

An ACI Technical Publication

SYMPOSIUM VOLUME



Best Practices and Lessons Learned for
Teaching Concrete Materials and
Reinforced Concrete

Editors:
Benjamin Z. Dymond and J. Chris Carroll



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Best Practices and Lessons Learned for Teaching Concrete Materials and Reinforced Concrete

Sponsored by
ACI Committee S802

ACI Virtual Convention
October 17-21, 2021

Editors:
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and J. Chris Carroll



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SP-359

First printing, November 2023

Discussion is welcomed for all materials published in this issue and will appear ten months from this journal's date if the discussion is received within four months of the paper's print publication. Discussion of material received after specified dates will be considered individually for publication or private response. ACI Standards published in ACI Journals for public comment have discussion due dates printed with the Standard.

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Farmington Hills, Michigan 48331

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Printed in the United States of America

Editorial production: Ryan M Jay

ISBN-13: 978-1-64195-236-1

Best Practices and Lessons Learned for Teaching Concrete Materials and Reinforced Concrete

The manuscripts included herein introduce common learning theories and methods in engineering education that can be specifically applied to the topics of reinforced concrete and concrete materials. The papers focus on the application of these theories to specific concrete-related topics and suggest ways to implement these methods in university classrooms. The primary goal of this Special Publication is to provide pedagogical resources, ideas, and techniques that can be implemented by anyone that accepts the challenge of teaching reinforced concrete and concrete materials, from a new instructor to an experienced professor.

To disseminate effective teaching methods among a global group of educators and learners, ACI Committee S802 organized two sessions entitled “Best Practices and Lessons Learned for Teaching Concrete Materials and Reinforced Concrete” at the Spring 2021 ACI Virtual Convention. The first session was focused on best practices teaching concrete materials and the second session was focused on best practices teaching introductory reinforced concrete. The manuscripts in this Special Publication are organized in the order in which they were presented at the ACI Convention.

The co-editors, Dr. Benjamin Dymond and Dr. J. Chris Carroll, are grateful for the contributions from the Special Publication authors and sincerely value the time and effort of the authors in preparing the papers in this volume. Furthermore, the Special Publication would not have been possible without the effort expended by the experts who peer reviewed the papers in this volume.

Benjamin Dymond and J. Chris Carroll
Co-Editors

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Effective Teaching Methods in Concrete Education

Matthew K. Swenty, Benjamin Z. Dymond, J. Chris Carroll

Synopsis: Teaching engineering students reinforced concrete and concrete materials topics is not a trivial task. Students learn in a variety of different ways and many professors rely on only a few methods of presenting the material and directing learning. The disconnect can create a struggle in the learning process for all parties involved. This paper introduces several different common teaching styles and methods that have been used in engineering education. The methods are compared and contrasted based on complexity, resources required, and preparation time. Various levels of change are discussed from small incremental adjustments to completely redesigning the course. A series of examples are described to demonstrate a few ways of implementing new teaching ideas into a classroom. Companion papers expand upon this introductory paper and provide in-depth and specific applications to topics common in concrete education. The goal of this special publication is to provide a venue to share teaching ideas and make concrete education more effective, efficient, and enjoyable for everyone.

Keywords: Engineering education, civil engineering, learning styles, teaching methods, active learning, reinforced concrete, concrete materials, teaching examples