TESTING FORUM

Conference on Advances in Cement and Concrete

From 24–29 June, 1994, under the auspices of the Engineering Foundation, about 100 persons gathered at the New England Center, University of New Hampshire, Durham, NH, for the triennial conference on advances in cement and concrete. Attendees were present from 17 countries: 50 from the United States, 19 from Canada, 6 from France, 5 from Japan, 4 from Italy, 3 from Switzerland, 2 each from England, Scotland, and the United Kingdom; 2 each from Spain, Norway, and Israel; and 1 each from The Netherlands, Russia, India, Hungary, and Austria. A volume of 621 pages was published and distributed by the American Society of Civil Engineers (ASCE) and included the complete text or abstract of 43 papers from the program. There was also a poster session discussing 11 subjects. The eight technical sessions were:

- I—Cement and Concrete – Past and Present
- II—Clinker Processing and Quality
- III—Hydration of Cementitious Materials
- IV—Fracture and Fiber Reinforcement
- V—Chemical and Mineral Admixtures
- VI—Performance and Durability
- VII—Environmental Issues and Waste Management
- VIII—Future Directions

Ad hoc (afternoon) sessions dealt with (1) delayed formation of ettringite, (2) influence of industrial waste and urban garbage used as fuel on the process, cement quality, and economy of cement manufacturing, and (3) the next major breakthrough in concrete technology, when and where. Session I was a tribute to D. M. Roy and P. K. Mehta, ably arranged by the cochairs of the conference, Michael Grutzeck of Penn State and Shondeep Sarkar of Sherbrooke.

The banquet Thursday evening was a "roast" of Professor Sidney Diamond. The papers not in the proceedings volume will be available later. Perhaps at that time note can be taken, if relevant, that some copies of the book had pages 591 through 598 duplicating pages 584 through 590; and there was at least one copy that had quite a few blank pages in the range 54–63.

Some interesting topics were presented, relating to many areas. What do we do about the ton or so of CO_2 that now escapes to the atmosphere for each ton of portland cement that is produced. In his paper, Dr. Chatterjee (p. 438) referred to a study in which CO_2 was converted to CO and H_2 and then to methanol and then to methyl tertiary butyl ether. Other, more immediate measures involve using more blast-furnace slag and pozzolan per cubic meter of concrete and consequently less portland cement. Dr. Uchikawa (p. 541) notes that "environmental load-reducing cement" can be made by using less limestone and less fuel that would produce less CO_2 per unit of product. Professor Neville, in the opening paper, again spoke in favor of understanding real concrete and not assuming one can predict concrete behavior from laboratory studies, especially when the studies were on pastes and mortars only. Many later speakers recollected his remarks and differentiated "bookcrete" as well as "labcrete" from "realcrete." Hal Taylor gave a review of delayed ettringite formation (p. 122), and as noted above, this topic was the subject of a whole afternoon session moderated by Robert L. Day, who compiled a book on the subject for the Portland Cement Association in 1992. My conclusion is that there will be no clear picture of how, when, and if this is a real hazard to real concrete until the issue is involved in litigation. Taylor suggests that it may not be a hazard in the absence of some deteriorative process initiated by unrelated causes. Others suggested that it was perhaps not different from "ordinary" sulfate attack on concrete except for the fact that the sulfate is derived from the concrete itself and not from an external source. Professor Mindess (p. 217) in "Fibre-Reinforced Concrete – Myth and Reality" said, "While fibers, used properly, can improve some of the properties of concrete, their use can never provide crack-free concrete," and then reviewed the large number of incorrect and invalid claims made for fibers by listing six specific myths. In my view, the book is worth its existence for this paper alone. Chris Rogers (p. 338) dealt with testing aggregates to insure durable concrete; Mike Thomas (p. 362) dealt with the use of fly ash to prevent deleterious expansion from alkali-silica reaction. Both these are reassuring and report real improvements in understanding. I have called them to the attention of people in aggregate research for immediate use.

Call for Papers

Symposium on Thermal and Mechanical Test Methods and Behavior of Continuous Fiber Ceramic Composites (CFCCs)

8–9 Jan., 1996, Cocoa Beach, FL

Papers are invited for the First Symposium on Thermal and Mechanical Test Methods and Behavior of Continuous Fiber Ceramic Composites (CFCCs), cosponsored by ASTM Committees C-28 on Advanced Ceramics and E-8 on Fatigue and Fracture and the American Ceramic Society. The symposium will be held 8–9 Jan., 1996 in Cocoa Beach, FL in conjunction with the standards development meetings of Committee C-28 and the 20th Annual Cocoa Beach Conference and Exhibition on Composites and Advanced Ceramics, Materials, and Structures.

The anticipated engineering applications of CFCCs in industrial, aerospace, and propulsion systems require materials to be exposed to service cycles in various deleterious environments that may include simultaneous temperature and load cycling or thermal or mechanical shock. Materials testing and characterization elucidate aspects of the unique damage-tolerant behavior (toughness) of this class of advanced ceramics. This information can enable proper formulation of models used for component lifetime prediction and design, and guide material development. The intent of this symposium is to continue the premarket penetration standardization process required to ensure timely and rapid introduction of these emerging materials into international markets. Researchers from industry, academia, and government are invited to participate in this symposium.

Papers are invited on the following topics specifically related to thermal and mechanical test methods and behavior of continuous

fiber ceramic composites (CFCCs):

- Development and application of novel test methods and equipment
- Application of standardized test methods
- Environmental and thermal effects
- Tenile, compressive, or shear strength behavior
- Creep/creep rupture behavior
- Cyclic fatigue, including frequency, waveform, and amplitude effects
- Thermomechanical fatigue
- Deformation behavior
- Multiaxial loading as applied to test specimen coupons or components (for example, tubes)
- Effects of fiber architecture, including laminate, fabric, or braided reinforcements
- Specimen design, including volume and geometrical effects
- Interfacial property measurement and effects of composite performance

Prospective authors must submit a title, a 250 to 300 word abstract, and the ASTM paper submittal form by 6 Feb., 1995. The abstract must include a clear definition of the objective and approach of the work discussed, pointing out material that is new, and present sufficient details regarding results. Your presentation and manuscript must neither be of a commercial nature nor previously published. Because a limited number of abstracts will be accepted, approximately 30 to 40, be sure that the abstract is complete to allow for careful assessment of suitability for this symposium. ASTM may print and distribute the abstracts at the symposium with the approval of the symposium chairman.

Submit the abstract to Dorothy Savini, Symposia Operations, ASTM, 1916 Race Street, Philadelphia, PA 19103-1187, (215) 229-2617. Authors are urged not to send abstracts by fax because they do not reproduce clearly. Paper submittal forms are available from Ms. Savini or the symposium chairman. You will be notified of acceptance for presentation at the symposium by the symposium chairman by 30 March, 1995.

While a special technical publication (STP) is anticipated, the Committee on Publications (COP) will consider the final selection of abstracts for approval as a book. After COP confirms the publication of an STP, you will be sent manuscript guidelines from the ASTM staff. All accepted manuscripts to be peer reviewed for the STP will be due to ASTM by November 6, 1995. This date will be strictly enforced. Papers not received by this due date will not be published in the STP but may be forwarded to an appropriate ASTM journal for consideration by the journal editor.

The main author (the author corresponding with the ASTM publications staff) of each published paper will receive a complimentary copy of the STP. All published authors will have the opportunity to purchase reprints of their papers at a nominal cost.

More information is available from symposium chairman Michael G. Jenkins, University of Washington, Dept. of Mechanical Engineering, MS FU-10, Seattle, WA 98195, (206) 685-7061, FAX: (206) 685-8047, e-mail: jenkinsm@u.washington.edu; cochairmen Stephen T. Gonczy, Allied Signal Research, Box 5016, Des Plaines, IL 60017, (708) 391-3320, FAX: (708) 391-3356, e-mail: goncy@research.allied.com; Edgar Lara-Curzio, Martin Marietta Energy Systems, Oak Ridge National Laboratory, PO Box 2008, MS 6064, Oak Ridge, TN 37831-6064, (615) 574-1749, e-mail: laracurzioe@-mal160.ms.ornl.gov; Noel Ashbaugh, University of Dayton, Research Institute, 300 College Park, Dayton, OH 45469-0128, (513) 255-1364, e-mail: ashbaune@ml.wpafb.af.mil; Larry Zawada, WRDC/MLLN, Materials Behavior Branch, Metals and Ceramics Division, Wright Patterson AFB, OH 45433-6532, (513) 255-1352, FAX: (513) 255-9792, e-mail: zawadalp@ml.wpafb.af.mil.

ASTM to Sponsor Symposium on Exterior Insulation and Finish Systems (EIFS): Materials, Properties, and Performance

ASTM will be sponsoring a symposium on Exterior Insulation and Finish Systems (EIFS): Materials, Properties, and Performance on 11–12 March, 1995 at the Marriott City Center in Denver, CO. The symposium is sponsored by Committee E-6 on Performance of Buildings. The program for the symposium follows.

SATURDAY, MARCH 11, 1995

SESSION 1: PERFORMANCE OF EIF SYSTEMS

1.45 p.m.
Opening Remarks—P. E. Nelson and R. E. Kroll, Symposium Cochairmen

2:00 p.m.
Long-Term Durability of Components of EIFS Systems (PB)—R. J. Kenney and R. S. Piper, R. J. Kenney Associates, Inc., Plainville, Massachusetts, USA

2:30 p.m.
EIFS: When It Works, When It Does Not—G. L. Zwayer; Wiss, Janney, Elstner Associates, Inc., Northbrook, Illinois USA

3:00 p.m. BREAK

3:30 p.m.
Performance of Class PB Exterior Insulation and Finish Systems by Various Test Standards—M. J. Bruner, Sto Corp., Atlanta, Georgia, USA

4:00 p.m.
Fire Performance of EIFS of Different Thicknesses—B. L. Schafer and N. McArthur, CSIRO DBCE, Highett, Victoria, Australia

4:30 p.m.
Performances Of the External Insulation In Buildings Over Time: The Italian Experience—I. Meroni, W. Esposti, and L. Caroli, ICITE-CNR, San Giuliano Milan, Italy

5:00 p.m.
Use of Exterior Insulation and Finish Systems On U.S. Army Facilities—R. Lampo and J. Trovillion, U.S. Army Construction Engineering Research Laboratory, Champaign, Illinois, USA

5:30 p.m. SYMPOSIUM ADJOURNS FOR THE DAY

SUNDAY, MARCH 12, 1995

SESSION II: EVALUATION OF SURFACE COATING

10:00 a.m.
The Effect of 10 Years Exterior Exposure on the Dirt Pick-up Resistance and Durability of textured Acrylic Finishes Used in

EIFS—M. J. O'Brien, Rohm and Haas Company, Spring House, Pennsylvania, USA

10:30 a.m.
Predicting Exterior Crack-Bridging Performance of Textured Elastomeric Topcoats—V. A. Demarest, Rohm and Haas Company, Spring House, Pennsylvania, USA

11:00 a.m.
Long-Term Performance of Silicone Coatings in Exterior Insulation and Finish Systems—A. Ortiz, Sto Corp., Atlanta, Georgia, USA

SESSION III: TESTING OF EIFS

11:30 a.m.
Comparison of EIFS Lamina Water Transmission Test Methods—R. J. Kudder and K. M. Lies, Raths, Raths & Johnson, Inc., Willowbrook, Illinois, USA

12:00 noon LUNCH (on your own)

1:15 p.m.
The Effect of Accelerated Weathering On Glass Fiber Mesh in EIFS of Varying Base Coat Thicknesses—M. F. Williams and B. L. Williams, Williams Building Diagnostics Inc., Maple Glen, Pennsylvania, USA

SESSION IV: EVALUATION OF JOINTS, FLASHINGS, AND RAINSCREEN TECHNOLOGY FOR EIFS

1:45 p.m.
Reduced Tension Sealant Systems - An Evaluation of Double Joints With and Without Vented Cavity—K. Baerveldt, Emseal Corporation, Mississauga, Ontario, Canada

2:15 p.m.
EIFS: Surface Sealed Wall Systems Need Flashings—P. E. Nelson, Symposium Chairman

2:45 p.m. BREAK

3:15 p.m.
Pressure-Equalized Exterior Insulation and Finish Systems—R. Kroll, Dryvit Systems, Inc., West Warwich, Rhode Island, USA

3:45 p.m.
Noncumbustible, Pressure Equalized, Rainscreen Technology to Eliminate Leaking in EIFS—J. Edgar, Sto Industries Canada Inc., Mississauga, Ontario, Canada

4:15 p.m.
EIFA Weather Barrier Performance and Evaluation in Accordance with Modified E331 Method—T. E. Remmele, Sto Corp., Atlanta, Georgia, USA

SESSION V: COSTS

4:45 p.m.
Projected Life Cycle Costs of Exterior Insulation & Finish Systems—W. F. Eagan and J. W. Josephs, Senergy Inc., Cranston, Rhode Island, USA

5:15 p.m.
Closing Remarks—P. Nelson, Symposium Chairman

5:20 p.m. SYMPOSIUM ADJOURNS

5:30 p.m. RECEPTION

Additional Information for Authors

The *Cement, Concrete, and Aggregates* (CCA) journal is a biannual publication sponsored by ASTM technical committees C-1 on Cement and C-9 on Concrete and Concrete Aggregates with support from C-13 on Concrete Pipe and C-27 on Precast Concrete Products. Each published paper and technical note has been peer-reviewed. Papers and technical notes are open to brief written comments in the Discussion section of the Journal, which also includes authors' written responses.

The Technical Editor may consider a paper submitted to the Journal as a Technical Note if: it gives a reasonably brief description of ongoing studies with or without providing interim, tentative data, and conclusions, or both; it reports phenomena observed in the course of research requiring further study; it provides mathematical procedures for facilitating reduction and analysis of data; or it reports promising new materials prior to undertaking extensive research to determine their properties.

The decision as to whether a manuscript is published as a paper or a technical note resides with the Technical Editor.

The guidelines that follow describe our manuscript selection, peer-review, revision, and publication processes. Following these guidelines will ensure expeditious handling of submitted material.

Submission

The name, mailing address, position, affiliation, and telephone and fax number of each author must be supplied in a cover letter. The submitting author is to provide the names, affiliations, addresses, and telephone numbers of five to six individuals who are qualified to review impartially the paper and the research leading to it, and who are not employed at the same institution or company as any of the authors. While these names may or may not be used for the review, we will add them to our pool of potential reviewers. Also, a statement needs to be included that the paper has not been published and is not under consideration for publication elsewhere. All permissions for previously published material used in the paper must be submitted in writing at this time.

The submitting author must also affirm that all those listed as co-authors have agreed (a) to be listed and (b) to submit the manuscript to ASTM for publication.

Five copies of the manuscript with clear copies of each figure are required. Original art work and computer disks should accompany the final revision.

Manuscript Instructions*

Word Processing Instructions

The hard-copy text can be produced on any letter-quality printer. Text is to be printed double-spaced with left and right margins of 1 in. (25.4 mm) using left justification. New paragraphs are to be indented five spaces, and end-of-line returns are not to be used.

The *revised* manuscript is to be sent on a $5^1/_4$ in. (133 mm) or $3^1/_2$ in. (89 mm) disk, preferably in WordPerfect for Windows 5.2, with the corresponding hard copies. ASTM can convert from other wordprocessing packages as well.

Abstract and Keywords

An abstract of 100 to 150 words and a list of 5 to 10 keywords that can be used to index the manuscript are required.

Trademarks

Commercialism is to be avoided by using generic terms whenever possible. Trademarks and trade names are to be capitalized if their use is unavoidable.

SI Units

Society policy requires the use of SI units in all publications (including figures and tables). If in.-lb. units must be used to describe materials and present test results, SI equivalents must follow in parentheses. (See ASTM Standard for Metric Practice E380 for further information on SI units.)

Figures

Each figure is to be simple and uncluttered. All illustrations are to be placed together at the end of the manuscript with a separate sheet of figure captions. Consecutive Arabic (not roman) numerals are required. The size of type in illustrations must be large enough to be legible after reduction. All lettering, lines, symbols, and other marks must be drawn in black India ink on white paper. Computer graphics must be produced by a laser printer. Photographs must be high-contrast black and white. SCALE MARKERS MUST BE SHOWN ON ALL PHOTO-MICROGRAPHS AND ALL FIGURES THAT ARE REPRESENTATIONS OF EQUIPMENT OR SPECIMENS.

Tables

All tables are to be placed together at the end of the manuscript, preceding the illustrations. Tables are to be numbered in Arabic and are cited in numerical order in the text. It is better to use several small simple tables than one large, complex table.

References (New Reference Style)

References shall be cited in the text by author's last name and date of publication. References shall be listed together at the end

*For complete manuscript instructions, which include a sample manuscript, call Barbara Stafford, Administrative Assistant, ASTM Journals, 215/299-5424 or fax at 215/299-5511.

of the text in alphabetical order by author's last name. They must contain enough information to allow a reader to consult the cited material with reasonable effort.

Sample References

Anderson, D. E., June 1984, "Surface Impoundment of Soil Liners," *Geotechnical Testing Journal,* Vol. 6, No. 2, pp. 30–41.

Hancox, W. T. and Smith, J. P., 1988, "Progress in the Nuclear Fuel Waste Management Program," *Proceedings,* Second International Conference on Radioactive Waste Management, Winnipeg, Canada, Canadian Nuclear Society, Toronto, pp. 1–9.

Miura, S., Woo, S.-T., and Kirk, R. T., 1990, "A Sample Preparation Method and Its Effect on Static and Cyclic Deformation," *Soils and Foundation,* Vol. 22, No. 1, pp. 61–77.

Taylor, S. W., 1986a, *Fundamentals of Soil Mechanics,* Vol. I, John Wiley and Sons, New York.

Taylor, S. W., 1986b, *Fundamentals of Soil Mechanics,* Vol. II, John Wiley and Sons, New York.

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Each new manuscript is sent to the Technical Editor for consideration. If the Technical Editor finds that the manuscript fits the scope of the journal, will be of interest to the readership, and is well written, the paper is processed for peer review.

Three or more reviewers, selected by the Technical Editor, review each paper for technical content, originality, logical conclusions, sound data, reproducibility of results, and clarity of presentation; two or more reviewers provide reviews of each technical note. Their comments are compiled and evaluated. The reviewers' anonymous comments and any other comments from the Technical Editor or his designee are then returned to the author for revision.

The author must submit five copies of the revised manuscript with an annotated (highlighted) version of the paper indicating clearly where each revision has been made and identifying the reviewer's comment to which the author is responding. Changes in the text including all MANDATORY reviewers' comments must be addressed explicitly on the "authors' response form" provided during revision, as well as any explanation why a change was not made.

The Technical Editor will evaluate all revised manuscripts and make the final decision regarding publication in the Journal. The Editor may: (1) accept the revised manuscript for publication, (2) require further revision or explanation, or (3) reject the revised manuscript. A revised manuscript may be sent for re-evaluation to a reviewer who has found major flaws in the original manuscript.

Awards

Paper are eligible for the following ASTM awards: the Charles B. Dudley Medal (for outstanding papers published by ASTM), the Richard L. Templin Award (for outstanding papers on new and useful testing procedures and apparatus), the Sanford E. Thompson Award (for papers on concrete and concrete aggregates), and the P. H. Bates memorial Award (for papers on hydraulic cement).

Editorial Review by ASTM

Each accepted paper is edited by the ASTM staff for style, organization, and proper English usage. The edited manuscript is returned to the author before typesetting. The typeset page proof is also sent to the author and the Technical Editor for final review prior to printing.

If ASTM does not hear from the author by the time designated for return of the edited paper and page proof, or both, ASTM will proceed with the publication process.

Book Reviews

ASTM receives books from other publishers requesting book reviews. The books are available to potential reviewers in exchange for publishable reviews. Book reviews are screened and edited by the Technical Editor and staff without peer review.

Testing Forum and Announcements

Anyone having interesting test tips or announcements should submit a brief description to the Testing Forum. Such contributions are screened and edited by the Technical Editor and staff without peer review.

Dr. R. Doug Hooton
Technical Editor

Cement, Concrete, and Aggregates
Table of Contents
Volume 16, 1994

No. 1, June

No. 2, December

ERRATUM

In the December 1994 issue of *Cement, Concrete, and Aggregates* (Vol. 16, No. 2), the following corrections should be applied. All corrected information, with the exception of the table, appears in **bold**.

- Page 101, column 2, second line from bottom should read:

  "The instrument was set to the 834 K Ω fixed resistor and the resistance of the 2 M Ω variable resistor was increased after each polarization."

- Page 116, Table 1 — The data in columns 2, 3, 5, 6, and 7, lines 7 and 8 show corrections.

TABLE 1—*Compositions without silica fume.*

	W/C	Cement kg/m³	Coarse Aggregate, kg/m³	Fine Aggregate, kg/m³	Superplasticizer, L/m³	Slump, mm
1	0.30	430	1100	798	12	200
2	0.31	480	1100	720	10	180
3	0.25	520	1100	710	25	210
4	0.25	570	1100	630	19	200
5	0.28	435	1100	810	18	190
6	0.28	560	1100	620	13	190
7	0.34	400	1100	800	12	190
8	0.22	640	1100	570	35	200
9, 10, 11, 12	0.28	500	1100	720	13	200

- Page 118, column 1, bottom of first paragraph should read:

  "If the superplasticizer was only active as a dispersing agent, its dosage should decrease from the right to the left as the cement dosage **decreases**."

- Page 123, column 1, first line of text should read:

  "• it is not economical to make non-silica-fume concrete having a *W-B* ratio lower than **0.26**."

- Page 136, Table 5, column 3, line 1 of data should read "**62**."

- Page 159, column 1, third paragraph in Abstract should read:

  "However, when plastic molds were used, there were significant differences in *cv* as cylinder size varied. The average *cv* for P75 cylinders was 4.9%, while it was 3.2% for P150 cylinders; the increase is highly significant. On the other hand, P100 cylinders gave a *cv* of 3.6%, which is not significantly different than that for P150 cylinders."

- Page 171, column 2, last paragraph should now read:

  "This is attributable to the harder burning mix that requires more fuel and thus introduces more coal ash to the clinker. These observations also confirm that a major source of the problem is excessive variation of kiln-feed composition that causes an unstable day-to-day operation and longer-term average differences in burning conditions, all of which caused clinker with variable properties."

- Page 189, Testing Forum — "Conference on Advances in Cement and Concrete"

  This section was reviewed and written by **Bryant Mather**, Director, Structures Laboratory, Department of the Army, Waterways Experiment Station, Corps of Engineers, Vicksburg, MS.