H. C. NUTTING COMPANY
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December 16, 1999

W.O.#15744.002 dsu

Mr. James W. Sist
Chem Tec International
7771 Woodstone Drive
Suite 100
Cincinnati, Ohio 45244

**RE: Test Results**
**Proof of Crack Sealing Capability of Chem Tec One**
**Per Ohio DOT Supplemental Specification 841**
**Soluble Reactive Silicate (SRS) Concrete Treatment**

Dear Mr. Sist:

We are please to submit herewith the report of the test results for proof of crack sealing capability of Chem Tec One, as performed in accordance with AASHTO T259, modified. Three specimens were utilized for the test procedures and the test results shown in the table below. Test procedures, as specified per AASHTO is attached for your reference.

| Proof of Crack Sealing Capability<br>Product: Chem Tec One | | | | |
|---|---|---|---|---|
| Specimen No. | Time Lapse of First Ponding min : sec | Time Lapse of Second Ponding min : sec | Col 2 ÷ Col 1 | Pass |
| 1 | 45 sec | 1,209,600 min (14 days) | >2 | Yes |
| 2 | 45 sec | 6:15 | 8.33 | Yes |
| 3 | 30 sec | 2:15 | 4.5 | Yes |

**Test Procedures**

The concrete mix for the test specimens met the requirements of Ohio DOT, spec 841, Section 2.3 and 3.1. In addition to the requirements of Section 3.1, the three test specimens were intentionally broken, so that the samples contained full depth cracks.

'Ponding dams, per Section 3.2 were installed around the perimeter of each of the reassembled concrete specimens. The dams were caulked around the perimeters to assure that only the cracks, or the concrete, allowed a solution to pass through. The crack width was recorded as part of each test. The enclosed photograph illustrates a typical prepared specimen used in each of three tests.

Section 3.4 required ponding of the dammed specimens with a 3 percent sodium chloride solution until it seeped through the cracks. The time required for the solution to appear through the cracks was recorded for each test. The solution was removed from each of the specimens and the specimens redried per Section 3.3. the dammed specimens, with applied SRS were air dried for 7 days. After the 7-day drying period, the dammed specimens were re-ponded with the 3 percent sodium chloride solution. The ponding tests ended when the solution came through the respective cracks. The Times were recorded. The SRS was ruled 'passed' because the time of the second Ponding divided by the time of the first ponding was a value of 2 or more, for each test.

Although laboratory testing can be directly correlated to field performance, in our Opinion, this particular test poses a more severe cracking with internal voids, than typical Cracking in a bridge deck. There are steel reinforcing bars that internally hold the bridge Structure in tack; however, there is a unrecoverable mass loss in the case of the Samples, when the specimen is broken and reassembled. Nevertheless, we believe that The test results present a fair assessment of the performance of Chem Tec One.

If there are any questions or concerns regarding this report please contact the Undersigned.

Respectfully submitted,

**H. C. NUTTING COMPANY**

GARY D. PFUEHLER, P.E.
SENIOR MATERIALS ENGINEER