

TESTING PURPOSE:

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

TESTING CONCLUSIONS:

Pervious concrete containing UltraFiber500® exhibited significantly higher rates of permeability than the control mix with an increase of 234% at a dosage rate of 3.0 lb/ yd³. The split tensile strength was increased for all dosage rates with an increase of 24% at a dosage rate of 1.5/yd³. UltraFiber500® caused a reduction in surface abrasion at all dosage rates with the greatest reduction in abrasion of 52% occurring at 1.5lb/yd³.

The addition of UltraFiber 500® did not impact the workability of the pervious concrete moisture 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 moisture proportions and testing pervious concrete for permeability and porosity.

This report details testing of pervious concrete reinforced with UltraFiber500® fibers by Solomon Colors, Inc. Concrete moisture proportions were selected to determine the effect of various dosage levels of UltraFiber500® on pervious concrete material properties including permeability.

A pervious concrete control moisture similar to mixes used around the U.S. was selected. The mix contained durable river gravel, Portland cement, air entraining agent and a water reducing admixture. The mix had a water cement ratio of 0.29. UltraFiber 500® mixes were tested at dosage rates of 1.5 and 3.0 lb/yd³. All of the mixtures were tested for fresh and hardened properties, porosity and rate of permeability.



TESTING RESULTS:

Concrete Permeability Properties

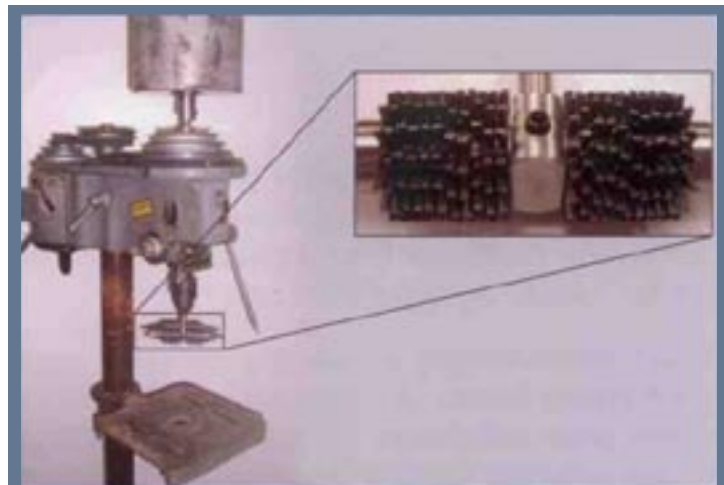
Mix ID (pcy)	Permeability (in/hr)	Permeability Increase (%)	Porosity (%)	Density (pcf)
Control	340	N/A	23.4	120.3
UF500 1.5	1049	209	25.5	123.1
UF500 3.0	1134	234	25.9	122.4

Concrete Strength and Abrasion Proper-

Mix IS (pcy)	Split Tensile Strength		Abrasion Resistance		Freeze-Thaw (max. cycles)	Durability Factor
	28 Day (psi)	% Increase	Mass Logg(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/yd³ UltraFiber500® increases permeability by 234%

Using 1.5 lb/yd³ UltraFiber 500® reduces Surface Abrasion by 52%
and improves Split Tensile Strength by 24%