

Environmental Engineering Concrete Structures

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This report presents recommendations for structural design, materials, and construction of concrete tanks, reservoirs, and other structures commonly used in water containment, industrial and domestic water, and wastewater treatment works, where dense, impervious concrete with high resistance to chemical attack is required. Special emphasis is placed on a structural design that minimizes the possibility of cracking and accommodates vibrating equipment and other special loads. Design and spacing of joints are considered. Proportioning of concrete, placement, curing, and protection against chemicals are also described. Information on seismic design is included.

Keywords: admixtures; aggregates; concrete; chemical attack; coatings; concrete coverages; concrete durability; concrete finishing (fresh concrete); concrete; cracking (fracturing); crack width and cracking; curing; deflection; earthquake resistant structures; environmental engineering; finishes; floors; formwork (construction); foundations; joint systems; joints (seals); live loads; mix proportioning; packing; permeability; placing; protective coatings; quality control; reinforced concrete; reservoirs; sanitary engineering; sewage treatment; stress; structural design; tanks (containers); transportation; torque; vibration; volume change; wastewater treatment; water-concrete ratio; water supply; water treatment.

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CHAPTER 1 — SPECIAL REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES

1.1 — Introduction

Environmental engineering concrete structures pose some problems uncommon in other uses of concrete. In

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Environmental Engineering Concrete Structures

**ACI Committee 350, American Concrete
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Environmental Engineering Concrete Structures:

Code Requirements for Environmental Engineering Concrete Structures (ACI 350-01) and Commentary (ACI 350R-01) ACI Committee 350, American Concrete Institute, 2001 Standards for tests and materials Durability requirements Concrete quality mixing and placing Formwork embedded pipes and construction and movement joints Details of reinforcement Analysis and design general considerations Strength and serviceability requirements Flexure and axial loads Shear and torsion Development and splices of reinforcement Two way slab systems Walls Footings Precast concrete Composite concrete flexural members Prestressed concrete Shells and folded plate members Strength evaluation of existing structures Special provisions for seismic design Structural plain concrete ACI 350-20 Code Requirements for Environmental Engineering Concrete Structures (ACI 350-20) and Commentary (ACI 350R-20) ACI Committee

350, 2021-10-31 Code Requirements for Environmental Engineering Concrete Structures and Commentary (ACI 350-06) ACI Committee 350, American Concrete Institute, 2006-01-01 Metric Code Requirements for Environmental Engineering Concrete Structures and Commentary ACI Committee 350, American Concrete Institute, 2009 Design Considerations for Environmental Engineering Concrete Structures ACI Committee 350, American Concrete Institute, 2004-01-01 *Code Requirements for Environmental Engineering Concrete Structures (ACI 350-06)*. ACI (American Concrete Institute), 2006

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