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(metric)

Specifications for Environmental Concrete Structures

An ACI Standard

Reported by ACI Committee 350

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Specifications for Environmental Concrete Structures

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This specification is a Reference Specification that the Architect/Engineer can make applicable to a construction project by citing it in the Project Specifications. The Architect/Engineer supplements the provisions of this Reference Specification as needed by designating or specifying individual project requirements.

The document covers materials and proportioning of concrete; reinforcement and prestressing reinforcement; production, placing, finishing, and curing of concrete; formwork design and construction; and shotcrete. Methods and treatment of joints and embedded items, repair of surface defects, and finishing of formed and unformed surfaces are specified. Separate sections are devoted to architectural concrete, mass concrete, and internal and external post-tensioned prestressed concrete. Provisions governing testing, evaluation, and acceptance of concrete as well as acceptance of the structure are included.

Keywords: admixtures; aggregates; air entrainment; architectural concrete; compressive strength; consolidation; curing; density; durability; evaluation; environmental concrete; finishes; floors; formwork (construction); grouting; inspection; joints; mass concrete; mixture proportioning; post-tensioned prestressed concrete; prestressing reinforcement; reinforcing steels; reshoring; shoring; subgrades; tolerances.

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ACI 350.5M-12 became effective October 5, 2012, and was published April 2013.

(Mandatory portion follows)

SECTION 1—GENERAL REQUIREMENTS

1.1—Scope

1.1.1 *Work specified*—This specification covers cast-in-place environmental concrete and shotcrete. Provisions of this specification shall govern except where other provisions are specified in Contract Documents.

1.1.2 *Work not specified*—The following subjects are not in the scope of this specification:

a) Precast concrete products
b) Heavyweight shielding concrete
c) Slipformed paving concrete
d) Lightweight concrete
e) Shrinkage-compensating concrete
f) Terrazzo
g) Insulating concrete
h) Refractory concrete
i) Self-consolidating concrete
j) Slipformed concrete walls
k) Tilt-up concrete construction

1.2—Definitions

accepted—determined to be satisfactory by Architect/Engineer.

ACI Concrete Field Testing Technician Grade I—a person who has demonstrated knowledge and ability to perform and record the results of ASTM standard tests on freshly mixed concrete and to make and cure test specimens. Such knowledge and ability shall be demonstrated by passing prescribed written and performance examinations and having credentials that are current with ACI.

ACI Reference Specification—a standardized mandatory-language document prescribing material, dimensions, and workmanship incorporated by reference in contract documents with information in the Mandatory Requirements Checklist required to be provided in the Project Specification.

Architect/Engineer—Architect, Engineer, architectural firm, engineering firm, or architectural and engineering firm issuing Contract Documents, administering the Work under Contract Documents, or both.

architectural concrete—concrete designated by Architect/Engineer as requiring a specified appearance.

backshore—shores placed snugly under a concrete slab or structural member after the original formwork and shores have been removed from a small area at a time, without allowing the slab or member to deflect, or support its own weight or existing construction loads.

Contract Documents—a set of documents supplied by Owner to Contractor as the basis for construction; these documents contain contract forms, contract conditions, specifications, drawings, addenda, and contract changes.

Contractor—person, firm, or entity under contract for construction of the Work.

core wall—portion of the externally prestressed circular concrete tank wall placed in circumferential compression by prestressing.

cover coat—the layer or layers of shotcrete applied over the wire coat of an externally prestressed circular concrete tank wall.

diaphragm—thin metal sheet formed with vertical ribs embedded within the core wall of circular externally prestressed concrete tanks.

duct—a conduit (plain or corrugated) to accommodate prestressing steel for post-tensioned installation.

exposed to view—portion of structure that can be observed by the user during normal use.

finish coat—final layer of shotcrete placed on the cover coat of an externally prestressed circular concrete tank wall.

high-early-strength concrete—concrete that, through the use of ASTM C150 Type III cement or admixtures, is capable of attaining specified strength at an earlier age than normal concrete.

environmental engineering concrete structures—concrete structures intended for conveying, storing, or treating water, wastewater, or other nonhazardous liquids, and for secondary containment of hazardous materials.