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DATE: May 10, 2005
REVISED: June 8, 2005

TO: Mr. Yoshiki Kuroki
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101 East 52nd Street, 26th Floor
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PROJECT: AC32 FIBER PERFORMANCE TESTS
KURARAY FIBERS

PROJECT NO.: 325008

TESTING OF CONCRETE WITH SYNTHETIC FIBERS

INTRODUCTION:

This report presents the results of our laboratory testing of Kuraray Fibers pursuant to ICC Evaluation Service, Inc., AC32 Acceptance Criteria for Concrete with Synthetic Fibers, effective November 2003. Specifically, the testing specified pursuant to 3.2 of AC32 was conducted. Our work was requested by Mr. Richard McCabe of Kuraray America, Inc. on or about January 18, 2005, and authorized by Mr. Yoshiki Kuroki of Kuraray America, Inc. on February 15, 2005. The scope of our testing work was as follows:

1. Perform laboratory concrete batching of concrete with and without fibers according to the ICC-ES acceptance criteria, for the purpose of conducting the following tests:
   A. Concrete Flexural Strength, AC32 Section 4.1 and ASTM C 78 and C 1018
   B. Concrete Compressive Strength, AC32 Section 4.2 and ASTM C 39
   C. Freeze-thaw Durability, AC32 Section 4.3 and ASTM C 666 and C 494
   D. Effect on Reinforcement Bond Strength, AC Section 4.4 and ASTM C 234
   E. Plastic Shrinkage Cracking, AC Section 4.5 and Annex A

2. Prepare a written report presenting the laboratory data and compliance to the AC32 Conditions of Acceptance for each of the tests listed above.

SUMMARY OF TEST RESULTS:

The following is a summary of the test results:

Test	Control	Fibers	% of Control	AC32 Criteria
Flexural	4.83 MPa (700 psi)	4.83 MPa (700 psi)	100%	≥ Control
Compressive	44.10 MPa (6,400 psi)	44.15 MPa (6,400 psi)	100%	≥ Control
Freeze-thaw	71.8	71.8	100%	≥ Control
Bond Strength	56.90 KN (12,790 lbs)	66.25 KN (14,890 lbs)	116%	≥ Control
Plastic Shrink.	86.4 mm^2 (0.025 in^2)	16.1 mm^2 (0.134 in^2)	75%*	Min. 40%*

* Percent reduction in plastic shrinkage cracking compared to control

CONCLUSIONS:

Based on these test results, the Kuraray Fibers, used at a dosage rate of 0.59 Kg/m^3 (1.0 lb/yd^3) fully satisfy the requirements of AC32 pursuant to Section 3.1.