UltraFiber 500® Improve Your Pervious Concrete!

Testing Purpose:

To determine the impact from the addition of Solomon UltraFiber 500® concrete reinforcing fibers to the properties of Portland Cement Pervious Concrete.

Testing Conclusions:

Pervious concrete containing UltraFiber 500® exhibited significantly higher rates of permeability than the control mix. Adding UltraFiber 500® at a dosage rate of 3.0 lb/yd^3 increased permeability 234%. Split tensile strength was increased at all dosage rates with an increase of 24% at a dosage rate of 1.5 lb/ yd^3. Adding UltraFiber 500® resulted in a reduction in surface abrasion at all dosage rates with the greatest reduction in abrasion of 52% occurring at 1.5 lb/ yd^3.

The addition of UltraFiber 500® did not impact the workability of the pervious concrete mixture while freeze-thaw durability was improved vs. the control mixture.

Testing Methodology:

Portland Cement Pervious Concrete (PCPC) is a storm water management tool which can reduce or eliminate detention/retention areas allowing enhanced site utilization. Since 2004, Iowa State University (ISU) has been evaluating PCPC mixture proportions and testing pervious concrete for rate of permeability and porosity.

ISU tested pervious concrete reinforced with UltraFiber 500® fibers at different dosage levels and a pervious concrete control that did not contain any fiber.

The pervious concrete mixture was selected to be similar to mixes used around the U.S. The mix contained durable river gravel, Portland cement, an air entraining agent and a water reducing admixture. The mix had a water to cement ratio of 0.29. UltraFiber 500® mixes were tested at dosage rates of 1.5 and 3.0 lb/yd^3. All of the mixtures were tested for fresh and hardened properties, porosity and rate of permeability.

Testing Results:

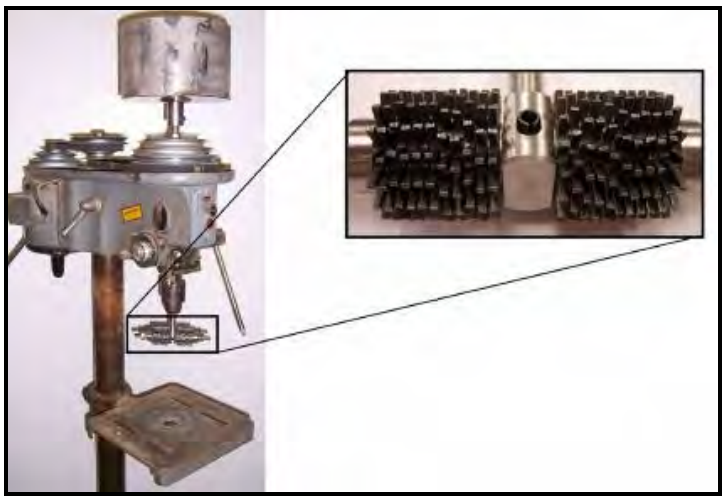
Concrete Permeability Properties

Mix ID (pcy)	Permeability (in/hr)	Permeability Increase (%)	Porosity (%)	Density (pcf)
Control	340	N/A	23.4	120.3
UF500 1.5	1049	209	25.5	123.1
UF500 3.0	1134	234	25.9	122.4

Concrete Strength & Abrasion Properties

Mix ID (pcy)	Split Tensile Strength		Abrasion Resistance		Freeze-Thaw (max. cycles)	Durability Factor
	28 Day (psi)	% Increase	Mass Loss(g)	% Decrease		
Control	268	N/A	4.88	N/A	122	35
UF500 1.5	333	24.3	2.33	52.3	125	35
UF500 3.0	323	20.5	3.43	29.7	163	46

Pervious Concrete Permeameter


Concrete Abrasion Resistance Test

Using 3.0 lb/yd^3 UltraFiber 500® increases permeability by **234%**

Using 1.5 lb/yd^3 UltraFiber 500® reduces Surface Abrasion by **52%** and improves Split Tensile Strength by **24%**

REFERENCES
National Concrete Pavement Technology Center, Iowa State University
To obtain a copy of the full study report by Kevern of ISU, go to www.ultrafiber500.com and send a request.