Web of Science®

« Back to results list ◄ Record 3 of 3 ► Record from Web of Science®

Nonlinear coupling of carbonation and chloride diffusion in concrete

Author(s): Puatatsananon W, Saouma VE

Source: JOURNAL OF MATERIALS IN CIVIL ENGINEERING **Volume:** 17 **Issue:** 3 **Pages:** 264-275 **Published:** MAY-JUN 2005

Times Cited: 4 **References:** 28 Citation Map

Abstract: External reinforced concrete elements exposed to chloride and/or CO2 will eventually have a lower pH, which in turn will depassivate the reinforcement and initiate corrosion, thus causing spalling. This paper seeks to address the complex multiphysics nature of concrete environmental damage, which is governed by coupled nonlinear partial differential equations. Heat, relative pore humidity, chloride, and carbonation are all implemented in a two-dimensional coupled nonlinear finite-difference code. Coupling between carbonation and chloride diffusion is explored in the context of both homogeneous and heterogeneous concrete models. Numerical simulations results are presented.

Document Type: Article

Language: English

KeyWords Plus: SATURATED CONCRETE; POROUS MATERIALS; CEMENT PASTES; MOISTURE; PENETRATION; CAPACITY; MORTARS; MODEL; HEAT; FLOW

Reprint Address: Puatatsananon, W (reprint author), Ubon Ratchathani Univ, Dept Civil Engn, Boulder, CO 80309 USA

Addresses:
1. Ubon Ratchathani Univ, Dept Civil Engn, Boulder, CO 80309 USA
2. Univ Colorado, Dept Civil Engn, Boulder, CO 80309 USA

Publisher: ASCE-AMER SOC CIVIL ENGINEERS, 1801 ALEXANDER BELL DR, RESTON, VA 20191-4400 USA

Subject Category: Construction & Building Technology; Engineering, Civil; Materials Science, Multidisciplinary

IDS Number: 927UL

ISSN: 0899-1561

DOI: 10.1061/(ASCE)0899-1561(2005)17:3(264)

Cited by: 4

This article has been cited 4 times (from Web of Science).

Tran DH, Perera BJC, Ng AWM Comparison of Structural Deterioration Models for Stormwater Drainage Pipes COMPUTER-AIDED CIVIL AND INFRASTRUCTURE ENGINEERING 24 2 145-156 2009

Wang X, Foliente G Identifying bridge structural condition development trends via categorical inspection condition rating with case studies STRUCTURE AND INFRASTRUCTURE ENGINEERING 4 6 449-466 2008

Ervin BL, T Bernhard J, Kuchma DA, et al. Estimation of general corrosion damage to steel reinforced mortar using frequency sweeps of guided mechanical waves INSIGHT 48 11 682-692 NOV 2006

[view all 4 citing articles]

Create Citation Alert

Related Records:

Find similar records based on shared references (from Web of Science).

[view related records]

References: 28

View the bibliography of this record (from Web of Science).

Suggest a correction

If you would like to improve the quality of this product by suggesting corrections, please fill out this form.

<< Back to results list ◄ Record 3 of 3 ► Record from **Web of Science®**

Output Record

Step 1:

- Authors, Title, Source
  - plus Abstract
- Full Record
  - plus Cited Reference

Step 2:

[How do I export to bibliographic management software?]

Print | E-mail | Add to Marked List

Save to EndNote Web | Save to EndNote, RefMan, ProCite

Save to other Reference Software | Save

View in 简体中文 English 日本語