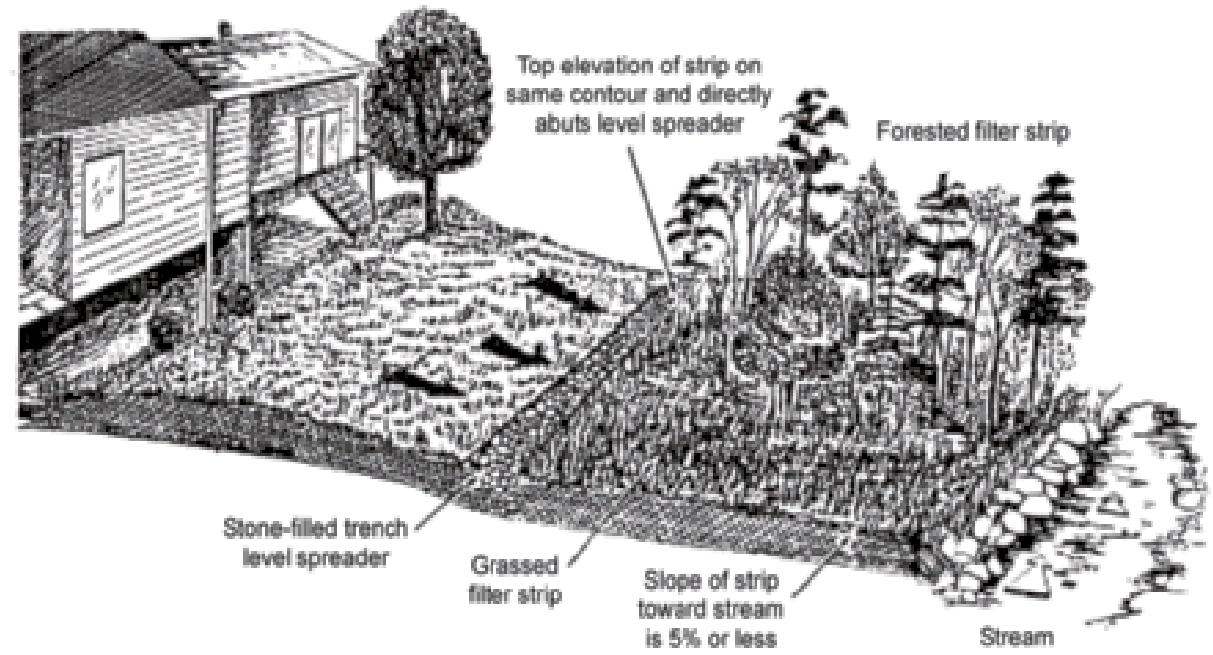
- Filter strips should be planted with grass that can withstand high velocity flows, as well as both wet and dry periods.

- Minimum flow length of 25 feet, but the filter strip should ideally extend the length of impervious area causing runoff.

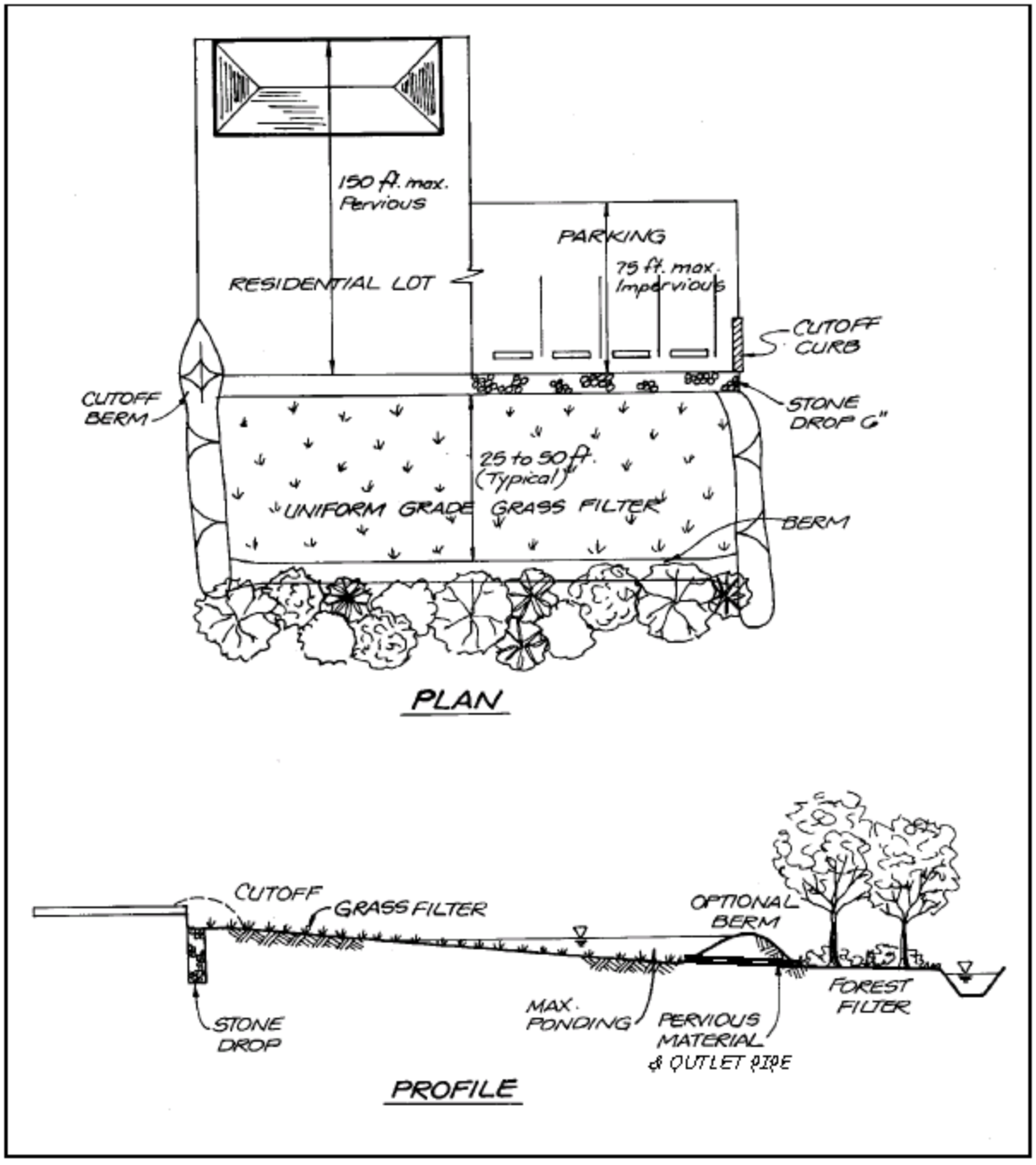
- Filter strips should have a minimum slope of 2% and a maximum slope of 6%.

- A pervious berm of gravel must be installed at the toe of the slope. Both the top and toe of the slope should be as flat as possible to encourage sheet flow.

- Vegetation planted in the filter strip should be able to withstand flow in both wet and dry conditions. See the Appendix (Vegetation for Infiltration Practices) for complete list of suggested plants and trees.



Filter Strip Combining Grasses and Wooded Areas
Source: Claytor, 1996.



Example Design Schematic
Source: Atlanta Regional Commission, 2001