TECHNICAL REPORT TITLE PAGE

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| Characteristics of Iowa Fine Aggregate | Final Report, 8-92 to 4-96 |
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**8. ABSTRACT**

The objective of this research was to evaluate the quality (angularity, mortar strengths and alkali-silica reactivity) of fine aggregate for Iowa portland cement concrete (pcc) pavements. Sands were obtained from 30 sources representative of fine aggregate across Iowa. The gradation, fineness modulus and mortar strengths were determined for all sands. Angularity was evaluated using a new National Aggregate Association (NAA) flow test. The NAA uncompacted void values are significantly affected by the percent of crushed particles and are a good measure of fine aggregate angularity.

The alkali-silica reactivity of Iowa sands was measured by the ASTM P214 test. By P214 many Iowa sands were identified as being reactive while only two were innocuous. More research is needed on P214 because pavement performance history has shown very little alkali-silica reactivity deterioration of pavement. Six of the sands tested by P214 were evaluated using the Canadian Prism Test. None were identified as being reactive by the Canadian Prism Test.

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| Fine aggregate<br>Portland cement concrete<br>Angularity<br>Mortar strength<br>Alkali-silica reactivity<br>Fineness modulus | 51 |

## CONCLUSIONS

This research on characteristics of Iowa fine aggregate for concrete supports the following conclusions:

1. The NAA uncompacted void test is a relatively simple but good measure of fine aggregate angularity.

2. The percent of crushed particles in the fine aggregate has a significant effect on the NAA uncompacted void values.