

THE EFFECTS OF CRACKING ON THE DURABILITY OF CONCRETE BRIDGE DECKS

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Abridgment

The problem of bridge deck deterioration has been studied by many people and organizations. A 2-part study was used in Iowa to ascertain whether there was a relationship between cracking of reinforced concrete bridge decks and their durability. One phase involved the survey of 62 bridges on Iowa's primary and Interstate systems. The objective of this was to try to determine whether cracking could be related to a specific cause. Cracking is assumed to be the forerunner of many bridge deck deterioration problems. The second phase involved a survey of all the state highway departments to determine their feelings and ideas on cracking as related to bridge deck deterioration.

The study showed that cracking was greatest in the negative-moment region of the deck when compared with the positive-moment region of the same deck. This indicated that the cracking was caused, at least in part, by live loads. The prevention of live-load cracking is not possible under our current design setup. Cracks serve as points of ingress for salt solutions. Therefore, some method of preventing the penetration of the salt solution must be developed.