

Porous Block Pavers

PURPOSE: Block pavers used in place of traditional impervious paving materials decrease the total amount of runoff leaving a site, promote infiltration of runoff into the ground, reduce the amount of pollutants carried to a storm drain or waterway, and aid with reducing peak runoff velocity and volume.

Block or masonry pavers are made to the same strength and durability specifications as traditional solid concrete paving blocks. However, where block pavers interlock, void space is created that is filled with gravel, which allows runoff to percolate through the soil and recharge the groundwater supply. The paver itself has a maximum permeability of up to five percent, whereas the void space adds 10 to 15 percent of permeable surface per square foot.

Filling the void space between pavers with gravel also provides stability, making the pavers suitable for many uses, including parking lots, driveways, sidewalks, bike paths, fire lanes and low-speed roadways. Studies have shown that with proper maintenance, block pavers can have a minimum service life of 20 years.

Installation of block pavers begins with a level base of existing subgrade. A layer of geotextile material placed over the soil subgrade keeps the overlying stone reservoir layer in place, and prevents channels from forming in the subgrade that would lead to depressions at the surface. A layer of crushed stone or aggregate is spread, which provides a reservoir for holding runoff prior to infiltration. The thickness of the crushed stone layer will depend on the amount of water storage required, the permeability of the soil subgrade and anticipated traffic loads. A bedding layer of smaller, crushed aggregate is then laid and leveled using a screed. The pavers are placed on the bedding layer, then aggregate of similar size to that used in the bedding layer is brushed into the space between the blocks.

NOTE: Aggregate must be washed clean of fines in order to prevent the pavers from clogging. Block pavers are not capable of removing dissolved nutrients from water; therefore, they should be located at least 100 feet from drinking water sources.

General Design Considerations

- Use in areas with soil permeability of at least 0.5 inch per hour
- Existing soil base must be graded flat and compacted to at least 95%; avoid overcompaction of base
- Install pavers at least two to five feet above seasonal high groundwater table
- Slope of pavement should be less than 5%
- Follow manufacturer's recommendations for stone/aggregate used in bedding and reservoir layers
- Bedding layer should be leveled to a depth between 1.0 and 1.5 inches
- Allow for at least 0.5 inch of void space between sets of pavers
- Maintenance includes street sweeping or vacuuming surface quarterly to ensure proper functioning of system
- Additional aggregate may need to be added after sweeping or vacuuming
- Use snow plows with caution during snow removal
- Use of ash, salt or other de-icers is not recommended
- Installation in areas of high traffic or heavy contamination not recommended (ex. service stations)

Block Pavers installed in Sitting Area



Benefits and Uses

- Reduces total amount of impervious cover
- Recharges groundwater supply
- Can reduce peak volume velocity and volume of stormwater runoff to streams and storm sewer systems
- Alleviates flooding and erosion downstream
- Applicable to all types of sites (residential/commercial/industrial)
- Aesthetically pleasing
- Reduces space required for stormwater detention/retention basins
- Applicable for patios, walkways, and areas of light vehicular use

Additional Resources

PA Department of Environmental Protection
- www.dep.state.pa.us
- Pennsylvania Stormwater Best Management Practices Manual

US Environmental Protection Agency
www.epa.gov

Low Impact Development Center
- www.lid-stormwater.net - click on "Site Map" and select Permeable Paving
- www.lowimpactdevelopment.org

Block Pavers installed in Parking Area

