



NEMO Bulletin

CT NEMO is a part of the Center for Land Use Education and Research at UConn.

Disconnecting Impervious Areas at Home: Driveways

This bulletin is designed to provide guidance on how to reduce the amount of impervious surfaces on your property that are connected to your town's stormwater system. Impervious surfaces do not let rain water soak into the ground below. Instead rain often runs off rooftops, sidewalks, driveways and roads and into the nearest storm drain. These pipes lead either to the nearest surface water body (suburban and rural areas) or to a combined sewer system (urban areas) and the excess stormwater causes many problems downstream.

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NEMO (Nonpoint Education for Municipal Officials) provides information, education and assistance to local land use officials and other community groups on how they can accommodate growth while protecting their natural resources and community character.

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To reduce these downstream impacts, the guiding principle is to keep rainfall runoff on your property if possible and let it infiltrate into the ground.

Driveways

Driveways are a major component of impervious cover on a residential lot. However, just as with rooftops, not all driveways are directly connected to the stormwater system, and the best way to figure that out is to observe where runoff moves during a rain storm. If runoff from your driveway drains to your lawn and does not leave your property, it is not connected to the stormwater system, so there really is nothing that needs to be done. If you find that runoff from your driveway does go into the street stormwater system, there are several options to reduce the impact.

The simplest method is to install a trench drain at the bottom of your driveway (Figure 1). A trench drain will catch water before it leaves your property, and redirect it to a pervious area such as a lawn or forest area. This will likely need to be installed by a contractor, and you will need to have sufficient grade to drain the

water away, or this will not function properly.

The remaining methods are fairly costly and only will be feasible for most people when considering replacement of their existing driveway. There are a variety of pervious driveway materials that will allow water to pass through into the soil below while providing a



Figure 1. Trench drain in residential driveway.



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Figure 2. PICPs on the UConn campus in Storrs.

stable surface to drive upon. While different in surface appearance, these pavements have one major difference from regular pavement: the base materials are different, and are designed to promote infiltration. **Therefore, all of the pervious pavements described here should only be installed by contractors experienced with these types of systems.** Additionally, winter sand should not be applied to pervious products, as it can lead to clogging (see maintenance section box).

Permeable Pavers

Perhaps the most practical for residential driveways are permeable interlocking concrete pavers (PICPs). They come in a variety of styles and configurations, and provide a professional finished look (Figures 2-3). The pavers are designed with spaces at the joints, which allow water to sink down through to the subsurface layers. These types of systems will often have an underdrain in the subgrade storage layer to provide relief for excess water if the native soil can't accept it.

Pervious Asphalt

Pervious asphalt is a variation on the traditional asphalt mix, where the fine sand components are left out, allowing for a permeable



Figure 3. PICPs on a residential driveway in Waterford, CT.

structure that can support auto traffic (Figure 4). Pervious asphalt is installed with the same equipment as traditional asphalt, but the contractor will need to have experience with proper base preparation.

Pervious Concrete

Pervious concrete is a variation on the traditional concrete mix, where just like with pervious asphalt, the sand is left out of the mix. However, the remaining ingredients (Portland cement, stone aggregate and water) are combined in a very specific ratio, and installed in a way that is very different from traditional concrete. Therefore, it is critical to have a certi-



Figure 4. Pervious asphalt on the UConn campus in Storrs, CT.



Figure 5. Pervious concrete installation in East Haddam, CT.

fied installer for this product. If done properly, pervious concrete can provide an extremely durable product that will last for many years (Figure 5). Precast pervious concrete is also being produced. This can be a good option for a small (or large) driveway, or sidewalk (Figure 6). For more information visit <http://storm-crete.com>.

Reducing Costs

The installation costs on these products, particular for small scale projects like a home, are going to be more expensive that traditional methods. However it is important to note that



Figure 6. Precast pervious concrete panels being installed in East Lyme, CT.

you do not have to install the pervious product on the entire surface. To save costs you could use these materials for just a portion of your driveway, like the area closest to the road. If properly installed, these pervious surfaces can accept stormwater runoff from a traditionally paved area in addition to the rain that falls directly on them. Areas up to five times as large as the pervious section can be successfully treated by these practices.. This approach can save substantial amounts of money. However, it could also require more frequent, or at least different, maintenance (see below).

Maintenance considerations

The small pores in pervious pavements will tend to fill up with sediment over time. To maintain proper function, pervious pavements should be cleaned to reduce clogging. Small pervious pavement areas such as sidewalks or driveways should be blown off with a high power leaf blower frequently (at least once a month) to prevent debris from collecting in the pores. If the pavement becomes clogged and is not infiltrating water as well as it first did, the pavement will need to be cleaned with a pressure washer.

Contractors

To find a contractor in your area experienced in installing green infrastructure, visit the green infrastructure contractor page on the NEMO MS4 website: <http://nemo.uconn.edu/ms4/implement/post-construction.htm>.