Masonry: Materials, Design, Construction, and Maintenance

Harry A. Harris, editor
Masonry: materials, design, construction, and maintenance/Harry A. Harris, editor.
(STP; 992)
Papers from a symposium held in New Orleans, LA, 2 Dec. 1986 and sponsored by ASTM Committees C-7 on Lime, C-12 on Mortars for Unit Masonry, and C-15 on Manufactured Masonry Units.
Includes bibliographies and indexes.
"ASTM publication code number (PCN) 04-992000-07."
ISBN 0-8031-1168-1
1. Masonry—Congresses. I. Harris, Harry A. II. ASTM Committee C-7 on Lime. III. ASTM Committee C-12 on Mortars for Unit Masonry. IV. ASTM Committee C-15 on Manufactured Masonry Units. V. Series: ASTM special technical publication; 992.
TA670.M3781988 88-15446
693.1—dc19 CIP

Copyright © by AMERICAN SOCIETY FOR TESTING AND MATERIALS 1988

NOTE
The Society is not responsible, as a body, for the statements and opinions advanced in this publication.

Peer Review Policy

Each paper published in this volume was evaluated by three peer reviewers. The authors addressed all of the reviewers' comments to the satisfaction of both the technical editor(s) and the ASTM Committee on Publications.

The quality of the papers in this publication reflects not only the obvious efforts of the authors and the technical editor(s), but also the work of these peer reviewers. The ASTM Committee on Publications acknowledges with appreciation their dedication and contribution of time and effort on behalf of ASTM.

Printed in Baltimore, MD
July 1988
Foreword

This publication, *Masonry: Materials, Design, Construction, and Maintenance*, contains papers presented at the symposium of the same name held in New Orleans, LA on 2 Dec. 1986. The symposium was sponsored by ASTM Committees C-7 on Lime, C-12 on Mortars for Unit Masonry, and C-15 on Manufactured Masonry Units. Harry A. Harris, Ash Grove Cement Co., presided as symposium chairman and was editor of this publication.
## Contents

### Overview

- **Overview**

### Materials

- **Inadequacy of Property Specifications in ASTM C 270**—G. C. ROBINSON AND R. H. BROWN 7
- **Shear Strength of Masonry Piers Under Cyclic Loading**—L. S. P. JOHAL AND E. D. ANDERSON 18
- **Investigation of Masonry Bond and Surface Profile of Brick**—J. W. RIBAR AND V. S. DUBOVOY 33

### Design

- **Preconstruction Brick Veneer Evaluation Testing**—D. C. RATHS 41
- **Problems and Solutions to Masonry Buildings**—R. M. GENSERT AND W. C. BRETNALL 57
  - Discussion 91
- **Influence of Tie Flexibility, Relative Length, and End-Boundary Condition on Brick Veneer-Metal Stud Flexural Bond Stress**—I. R. CHIN, N. V. KROGSTAD, AND C. B. MONK, JR. 96
- **Analysis and Test of a Torsional Sensitive C-Shaped Prefabricated Brick Spandrel Panel**—R. C. ARNOLD, L. J. DONDANVILLE, N. V. KROGSTAD, AND C. B. MONK, JR. 118
- **Test of Model Masonry Single Pier Under Dynamic Shaking and Quasistatic Cyclic Loading**—H.-L. CHEN AND S. F. SHAH 145

### Construction

- **Statistical Primer for Brick Masonry**—C. T. GRIMM 169
- **The Effectiveness of Waterproofing Coatings, Surface Grouting, and Tuckpointing on a Specific Project**—W. B. CONEY AND J. G. STOCKBRIDGE 220
MAINTENANCE

Diagnosis of Terra-Cotta Glaze Spalling—S. E. THOMASEN AND C. L. SEARLS 227

In-Situ Evaluation of Compressive Stresses—D. MANMOHAN, R. L. SCHWEIN, AND L. A. WYLLIE, JR. 237

Restoration of the John J. Glessner House—T. SOURLIS 251

Masonry Cracks: A Review of the Literature—C. T. GRIMM 257

Indexes 281