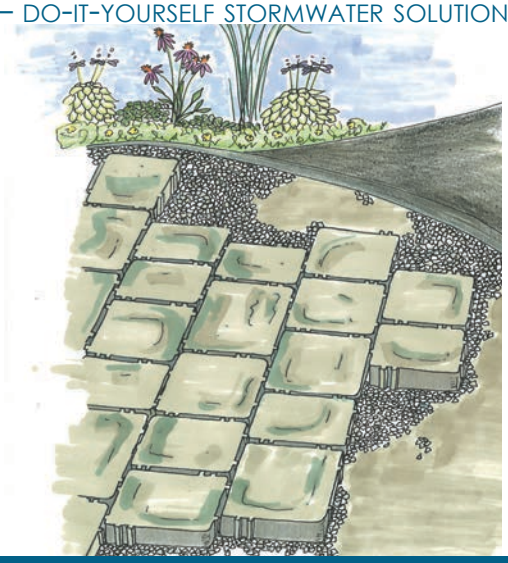
PERVIOUS WALKWAYS AND PATIOS



Walkway and patios areas that look like traditional pavers but have a stone-filled reservoir underneath designed to store and infiltrate water. They help to reduce runoff.

SIZING AND DESIGN

STEP 1 – **Identify installation area**. Determine the areas where you will be installing pervious pavers.

Pervious pavers are best for areas with slopes of less than 2% (one foot of elevation change for 50 feet of length). There should be a minimum of two feet between the bottom of the stone base and bedrock or the water table.

STEP 2 – **Perform an infiltration test**. Test the ability of the soil to infiltrate water (allow it to soak in and drain through the soil). Pervious pavers should only be built in areas where soils drain within 24 hours. Follow the steps below.

a. Using a shovel or a post hole digger, dig a 12-inch deep hole.

b. Fill the hole with water and allow it to drain completely (NOTE: if the hole fills with water on its own or if water is still in the hole after 24 hours, choose a new location).

c. Fill the hole with water a second time and do one of the following:

- Place a ruler or yard stick in the hole. Note the water level and time. After 15 minutes, check the water level again and note the new water level. Multiply the change in water level by four to get the number of inches of infiltration in an hour. A rate of at least $^1/_2$-inch of water per hour is appropriate for an infiltration practice.

  OR

- Cover the hole for safety and check back 24 hours later. If the water has completely drained, this indicates the soil is appropriate for an infiltration practice.

EQUIPMENT & MATERIALS

- Measuring tape
- Shovel
- Rake
- Broom
- $1^1/_2$" washed stone
- $^3/_8$" pea stone
- Non-woven geotextile fabric
- Tamper or roller
- Pervious pavers
- Level

TIP: Pervious pavers come with manufacturer instructions for the type and depth of sub-base material. If the information in this fact sheet differs from the manufacturer's instructions, follow the manufacturer's instructions.

STEP 3 – **Determine materials needed**.

a. Calculate the area of the new or existing walkway or patio that you will be installing with pervious pavers by multiplying the length (in feet) and width (in feet) of the area to be paved.

   If the area you are paving is not a simple square or rectangle, sketch the area where the pavers will be installed on a piece of paper, write down the corresponding measurements, and bring it to your local landscape supply yard or store where you will be purchasing the pavers. They will be able to help you determine how many pavers you need.

b. Sub-base materials (Figure 1) are the $1^1/_2$-inch stone and pea stone layers that go under the pavers. These materials provide a reservoir for stormwater before it soaks into the ground underneath. You should have a minimum depth of 12 inches of $1^1/_2$-inch diameter washed stone and six inches of $^3/_8$-inch pea stone for your sub-base. Use the following equations to determine the minimum amount of sub-base materials you will need (multiplying by 0.037 converts cubic feet to cubic yards):

   WASHED STONE: PAVEMENT AREA (ft^2) x 1ft x 0.037 = YARDS

   PEA STONE: PAVEMENT AREA (ft^2) x 0.5ft x 0.037 = YARDS

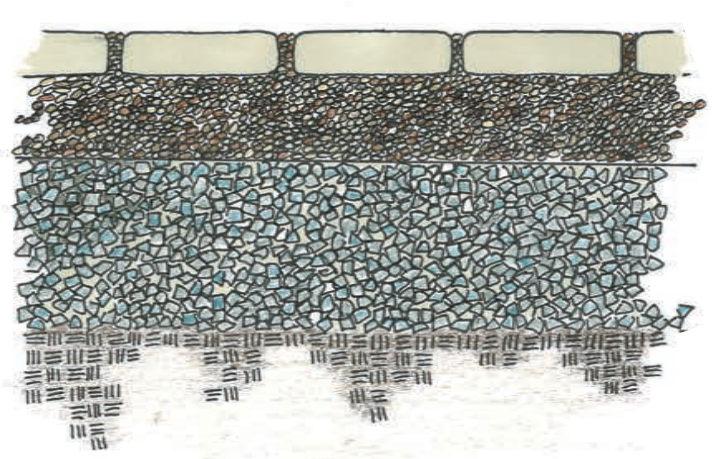


Figure 1 – Pervious walkway profile.

STEP 4 – **Identify staging and material disposal area(s)**. Identify an area on the site where delivered materials, such as stone, compost and mulch, can be stored temporarily while the project is being built. Also identify an area to dispose of excess materials, like sod and soil that is excavated from the project area, where it will not wash away during storms.

INSTALLATION

STEP 1 – **Prepare the installation site**. If the project area is within 250' of a waterbody and requires use of equipment beyond hand tools, such as a jack hammer or backhoe, contact the NHDES Shoreland Program to see if a permit is required. Remove any existing walkway or patio material. Mark the location of the walkway or patio with either landscaping paint or a string line on either side.

STEP 2 – **Excavate**. Excavate the site approximately 20 inches deep, depending on the type of paver you're using. Smooth the area you've excavated with a rake.

STEP 3 – **Lay the sub-base materials and pavers**.

a. Spread the $1^1/_2$-inch stone over the excavated dirt to a depth of 12 inches, or per manufacturer's instructions. Compact with a roller or tamper.

b. Check paver manufacturers instructions for use of non-woven geotextile fabric over the $1^1/_2$-inch stone.

c. Spread the pea stone over the fabric, if using. The depth of the pea stone should be six inches, or per manufacturer's instructions. Compact with a roller or tamper. Level the surface to make the pavers easier to install.

d. Install the pavers on top of the pea stone and use a level to make sure they are installed uniformly. Most pervious pavers have tabs on the edges to create proper spacing between them.

e. Once the pavers are installed, spread more pea stone over the top and use a push broom to work the pea stone into the space between the pavers.

MAINTENANCE

INSPECT: Seasonally and after large storms, look for signs of clogging such as ponding at the surface or accumulated sediment.

CLEAN OUT: If clogging occurs, remove and wash or replace pea stone and fabric. Remove any vegetation growing on the steps if not included in the design. Refer to manufacturer's instructions for pressure washing or vacuuming.

DESIGN REFERENCE

Low Impact Development Center. *Permeable Paver Specification*. 1995.

NHDES. *Permeable Pavement Demonstration Brochure*. 2010.

ADDITIONAL PRACTICES

Grass pavers or geo grids. These are general terms for a variety of open grid structures designed to stabilize erodible areas. They may be woven, interlocking or honeycomb structures constructed of plastic, natural fibers or concrete. They are installed for soil reinforcement and stabilization. Some types can be filled with stone or with soil to grow grass. Search online or ask at a hardware or home improvement store to find options suitable for your needs.