

# **PETROGRAPHIC EXAMINATION OF A 67 YEAR OLD CONCRETE BRIDGE DECK**

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## **ABSTRACT**

A 67-year-old concrete bridge (J857) on State Highway 72 in the Missouri, USA, has been decommissioned because of realignment of the highway. The 18-inch thick, single reinforced bridge deck bridge was cast in 1932. According to maintenance records, de-icing salts were used for the past 40 years, and an asphalt overlay was placed on the deck in the early 1990's. Although the bridge is very old, the concrete appears to be sound.

Microscopical features observed in cores from the bridge show different characteristics than of concrete used today.

Petrographic examinations of two cores were performed to estimate the mixture proportions of the concrete and compare them to the intended mix design available. Also discussed are characteristics of the concrete constituents. Relict Portland cement particles are present and are characterized. Although the concrete bridge deck is 67 years old, the concrete shows no deep distress.