



TECHSUMMARY *February 2018*

State Project No. DOTLT1000102 / LTRC Project No. 16-2C

Reliable Early Opening Strength for Concrete Pavements and Patch Work

INTRODUCTION

The increasing need for pavement rehabilitation coupled with the increase in traffic demand has led many states and regional transportation departments to review their often outdated requirements for concrete pavement opening strengths. There is a need to complete projects more efficiently and open to traffic sooner, while maintaining pavement integrity and longevity. Completion of this research will give the Department direction as to the future of early opening concrete in DOTD construction projects. Concrete rehabilitation is critical in the service life of Louisiana roads and this synthesis gives direction on the proper method for utilizing early opening concrete.

OBJECTIVE

The objective of this synthesis project was to study the requirements for early-opening-to-traffic concrete used by other state DOTs. This project looks to improve opening times, cost of concrete, and road conditions while keeping in mind the dependability and durability of the concrete.

SCOPE

To meet the objectives of this project, a review of the state-of-the-practice and state specifications was completed for DOTs around the country. Reviews of current and former state surveys and specification reviews for early-opening-to-traffic requirements were also completed.

METHODOLOGY

A state-of-the-practice literature review was conducted utilizing available peer-reviewed literature materials on the Transportation Research Information Database (TRID).

The national concrete consortium, a pooled-fund project with upwards of 26 participating states conducted a survey on state specific rehabilitation practices.

CONCLUSIONS & RECOMMENDATIONS

The results of this synthesis study indicate that the Department requires a significantly higher compressive strength than needed for early opening of concrete pavement patching. Reducing the required strength for opening to traffic and utilizing the maturity method for concrete strength estimation will benefit the Department. The authors recommend changing the required compressive strength from 3000 psi to 2000 psi. These changes will increase the durability of the repair while saving person-hours, lane closure delays, and possibly material costs.

The authors recommend changing the 3000 psi requirement for early opening to traffic to the SHRP-206 findings of 2000 psi. To gain the maximum benefit of early opening, the authors also recommend full adoption of the maturity method for estimating in-place strength.

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