Stormwater Friendly Driveways | Porous Concrete and Asphalt

Porous concrete and asphalt – also called permeable or pervious – are alternative pavement surfaces that contain the same large aggregate material as traditional concrete or asphalt, but little or no sand or other fine fill material. This leaves a system of holes or voids that water can drain through quickly, while maintaining the general appearance and hardness of typical pavement. Porous pavement is installed over a drainage layer of clean, crushed stone and supporting subbase (see the schematic drawing on the next page) that acts as a reservoir to hold, drain, and infiltrate stormwater. Porous pavement surfaces tend to be more textured, providing better traction for vehicles and pedestrians, and both poured-in-place and pre-cast options are available.

❄ QUICKER SNOWMELT AND DRAINAGE

The air flow and drainage provided at the surface of the driveway allows snow and ice to melt and drain quickly, reducing the risk of re-freezing and slippery surfaces. Less deicer is needed, lowering winter maintenance costs while keeping chlorides from leaching into ground and surface waters.

🏷 LOW LIFE-CYCLE COST

While installation costs are typically slightly higher, properly constructed porous pavement is durable, low maintenance, and has a low life cycle cost.

💧 WATER QUALITY

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≈ WATER QUANTITY

Contaminants such as oils can be caught in the void spaces of the porous pavement where they are broken down into smaller and less harmful compounds, and are kept out of your yard, storm drains, and natural waterways. Porous pavement also does not require sealing with potentially toxic sealants.

🧠 CONSIDERATIONS

Porous pavement has more void space and is prone to settling under heavy weight, though this should not be an issue in residential applications. Proper installation is critical, so a certified installer or an experienced contractor should be selected. Pavement should be kept clean with regular sweeping, typically once in spring after snowmelt, once in fall after the leaves fall, or occasional vacuuming to keep void spaces clear. Careful sediment control is needed for any uphill areas to avoid clogging pavement. Care should be taken when using deicers—over-application of chlorides can increase raveling of pervious concrete. Consider use of pre-cast permeable concrete slabs to minimize this material's susceptibility to deicers.

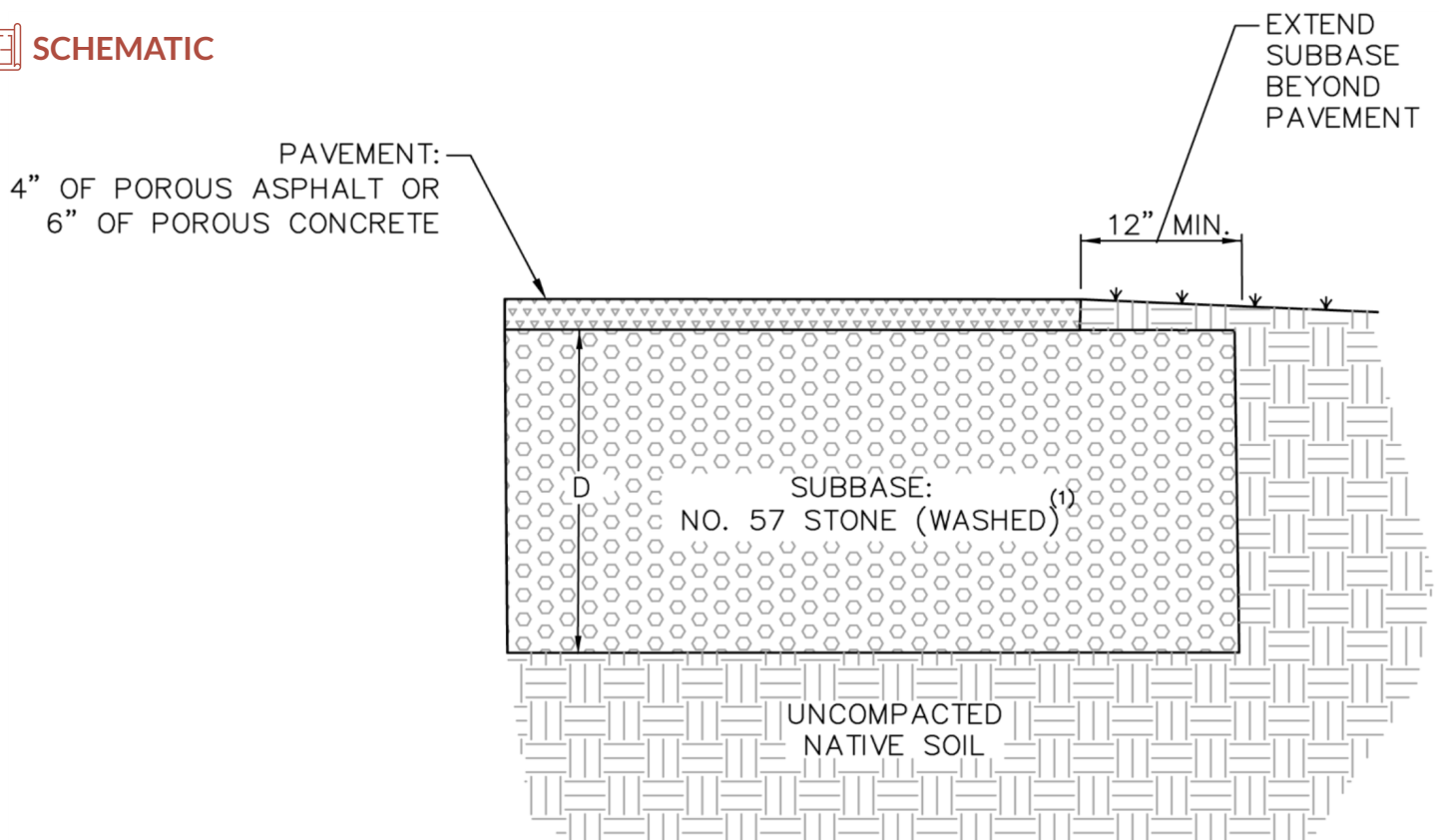*The line between porous and non-porous asphalt.*

Photo credit: vtwaterquality.org

A pre-cast permeable concrete parking lot being laid on the UVM campus in Burlington.

Photo credit: UVM

SCHEMATIC

PAVEMENT:
4" OF POROUS ASPHALT OR
6" OF POROUS CONCRETE

EXTEND SUBBASE BEYOND PAVEMENT

12" MIN.

D   SUBBASE:
NO. 57 STONE (WASHED) (1)

UNCOMPACTED NATIVE SOIL

NOTES

1. Crushed stone, approximately 1" to 1.5" in size.
2. Compact the subbase layer in minimum 6" lifts.
3. All aggregates must be washed angular crushed stone. Do not use rounded stone.
4. For porous concrete: Allow 28-day cure prior to exposure to freezing, and no deicer use within first 12 months.
5. Subbase thickness dimension "D" is 12 inches for sandy, well drained soils, and 16" otherwise. This subbase thickness is for residential driveways only. Locations that experience heavy vehicle loads or have clay soils will require subbase design by a qualified professional. Maximum driveway slope should not exceed 5%.

ESTIMATED INSTALLATION COSTS

Porous asphalt and concrete costs start at $20 per square foot. This cost includes subbase installation, but not demolition of the existing driveway. Costs vary based on soil conditions, size of driveway, and contractor availability.

The typical cross sections provided herein are conceptual only and are not intended for use as construction documents. Refer to manufacturer for installation and maintenance requirements for all products. Modifications to the typical sections may be necessary based upon soil conditions and site suitability. Contact a qualified professional to verify suitability for each application.

Town of Wolfeboro

WENTWORTH WATERSHED ASSOCIATION
Conserving Wentworth-Crescent Lakes & Lands
Wolfeboro 1930