

LONG-TERM INFLUENCE OF ALKALINE EARTH SILICATE ADMIXTURES ON
THE MICROSTRUCTURAL DEVELOPMENT OF STRUCTURAL CONCRETE

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ABSTRACT

Specimens from a Pennsylvania Turnpike bridge structure have been examined as part of a study to characterize the physical and chemical properties of structural concrete bridge panels that have been in service for twenty-five years. A remarkable contrast exists between one bridge that was constructed with concrete formulated with the use of an alkaline earth silicate admixture and the identical concrete formulation but without the use of the admixture. While the structure with the admixture appears macroscopically to be only a number of years old, the structure without admixture appears macroscopically deteriorated. On a microscopic scale, a significant difference appears between the two microstructures; one, with the admixture, being dense and continuous and the other, without the admixture, somewhat porous and discontinuous.