

PERMEABLE PAVING OPTIONS

► USES: WALKWAYS, PATIOS, PARKING AREAS, DRIVEWAYS



Turf block



Modular pavers



Flag stones

Permeable paving options shown above allow runoff to pass through and **SINK** into the soil.

Permeable materials are path, patio or driveway surfacing materials that allow runoff to pass through and **SINK** back into the soil. Some popular choices are modular pavers, flag stones, turf block, and permeable asphalt and concrete. Generally, these materials allow runoff to **SINK** into the ground below, limit runoff, and improve water quality by filtering pollutants in the soil layers below.

Most permeable materials require an appropriately deep base layer underneath composed of sand, free-draining gravel, and sometimes non-woven drainage fabric. This base foundation not only increases the amount of stored runoff, it also prevents subsurface compaction and makes installation easier. There are now permeable options for almost any application. For specifics on installation and use, contact your local retailer or product manufacturer. For additional guidance on permeable pavement design and restrictions on suitable locations (called infeasibility criteria), refer to Chapter 5 (BMP T5.12) of the [Snohomish County Drainage Manual](#).

TURF BLOCKS

Turf blocks (concrete or plastic blocks with holes, pictured top right) provide soil stability for driveways and walkways. Turf blocks **SLOW** and **SINK** runoff, as well as improve water quality by filtering pollutants. The blocks' grid pattern spreads out loads above to a wider area, reduces compaction, and retains the material it is filled with to provide soil stability.



Photo: Immanuel Giel, Wikimedia

Turf blocks can be planted or filled with sand or gravel. They work best for walkways, driveways or overflow parking areas.

When planted with grass, the root structure improves infiltration. Sometimes the blocks are filled with sand or gravel, or with topsoil, and planted with low-growing walkable groundcover. They are not ideal for everyday parking because of irrigation and maintenance demands and, if they are planted, long-term parking can inhibit plant growth.

✓ Maintenance

Planted turf block may require regular mowing (depending on plant choices), weeding, and watering.

DO

- ✓ Choose low growing and drought-tolerant grasses or groundcovers.
- ✓ Use only in well-drained or moderately-drained soils.
- ✓ Use erosion control measures during installation (see 2 | Evaluate Your Property).

DO NOT

- ✗ Use in high traffic areas or long-term parking areas.
- ✗ Aerate.

MODULAR PAVERS & FLAG STONES

Modular Pavers

Modular pavers are normally made of pre-cast brick, concrete, stone, or other material. They come in various shapes, normally interlock, and can be set to form shapes and patterns. Modular pavers are designed to allow more runoff to **SINK** into the ground than traditional pavement. Runoff flows into the void spaces between and below pavers.

Modular pavers are typically installed over base layers of sand, gravel, and rock. The space between pavers are typically filled with washed coarse sand or pea gravel, though some are also designed for vegetation. Pavers typically have a spacer that ensures the ideal distance between pavers is maintained for maximum infiltration. An example installation of modular paver is shown in the adjacent diagram, but exact materials and depths vary. Follow the recommendations specified by the manufacturer for your paver installation. Pavers can be used in high use areas such as parking lots, patios, and walkways.



Modular pavers work great for parking areas, patios and walkways.

Flag Stones

Flag stones are larger and may be placed directly on the soil. A low-growing groundcover may be planted between flag stones to allow for greater infiltration. Flag stones are best for patios and walkways.

✓ Maintenance

Keep the area clear of sediment to prevent clogging. Annual sweeping with a wet/dry vacuum cleaner or a hard bristle broom helps maintain permeability. The gaps between pavers may require occasional weeding and sand or gravel replenishment. Because permeable pavers are easily lifted and reset, they are easy to repair or replace.

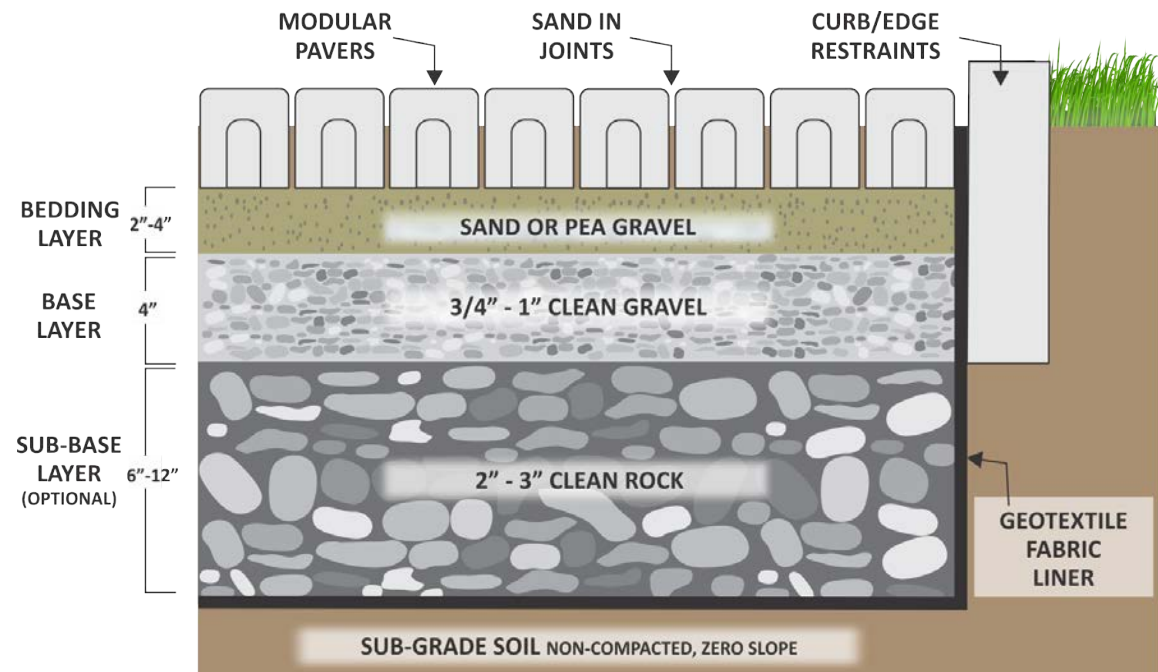
DO

- ✓ Use only in well/moderately-drained soils.
- ✓ Plant vegetation in between or around pavers.
- ✓ Use foundation materials specified by manufacturer.
- ✓ Build slightly higher than the surrounding yard for best drainage.
- ✓ Use erosion control measures during installation (see 2 | Evaluate Your Property).

DO NOT

- ✗ Use in areas with high sediment loads that can clog porous areas.

EXAMPLE INSTALLATION OF MODULAR PAVERS



PERMEABLE ASPHALT & CONCRETE

Permeable pavements contain pore spaces that allow runoff to **SINK** through the pavement itself. The water seeps through the material to a rock base layer underneath and pollutants are naturally filtered out by the underlying soil.

The two different types of permeable pavements are permeable asphalt and permeable concrete. The underlying soil must have a moderate to high infiltration rate to be considered for permeable pavement installations since they are not as flexible as other pavements and may be damaged if saturated during freezing conditions. The bottom of the rock base/reservoir should be completely flat so that runoff will be able to infiltrate through the entire surface.

Permeable pavement should be located a minimum of 2 to 5 feet above the seasonally high groundwater table and at least 100 feet from drinking water wells. Ideal uses include walkways, residential parking areas and driveways.



Photo: National Ready Mixed Concrete Association

Permeable pavement allows water to seep through and be naturally filtered by the soils below.

Although installation is becoming easier and permeable pavements are a cost-effective alternative to traditional paving, appropriate construction techniques and maintenance are necessary to ensure their effective performance. Hiring a licensed contractor experienced in these materials is strongly recommended. For cross section drawings of permeable asphalt and concrete, consult Chapter 11 of the [Snohomish County Engineering Design and Development Standards](#) (EDDS).

✓ Maintenance

Keep the surface clear of soil, rocks, leaves, and other debris. Vacuum annually, using a wet/dry vacuum or specialized vacuum for large areas, to remove debris from the porous surface of the pavement. Other cleaning options may include power blowing and pressure washing. Always follow the manufacturer's maintenance recommendations.

DO

- ✓ Consider consulting a landscape architect or civil engineer to recommend a design customized to your site.
- ✓ Plant or mulch any surrounding bare soil areas.
- ✓ Follow the manufacturer's maintenance recommendations.
- ✓ Use erosion control measures during installation (see 2 | Evaluate Your Property).

DO NOT

- ✗ Seal or repave with non-permeable materials.

BEFORE YOU BUILD

To determine if a permit is required for your project, contact Snohomish County Planning and Development Services (PDS) [Ask Permit Tech](#) program or call 425-388-3311.

For example, you will need a Land Disturbing Activity (LDA) permit if you are adding or replacing 2000 square feet or more of "hard surfaces" including permeable paving options. If permits are not required, you still must take measures to prevent sediment erosion during construction (see 2 | Evaluate your Property).

FINDING A PROFESSIONAL

Before you design and install permeable paving options, you may want to hire a landscape architect or civil engineer for design and engineering guidance. Be sure you let them know you want to infiltrate the water on your property.

Remember, you can always contact Snohomish County Conservation & Natural Resources [Surface Water Management \(SWM\)](#) for technical advice (surfacewater@snoco.org or 425-388-3464).

See www.resources.rainscaping.info for more information.