



ABOUT THIS PROJECT

PROJECT NAME: [Calibrating the Iowa Pore Index: Morphometric Properties of Aggregates, Phase III](#)

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PROJECT FUNDING PROGRAM:
State Planning and Research

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RESEARCH IN PROGRESS

Evaluating fine aggregates for use in Iowa road construction

Coarse and fine aggregates are primary materials used in road construction. Fine aggregates (sand) have developed over thousands of years, allowing soluble components to dissolve and weak components to fracture. Recently aggregate producers have become interested in supplying manufactured sand, created by crushing coarse aggregates (gravel) from sand pits or quarry rock to sand-size material. While this practice may be more cost-effective, the material has not matured over thousands of years, raising concerns about its durability. If used in place of natural fine aggregates, manufactured sand may lead to premature road deterioration.

This project aims to develop a draft specification for fine aggregates,

similar to that for coarse aggregates, to evaluate both natural and manufactured sand. A Camsizer P4 will be used to efficiently measure the size and shape of natural and manufactured sand particles.

Researchers will also evaluate fine aggregates applying the methodology currently used on coarse aggregates: the bulk chemistry test (which identifies magnesium and clay content) and the pore system quality test. The results will be compared to those of currently approved natural fine aggregates, as overly porous fine aggregates or manufactured sand could contribute to road deterioration in freeze-thaw conditions.

“The results of this project may provide us with important and

efficient tools to sufficiently understand and evaluate the quality of fine aggregates and manufactured sand that is currently available. By thoroughly evaluating these products, we can determine if they have sufficient quality to use in road construction,” explained Malcom Dawson, chief geologist, Iowa DOT Construction and Materials Bureau.

The research is expected to conclude in October 2025.

To learn more about this project and subscribe to updates, visit [Idea #3188](#).

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