

ABSTRACT

In several locations of Iowa, it is becoming more difficult to produce concrete sand consistently at a reasonable cost. Both ASTM and AASHTO have specifications for concrete sands that allow a finer, poorer graded sand than Iowa specifications.

The objective of the study was to develop standard mix designs to permit the use of finer graded sand for p.c. concrete. Three hundred cylinders were made from five sands available in the state. Based on the results of the study, the following is recommended.

1. Create another class of concrete sand by:
 - a. Lowering the current mortar strength ratio from 1.5 to 1.3
 - b. Raising the allowance for the percent passing one sieve and retained on the next from 40 to 45.
 - c. Including a provision that 25 to 60 percent passing the number 30 sieve is required for the sand.
2. Modify the standard paving mixes with and without fly ash for use with the finer sand as follows:
 - a. 8% more cement and fly ash for B-2 to B-5 mixes.
 - b. 7% more cement and fly ash for A-2 to A-5 mixes.
 - c. 5% more cement and fly ash for C-2 to C-5 mixes and water reduced mixes.