RESEARCH
PROJECT CAPSULE [20-3C]
September 2020
TECHNOLOGY TRANSFER PROGRAM

Feasibility and Advantages of Accepting Concrete Other Than 28 Days

JUST THE FACTS:

Start Date:
October 28, 2019

Duration:
9 months

End Date:
July 27, 2020

Funding:
SPR: TT-Fed/TT-Reg

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Sponsored jointly by the Louisiana Department of Transportation and Development and Louisiana State University

POINTS OF INTEREST:

Problem Addressed / Objective of Research / Methodology Used / Implementation Potential

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PROBLEM

Accurately measuring concrete material properties can often present challenges for designers, contractors, and materials engineers given the enormous quantity of factors, which must be considered. There is also a lack of consistency across state highway agencies (SHAs) and municipalities when prioritizing these properties for developing quality assurance specifications. The technology and materials used for developing concrete mixtures have advanced in recent decades, but standards and practices have not always been readily adapted to reflect these changes. The concepts of strength and durability are sometimes inaccurately correlated to each other, which may lead to misunderstandings. Determining the most effective acceptance criteria for concrete continues to be discussed and debated throughout the public and private sectors.

ASTM C39 compressive strength testing of concrete specimen

Corrosion of reinforcing steel in concrete structure

OBJECTIVES

This study seeks to thoroughly document and evaluate the current state of knowledge and best practices for investigating the acceptance of concrete at times other than 28 days, which could potentially improve the understanding of concrete performance and help prolong the service life of pavements and structures. The scope of the research will include an overview of both the private and public sector and consider important concrete material properties and test methods as they relate to strength and durability.

METHODOLOGY

Various databases and resources will be used for establishing current engineering knowledge on concrete material properties and test methods for developing acceptance criteria. Subsequent documentation and evaluation of quality assurance specifications for Louisiana will be conducted. A comprehensive collection of methodologies for evaluating concrete performance will be compiled, and a final report will summarize all findings and recommendations.

IMPLEMENTATION POTENTIAL

A valuable resource will be provided to the Louisiana Department of Transportation and Development (DOTD) for benchmarking its own standards and practices with those of other transportation agencies.