

FACT SHEET- POROUS PAVEMENT

POROUS PAVEMENT

Also known as: Unit Pavers, Porous Concrete, and Pervious Pavement



DESCRIPTION

Porous Pavement is a system comprised of load-bearing, durable surface together with an underlying layered structure that temporarily stores water prior to infiltration or drainage to a controlled outlet. The surface can be porous such that water infiltrates across the entire surface of the material (e.g., crushed aggregate, porous concrete and porous asphalt), or it can be constructed of impermeable blocks separated by spaces and joints, through which the water can drain. This latter system is termed ‘permeable’ paving. Pervious paving is used for light vehicle loading in parking areas. For a surface to be considered porous it must allow water to infiltrate in to the soil below. Perforated pipe may be installed high in the section and the volume below the perforated pipe may be counted toward volume capture if no impermeable liner is installed. Sections with perforated pipe or liners at the bottom provide treatment only.

ADVANTAGES

- Significant flow attenuation and improvement in water quality.
- Can remove both the soluble and fine particulate pollutants.
- Roof runoff can be piped into the subsurface storage area directly, which would increase the level of flow attenuation.
- Within lined systems, there is the opportunity for stored runoff to be piped out for reuse.
- Pervious pavements have a high level of applicability because they are unobtrusive.

FACT SHEET- POROUS PAVEMENT

LIMITATIONS

- Can become clogged if improperly installed or maintained. However, this problem is minimized by the ease with which small areas of paving can be cleaned or replaced when blocked or damaged.
- Use should be limited to car parking areas and other lightly trafficked or nontrafficked areas. Pervious surfaces are currently not considered suitable for roadways within the public right-of-way.
- Prohibited in areas of known contamination. If soil and/or groundwater contamination is present on the site or within a 100' radius of the proposed location, the North Coast Regional Board review and approval is required.
- Do not use in areas of slope instability where infiltrated storm water may cause failure. Slope stability shall be determined by a licensed Geotechnical Engineer.
- Do not use in locations that can negatively impact building foundation or footings. Location shall be approved by a licensed Geotechnical Engineer.

KEY DESIGN FEATURES

- The subgrade should be able to sustain traffic loading without excessive deformation.
- The granular capping and sub-base layers should give sufficient load-bearing to provide an adequate construction platform and base for the overlying pavement layers.
- Pervious pavements require a single size grading to create voids for infiltration. The choice of materials is therefore a compromise between stiffness, permeability and storage capacity.
- Because the sub-base and capping will be in contact with water for extended periods, the strength and durability of the aggregate particles when saturated and subjected to wetting and drying should be assessed.
- Pervious concrete shall be designed and installed as described by the current version of CalTrans "Pervious Pavement Design Guidance."
- Must be installed under the supervision of a Certified Craftsman level contractor.



SIZING DESIGN- GOAL AND REQUIREMENTS

- **For all projects:** The treatment component requires that all of the runoff generated by this water quality design storm from impermeable surfaces must be treated on site for the pollutants of concern.
- **For projects that increase the amount of impervious surface, but create or replace less than a total of one acre:** The **Delta Volume Capture** component requires that any increase in volume due to development for the water quality design storm must be

FACT SHEET- POROUS PAVEMENT

infiltrated and/or reused on site. Further discussion of the Treatment and Delta Volume Capture requirements and the accompanying formulas can be found in Chapter 6.

- **For projects that create or replace one acre or more of impervious surface:** These larger projects must mitigate their impacts by meeting the **Hydromodification Requirement** by capturing 100% of the post development volume generated by the water quality rain event.
- All calculations shall be completed using the “Storm Water Calculator” available at www.srcity.org/stormwaterLID.

INSPECTION AND MAINTENANCE REQUIREMENTS

A maintenance plan shall be provided with the Final SW LID Submittal. The maintenance plan shall include recommended maintenance practices, state the parties responsible for maintenance and upkeep, specify the funding source for ongoing maintenance with provisions for full replacement when necessary and provide site specific inspection checklist.

At a minimum inspection and maintenance shall include the following:

- Keep landscaped areas well maintained
- Prevent soil from washing onto pavement

Pervious Pavement shall be inspected and maintained 2-3 times per year:

a) Vacuum clean surface using commercial sweeping machines at the following times:

- End of winter (April)
- Mid-summer (July / August)
- After autumn leaf-fall (November)
- Inspect outlets annually

b) As needed maintenance:

- If routine cleaning does not restore infiltration rates, then reconstruction of part of the pervious surface may be required.
- The surface area affected by hydraulic failure should be lifted for inspection of the internal materials to identify the location and extent of the blockage.
- Surface materials should be lifted and replaced after brush cleaning. Geotextiles, if used, may need complete replacement.
- Sub-surface layers may need cleaning and replacing.
- Due to the accumulation of pollutants, removed silts may need to be disposed of as controlled waste.