(516) 273-5717

ALL ISLAND TESTING ASSOC. INC.

61G Pine Aire Drive Bay Shore, N.Y. 11706

August 7, 1985

I.C.S. Penetron
P.O. Box 497
Mt. Sinai, New York 11766

Re: Information of Client

In accordance with the request of client, permeability tests were made in the laboratory on the ICS/ Pentron treated and untreated concrete samples in the manner as directed by personnel of ICS/Penetron.

All Island Testing Association, Inc. meets the requirement of ASTM E-329 and is inspected by the Cement and Concrete Reference Laboratory of Washinton, D.C. as required by New York State. Test apparatus provided by ICS/Penetron International, Ltd. and was modeled after the test apparatus described in the Corps. of Engineers Test No. CRDC-48-73 with variations. Data obtained during the three month period from 5/2/85 thru 7/30/85 has led to the conclusion that Penetron sealed the concrete and eliminated measurable leakage of water at all phases of increased pressure up to 200 PSIG or 426 foot of head.

The apparatus used for the permeability test was provided by ICS/Penetron International, Ltd., consisting of control valves for apir pressure and flow, four steel pressure vessels to hold samples, and the necessary hoses, guages, valves and fittings needed to carry out the test. The guages and pressurized equipment used for this testing were calibrated by technicians from Carl's Medical Gas and Supply.

The pressurized air was directed to each vessel which contained a guage to monitor the pressure and hoses and flasks for collecting and measuring water.

The variation from the CRD C-48-73 guide are as follows:

1. Water flow emitting from bottom side of concrete was measured as opposed to stove pipe system with Corp. of Engineers.

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2. Pressure was increased from 10 PSI to 200 PSI over duration of test. Corp. started pressure at 100 PSIG and immediately increased to 200 PSI for duration of tests.

3. Polyster alkyd resin used to seal sample to cylinder. Corp. used paraffin-resin and asphalt mixture.

4. Bitumen based gaskets used as opposed to plaster seals.

5. Steel cylinders were 6 1/2" in dda x 6" high with samples approximately 6" diameter x 2" in thickness.

Procedure

Four samples (two treated, two untreated) were placed in steel cylinders. Each cylinder had several holes in the base plate. These holes were surrounded by the bitumine gasket, upon which the samples were placed.

Samples used for permeability test were cast by All Island Testing, using a standard 200 psi design mix.

441 lbs. type 1 and 2 cement
1600 lbs. sand
1730 lbs. 1" gravel
35.2 gal. water
4" slump
average 28 day (3 sample) breaking strength
2560 psi

Samples were cast 5/2/85 after 48 hours samples were ponded for 29 days, 5/4 - 6/3. Samples were removed from ponding at which time two were coated with Penetron (two coats, one hour apart). The samples were then misted three to five times a day for the next five days, 6/3 - 6/7. Samples were then air dried for nine days at room temperature.

American Lava Polyester Alkyd Resin was filled around the specimens and up to the level of the upper seals (standard plumbing wax) and then left to cure for two days, 6/17 - 6/18.

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Each cylinder was filled with water and vessels secured. Pressure was set at 10 PSI and test begun. Water forced through samples was trapped in containers below and amounts recorded. The pressure was gradually increased over the testing period at times when the Penetron treated samples were showing greatly reduced passage. All vessels showed leakage at 10 to 15 PSI and on every occasion the treated samples showed marked decreasing leakage. The untreated samples never showed signs of measurable reduced leakage.

This testing demonstrates that ICS/Penetron effectively eliminates all measurable leakage.

Respectfully Submitted,
ALL ISLAND TESTING ASSOCIATES INC.

Doug Quick

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