

ALL ISLAND TESTING EGP. ASSOC. INC.
61G PINEAIRE DRIVE
BAYSHORE, NEW YORK 11706
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June 10, 1983

INTRODUCTION:

This report presents the results of laboratory tests conducted on the Penetron Waterproofing System manufactured by ICS Penetron International Ltd., 11 Seacliff Lane, Miller Place, New York 11764.

Concrete Mix Data -

Type of Mix NY/DOT 2A455C

Mix Proportions (1 yard)

| | |
|-----------------------------------|--------|
| Cement (Type I) | 567# |
| Air-Entraining Admixture | 7.0 oz |
| Fine Aggregate (#4 Down Sand) | 1290# |
| Coarse Aggregate (3/4"-#4 Gravel) | 1850# |
| Water | 268# |

Properties of Plastic Concrete

| | |
|----------------|-------|
| Slump, in. | 3.112 |
| Air Content, % | 4.7 |

Compressive Strength

| | |
|--------------|------|
| 7 Days, psi | 3810 |
| 28 Days, psi | 5320 |

Casting and Curing -

Six test panels approximately 6 3/4" deep, 5 1/2" wide and 15 1/2" long were cast in two layers in plywood forms. A 3/4" deep "dish" or "trough" was cast into the top of the panel. Each layer was consolidated by rodding 25 times with a 5/8" diameter rod.

After casting, the slabs were covered with plastic curing paper for 24 hours, then removed from the forms and placed in the laboratory moist room. Upon removal from the curing room, the dam around the trough was coated with a heavy epoxy and the surface to be tested was etched with a 20% solution of muriatic acid to remove any concrete laitance. All samples were flushed off with distilled water and maintained in a saturated surface moist condition.

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Surface Treating - With the concrete in a saturated surface dry condition, three of the panels were treated on the bottom surface with Penetron at the rate of 2.0 pounds per square yard. The Penetron was mixed 3 powder to 1 water by volume and applied within 10 minutes after addition of the water.

After treating, all panels were kept moist for 3 days with a fine mist of water four times each day. At the end of this period, the samples were returned to the laboratory moist room for an additional 14 days.

MICROSCOPIC & INFRARED SPECTROSCOPY EXAMINATION:

The samples were studied under magnification to determine the depth of penetration of the waterproofing compound into the concrete surface.

Microscopic examination revealed that some components of the penetration diffusion into the concrete was as follows:

| <u>14 days</u> | <u>28 days</u> | <u>56 days</u> |
|----------------|----------------|----------------|
| 5.5 cm | 16 cm | 31cm |

CONCLUSIONS: As the concrete ages, additional and deeper penetration of the waterproofing material is probable.

Microscopic examinations revealed that the Penetron Components that diffused into the concrete surface resulted in a crystalline growth, white in color. These crystalline growths appear to be hydration products of the Penetron components with the cement's calcium-silicate gel in the matrix of the concrete.

Respectfully Submitted,
ALL ISLAND TESTING ASSOCIATES INC.

Doug Quick
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