

IBRACON 2011 – Florianopolis

PERVIOUS CONCRETE PAVEMENT

A photograph showing the construction of pervious concrete pavement. In the foreground, a large concrete pump truck is pouring concrete into a prepared form. Several workers in blue jeans and t-shirts are visible, some using blue-handled tools to guide the concrete. The background shows a pile of large, light-colored stones and a blue motorized roller. The scene is outdoors on a bright day.

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Pervious Concrete

- ❖ Concrete mix with little or no sand
- ❖ Made with different aggregate sizes & types
- ❖ Mix can be produced with different colors
- ❖ Void ratio from 15% to 25%, depending on required density and strength.
- ❖ Sustainable and “Green” material compared to asphalt surfaces.
- ❖ First used in Florida in late 1970s.





Different Aggregate Sizes and Types





....and Colors

Sustainable & Green

- Saves on land otherwise used for detention pond.
- Maximizes permeable surface in a development
- May filters surface water from pollutants
- Cooler than asphalt and conventional concrete - contributes to less energy for cooling
- Light color - save on lighting energy

Applications



Parking



Sidewalks



Streets



**Base Layer Beneath
PCC Pavement**



Filter Fabric

Edge Drain

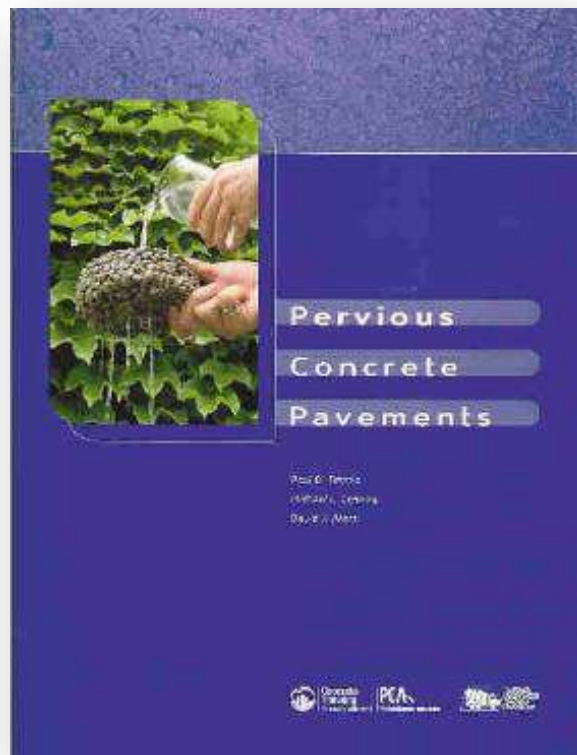
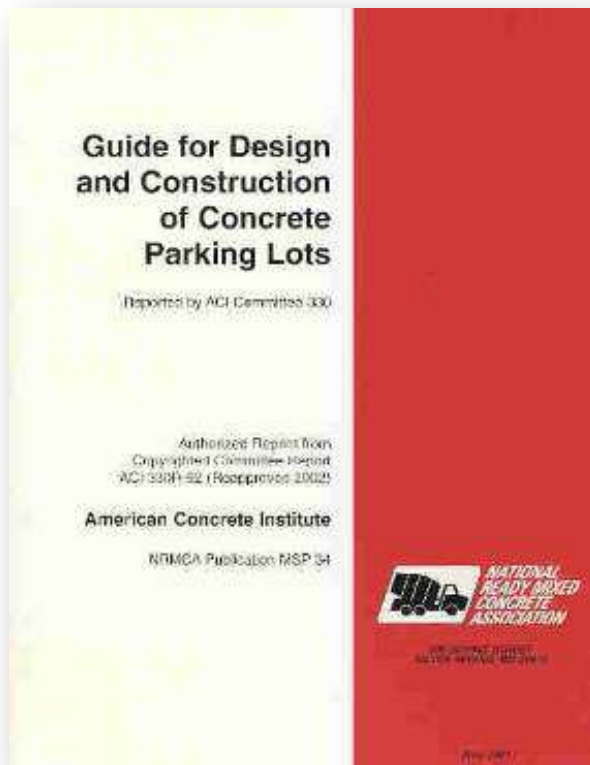
Materials & Mix Design

- Mix design depends on required strength and drainability.
- Use approximately 360 kg/m³ of Cementitious material including 50/50 Cement/slag or 75/25 Cement/Fly Ash
- $W/C_m = 0.30$
- May add some sand back into mix for stiffer layer

Pavement Design Consideration

- Edge confinement
- Stiff support
- Design thickness based on truck traffic
- Minimum 15 cm of base
- Not less than 18 cm pavement for streets
- Not less than 10 cm for parking and sidewalks

Design Guides





Construction

































Curing With Plastic Sheets is not “Green”





Use of Lithium Cure





Performance and Challenges

- Without proper design, and quality control of materials and construction - can have unpredictable drainability and stiffness.
- Aggregate raveling can be a major problem with poor mix design and construction.
- The issue of surface clogging has been a concern to potential specifiers and owners.
- **Balling of inside the truck mixer**
- Not much information on its structural capacity







Raveling Problem







TYMCO

210

F450

MAX DUTY

USDOT 1886591 CO

Testing & Development


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Eco-MIX

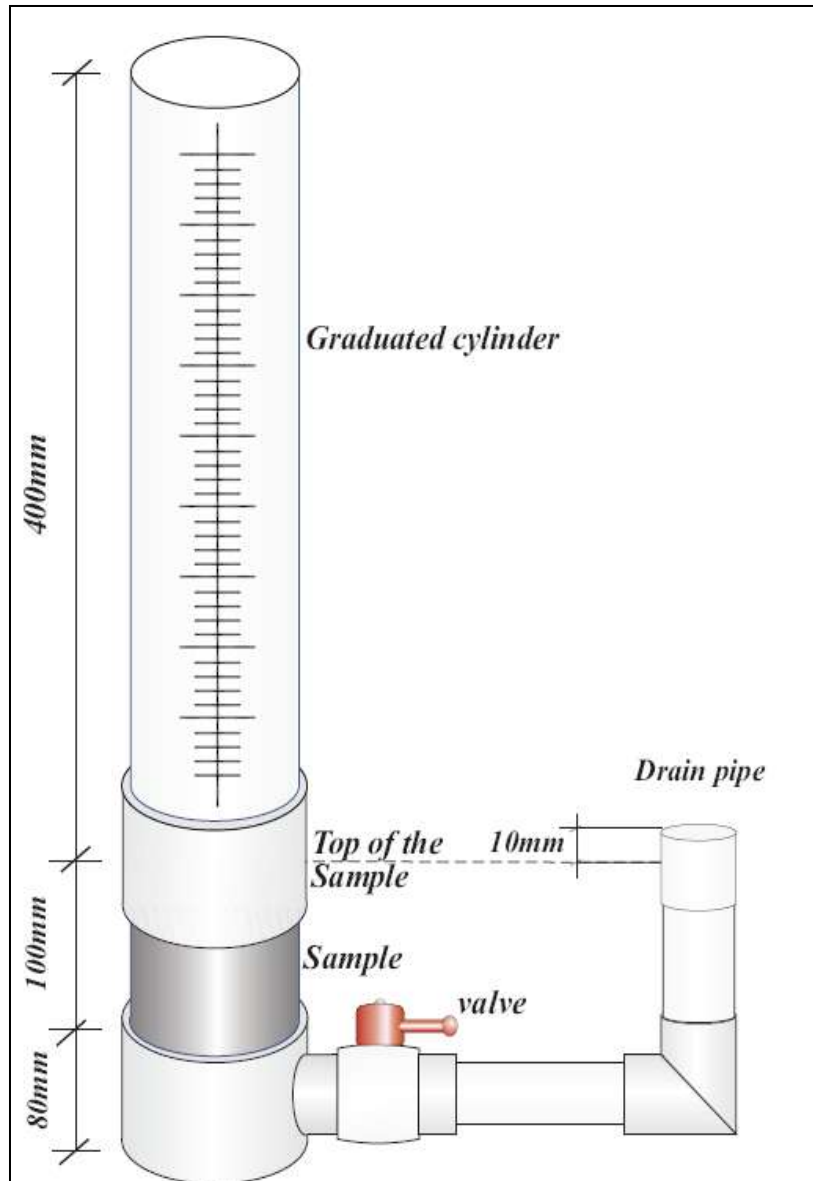
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Dynatest
Heavy Weight Deflectometer

Dynatest
Heavy Weight Deflectometer

886 OTC



Courtesy of Dr. Hassani



Raveling Inhibitor









**Prevent Raveling along
the edge**













06 28 2011

Muito Obrigado



Testing & Specifications

Contractor Training & Certification