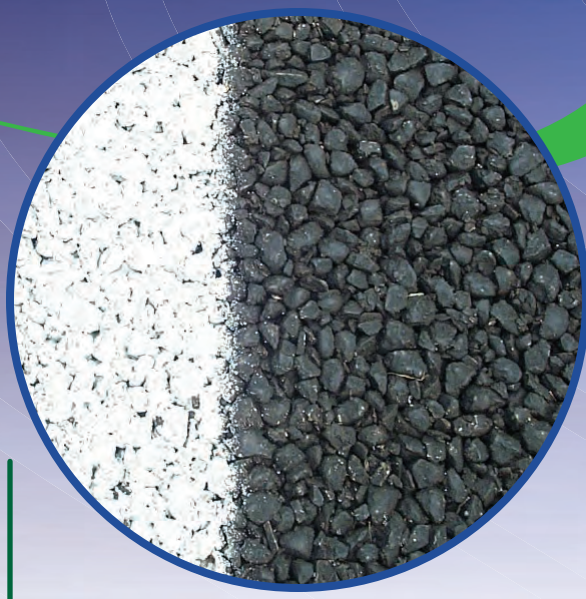
PERMEABLE ASPHALT

PUBLIC SERVICE PARK'S BMP FACT SHEET SERIES



Overview

Permeable asphalt resembles conventional asphalt, but has more air spaces that allow water to pass through the pavement and into an underlying stone reservoir that stores the surface runoff. By allowing the storm water to pass through into the sub-surface reservoir, this Best Management Practice (BMP) reduces the amount of storm water runoff and allows the water to infiltrate into the ground, without limiting the use of space.

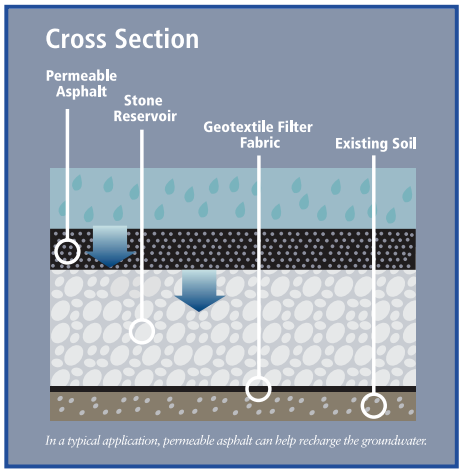
Description

The permeable asphalt mix consists of coarse gravel and asphalt binder, underlaid with a thick layer of gravel, which allows water to drain through quickly. Unlike traditional asphalt, permeable asphalts contain little or no fine materials. Instead, it contains air spaces, or voids that allow the storm water to pass through to the stone reservoir and infiltrate into the ground. By increasing onsite infiltration, the storm water runoff rate and volume is reduced and in some cases, may decrease the need for conventional storm water curb and gutter systems.

When properly maintained, permeable asphalt has also shown pollutant reduction capabilities by filtering water through the stone reservoir and infiltrating it back into the ground.

Benefits

- Reduces storm water runoff volume
- Reduces peak discharge rates
- Allows storm water to infiltrate into ground
- Recharges groundwater
- Maintains stream baseflows
- Reduces pollutant transport through infiltration
- Less need for conventional curb and gutters
- Adds landscaping value



In a typical application, permeable asphalt can help recharge the groundwater.

Links

- SD1 BMP Manual
http://www.sd1.org/resourcehandler.aspx?id=261
- National Asphalt Pavement Association
http://www.pavegreen.com
- Eaton Asphalt
859-371-1274

Design & Siting Considerations

- Best suited for low to medium traffic areas, such as residential roads and parking lots.
- Avoid areas with high amount of sediment or erosion to prevent clogging and maintain permeability of the system.
- In soils with limited permeability, consider the installation of a discharge pipe from the storage area that is able to bypass large storm events.
- Since water is able to pass through the system, permeable pavement is less prone to cracking or buckling from freezing and thawing. In some areas, the rapid drainage below the porous surface has increased the rate of snow melt above.
- Permeable concrete pavement is an infiltration practice and should not be used in areas with a high potential for storm water contamination (such as auto maintenance areas, loading facilities and hazardous material areas).

Maintenance

- Vacuum four times a year.
- Use liquid and pellet forms of chlorides sparingly. (Do not use sand, this can clog the voids in the concrete.)
- Use snow plow or snow blower as needed.
- Pressure wash if necessary.

Cost Considerations

While the initial costs of permeable asphalt may exceed traditional materials, these costs may be offset by reducing the need for storm water management structures, reducing the amount of land necessary for storm water management, and obtaining storm water credits from the local storm water utility. Cost will vary depending on the site's size, design, inlets, piping, and soil characteristics.

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For more information or a tour of Public Service Park, call the storm water hotline at 859-578-6745.

Public Service Park PERMEABLE ASPHALT Details

SD1 installed approximately 2,300 square feet of permeable asphalt in the southwest parking area. Public Service Park's demonstration site consists of seven inches of permeable asphalt over eight inches of base materials. Due to the high clay content and lower permeability rate of the native soils, SD1 utilizes an underdrain system that conveys the infiltrated storm water to an underground detention chamber, which ultimately discharges into Banklick Creek. Public Service Park's site was designed with monitoring wells where sampling will be conducted to determine the effectiveness and performance of the permeable asphalt.

1. Vegetated Roof
2. Underground Detention
3. Biofiltration Swale
4. Permeable Pavers
5. Vegetated Swale
6. Wetland
7. Retention Pond
8. Permeable Concrete
9. Permeable Asphalt
10. Outdoor Classroom
11. Storm Water Garden
12. Cistern
13. Runoff Surfaces
14. Oil/Water Separator
15. Detention Pond
16. Urban Forest
17. Step Pools
18. Upper Trail
19. Lower Trail
20. Creek Overlooks