

Pavement Permeability Chart¹

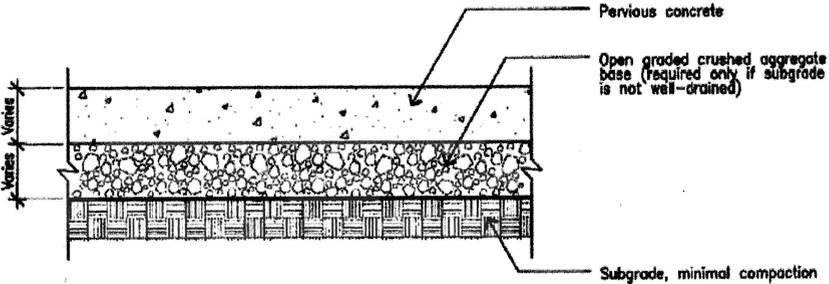
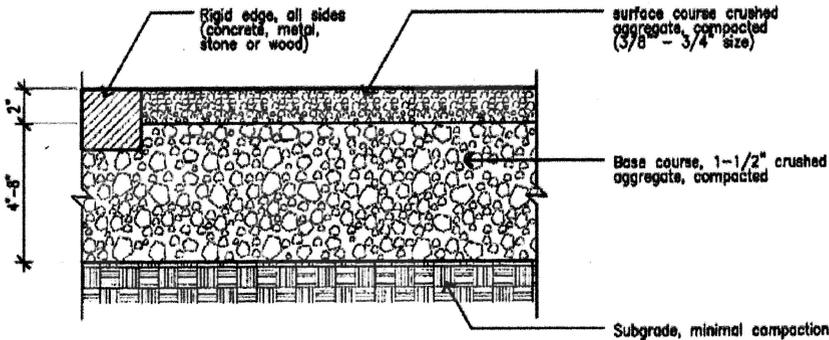
Material	Description	Possible Applications ²	Percent Permeable ³	Example
Asphalt (conventional)	Impervious cementitious material in which the predominating constituents are bitumens. Contains fine aggregate (dust or sand) that fill the voids between larger particles making it impermeable.	<ul style="list-style-type: none"> • High volume and/or speed traffic areas • If feasible, slope towards infiltration basins instead of into directly-connected collection structures 	Negligible	
Asphalt (porous)	Open-graded asphalt concrete over an open-graded aggregate base, over a draining soil. Contains very little fine aggregate (dust or sand) and is comprised almost entirely of stone aggregate and asphalt binder;	<ul style="list-style-type: none"> • Flat sites (slopes <6%) with uniform, permeable subgrade • Low traffic use, such as parking lots, travel lanes, parking stalls • Surface may be too rough for 	25 to 40%	<p>Labels in diagram: Porous asphalt surface course Filter course Open graded crushed aggregate base Filter fabric (optional) Subgrade, minimal compaction</p>

¹ This chart was generally derived from Start at the Source: Design Guidance Manual for Stormwater Quality Protection (1999 edition)

² Permeable pavements are not appropriate for gas stations, truck stops, or areas in which high concentrations of hydrocarbons or other pollutants can be leached into soil.

³ Percentages are based largely on runoff coefficients that determine the portion of rainfall or irrigation that will run off the surface based on the permeability and water-holding capacity of the material. The runoff coefficient value, expressed as C, can vary from close to zero to up to 1.0. A low C value indicates that most of the water is retained for a time on the site, as by soaking into the ground or forming puddles, whereas a high C value means that most of the water runs off rapidly. These estimates are only approximate and should not be used for flood control sizing.

Material	Description	Possible Applications ²	Percent Permeable ³	Example
	surface void content of 12-20%.	bicycle path		
Brick	Solid unit paver laid on a permeable base with sand joints.	<ul style="list-style-type: none"> Flat sites (slopes <6%) Driveways, walkways, patios, public sidewalks, plazas, low volume streets 	25 to 85%, depending on joint spacing (larger joints have greater permeability). Mortared joints on a concrete base have 0% permeability	<p>Brick paving 1/8" joint Sand setting bed Filter fabric (optional) Open graded crushed aggregate base Subgrade, minimal compaction</p>
Cobbles	Natural stones of various sizes generally consisting of larger granular material ranging from 6 inches to 24 inches diameter set on soil.	<ul style="list-style-type: none"> Garden areas (i.e., around bases of trees), parkway planter strips and median island, decorative landscaping 	10 to 40%, depending on joint spacing and stone size	<p>Rigid edge 4"-6" cobble (river rock) Sand setting bed Subgrade, minimal compaction</p>
Concrete (conventional)	Impervious composite building material made from the combination of aggregate (generally gravel and sand) and cement binder.	<ul style="list-style-type: none"> High volume driveways, sidewalks If feasible, slope towards infiltration basins instead of into directly-connected collection structures 	Negligible	

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Concrete (pervious) also called Portland cement pervious pavement	A discontinuous mixture of coarse aggregate, hydraulic cement and other cementitious materials, admixtures, and water which has a surface void content of 15-25% allowing water to pass through.	<ul style="list-style-type: none"> • Flat sites (slopes <6%) with uniform, permeable subgrade • Sidewalks and patios • Low traffic volume and low speed (less than 30 mph limit) bikeways, streets, travel lanes, parking stalls, and residential driveways 	30 to 50%	 <p>The diagram shows a cross-section of a pervious concrete pavement system. From top to bottom, it consists of: a top layer of pervious concrete with a thickness labeled 'Varies'; an 'Open graded crushed aggregate base (required only if subgrade is not well-drained)' with a thickness also labeled 'Varies'; and a 'Subgrade, minimal compaction' at the bottom. Arrows point from the text labels to the corresponding layers in the diagram.</p>
Crushed aggregate (gravel)	Crushed stone ranging from sand-sized fines to 2-inch diameter stone.	<ul style="list-style-type: none"> • Parking stalls, driveways, walkways, plazas, patios, street shoulder • Low volume and low speed vehicle traffic areas • Areas of low erosion • For surfaces subject to vehicular use, crushed gravel sizes between 3/8" and 3/4" make a stable surface that is also easy to walk on 	60 to 90%, permeability increases with larger aggregate sizes	 <p>The diagram shows a cross-section of a crushed aggregate pavement system. From top to bottom, it consists of: a 'Rigid edge, all sides (concrete, metal, stone or wood)' with a thickness of 2 inches; a 'surface course crushed aggregate, compacted (3/8" - 3/4" size)' with a thickness of 4-6 inches; a 'Base course, 1-1/2" crushed aggregate, compacted' with a thickness of 4-6 inches; and a 'Subgrade, minimal compaction' at the bottom. Arrows point from the text labels to the corresponding layers in the diagram.</p>