STORM WATER SOLUTIONS

A Visual Guide to
Infiltrative Spaces

City of Santa Barbara
Creeks Division

Welcome to the City of Santa Barbara's Storm Water Management Program (SWMP) Visual Guide.

As urban development increases, more storm water (rain) runs off the land, moving faster and carrying pollution with it into our creeks and ocean. However, by taking proactive steps to effectively manage storm water, control pollution sources, and design sites thoughtfully, we can reduce these impacts while providing additional environmental benefits like reducing localized flooding, improving climate resiliency, increasing urban greening, reducing heat island effects, and improving air quality.

It is our hope that this guide inspires and educates developers, engineers, planners, landscape architects, storm water professionals, Santa Barbara residents, and property owners to implement storm water solutions which help protect Santa Barbara's environment for future generations.

This guide is a complement to the full Technical Guidance Manual and Quick Reference Guides available at SantaBarbaraCA.gov/SWMP.

STORM WATER BMPs

Best Management Practices (BMPs) slow and treat runoff from new and redeveloped surfaces.

Benefits of BMPs can include:

- Aiding in water conservation
- Protecting local creeks and oceans from pollution
- Reducing local flooding
- Reducing a site's water usage and costs
- Providing urban green space and wildlife habitat
- Enhancing a location's aesthetic appeal

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Disconnecting Downspouts

Disconnecting downspouts and flow spreading diverts water from roof gutters or hardscape to vegetated areas where it can be absorbed into the soil.

Rain Gardens and Bioretention Areas

These depressed landscaped areas are designed to allow runoff to pool and soak into the ground. They can be attractive landscape features that provide habitat for birds, butterflies, and insects, while providing areas of infiltration.

Rain Barrels and Cisterns

These above ground storage vessels capture runoff from roof downspouts during rain events and store that runoff for later use. They can effectively manage storm water runoff while reducing demands on local water supplies.

Permeable Hardscapes and Pavements

These products can replace traditional hardscapes like driveways, parking areas, patios, and walkways, allowing water to flow through them into a gravel layer and soil subgrade below. This type of low impact development (LID) mimics the predevelopment condition.

Permeable pavement looks similar to concrete but contains small holes to allow water to pass through.

Permeable pavers are concrete forms designed with spaces that allow for rain to flow through.

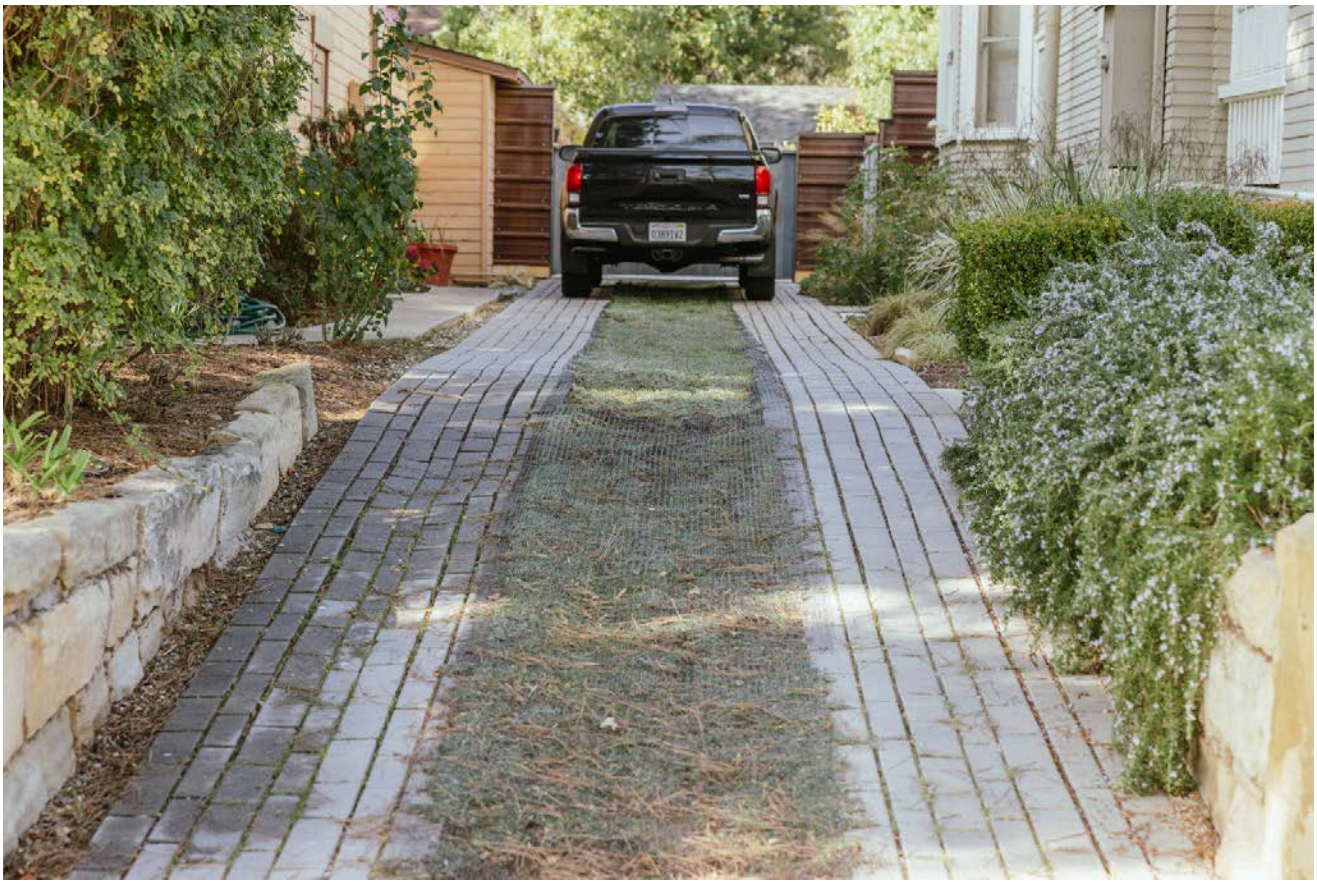
Large format pavers can be concrete or flagstone installed with permeable gaps consisting of soil or gravel.

Products that allow space for grass or other vegetation are most applicable for driveways and parking areas, providing support for the weight of the vehicles but allowing the driveway to be primarily a vegetated surface, allowing rain to infiltrate into the soil below.

Gravel can be used for driveways, walkways, patios, and parking areas. However, it may not meet the standards for accessible design and there may be limitations on gravel driveways adjacent to major streets and on steep slopes.

Ribbon Driveways

Ribbon driveways, sometimes called “Hollywood” or strip driveways, contain two parallel strips of pavement to drive on, with gravel, grass, or low growing vegetation in between.



Contained Planters and Planter Boxes

Elevated planters or in ground planter boxes are designed to hold soil and plants, providing a surface area that can absorb rain and temporarily store storm water runoff.

Green Roofs

Green roofs include a layer of soil and vegetative cover over a waterproofing membrane. Like contained planters, the soil and vegetation on a green roof can absorb rain and provide water for plants.

Infiltration Basins

Infiltration basins are usually large, shallow depressions with flat, vegetated bottoms and side slopes that receive runoff from impervious areas such as buildings, parking lots, and patios. The basin will temporarily store the water, allowing it to slowly infiltrate into the surrounding soil.

Additional BMPs

Underground Infiltration
Underground infiltration BMPs are designed to temporarily store and infiltrate runoff from rooftops and other impervious areas. Examples include dry wells, storm water chambers, and infiltration trenches. The void spaces in the chambers or gravel layers provide temporary storage while the surrounding soil allows storm water to infiltrate.

Soil Amendments
Soil amendment can include anything that is added (e.g., compost) or done to (e.g., aeration) the soil to make it easier for rain to flow through to groundwater.

Sand Filters
Sand filters operate like a bioretention area; however, instead of filtering storm water through soil in a planted area, it is filtered through a constructed sand bed with an underdrain system.

For details on the full suite of BMPs that meet SWMP requirements, please see the City's Technical Guidance Manual at SantaBarbaraCA.gov/SWMP.

Credits

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SUSTAINABILITY
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CITY OF SANTA BARBARA

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