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SI

International System of Units

Cast-in-Place Architectural Concrete Practice—Guide

Reported by ACI Committee 303

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Cast-in-Place Architectural Concrete Practice—Guide

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Cast-in-Place Architectural Concrete Practice—Guide

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This guide presents recommendations for producing cast-in-place architectural concrete. The importance of specified materials, forming, concrete placement, curing, additional treatment, inspection, and their effect on the appearance of the finished product are discussed. Architectural concrete requires special construction techniques, materials, and requirements that are unique to each project. The specific recommendations and information presented in this guide should be used accordingly.

Keywords: admixture; aggregate; architectural concrete; bush-hammer; coating; column; consolidation; cracking; curing; deflection; exposed-aggregate finish; finish; form lining; formwork; joint; joint sealant; mixture proportion; pigment; placing; quality control; release agent; repair; retarder; sealant; texture; wall.

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CONTENTS

CHAPTER 1—INTRODUCTION, p. 2

1.1—Introduction, p. 2

1.2—Scope, p. 2

CHAPTER 2—DEFINITIONS, p. 2

CHAPTER 3—ARCHITECTURAL CONSIDERATIONS, p. 4

3.1—Architectural features, p. 4

3.2—Architectural design, p. 5

3.3—Sealers and coatings, p. 7

3.4—Joint sealants, p. 7

3.5—Specifications, p. 8

CHAPTER 4—STRUCTURAL CONSIDERATIONS, p. 11

4.1—Cracking, p. 11

4.2—Spalling, p. 11

4.3—Deflections, p. 11

4.4—Joints, p. 12

4.5—Beams and slabs, p. 12

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- 4.6—Columns, p. 12
- 4.7—Walls, p. 12

CHAPTER 5—FORMS, p. 13

- 5.1—General, p. 13
- 5.2—Materials, p. 15
- 5.3—Economics, p. 18
- 5.4—Formwork accuracy, p. 18
- 5.5—Form joints, p. 18
- 5.6—Textures and patterns, p. 19
- 5.7—Formwork accessories, p. 20
- 5.8—Form coatings and sealers, p. 22
- 5.9—Form release agents, p. 22
- 5.10—Form removal, p. 25

CHAPTER 6—REINFORCEMENT, p. 25

- 6.1—General, p. 25
- 6.2—Clear space, p. 26
- 6.3—Reinforcement cover, p. 26
- 6.4—Reinforcement supports and spacers, p. 26
- 6.5—Tie wire, p. 26
- 6.6—Zinc-coated (galvanized) reinforcing bars, p. 26
- 6.7—Epoxy-coated reinforcing bars, p. 27
- 6.8—Glass fiber-reinforced polymer (GFRP) reinforcing bars, p. 27

CHAPTER 7—CONCRETE MATERIALS AND MIXTURE PROPORTIONING, p. 27

- 7.1—General, p. 27
- 7.2—Materials, p. 27
- 7.3—Proportioning, mixing, and temperature control, p. 29

CHAPTER 8—PLACING AND CONSOLIDATION, p. 30

- 8.1—Conveying and placing, p. 30
- 8.2—Consolidation, p. 30

CHAPTER 9—CURING, p. 32

- 9.1—General, p. 32
- 9.2—Curing in forms, p. 32
- 9.3—Moisture curing, p. 32
- 9.4—Membrane curing, p. 32
- 9.5—Hot weather curing, p. 32
- 9.6—Cold weather curing, p. 33
- 9.7—Internal curing, p. 33

CHAPTER 10—ARCHITECTURAL CONCRETE SURFACE TREATMENTS, p. 33

- 10.1—Surface retarder, p. 33
- 10.2—High-pressure water jet (waterblast), p. 33
- 10.3—Acid etch, p. 33
- 10.4—Abrasive blast, p. 34
- 10.5—Tooling or other mechanical treatments, p. 35

CHAPTER 11—BLEMISHES AND SURFACE REPAIRS, p. 35

- 11.1—Blemishes, p. 35
- 11.2—Tie-hole plugging and patching, p. 36
- 11.3—Sealers and coatings, p. 37

CHAPTER 12—REFERENCES, p. 37

Authored references, p. 37

APPENDIX A—ARCHITECTURAL CONCRETE PHOTOS, p. 38

CHAPTER 1—INTRODUCTION

1.1—Introduction

This guide presents recommendations for cast-in-place architectural concrete that is permanently exposed to view. Architectural concrete requires special care in the design, detailing, selection of concrete materials, forming, placing, consolidation of, and surface finishing to achieve the desired architectural appearance. Refer to [Appendix A](#) for photo examples of cast-in-place architectural concrete.

1.2—Scope

The information presented in this guide is broad and includes the recommended responsibilities of the architect, contractor, concrete producer, and inspector for a successful project. Critical areas requiring special attention are highlighted, and means for prevention or correction of defects are discussed. Specific surface treatments and special forming techniques are presented, as well as applicable codes, specifications, and recommendations. General information about architectural concrete can be found in [Dorfmueller \(2014\)](#) and [Hover \(2013\)](#).

The guide also covers special conditions specifically related to architectural concrete. Information and techniques applicable for producing a specific result in one situation may not be applicable to another situation. The recommendations in this guide are subjective relative to the means and methods used for accomplishing a specific task or architectural effect and should be tested (through [ACI SPEC-301-20](#) Section 6.1.3.2(a), mockup) before use in an actual project to ensure it will produce the required result with the materials available to complete the project (examples would be aggregates, white cement, and self-consolidating concrete mixture).

This guide does not address all the problems associated with architectural concrete. Further research is needed on surface air voids and other construction-related issues; refer to [Malisch and Brown \(2017\)](#).

CHAPTER 2—DEFINITIONS

Please refer to the latest version of ACI Concrete Terminology for a comprehensive list of definitions. Definitions provided herein complement that resource.

acceptable or **accepted**—determined to be satisfactory by architect/engineer based on requirements of contract documents.

acceptance—acknowledgment by architect/engineer that submittal or completed work is acceptable.

aggregate transparency—discoloration of a concrete surface consisting of darkened areas over coarse aggregate particles immediately below the concrete surface.

architectural concrete reference sample (ACRS)—a sample provided by the design team to the contractor at minimum of 18 x 18 x 2 in. (460 x 460 x 50 mm) that shows