



**Permeable Pavement Overview**

**Topics**

The LID/GSI Context

History

General Design and Construction Requirements



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Puget Sound faces rigorous stormwater and unique wildlife challenges...

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**Low Impact Development Principles and Practices**



A land use development strategy that emphasizes protection and use of on-site natural features to manage stormwater.



Integrated engineered, small scale stormwater controls. WQ treatment integral in all controls.

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**Low Impact Development Principles and Practices**



**Used at the parcel and subdivision scale: site scale necessary but not sufficient...regional land use planning critical for effective stormwater management.**



**Primary goals: 1) no measurable impacts to receiving waters; and 2) maintain or more closely approximate pre-development surface flow volumes and durations.**

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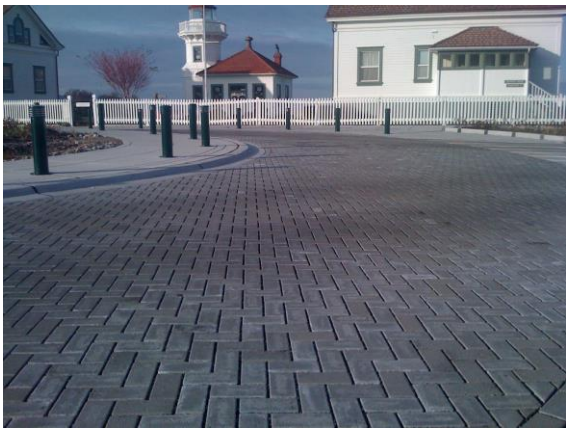
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### Permeable pavement history



Pervious concrete first used during 1800s in Europe for pavement surfacing and load-bearing walls.

1920s in homes in Scotland and England.

Primary driver to reduce cement content due to scarcity and cost.

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### Permeable pavement history



Porous asphalt originally developed in 1970s.

Franklin Institute in Philadelphia, PA conducted initial development and research.



Porous asphalt used for many years as OGFC for highway safety.

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### Permeable Pavement Applications

- Parking.
- Sidewalks.
- Plazas and patios.
- Sports courts.
- Noise barriers/walls.
- Low volume residential roads.



Bellingham bicycle lane



Marysville park and ride



Seattle's Ermat Park

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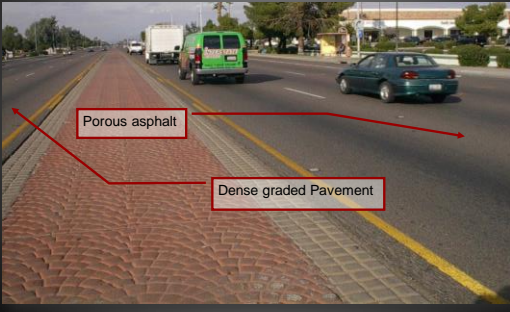
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### Permeable Pavement Applications

However, permeable pavement has been used successfully on high capacity roads.




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### Opportunities and Challenges



- Dispersed infiltration.
- Water quality treatment.
- Well-proven technology (mostly).
- Construction challenges.
- Maintenance.

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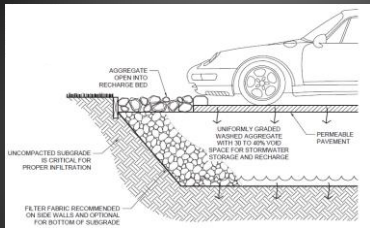
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### Permeable Pavement Components and Functions



- Wearing course.
- Overflow.
- Leveling or choker course.
- Aggregate base/storage course.
- Under and elevated drains.
- Sub-surface berms or trenches.
- Geosynthetics.
- Native underlying soil.

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### Five Critical Design and Construction Factors



Site assessment.

Correct design specifications.

Qualified installers!



Erosion and sediment control.

Maintenance.

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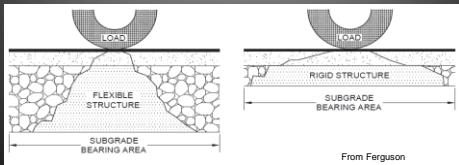
### Permeable Pavement Applications

Fundamentally, two types of permeable pavements.

- Rigid (pervious concrete).
- Flexible (porous asphalt, permeable pavers and grid systems).

All systems rely on proper subgrade preparation and aggregate base design.

Proper subgrade preparation and aggregate base design are critical structural elements for flexible systems.



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