

Early-Age Cracking of Structures, TxDOT's Experience

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ABSTRACT

Early-age cracking of elements such as pavements and bridge decks may adversely affect the service life of the structure and negatively influence its durability. Although there are a number of causes, one primary cause is due to rapid drying of the concrete surface. The Texas Department of Transportation (TxDOT) has not been immune to this type of cracking, in part because of the vast number of climatic regions located within the state. Three of the most recent forensic investigations performed by TxDOT relating to this type of distress are summarized. These case studies reveal the diagnosis of the distress, including a detailed investigation and petrographic analysis, the causes (e.g., weather conditions, mixture design, construction techniques) of the distress observed, prevention techniques to avoid this problem in the future, and the suggested remedial repairs of the structures. These real-world experiences are an educational opportunity for engineers and researchers to gain more knowledge of this phenomenon to better enhance the durability of our infrastructure and to avoid similar problems in the future.

Key words: early-age cracking—drying—durability—forensic investigation