AMERICAN CONCRETE INSTITUTE

1978 FALL CONVENTION

HYATT REGENCY HOUSTON, TEXAS

October 29 - November 3, 1978
# PROGRAM
## FALL CONVENTION

October 29 — November 3, 1978
Houston, Texas

Registration fees cover attendance at all ACI technical and educational committee meetings, general session, and symposia. They do not cover the Formwork Safety Forum on Tuesday nor the Concrete Mixer on Wednesday for which there are separate charges.

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## SUSTAINING MEMBERS OF THE AMERICAN CONCRETE INSTITUTE

Master Builders
Division of Martin Marietta Corporation
Cleveland, Ohio

Southwestern Portland Cement Company
Los Angeles, California

Portland Cement Association
Skokie, Illinois

Sika Chemical Corporation
Lynhurst, New Jersey

Marquette Company
Nashville, Tennessee

W. R. Grace & Company
Cambridge, Massachusetts
SCHEDULE

SUNDAY, OCTOBER 29
8:30 a.m. - 6:00 p.m.
Administrative committee meetings

MONDAY, OCTOBER 30
8:30 a.m. - 10:00 p.m.
Administrative, technical, and educational committee meetings
1:00 p.m. - 5:00 p.m.
Formwork Safety Forum (Registration fee: $25.00 ACI Members; $30.00 NonMembers)
2:00 p.m. - 5:00 p.m.
Student Activities Seminar (ACI Committee E-801)

TUESDAY, OCTOBER 31
8:30 a.m. - 10:00 p.m.
Administrative, technical, and educational committee meetings
1:00 p.m. - 5:00 p.m.
Symposium: Nonlinear Behavior of Reinforced and Prestressed Concrete Structures (ACI Committee 428) (2nd session)
2:00 p.m. - 5:00 p.m.
Symposium: In-Situ Strength Evaluation of Concrete (ACI Committee 214)
9:00 a.m. - 12:00 noon
Symposium: Mathematical Modeling of Reinforced Concrete Structures (ACI Committee 442)

WEDNESDAY, NOVEMBER 1
9:00 a.m. - 10:30 a.m.
General Session
10:30 a.m. - 12:00 noon
Standards Presentation
1:30 p.m. - 6:00 p.m.
Administrative and technical committee meetings
2:00 p.m. - 5:00 p.m.
Research on Plain and Reinforced Concrete (ACI Committee 115)
2:00 p.m. - 5:00 p.m.
Energy and Resource Conservation
6:15 p.m. - 8:15 p.m.
Concrete Mixer

THURSDAY, NOVEMBER 2
8:30 a.m. - 5:30 p.m.
International Symposium on Foundations for Equipment and Machinery (ACI Committee 351)
8:30 a.m. - 5:30 p.m.
Adrian Pauw Symposium on Designing for Creep and Shrinkage (ACI Committee 209)
8:30 a.m. - 10:00 p.m.
Administrative, technical, and educational committee meetings
9:00 a.m. - 12:00 noon
Design, Construction and Maintenance Problems Relating to Parking Garages
2:00 p.m. - 5:30 p.m.
Symposium: Nonlinear Behavior of Reinforced and Prestressed Concrete Structures (ACI Committee 428) (1st session)

FRIDAY, NOVEMBER 3
7:00 p.m. - 10:00 p.m.
Forum: Concrete Constructability - The ACI Code Versus Field Implementation (ACI Committee 114)
8:30 a.m. - 12:00 noon
Symposium: Nonlinear Behavior of Reinforced and Prestressed Concrete Structures (ACI Committee 428) (2nd session)
8:30 a.m. - 12:30 p.m.
Symposium: In-Situ Strength Evaluation of Concrete (ACI Committee 214)
9:00 a.m. - 12:00 noon
Symposium: Mathematical Modeling of Reinforced Concrete Structures (ACI Committee 442)

ACI FUTURE CONVENTIONS

1979 Annual Convention
March 18-23
Marc Plaza Hotel
Milwaukee, Wisconsin

1979 Fall Convention
October 29-November 2
The Capital Hilton Hotel
Washington, D.C.

1980 Annual Convention
March 2-7
with World of Concrete
Aladdin Hotel
Las Vegas, Nevada

1980 Fall Convention
September 21-26
Condado/La Concha
San Juan, Puerto Rico
SPECIAL EVENTS

Publications Display . . . on the third (Ballroom) level all week. See the latest ACI publications now available. Orders are taken at the Registration Desk which is also on the third level.

Film Presentation . . . Tuesday, 11:00 a.m. in the Arborcetum East, Mr. Claes Bjork of the Stabilator Company of Skansa U.S.A., Inc. will present a short talk and a film entitled "Stabilator Training Program for Shotcrete Crews." This presentation will be incorporated in the meeting of Committee 506, Shotcreting, and visitors are invited to attend.

Education at the Convention . . . Two half-day programs are being presented, one of which requires a separate registration fee. Since enrollment is limited, early registration is advised.

Student Activities Seminar . . . Tuesday, 2:00 p.m. - 5:00 p.m. in the Imperial West. Arranged specifically for the engineering student, this seminar will cover community projects and competitions plus a briefing on ACI's technical activities.

Formwork Safety Forum . . . Tuesday, 1:00 p.m. - 5:00 p.m., in the Imperial East. This forum covers all aspects of formwork safety and all those who are concerned with this area of concrete construction are urged to attend.

Graphics Demonstration . . . Wednesday, 2:00 p.m., in the Cottonwood B room. A 30-minute presentation on the capabilities of computer-aided interactive drafting will be given by representatives of the Auto-Trol Corporation. The presentation will be given at the start of the meeting of Committee 118, Use of Computers. Visitors are invited.

In addition to the above presentation, state-of-the-art demonstrations of computer-aided interactive drafting will be given at the offices of Caudill, Rowlett, Scott, Inc. These demonstrations will be made to groups of 5 or 6 people and will last about 30 minutes. Transportation will be provided. The first group will leave the hotel at 1:00 p.m. on Thursday and additional groups will leave at intervals throughout the afternoon, as needed.

"Concrete Mixer" . . . Wednesday, 6:15 p.m. - 8:15 p.m. This traditional event will be held at La Hacienda de los Morales which is a facility of international repute for its continental cuisine. Buses will leave the hotel at 6:15 p.m. The last bus will leave the Hacienda at 8:15 p.m. Tickets are $2 and you are requested to wear your badge.

PLEASE NOTE: Should you want to stay at the Hacienda for dinner, you must make a reservation and you are advised to make it early.

Special Tours . . . have been planned by the Local Convention Committee. Be sure to check the spouses' program in the back of this booklet for tours of interest to you. There will be at least one and probably several. Don't miss them!
HOUSTON CONVENTION COMMITTEE

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Macleody Engineers & Associates

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Macleody Engineers & Associates
Don Brogna
Master Builders

The officers, staff, and members of ACI would like to thank the Local Committee, the Hostesses, and the Houston Chapter for their part in the 1978 Fall Convention!

CONTRIBUTORS TO THE HOUSTON CHAPTER PROGRAM
(as of September 21, 1978)

K. R. Abel & Son, Inc.
Aggregate Plant Products Company
Associated Testing Laboratories, Inc.
The Austin Company
Howard Barnstone, Architects, Inc.
Basic Constructors, Inc.
W. S. Bellows Construction Corp.
Boehlack & Gardner Equipment Company Inc.
Brown & Root, Inc.
Builders Supply Company of Houston
Burgess Power Equipment
Campbell Ready-Mix, Inc.
Caudill, Rowlett, Scott, Inc.
Centex Cement Corp.
Century Development Corp.
Champion, Inc.
Cle-Tex Materials, Inc.
Colaco Engineers, Inc.
Crane Carrier Company
Dannenbaum Engineering Corp.
Direction One
Earth Materials Engineering & Testing Service, Inc.
Ellisor Engineers, Inc.
Engineering Service & Equipment, Inc.
R. B. Everett & Company
Fish Engineering & Construction, Inc.
Flexicore of Texas, Inc.
Ford Motor Company (Houston District Sales Office)
Fretz Construction Company
Gentry, Haynos & Whaley, Inc.
Gifford-Hill & Company Inc.
Goodale-LeMay, Inc.
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CUTBERTO DIAZ-GOMEZ
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EDWARD L. KAWALA
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EVERETTE OSGOOD
EDWARD D. PFRANG
HERMAN G. PROTZE III
RAYMOND J. SCHUTZ
DANIEL J. SLADEK
VICTOR A. WALTHER, JR.
PAUL ZIA

*American Concrete Institute
P.O. Box 19150
Detroit, Michigan 48219
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**WEDNESDAY**

**NOVEMBER 1**

**9:00 a.m. - 10:30 a.m.**
**10:30 a.m. - 12:00 noon**

**GENERAL SESSION**
**STANDARDS PRESENTATION**

**2:00 p.m. - 4:00 p.m.**

**Convention Committee**

**2:00 p.m. - 4:00 p.m.**

**Ad Hoc Committee on Publications Policy**

**9:00 a.m. - 10:30 a.m.**
**10:30 a.m. - 12:00 noon**

**Imperial Center**

**Arborum West I**
ADRIAN PAUW SYMPOSIUM ON DESIGNING FOR CREEP AND SHRINKAGE (sponsored by Committee 209) (1st session) Imperial Center

Design, Construction and Maintenance Problems Relating to Parking Garages (ad hoc committee) Board of Directors Imperial East

10:30 a.m. - 12:30 p.m.

207 Mass Concrete Magnolia
318 Standard Building Code Arboretum Center
421 Design of Reinforced Concrete Slabs Arboretum East
515 Coatings for Concrete Arboretum West II
547 Refractory Concrete Mesquite
E-703 Concrete Construction Practice Cedar

2:00 p.m. - 4:00 p.m.

207 Mass Concrete Magnolia
114 Research and Development Live Oak
118 Use of Computers Cottonwood B
210 Erosion of Concrete in Hydraulic Structures Ponderosa
216 Fire Resistance and Fire Protection Redbud
221 Aggregates Mimosia
301 Specifications for Structural Concrete Dogwood B
303 Architectural Concrete Imperial West
311 Inspection of Concrete Cottonwood A
318 Standard Building Code Arboretum Center
325 Concrete Pavements Holly
349 Concrete Nuclear Structures Arboretum East
351 Foundations for Equipment and Machinery Magnolia
408 Bond and Development of Reinforcement Dogwood A
547 Refractory Concrete Mesquite
— ACI-ASCE Masonry Committee Arboretum West I

4:00 p.m. - 6:00 p.m.

421 Design of Reinforced Concrete Slabs Arboretum East
547 Refractory Concrete Mesquite
— ACI-ASCE Masonry Committee Arboretum West I

INTERNATIONAL SYMPOSIUM ON FOUNDATIONS FOR EQUIPMENT AND MACHINERY (sponsored by Committee 351) (2nd session) Imperial West

ADRIAN PAUW SYMPOSIUM ON DESIGNING FOR CREEP AND SHRINKAGE (sponsored by Committee 209) (2nd session) Imperial Center SYMPOSIUM ON NONLINEAR BEHAVIOR OF REINFORCED AND Prestressed Concrete Structures (sponsored by Committee 428) (1st session) Imperial East

4:00 p.m. - 6:00 p.m.

207 Mass Concrete Magnolia
515 Coatings for Concrete Arboretum West II
523 Insulating and Cellular Concrete Cottonwood B
546 Repair of Concrete Arboretum East
547 Refractory Concrete Mesquite
549 Ferrocement Redbud
E-801 Student Concrete Projects Cedar

7:00 p.m. - 10:00 p.m.

FORUM: CONCRETE CONSTRUCTABILITY - THE ACI CODE VERSUS FIELD IMPLEMENTATION (sponsored by Committee 114) Imperial West

7:30 p.m. - 9:30 p.m.

428 Inelastic Behavior of Reinforced Concrete Structures Dogwood B
FRIDAY
NOVEMBER 3

8:30 a.m. - 12:00 noon
SYMPOSIUM ON NONLINEAR BEHAVIOR OF REINFORCED CONCRETE AND PRESTRESSED CONCRETE (sponsored by Committee 428) (2nd session) Imperial East

8:30 a.m. - 12:30 p.m.
SYMPOSIUM ON IN-SITU STRENGTH EVALUATION OF CONCRETE (sponsored by Committee 214) Imperial West

9:00 a.m. - 12:00 noon
SYMPOSIUM ON MATHEMATICAL MODELING OF REINFORCED CONCRETE STRUCTURES (sponsored by Committee 442) Imperial Center

TUESDAY, OCTOBER 31
1:00 p.m. - 5:00 p.m.

FORMWORK SAFETY FORUM
sponsored by ACI Committee E-703 in cooperation with ACI Committee 347 Imperial East

NOTE: A separate registration fee is charged for this forum of $25.00 for ACI Members and $30.00 for NonMembers. Since enrollment is limited, early registration is advised.

Moderator: Peter D. Courtis, chairman, ACI Committee 347, and vice-president, Superior Concrete Accessories, San Diego, California

Why Do We Have Formwork Failures?
Learning from experience; a review of leading causes immediately suggests some remedies
INSTRUCTOR: Dov Kaminetzky, principal, Feld, Kaminetzky, and Cohen, New York, New York

Coping with Codes and Standards
Playing the game by the rules. OSHA and ANSI A10.5. Review of new ACI formwork standard, 347-78, also new provisions for formwork in ACI 318-77 Building Code
INSTRUCTOR: M. K. Hurd, consultant, Farmington, Michigan

How to Design Forms for Improved Safety
Who does the design? Who is responsible? What problems can the designer forestall?
INSTRUCTOR: Dov Kaminetzky

Better Construction Practices for Greater Formwork Safety
A seasoned professional tells what to look out for at the job site; how to handle people problems
INSTRUCTOR: Paul H. Sommers, chief engineer, Algernon W. Blair Construction Company, Montgomery, Alabama

Question and Answer Session . . . led by a panel of members of ACI Committee 347, Formwork for Concrete.
H. S. Lew, National Bureau of Standards, Washington, D.C.
Doran S. Platt, Jr., George Hyman Construction Company, Bethesda, Maryland
Roger S. Johnston, K. C. Construction Supply Company, Denver Colorado
Denis L. Kearney, The Ceco Corporation, Chicago, Illinois
The panel will deal with questions and problems submitted in advance of the forum as well as questions from the audience.
**TUESDAY, OCTOBER 31**
2:00 p.m. - 5:00 p.m.

**STUDENT ACTIVITIES SEMINAR**

Sponsored by ACI Committee E-801

Imperial West

This program has been developed by the "Student Concrete Projects" Committee especially for engineering students. There is no fee for this program.

Discussion of the Technical Activities of ACI
Norman L. Scott, president, Consulting Engineers Group, Inc., Glenview, Illinois

Plans to Develop Performance Codes and Specifications for Design and Construction

Community Projects for Students and Professionals
William E. Brewer, member, ACI Educational Activities Committee, and vice-president, engineering, Kuhlman Corporation, Toledo, Ohio

Concrete Canoe Racing Program
Charles F. Scholer, chairman, ACI Committee E-801, Student Concrete Projects, and professor, Department of Civil Engineering, Purdue University, West Lafayette, Indiana

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**WEDNESDAY, NOVEMBER 1**
9:00 a.m. - 10:30 a.m.

*(Starting at 8:40 a.m. a film will be shown introducing you to Houston. Don't miss it!)*

**GENERAL SESSION**

Imperial Center

Session Chairman: William C. Moore, general chairman, 1978 ACI Fall Convention, and vice-president, Southern Inspection Service, Inc., Houston, Texas

Welcome
William C. Moore, session chairman

Keynote Address
C. H. Mullender, Jr., senior vice-president, Transcontinental Gas Pipe Line Corporation, Houston, Texas

Raymond E. Davis Lecture: "But Where Are All the Cowboys . . ."
John E. Breen, J. J. McKetta professor of engineering, Department of Civil Engineering, University of Texas at Austin, Austin, Texas

Proposed Bylaws Revision

Acknowledgement of Chapter Officers

ACI Business*

*The presentation and discussion of Standards will be held in the Imperial East Ballroom beginning at 10:30 a.m.

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**YOU ARE INVITED TO JOIN ACI FOR:**

- Journal subscription as part of dues consideration
- Reduced publication prices
- Discounts on seminars
- Reduced convention registration fees
- Local chapter affiliation
- Committee participation
- Information search service

For information write:

Membership Department
American Concrete Institute
WEDNESDAY, NOVEMBER 1
10:30 a.m. - 12:00 noon

STANDARDS PRESENTATION

Imperial East

Moderator: John L. Goetz, President, ACI, and senior vice-president, Southwestern Portland Cement Company, Los Angeles, California


Clyde N. Baker, Jr., chairman, ACI Committee 336, and president, Soil Testing Services, Inc., Northbrook, Illinois

Proposed Addition to “Code Requirements for Safety Related Concrete Structures (ACI 349-76)” (Appendix B)
Dwaine A. Godfrey, chairman, Working Group on Embedments, ACI Committee 349, and president, Nuclear Structures, Inc., Atlanta, Georgia

Proposed Epoxy Standards:

503.1: “Standard Specification for Bonding Hardened Concrete, Steel, Wood, Brick, and Other Materials to Hardened Concrete with a Multi-Component Epoxy Adhesive”

503.2: “Standard Specification for Bonding Plastic Concrete to Hardened Concrete with a Multi-Component Epoxy Adhesive”

503.3: “Standard Specification for Producing a Skid-Resistant Surface on Concrete by the Use of a Multi-Component Epoxy System”

503.4: “Standard Specification for Repairing Concrete with Epoxy Mortars”
R. W. Gaul, chairman, ACI Committee 503, and president and general manager, Adhesive Engineering Company, San Carlos, California

Proposed ACI Standard: “Building Code Requirements for Concrete Masonry Structures”
Richard M. Gensert, chairman, ACI Committee 531, and president, Gensert, Peller, Mansini Associates, Cleveland, Ohio

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WEDNESDAY, NOVEMBER 1
2:00 p.m. - 5:00 p.m.

ENERGY AND RESOURCE CONSERVATION

Imperial Center

Sponsored by the ad hoc committee on Energy and Resource Conservation

Session Chairman: Anthony E. Fiorato, chairman, ad hoc committee on Energy and Resource Conservation, and manager, Construction Methods Section, Research and Development Division, Portland Cement Association, Skokie, Illinois

Energy Considerations in Cement and Concrete

Thermal Inertia in Architectural Walls
Francisco N. Arumi, associate professor, School of Architecture, University of Texas at Austin, Austin, Texas

Optimum Thermal Requirements for Buildings
Stanley E. Goodwin, senior engineer; and Mario J. Catani, director, Building Construction Department, Portland Cement Association, Skokie, Illinois

The Use of Concrete in Underground Energy Storage Facilities
David C. Willett, vice-president, Acros American, Inc., Buffalo, New York

Energy Conservation with Concrete
William M. Avery, publisher, Concrete Construction Publications, Inc., Addison, Illinois

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NEW UPDATED PUBLICATIONS CATALOG

Write: Publications Catalog
American Concrete Institute
P.O. Box 19150
Detroit, Mich. 48219
WEDNESDAY, NOVEMBER 1
2:00 p.m. - 5:00 p.m.

RESEARCH ON PLAIN AND REINFORCED CONCRETE

(Brief and confidential reports)

sponsored by ACI Committee 115

Imperial East

Session Chairman: Boris Bresler, chairman, ACI Committee 115, and senior consultant, Wiss, Janney, Elstner & Associates, Inc., Emeryville, California

Secretary: Charles F. Scholer, secretary, ACI Committee 115, and professor, Department of Civil Engineering, Purdue University, West Lafayette, Indiana

Behavior and Analysis of Reinforced Concrete Box Girder Bridges
Mohamed I. Soliman, graduate student, M. Saeed Mirza, professor, and Gareth R. Thomas, associate professor, McGill University, Montreal, Quebec, Canada

Workability and Strength of Normal and Retempered Superplasticized Concretes
V. Ramakrishnan and W. V. Coyle, professors, Civil Engineering Department, South Dakota School of Mines & Technology, Rapid City, South Dakota

Shear Behavior of Composite Prestressed Concrete Girders
V. Kalyanaraman, professor, Department of Civil Engineering, University of Kentucky, Lexington, Kentucky

Research-In-Progress Report "Abrasion Studies of Concrete"
Tony C. Liu and James E. McDonald, U.S. Engineers Waterways Experiment Station, Vicksburg, Mississippi

Shear Behavior of Reinforced Concrete Beams with Low Values of Reinforcement
David Darwin, professor, and Michael Palaskas, University of Kansas, Lawrence, Kansas

Identification of Admixtures in Hardened Concrete Using High Pressure Liquid Chromatography
Larry Muszynski, graduate student, School of Civil Engineering, Purdue University, West Lafayette, Indiana

Structural (Cross Section) Analysis of Concrete Via Photon Tomography
Ira Lon Morgan, University of Texas, Austin, Texas

Deformational Behavior of Plain Concrete Subjected to Biaxial-Cyclical Loading
L. A. Traina, professor and A. A. Jaragh, graduate student, New Mexico State University, Las Cruces, New Mexico

Time-Dependent Behavior of Segmental Cantilever Concrete Bridges

Seismic Behavior of Reinforced Concrete Frames Design By Different Methods
Stephen Mahin, assistant professor, University of California, Berkeley, California; and Pulin Shah, engineer, EDS Nuclear, San Francisco, California

Schedule of ACI Seminars

November 30 - December 1
Hot and Cold Weather Concreting
co-sponsor: Missouri Chapter, ACI
Hilton Airport Plaza Inn
Kansas City, Missouri

December 7 - 8
Safety and Economy of Concrete Structures
6th Annual International ACI-IMCQC Seminar
Monterrey, Mexico
THURSDAY, NOVEMBER 2
8:30 a.m. - 12:00 noon

INTERNATIONAL SYMPOSIUM ON FOUNDATIONS FOR EQUIPMENT AND MACHINERY
sponsored by ACI Committee 351

Session Chairman: Tarun R. Naik, assistant professor of structural engineering, Department of Civil Engineering, University of Wisconsin—Milwaukee, Milwaukee, Wisconsin

Session I

Introduction
C. Raymond Hays, chairman, Committee 351, and manager of quality assurance, The Rust Engineering Company, Birmingham, Alabama

Keynote Address: Foundations For Dynamic Machine Loadings
Frank E. Richart, Jr., W. J. Emmons professor of civil engineering, University of Michigan, Ann Arbor, Michigan

Analysis and Design of Elevated Foundations for Reciprocating Machines
Suresh C. Arya, principal engineering specialist, CE Lummus Combustion Engineering, Inc., Houston, Texas; and George Pincus, professor, Department of Civil Engineering, University of Houston, Houston, Texas

Controlling Automobile Shredder Vibration Through Pneumatic Isolation
Donald E. Baxa, assistant professor, and Robert W. Ebisch, science writer, Department of Engineering and Applied Science, University of Wisconsin Extension, Madison, Wisconsin

Analysis of Fan Foundations for Dynamic Loads
N. C. Chokshi and J. P. Lee, Brown & Root, Inc., Houston, Texas

The Technology of Base Plate Grouting
Gary R. Hall, chief chemist; George W. Read, Jr., vice-president; and Robert L. Trinklein, manager of research and development, Sauerelsen Cements Company, Pittsburgh, Pennsylvania

THURSDAY, NOVEMBER 2
8:30 a.m. - 12:30 p.m.

ADRIAN PAUW SYMPOSIUM ON DESIGNING FOR CREEP AND SHRINKAGE
sponsored by ACI Committee 209


Session I

Introduction
Brij B. Goyal, session chairman

Keynote Address
Max Zar, partner and head, Structural Department, Sargent and Lundy, Chicago, Illinois

Mass Reinforced Concrete Without Construction Joints

Prediction of Creep, Shrinkage and Temperature Effects in Concrete Structures Part I
Domingo J. Carreira, concrete technologist, Project Engineering Division, Sargent and Lundy, Chicago, Illinois

Prediction of Long-Term Movements of In-Situ Reinforced Concrete Columns
R. N. Swamy, reader in civil and structural engineering, Department of Civil and Structural Engineering, University of Sheffield, Sheffield, England; and P. Arumugasaamy, R. Travers Morgan and Partners, Consulting Engineers, London, England

New Model for Practical Prediction of Creep and Shrinkage
Zdenek P. Bazant, professor of civil engineering; and L. Panula, graduate research assistant, Northwestern University, Evanston, Illinois

Concrete Drying Shrinkage - Facts and Fallacies
Paul P. Kraai, manager of quality control, Kaiser Sand and Gravel, Pleasanton, California

A Parameter Study of Factors Affecting Time Dependent Slab Deflections
Andrew Scanlon, structural engineer, Structure Evaluation Section, Portland Cement Association, Skokie, Illinois
THURSDAY, NOVEMBER 2
9:00 a.m. - 12:00 noon

DESIGN, CONSTRUCTION AND MAINTENANCE PROBLEMS RELATING TO PARKING GARAGES

sponsored by the ad hoc committee on Parking Garages

Session Chairman: D. Wade Madeley, principal, Madeley Engineers and Associates, Houston, Texas

Functional Design

Structural Design Including Post-Tensioning of Slabs with Rigid Shear Walls, Stability, Camber, Deflections

Deck Properties, Bonded vs. Unbonded Toppings, Joints and Joint Sealants

Construction Problems and Solutions
Richard L. Tucker, professor, Department of Civil Engineering, University of Texas at Austin, Austin, Texas. To be presented in conjunction with Luther H. Hill Jr., president, Luther Hill & Associates, Inc., Dallas, Texas

Survey of Problems with the Performance of Parking Garages

Principles of Watertight Concrete Construction for Parking Structures
Dave Monroe, technical sales representative and project manager, Harry L. Peterson Company, Inc., Sealant Engineers, Pontiac, Michigan

THURSDAY, NOVEMBER 2
2:00 p.m. - 5:30 p.m.

INTERNATIONAL SYMPOSIUM ON FOUNDATIONS FOR EQUIPMENT AND MACHINERY

sponsored by ACI Committee 351

Session Chairman: C. Raymond Hays, chairman, Committee 351, and manager of quality assurance, Rust Engineering Company, Birmingham, Alabama

Session II
Analysis of Foundations Subjected to Dynamic Loads by the Stiffness Method
Tarun R. Naik, assistant professor of structural engineering, Department of Civil Engineering, University of Wisconsin-Madison, Milwaukee, Wisconsin; and C. K. Wang, professor, Department of Civil and Environmental Engineering, University of Wisconsin-Madison, Madison, Wisconsin

Design Considerations for Dynamically Loaded Equipment Foundations
A. H. Karabinis, engineering specialist; and T. J. Fowler, senior Monsanto fellow, Monsanto Company, St. Louis, Missouri

Damage from Vibrations of Gangsaw Foundations
David Waaler, consulting engineer and research associate; and Bengt B. Broms, professor and head, Department of Soil and Rock Mechanics, Royal Institute of Technology, Stockholm, Sweden

Dynamic Analysis of Turbine-Generator Foundations
F. Aboul-Elia, research assistant, and M. Novak, professor, Faculty of Engineering Science, University of Western Ontario, London, Ontario, Canada

Development of a Spring-Mounted Turbine Support for a Floating Nuclear Plant
Richard S. Orr, chief engineer, Structural Engineering, Offshore Power Systems, Jacksonville, Florida

Foundations for Auto Shredders
Frank E. Richart, Jr., W. J. Emmons professor of civil engineering; and R. D. Woods, professor of civil engineering, University of Michigan, Ann Arbor, Michigan

Design and Performance of Machine Foundations: Typical Case Studies
P. Srinivasulu and N. Lakshmanan, scientists, Structural Engineering Research Center, Madras, India. Presented by Professor R. D. Woods, University of Michigan, Ann Arbor, Michigan
THURSDAY, NOVEMBER 2
2:00 p.m. - 5:30 p.m.

ADRIAN PAUW SYMPOSIUM ON
DESIGNING FOR CREEP AND SHRINKAGE

sponsored by ACI Committee 209

Imperial Center


Prediction II

Prediction of Creep, Shrinkage and Temperature Effects in Concrete Structures Part II
Dan E. Branson, professor of materials engineering, University of Iowa, Iowa City, Iowa

The Calculation of Deflections of Reinforced Concrete Members - A Rational Approach
Heinrich Trost, professor of civil engineering, Aachen University of Technology, Aachen, Germany

Design Aids for Predicting Long-Term Prestress Losses Due to Creep and Shrinkage

Designing for Temperature, Moisture and Creep in Pavements
Bengt F. Friberg, consulting engineer, St. Louis, Missouri

Prediction of Creep, Shrinkage and Temperature Effects in Concrete Structures Part II
Zdenek P. Bazant, professor of civil engineering, Northwestern University, Evanston, Illinois

Design Considerations Dictated by Creep and Shrinkage in Prestressed Concrete Frames
M. S. Khalil, graduate student; W. H. Dilger and A. Ghali, professors of civil engineering, University of Calgary, Calgary, Alberta, Canada

Creep of Concrete for Reactor/Containment Building
Marwan A. Daye, Bechtel Power Corporation, Galtorschburg, Maryland

THURSDAY, NOVEMBER 2
2:00 p.m. - 5:30 p.m.

SYMPOSIUM ON NONLINEAR BEHAVIOR
OF REINFORCED AND PRESTRESSED
CONCRETE STRUCTURES

sponsored by ACI-ASCE Committee 428

Imperial East

Session Chairman: Vitelmo V. Bertore, chairman, ACI Committee 428, and professor of civil engineering, University of California, Berkeley, California

Session I

Introduction and Summary of the State-of-the-Art and the State-of-the-Practice on Nonlinear Behavior of Reinforced Concrete Structures
Vitelmo V. Bertore, session chairman

Constitutive Relations for Concrete: Endochronic and Plastic
Zdenek P. Bazant, professor of civil engineering, Northwestern University, Evanston, Illinois

Effect of Compressive Strength and Confinement on the Ductility of Lightweight Concrete
S. P. Shah, professor of civil engineering, and Antoine E. Naaman, associate professor of materials engineering, University of Illinois at Chicago Circle, Chicago, Illinois; and Jaime Moreno, manager of technical marketing, Concrete Products Division, Materials Service Corporation, Chicago, Illinois

Ductility of Plain and Confined Concrete Under Different Strain Rates
Walter H. Dilger, professor of civil engineering, The University of Calgary, Calgary, Alberta, Canada; Rainer Koch, research scientist, Otto-Graf-Institute, University of Stuttgart, Stuttgart, West Germany; and R. Kowalczyk, research scientist, Department of Structural Mechanics, Polish Academy of Sciences, Warsaw, Poland

The Effect of Bond in Interior Joints on Nonlinear Behavior of Ductile Moment Resisting Reinforced Concrete Frames
Egor P. Popov, professor of civil engineering; and Suthipol Viwathanatepa, graduate student, University of California, Berkeley, California

Geometric and Material Nonlinearities in Reinforced Concrete Sway Frames
Aldo Caucini, assistant professor; and Giorgio Macchi, professor of structural engineering, University of Pavia, Pavia, Italy

Panel Discussion
THURSDAY, NOVEMBER 2  
7:00 p.m. - 10:00 p.m.  

FORUM: CONCRETE CONSTRUCTABILITY  
—ACI CODE VERSUS FIELD  
IMPLEMENTATION  

sponsored by ACI Committee 114  

Imperial West  

The objective of this Forum is to bring contractors, design  
engineers, and others together to consider the problem of properly  
building that has been designed. Actual field implementation frequently involves poor concrete construction practices because of an inability to accomplish that which is detailed and specified.  

Presentations will be made as listed below and then the session will be opened for discussion with the speakers remaining as a panel to respond to questions.  

Constructors, contractors, and engineers as well as engineering and construction students are urged to attend this Forum. There is no registration fee to attend.  

Moderator: James M. Shilstone, director, The Concrete Associates, Inc., Dallas, Texas  

Introduction: Concrete Construction As A System  
James M. Shilstone, session moderator  

ACI Code - Requirements and/or Alternatives for Engineering Judgment  
Noel J. Everard, chairman, Department of Civil Engineering, University of Texas at Arlington, Arlington, Texas  

An Overview of Building Construction Conditions  
Jerry Corbetta, Corbetta Construction Company, Hamden, Connecticut  

Reinforcing Steel Details to Improve Constructability  
Rick Kujawa, Inryco, Inc., Melrose Park, Illinois  

Construction Tolerances  
Eugene H. Boeke, Jr., treasurer, Beers Construction Company, Atlanta, Georgia  

FRIDAY, NOVEMBER 3  
8:30 a.m. - 12:00 noon  

SYMPOSIUM ON NONLINEAR BEHAVIOR OF REINFORCED CONCRETE AND PRESTRESSED CONCRETE STRUCTURES  

sponsored by ACI-ASCE Committee 428  

Imperial East  

Session Chairman: M. Z. Cohn, professor of solid mechanics, University of Waterloo, Waterloo, Ontario, Canada  

Session II  

Behavior and Analysis of Continuous Beams Subjected to Uniform Loads  
M. Saeed Mirza, professor of civil engineering; and Mohamed I. Sollman, graduate student, McGill University, Montreal, Quebec, Canada  

Reinforced Concrete Columns Under Three-Dimensional Loading Histories  
K. Maruyama and H. Ramirez, research assistants; and J. O. Jirsa, professor of civil engineering, Department of Civil Engineering, University of Texas at Austin, Austin, Texas  

Nonlinear Design and Analysis of Reinforced Concrete Frames  
Mauricio A. Gerlein, structural engineer, Stanley D. Lindsey and Associates, Ltd., Nashville, Tennessee; and Fred W. Bauholtz, professor of civil engineering, Vanderbilt University, Nashville, Tennessee  

Nonlinear Analysis of Reinforced Concrete Frames Under Cyclic Loading  
Ouazi A. Hossain, consultant engineer, Nuclear Services Corporation, Campbell, California; and Leonard R. Herrmann, professor of civil engineering, University of California, Davis, California  

Inelastic Frame Behavior During Shaking Table Tests  
Ray W. Clough, professor of civil engineering; and Michael G. Oliva, graduate student, University of California, Berkeley, California  

Double Reinforcement for Seismic Resistance in Reinforced Concrete Frames  
James C. Anderson, assistant professor of civil engineering, University of Southern California, Los Angeles, California  

Analytical/Experimental Modeling of Connections  
William H. Townsend, assistant professor of civil engineering, State University of New York at Buffalo, Buffalo, New York; and James C. Anderson, assistant professor of civil engineering, University of Southern California, Los Angeles, California  

Shear Capacity of T-Beam-Column Connections  
William H. Townsend, assistant professor of civil engineering, State University of New York at Buffalo, Buffalo, New York  

Panel Discussion
FRIDAY, NOVEMBER 3
8:30 a.m. - 12:30 p.m.
SYMPOSIUM ON IN-SITU STRENGTH EVALUATION OF CONCRETE
sponsored by ACI Committee 214

Session Chairman: Richard D. Gaynor, vice-president of engineering and research, National Ready Mixed Concrete Association, Silver Spring, Maryland

Opening Remarks
V. M. Malhotra, chairman, ACI Committee 214, and head, Construction Materials Section, CANMET, Department of Energy, Mines and Resources, Ottawa, Ontario, Canada

Need For In-Situ Testing of Concrete
Robert E. Philp, chief, Structures Branch, Engineering Division, Civil Works, Office, Chief of Engineers, Washington, D.C.

In-Situ Strength Evaluation of Concrete - Case Histories and Laboratory Investigations
Rowland J. Kopf, president, Densicon, Inc., Elmwood, Connecticut; Claudia G. Cooper, director of inspection, Division of Inspection Services, County of Fairfax, Fairfax, Virginia; and Freeman Williams, executive vice-president, Ambrick Testing Laboratory, Alexandria, Virginia

In-Situ Strength Evaluation of Concrete by the Lek-Test System
Peter Kierkgaard-Hansen, professor of civil engineering, Technical University of Copenhagen, Denmark; and John A. Bickley, vice-president, Trow Group Limited, Rexdale, Ontario, Canada

In-Situ Strength Evaluation of Concrete - The “Break-Off” Method
Randulf I. Johansen, head, Construction and Control, Cement and Concrete Research Institute, The Norwegian Institute of Technology, Trondheim, Norway

Investigations Into the Development of New Pull Out Techniques for In-Situ Strength Determination of Concrete
G. Mailliot; and Andre Bisailion, president, Laboratoire de Beton Ltee, Montreal, Quebec, Canada; Georges G. Carette, materials engineer, Mineral Sciences Laboratories, and V. M. Malhotra, head, Construction Materials Section, CANMET, Department of Energy, Mines and Resources, Ottawa, Ontario, Canada

Concrete Squeals - Tells the Whole Story - Another Look at Non-Destructive Testing
Donald E. Dixon, materials engineer; and Robert S. Jenkins, project engineer, Law Engineering Testing Company, Atlanta, Georgia

Non-Destructive Tests to Predict Long-Term Strength
David A. Anderson, assistant professor, Department of Civil Engineering, The Pennsylvania State University, University Park, Pennsylvania

Determination of In-Situ Concrete Strength by the Maturity Method
Tarun R. Naik, assistant professor of structural engineering, Department of Civil Engineering, University of Wisconsin-Milwaukee, Milwaukee, Wisconsin

Summary of Additional Papers
Reporter: V. Ramakrishnan, professor of civil engineering, South Dakota School of Mines and Technology, Rapid City, South Dakota

In-Situ Strength Evaluation of Concrete
H. N. Tomsett, Cement and Concrete Association, Birmingham, England

A Simple Pull-Out Test to Assess the In-Situ Strength of Concrete
A. J. Chabowski and D. Bryden-Smith, Building Research Establishment, Department of the Environment, England

Comparison of Pull-Out Strength of Concrete with Compressive Strength of Cylinders and Cores, Pulse Velocity and Rebound Number
V. M. Malhotra and G. Carette, CANMET, Department of Energy, Mines and Resources, Ottawa, Ontario, Canada

Use of Combined Ultrasonic and Rebound Hammer Method for Determining Strength of Concrete Structural Members
A. Samarin, principal research engineer and P. Meynink, research engineer, Ready Mixed Concrete Ltd., Sydney, N.S.W., Australia

The Use of Pulse Velocity Techniques to Evaluate Epoxy Grout Repairs

Pulse Velocity - Maturity Concept, Strength Evaluation
V. Ramakrishnan, reporter
FRIDAY, NOVEMBER 3
9:00 a.m. - 12:00 noon

SYMPOSIUM ON MATHEMATICAL
MODELING OF REINFORCED
CONCRETE STRUCTURES

sponsored by ACI Committee 442

Imperial Center

Session Chairman: Ignacio Martin, interim chairman, ACI Committee 442, and partner, Capacete-Martin & Associates, Santurce, Puerto Rico

An Elasto-Plastic Analysis of a Core Subjected to Torsion
J. Schweighofer, professor of civil engineering, University of Toronto; and H. Micrays, senior designer, Parkin Engineers Ltd., Toronto, Ontario, Canada

Effect of Inplane Floor Slab Flexibility on Response of Crosswall Building System
Alan L. Unemori, engineer, Bechtel Corporation; Jose M. Rosset, professor of civil engineering, University of Texas at Austin, Austin, Texas; and James M. Becker, associate professor of civil engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts

Theoretical and Experimental Studies of the Response of Reinforced Concrete Structures to Earthquake Motions
Mete A. Sozen, professor, Department of Civil Engineering, University of Illinois at Urbana-Champaign, Urbana, Illinois

Nonlinear Behavior of Reinforced Concrete Building Structures Especially Under Earthquake Motions
S. Otani, associate professor, Department of Civil Engineering, University of Toronto, Toronto, Ontario, Canada

Analysis of Wide-Flanged Shear Wall Structures
A. Coull, Regius professor of civil engineering, University of Glasgow, Glasgow, Scotland; and S. A. Abu El Magd, research assistant, College of Technology, Paisley, Scotland

Behavior of Unbraced Multi-Paneled Frames Containing Heavily Loaded Columns
J. Stephen Ford, project engineer, Ellisor & Tanner, Inc., Dallas, Texas; and John E. Breen, J. J. McKetta professor of engineering, Department of Civil Engineering, University of Texas at Austin, Austin, Texas

LADIES’ PROGRAM

Hospitality: Sandalwood Suite, Fourth Level
Morning coffee and light refreshments will be provided in the hospitality room starting Monday morning at 9:00 a.m. The suite will be open all day and will act as a meeting and gathering place for attendees.

PROGRAM SCHEDULE

SUNDAY, OCTOBER 29
1:00 p.m. - 5:00 p.m.
Registration

MONDAY, OCTOBER 30
9:00 a.m.
Registration
1:30 p.m. - 5:00 p.m.
Orientation and Tour of Houston
An in-depth view of Houston - Rice University and world-renowned Texas Medical Center where medical history is made daily. Historical beginning of Houston - Sam Houston Park, Civic Center, which includes Jones Hall for the performing arts and the Alley Theatre with two stages within its walls. See the magnificent mansions of millionaires and well-known names in exclusive River Oaks, Hermann Park with its award winning Miller Memorial Theatre and, a sign of Houston thoughtfulness, the Fragrant Gardens — planned especially for the blind. And, of course, the Astrodome! Classed as the Eighth Wonder of the World, this truly unique structure maintains a constant 72° temperature the year round and can be converted within a few hours to accommodate most any type of sports event - from baseball to polo to motorcycle races. Admission to the Astrodome is included. Cost per person: $8.00

TUESDAY, OCTOBER 31
10:00 a.m. - 3:30 p.m.
The Galleria. Lunch at Brennan's
The Galleria Shopping Center - In the Magic Circle - Is the home of over 200 boutique and specialty shops surrounding a year-round ice skating rink. In addition to the outstanding shopping, there are many truly fine restaurants, and of course, the Galleria is also the Houston home of world-famous Neiman Marcus. Galleria II has recently opened adjacent to Galleria I and is a splendid complement to what is already one of the World's most exciting shopping complexes. Luncheon at Brennan's in the gorgeous, garden-like atmosphere that makes Brennan's truly unique. At the end of the day, a glass of wine will be served on the way to the hotel. Cost per person: $16.00.
WEDNESDAY, NOVEMBER 1
9:30 a.m. - 11:00 a.m.
Breakfast and "Rap" Session for the Ladies
A chance for the ladies to find out everything you have ever wanted to know about ACI! This session will be moderated by Past President Richard C. Mielenz and is designed to let you let us know what's on your mind about the Institute and its functions. Come and air your views and questions! Free.

1:30 p.m. - 4:00 p.m.
Special Seminar for today's woman: "Time Management for the Busy Homemaker."

Women at home and women that combine work outside the home with homemaking, have some of the most terrific time problems of all. This program focuses on the problems of balancing the demands of husband and children, outside jobs, and personal desires and goals. It shows women how to stop running in circles; how to define what they want from life - and how to get it!

Your instructor is Donna Niksch Douglass. Mrs. Douglass is the Associate Director of Time Management Center and mother to three children. She received her master's degree from Indiana University in Comparative Education. She has taught at both Georgia State University and North Georgia College. She is the author of "Relaxation Made Easy" and "Study Skills and Time Management for Students." She is currently working on a book for homemakers. There is no fee for this session.

THURSDAY, NOVEMBER 2
10:00 a.m. - 3:30 p.m.
NASA Space Center and Luncheon at Houston Yacht Club
A must for every age visitor to Houston is a visit to the Lyndon B. Johnson Manned Spacecraft Center where you will see Mercury, Gemini and Apollo spaceships, moon rocks, space food and other interesting momentos in the Visitor Orientation Center. An on-your-own walking tour of the facility takes you into the building for space simulation where the astronauts train, and the flight acceleration building where tests are made to train men for space flight stresses. Luncheon at the Houston Yacht Club - a private club situated on the bay waters and the meeting place for yachting enthusiasts of the area. Cost per person: $16.00.