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PRINTED IN U.S.A.
PROGRAM
70th ANNUAL CONVENTION
March 31-April 5, 1974
San Francisco, California

Registration fees cover attendance at all ACI technical and educational committee meetings, general session, and symposia.

contents

<table>
<thead>
<tr>
<th>feature</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>breakfast for new committee chairmen</td>
<td>6</td>
</tr>
<tr>
<td>breakfasts for program participants</td>
<td>6</td>
</tr>
<tr>
<td>schedule</td>
<td>3</td>
</tr>
<tr>
<td>special events</td>
<td>6</td>
</tr>
<tr>
<td>committee index</td>
<td>7</td>
</tr>
<tr>
<td>committee meetings</td>
<td>10</td>
</tr>
<tr>
<td>floor plan of meeting rooms</td>
<td>37</td>
</tr>
<tr>
<td>general session</td>
<td>21</td>
</tr>
<tr>
<td>symposium on reinforced concrete structures in seismic zones (first session)</td>
<td>22</td>
</tr>
<tr>
<td>symposium on concrete bridge decks (first session)</td>
<td>23</td>
</tr>
<tr>
<td>symposium on reinforced concrete structures in seismic zones (second session)</td>
<td>24</td>
</tr>
<tr>
<td>symposium on concrete bridge decks (concluding session)</td>
<td>25</td>
</tr>
<tr>
<td>symposium on reinforced concrete structures in seismic zones (concluding session)</td>
<td>26</td>
</tr>
<tr>
<td>symposium on concrete pavement design and construction</td>
<td>27</td>
</tr>
<tr>
<td>research on plain and reinforced concrete</td>
<td>29</td>
</tr>
<tr>
<td>symposium on deflections of concrete structures</td>
<td>28</td>
</tr>
<tr>
<td>symposium on industrialized concrete construction</td>
<td>31</td>
</tr>
<tr>
<td>awards luncheon</td>
<td>33</td>
</tr>
<tr>
<td>exhibits guide</td>
<td>32</td>
</tr>
<tr>
<td>ladies program in brief</td>
<td>34</td>
</tr>
<tr>
<td>future aci conventions</td>
<td>32</td>
</tr>
<tr>
<td>aci san francisco convention committee</td>
<td>35</td>
</tr>
</tbody>
</table>

schedule
HONOLULU, HAWAII

SUNDAY, MARCH 24
All day
Arrival in Honolulu

MONDAY, MARCH 25
Morning
City Punchbowl Tour
Evening
Aikane Sunset Sail (Sip-Sup & Sail)

TUESDAY, MARCH 26
All day
Unscheduled activities

WEDNESDAY, MARCH 27
All day
Unscheduled activities

THURSDAY, MARCH 28
9:00 a.m. - 11:30 a.m.
Symposium on Concrete in Hawaii
(ACI and Cement and Concrete Products Industry of Hawaii [CCPIH])
12:45 p.m. - 5:00 p.m.
Tour of Concrete in Hawaii

FRIDAY, MARCH 29
9:00 a.m. - 12:30 p.m.
Symposium on Offshore Concrete Structures (ACI Committee 357 and CCPIH) (first session)
1:30 p.m. - 5:30 p.m.
Symposium on Offshore Concrete Structures (concluding session)

SATURDAY, MARCH 30
All day
Depart for San Francisco

SAN FRANCISCO, CALIFORNIA

SUNDAY, MARCH 31
10:00 a.m. - 8:00 p.m.
Administrative and technical committee meetings

MONDAY, APRIL 1
8:00 a.m. - 10:00 p.m.
Administrative, technical, and educational committee meetings
2:00 p.m. - 6:00 p.m.
Earthquake Laboratory Tour

TUESDAY, APRIL 2
8:00 a.m. - 8:30 p.m.
Administrative, technical, and educational committee meetings
10:30 a.m. - 5:30 p.m.
special events

HAWAII SEGMENT

City Punchbowl Tour . . . Monday, March 25, morning. Meet buses in front of hotel.

Aikane Sunset Sail . . . Monday, March 25, evening. Sip, sup, and sail.

SAN FRANCISCO SEGMENT

Concrete Canoe . . . on display all week in the Gold Ballroom. Now is your chance to see one of the entries in the 1973 Concrete Canoe races.

Publications Display . . . in the Gold Ballroom all week. See the latest ACI publications now available. Orders are taken at the Registration Desk, also in the Gold Ballroom.

Photo Display . . . all week in the Gold Ballroom.

Earthquake Laboratory Tour . . . Monday, April 1, 2:00 - 6:00 p.m. A unique opportunity to see the research being undertaken on construction in seismic zones.

Using the Strength Design Handbook . . . Preview ACI's instructional cassette/workbook program on ACI's SP-17 (73). The program is meant for individual or group training in the use of the handbook as a time and money saving design aid. Monday, April 1, 2:00 - 3:30 p.m., and Thursday, April 4, 4:00 - 6:00 p.m., in Parlor C.

Hospitality Suite . . . for Exhibitors only. Monday, April 1, 6:00 - 7:30 p.m.

Napa Valley—Wine Country Tour . . . Tuesday, April 2, 10:30 a.m. - 5:30 p.m. A chance to join spouses to see the famous Napa Valley wineries. Tour includes the Robert Mondavi Winery in Oakville, the Beringer Brothers Winery in St. Helena, and time for shopping at Vintage 1870, an art center in Yountville. Lunch will be catered at the Mondavi Winery by Andre Mercier of the Mirabeau Restaurant in Oakland.

Educational-Technical Exhibits . . . Tuesday through Thursday in the Gold Ballroom. See the latest tools and services available to the concrete industry.
PCA Alumni Association Meeting... Tuesday, April 2, 5:00 - 7:00 p.m. in Room D.

The Delmar L. Bloom Distinguished Service Awards will be given out at the General Session, Wednesday, April 3, in the Grand Ballroom. Come and see your fellow committee members receive the awards they have earned through years of volunteer committee work.

"Concrete Mixer" social hour. Wednesday, April 3, 6:30 - 8:00 p.m. in the Grand Ballroom.

Awards Luncheon and New Officer Installation... Thursday, 12:15 p.m., in the Ralston Room. Good food and drink and multimedia presentations combined into a new format. Get your ticket early!

San Francisco Bay Cruise... Friday, April 5, 10:00 a.m. - 2:00 p.m. Cruise with your spouse in a chartered vessel and view Alcatraz Island, the Golden Gate Bridge, Angel Island, Treasure Island, and the San Francisco-Oakland Bay Bridge. There will be a Snack Bar on the boat and a chartered bus will take you from the Sheraton Palace to Fisherman's Wharf and return.

Breakfasts (by invitation only):
Tuesday, April 2, 7:00 a.m.
Breakfast for newly appointed chairmen of technical committees. French Parlor.

Wednesday, April 3, 7:00 a.m.
Breakfast for program participants in the General Session, Symposium on Concrete Bridge Decks (first session) and Symposium on Reinforced Concrete Structures in Seismic Zones (first session). French Parlor.

Thursday, April 4, 7:00 a.m.
Breakfast for program participants in the Symposium on Reinforced Concrete Structures in Seismic Zones (second and third sessions), Symposium on Concrete Bridge Decks (second session), and Symposium on Concrete Pavement Design and Construction. French Parlor.

Friday, April 5, 7:00 a.m.
Breakfast for program participants in the session on Research in Plain and Reinforced Concrete, Symposium on Deflections of Concrete Structures, and Symposium on Industrialized Concrete Construction. French Parlor.
<table>
<thead>
<tr>
<th>Number</th>
<th>Committee Short Title</th>
<th>Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>103</td>
<td>Monographs</td>
<td>Thursday</td>
</tr>
<tr>
<td>114</td>
<td>Research and Development</td>
<td>Monday</td>
</tr>
<tr>
<td>116</td>
<td>Nomenclature</td>
<td>Tuesday</td>
</tr>
<tr>
<td>117</td>
<td>Tolerances</td>
<td>Monday</td>
</tr>
<tr>
<td>118</td>
<td>Use of Computers</td>
<td>Tuesday</td>
</tr>
<tr>
<td>120</td>
<td>History of Concrete</td>
<td>Wednesday</td>
</tr>
<tr>
<td>201</td>
<td>Durability of Concrete</td>
<td>Tuesday</td>
</tr>
<tr>
<td>207</td>
<td>Mass Concrete</td>
<td>Tuesday</td>
</tr>
<tr>
<td>209</td>
<td>Creep and Shrinkage in Concrete</td>
<td>Monday</td>
</tr>
<tr>
<td>209-11</td>
<td>Creep and Shrinkage in Concrete</td>
<td>Monday</td>
</tr>
<tr>
<td>211</td>
<td>Proportioning Concrete Mixes</td>
<td>Monday</td>
</tr>
<tr>
<td>211-7</td>
<td>Mix Proportioning of Mass Concrete</td>
<td>Monday</td>
</tr>
<tr>
<td>212</td>
<td>Admixtures</td>
<td>Monday</td>
</tr>
<tr>
<td>213</td>
<td>Lightweight Aggregates and Lightweight Aggregate Concrete</td>
<td>Monday</td>
</tr>
<tr>
<td>214</td>
<td>Evaluation of Tests on Strength of Concrete</td>
<td>Monday</td>
</tr>
<tr>
<td>215</td>
<td>Fatigue of Concrete</td>
<td>Tuesday</td>
</tr>
<tr>
<td>216</td>
<td>Fire Resistance and Fire Protection of Structures</td>
<td>Wednesday</td>
</tr>
<tr>
<td>222</td>
<td>Corrosion of Metals in Concrete</td>
<td>Tuesday</td>
</tr>
<tr>
<td>223</td>
<td>Expansive Cement Concretes</td>
<td>Tuesday</td>
</tr>
<tr>
<td>224</td>
<td>Cracking</td>
<td>Tuesday</td>
</tr>
<tr>
<td>301</td>
<td>Specifications for Structural Concrete</td>
<td>Tuesday</td>
</tr>
<tr>
<td>302</td>
<td>Concrete Floor Finishes</td>
<td>Thursday</td>
</tr>
<tr>
<td>303</td>
<td>Architectural Concrete</td>
<td>Monday</td>
</tr>
<tr>
<td>304</td>
<td>Measuring, Mixing, Transporting, and Placing Concrete</td>
<td>Monday</td>
</tr>
<tr>
<td>305</td>
<td>Hot Weather Concreting</td>
<td>Monday</td>
</tr>
<tr>
<td>306</td>
<td>Cold Weather Concreting</td>
<td>Monday</td>
</tr>
<tr>
<td>307</td>
<td>Reinforced Concrete Chimneys</td>
<td>Tuesday</td>
</tr>
<tr>
<td>308</td>
<td>Curing Concrete</td>
<td>Thursday</td>
</tr>
<tr>
<td>309</td>
<td>Consolidation of Concrete</td>
<td>Tuesday</td>
</tr>
<tr>
<td>311</td>
<td>Inspection of Concrete</td>
<td>Thursday</td>
</tr>
<tr>
<td>313</td>
<td>Concrete Bins and Silos</td>
<td>Monday and Tuesday</td>
</tr>
<tr>
<td>315</td>
<td>Detailing Reinforced Concrete Structures</td>
<td>Monday</td>
</tr>
<tr>
<td>316</td>
<td>Construction of Concrete Pavements and Bases</td>
<td>Monday</td>
</tr>
<tr>
<td>318</td>
<td>Standard Building Code</td>
<td>Wednesday and Thursday</td>
</tr>
<tr>
<td>318-A</td>
<td>General</td>
<td>Monday</td>
</tr>
<tr>
<td>318-B</td>
<td>Concrete Quality Mixing and Placement</td>
<td>Monday</td>
</tr>
<tr>
<td>318-C</td>
<td>Formwork, Embedded Pipes, and Construction Joints</td>
<td>Monday</td>
</tr>
<tr>
<td>318-D</td>
<td>Details and Development of Reinforcement</td>
<td>Tuesday</td>
</tr>
<tr>
<td>318-F</td>
<td>Serviceability</td>
<td>Monday</td>
</tr>
<tr>
<td>318-G</td>
<td>Flexure and Axial Loads</td>
<td>Tuesday</td>
</tr>
<tr>
<td>318-H</td>
<td>Shear and Torsion</td>
<td>Monday</td>
</tr>
<tr>
<td>318-I</td>
<td>Slab Systems</td>
<td>Monday</td>
</tr>
<tr>
<td>318-K</td>
<td>Precast and Composite Concrete</td>
<td>Monday</td>
</tr>
<tr>
<td>318-L</td>
<td>Prestressed Concrete</td>
<td>Monday</td>
</tr>
<tr>
<td>318</td>
<td>Task Group on Code Simplification</td>
<td>Monday</td>
</tr>
<tr>
<td>318</td>
<td>Task Group on Progressive Collapse</td>
<td>Monday</td>
</tr>
<tr>
<td>325</td>
<td>Structural Design of Pavements for Highways and Airports</td>
<td>Tuesday</td>
</tr>
<tr>
<td>332</td>
<td>Residential Concrete Work</td>
<td>Friday</td>
</tr>
<tr>
<td>333</td>
<td>Composite Construction</td>
<td>Friday</td>
</tr>
<tr>
<td>334</td>
<td>Concrete Shell Design and Construction</td>
<td>Monday</td>
</tr>
<tr>
<td>336</td>
<td>Combined Footings and Pier Foundations</td>
<td>Wednesday</td>
</tr>
<tr>
<td>340</td>
<td>Ultimate Strength Design Handbook</td>
<td>Tuesday</td>
</tr>
<tr>
<td>344</td>
<td>Circular Prestressed Concrete Structures</td>
<td>Thursday</td>
</tr>
<tr>
<td>345</td>
<td>Concrete Bridge Decks</td>
<td>Thursday</td>
</tr>
<tr>
<td>347</td>
<td>Formwork for Concrete</td>
<td>Tuesday</td>
</tr>
<tr>
<td>348</td>
<td>Structural Safety</td>
<td>Tuesday</td>
</tr>
<tr>
<td>349</td>
<td>Concrete Nuclear Structures</td>
<td>Wednesday and Thursday</td>
</tr>
<tr>
<td>350</td>
<td>Sanitary Engineering Structures</td>
<td>Tuesday</td>
</tr>
<tr>
<td>351</td>
<td>Foundations for Equipment and Machinery</td>
<td>Monday</td>
</tr>
<tr>
<td>351Sub</td>
<td>Foundations for Equipment and Machinery</td>
<td>Monday</td>
</tr>
<tr>
<td>352</td>
<td>Joints and Connections in Monolithic Concrete Structures</td>
<td>Tuesday</td>
</tr>
<tr>
<td>355</td>
<td>Anchorage to Concrete</td>
<td>Monday</td>
</tr>
<tr>
<td>356</td>
<td>Industrialized Concrete Construction</td>
<td>Thursday</td>
</tr>
<tr>
<td>359</td>
<td>Concrete Components for Nuclear Reactors</td>
<td>Friday</td>
</tr>
<tr>
<td>359</td>
<td>Joint ACI-ASME Working Groups</td>
<td>Thursday</td>
</tr>
<tr>
<td>408</td>
<td>Bond Stress</td>
<td>Tuesday</td>
</tr>
<tr>
<td>423</td>
<td>Prestressed Concrete</td>
<td>Tuesday</td>
</tr>
<tr>
<td>426</td>
<td>Shear and Diagonal Tension</td>
<td>Monday</td>
</tr>
<tr>
<td>428</td>
<td>Limit Design</td>
<td>Tuesday</td>
</tr>
<tr>
<td>435</td>
<td>Deflection of Concrete Building Structures</td>
<td>Wednesday</td>
</tr>
<tr>
<td>437</td>
<td>Strength Evaluation of Existing Concrete Structures</td>
<td>Tuesday</td>
</tr>
<tr>
<td>438</td>
<td>Torsion</td>
<td>Tuesday</td>
</tr>
<tr>
<td>439</td>
<td>High-Strength Reinforcement in Concrete</td>
<td>Tuesday</td>
</tr>
<tr>
<td>441</td>
<td>Reinforced Concrete Columns</td>
<td>Monday</td>
</tr>
<tr>
<td>442</td>
<td>Response of Buildings to Lateral Forces</td>
<td>Monday</td>
</tr>
<tr>
<td>443</td>
<td>Concrete Bridge Design</td>
<td>Monday</td>
</tr>
<tr>
<td>444</td>
<td>Models of Concrete Structures</td>
<td>Tuesday</td>
</tr>
<tr>
<td>503</td>
<td>Adhesives for Concrete</td>
<td>Monday</td>
</tr>
<tr>
<td>504</td>
<td>Joint Sealants</td>
<td>Thursday</td>
</tr>
<tr>
<td>506</td>
<td>Shotcreting</td>
<td>Wednesday</td>
</tr>
<tr>
<td>512</td>
<td>Precast Structural Concrete</td>
<td>Friday</td>
</tr>
<tr>
<td>515</td>
<td>Coatings for Concrete</td>
<td>Monday</td>
</tr>
<tr>
<td>516</td>
<td>High Pressure Steam Curing</td>
<td>Monday</td>
</tr>
<tr>
<td>517</td>
<td>Accelerated Curing of Concrete at Atmospheric Pressure</td>
<td>Tuesday</td>
</tr>
<tr>
<td>523</td>
<td>Insulating and Cellular Concrete</td>
<td>Tuesday</td>
</tr>
<tr>
<td>524</td>
<td>Portland Cement Plastering</td>
<td>Tuesday</td>
</tr>
<tr>
<td>531</td>
<td>Concrete Masonry Structures</td>
<td>Tuesday</td>
</tr>
<tr>
<td>532</td>
<td>Lightweight Concrete Masonry</td>
<td>Thursday</td>
</tr>
<tr>
<td>533</td>
<td>Precast Panels</td>
<td>Thursday</td>
</tr>
<tr>
<td>533</td>
<td>Concrete Piles</td>
<td>Monday</td>
</tr>
<tr>
<td>544</td>
<td>Fiber-Reinforced Concrete</td>
<td>Tuesday</td>
</tr>
<tr>
<td>546</td>
<td>Repair of Concrete</td>
<td>Wednesday</td>
</tr>
<tr>
<td>547</td>
<td>Refractory Concrete</td>
<td>Tuesday</td>
</tr>
<tr>
<td>548</td>
<td>Polymers in Concrete</td>
<td>Wednesday</td>
</tr>
<tr>
<td>E-601</td>
<td>Seminars and Workshops</td>
<td>Monday</td>
</tr>
<tr>
<td>E-701</td>
<td>Enchirida—Materials</td>
<td>Tuesday</td>
</tr>
<tr>
<td>E-702</td>
<td>Enchirida—Structural Design</td>
<td>Wednesday</td>
</tr>
<tr>
<td>E-703</td>
<td>Enchirida—Construction</td>
<td>Wednesday</td>
</tr>
<tr>
<td>E-704</td>
<td>Enchirida—Building Code</td>
<td>Tuesday</td>
</tr>
<tr>
<td>E-801</td>
<td>Student Concrete Projects</td>
<td>Monday</td>
</tr>
<tr>
<td>ANSI Committee A10, Subcommittee 17</td>
<td>Concrete Construction Safety</td>
<td>Monday</td>
</tr>
<tr>
<td>ASCE Tall Building Reinforced Concrete Subcommittee</td>
<td>Monday</td>
<td></td>
</tr>
</tbody>
</table>
**COMMITTEE MEETINGS**

Be sure to check the bulletin board for last minute changes or added meetings.

**COMMITEE Meeting Room**

**SUNDAY, MARCH 31**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00 a.m. - 12:00 noon</td>
<td>Planning Committee</td>
<td>Royal Suite</td>
</tr>
<tr>
<td>1:00 p.m. - 3:00 p.m.</td>
<td>Planning Committee</td>
<td>Royal Suite</td>
</tr>
<tr>
<td>3:00 p.m. - 5:00 p.m.</td>
<td>Subcommittee 7, Mix Proportioning of Mass Concrete</td>
<td>Forty-Niner</td>
</tr>
<tr>
<td>3:30 p.m. - 5:30 p.m.</td>
<td>Subcommittee B, Concrete Quality Mixing and Placement</td>
<td>Parlor D</td>
</tr>
<tr>
<td>6:00 p.m. - 8:00 p.m.</td>
<td>Institute and Industry Advancement Committee</td>
<td>Royal Suite</td>
</tr>
</tbody>
</table>

**MONDAY, APRIL 1**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 a.m. - 10:00 a.m.</td>
<td>Concrete Bins and Silos</td>
<td>California</td>
</tr>
<tr>
<td></td>
<td>Detailing Reinforced Concrete Structures</td>
<td>Royal Suite</td>
</tr>
<tr>
<td></td>
<td>Task Group on Progressive Collapse</td>
<td>Parlor E</td>
</tr>
<tr>
<td></td>
<td>High Pressure Steam Curing</td>
<td>Forty-Niner</td>
</tr>
<tr>
<td>8:30 a.m. - 10:30 a.m.</td>
<td>Educational Activities Committee</td>
<td>English Room</td>
</tr>
<tr>
<td></td>
<td>General Activities Committee</td>
<td>Comstock</td>
</tr>
<tr>
<td></td>
<td>Architectural Concrete</td>
<td>Sierra</td>
</tr>
<tr>
<td></td>
<td>Coatings for Concrete</td>
<td>Parlor D</td>
</tr>
<tr>
<td>9:00 a.m. - 11:00 a.m.</td>
<td>Proportioning Concrete Mixes</td>
<td>Bonanza</td>
</tr>
<tr>
<td></td>
<td>Admixtures</td>
<td>Golden Gate</td>
</tr>
<tr>
<td></td>
<td>Subcommittee F, Serviceability</td>
<td>Parlor C</td>
</tr>
<tr>
<td></td>
<td>Subcommittee K, Precast and Composite Concrete</td>
<td>Parlor G</td>
</tr>
<tr>
<td></td>
<td>Foundations for Equipment and Machinery</td>
<td>Room D</td>
</tr>
<tr>
<td></td>
<td>Concrete Piles</td>
<td>Room C</td>
</tr>
<tr>
<td></td>
<td>Student Concrete Projects</td>
<td>Room B</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>313</td>
<td>Concrete Bins and Silos</td>
<td>California</td>
</tr>
<tr>
<td>516</td>
<td>High Pressure Steam Curing</td>
<td>Forty-Niner</td>
</tr>
</tbody>
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**10:30 a.m. - 12:30 p.m.**

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<thead>
<tr>
<th>Time</th>
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<tr>
<td>11:00 a.m. - 1:00 p.m.</td>
<td>Admixtures</td>
<td>Golden Gate</td>
</tr>
<tr>
<td></td>
<td>Subcommittee F, Serviceability</td>
<td>Parlor C</td>
</tr>
<tr>
<td></td>
<td>Shear and Diagonal Tension</td>
<td>Room A</td>
</tr>
</tbody>
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**12:00 noon - 4:00 p.m.**

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<tr>
<th>Time</th>
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<tbody>
<tr>
<td>1:00 p.m. - 3:00 p.m.</td>
<td>Hot Weather Concreting</td>
<td>Forty-Niner</td>
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<td>Cold Weather Concreting</td>
<td>Royal Suite</td>
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<td></td>
<td>Concrete Bins and Silos</td>
<td>California</td>
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<td></td>
<td>Foundations for Equipment and Machinery</td>
<td>Parlor E</td>
</tr>
</tbody>
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**1:30 p.m. - 3:30 p.m.**

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<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>2:00 p.m. - 4:00 p.m.</td>
<td>Technical Activities Committee</td>
<td>French Parlor</td>
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<tr>
<td></td>
<td>Tolerances</td>
<td>Room C</td>
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<td></td>
<td>Lightweight Aggregates and Lightweight Aggregate Concrete</td>
<td>Room A</td>
</tr>
<tr>
<td></td>
<td>Measuring, Mixing, Transporting, and Placing Concrete</td>
<td>Room B</td>
</tr>
<tr>
<td></td>
<td>Subcommittee I, Slab Systems</td>
<td>Parlor G</td>
</tr>
<tr>
<td></td>
<td>Task Group on Code Simplification</td>
<td>Golden Gate</td>
</tr>
</tbody>
</table>

**2:00 p.m. - 3:30 p.m.**

**2:00 p.m. - 3:30 p.m.**

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<th>Time</th>
<th>Event</th>
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<tr>
<td>3:00 p.m. - 5:00 p.m.</td>
<td>Strength Design Handbook Cassette Program PREVIEW</td>
<td>Parlor C</td>
</tr>
<tr>
<td></td>
<td>Concrete Bins and Silos</td>
<td>California</td>
</tr>
<tr>
<td></td>
<td>Foundations for Equipment and Machinery</td>
<td>Parlor E</td>
</tr>
</tbody>
</table>
3:30 p.m. - 5:30 p.m.
- Educational Activities Committee
  - 303 Architectural Concrete
  - 515 Coatings for Concrete

4:00 p.m. - 6:00 p.m.
- Technical Activities Committee
  - 213 Lightweight Aggregates and Lightweight Aggregate Concrete
  - 441 Reinforced Concrete Columns
  - 443 Concrete Bridge Design
  - ANSI Committee A10, Subcommittee 17, Concrete Construction Safety

4:30 p.m. - 6:30 p.m.
- Chapter Activities Committee
  - 318 Subcommittee A, General

5:00 p.m. - 7:00 p.m.
- Research and Development
  - 114 Anchorage to Concrete
  - E-601 Seminars and Workshops

5:30 p.m. - 7:30 p.m.
- Educational Activities Committee
  - 303 Architectural Concrete
  - 318 Subcommittee C, Formwork, Embedded Pipes, and Construction Joints

6:00 p.m. - 8:00 p.m.
- Board Committee on International Activities
  - Technical Activities Committee
  - 318 Subcommittee H, Shear and Torsion
  - 441 Reinforced Concrete Columns
  - 442 Response of Buildings to Lateral Forces
  - 443 Concrete Bridge Design
  - ANSI Committee A10, Subcommittee 17, Concrete Construction Safety
  - ASCE Tall Building Reinforced Concrete Subcommittee

6:30 p.m. - 8:30 p.m.
- Chapter Activities Committee
  - 318 Subcommittee A, General

8:00 p.m. - 10:00 p.m.
- ASCE Tall Building Reinforced Concrete Subcommittee

TUESDAY, APRIL 2
8:00 a.m. - 10:00 a.m.
- 313 Concrete Bins and Silos
  - 428 Limit Design
  - 438 Torsion
  - 547 Refractory Concrete

8:30 a.m. - 10:30 a.m.
- 223 Expansive Cement Concretes
  - 316 Construction of Concrete Pavements and Bases
  - 318 Subcommittee L, Prestressed Concrete (with Committee 423)
  - 423 Prestressed Concrete (with Subcommittee L of Committee 318)
  - 531 Concrete Masonry Structures

9:00 a.m. - 11:00 a.m.
- 118 Use of Computers
  - 201 Durability of Concrete
  - 309 Consolidation of Concrete
  - 318 Subcommittee D, Details and Development of Reinforcement
  - 347 Formwork for Concrete
  - 408 Bond Stress

9:30 a.m. - 12:00 noon
- Board of Direction

10:00 a.m. - 12:00 noon
- 313 Concrete Bins and Silos
  - 438 Torsion
  - 547 Refractory Concrete
  - E-704 Enchiridia—Building Code

10:30 a.m. - 12:30 p.m.
- 222 Corrosion of Metals in Concrete
  - 223 Expansive Cement Concretes
  - 423 Prestressed Concrete
  - 531 Concrete Masonry Structures

11:00 a.m. - 1:00 p.m.
- 118 Use of Computers
  - 201 Durability of Concrete
  - 309 Consolidation of Concrete
  - 318 Subcommittee D, Details and Development of Reinforcement
  - 325 Structural Design of Pavements for Highways and Airports
  - 347 Formwork for Concrete
  - 408 Bond Stress
1:00 p.m. - 3:00 p.m.
313 Concrete Bins and Silos California
437 Strength Evaluation of Existing Concrete Structures Forty-Niner
547 Refractory Concrete Parlor E
E-701 Enrichidia—Materials Royal Suite

1:30 p.m. - 3:30 p.m.
223 Expansive Cement Concretes Comstock
423 Prestressed Concrete Sierra
531 Concrete Masonry Structures English Room

2:00 p.m. - 4:00 p.m.
118 Use of Computers Room C
207 Mass Concrete Parlor G
214 Evaluation of Tests on Strength of Concrete French Parlor
307 Reinforced Concrete Chimneys Room A
325 Structural Design of Pavements for Highways and Airports Parlor D
340 Ultimate Strength Design Handbook Room B
408 Bond Stress Bonanza
523 Insulating and Cellular Concretes Parlor C

2:00 p.m. - 6:00 p.m.
--- Board of Direction Golden Gate

3:00 p.m. - 5:00 p.m.
313 Concrete Bins and Silos California
318 Subcommittee G, Flexure and Axial Loads Parlor E

3:30 p.m. - 5:30 p.m.
116 Nomenclature Royal Suite
423 Prestressed Concrete Sierra
517 Accelerated Curing of Concrete at Atmospheric Pressure Comstock
531 Concrete Masonry Structures English Room

4:00 p.m. - 6:00 p.m.
118 Use of Computers Room C
224 Cracking Bonanza
307 Reinforced Concrete Chimneys Room A
340 Ultimate Strength Design Handbook Room B
523 Insulating and Cellular Concretes Parlor C

4:30 p.m. - 6:30 p.m.
348 Structural Safety Parlor D
350 Sanitary Engineering Structures Parlor G
352 Joints and Connections in Monolithic Concrete Structures French Parlor

5:00 p.m. - 7:00 p.m.
215 Fatigue of Concrete Forty-Niner
444 Models of Concrete Structures California

5:30 p.m. - 7:30 p.m.
116 Nomenclature Royal Suite
301 Specifications for Structural Concrete Sierra
439 High-Strength Reinforcement in Concrete Parlor E
503 Adhesives for Concrete English Room
517 Accelerated Curing of Concrete at Atmospheric Pressure Comstock

6:00 p.m. - 8:00 p.m.
224 Cracking Bonanza
307 Reinforced Concrete Chimneys Room A
340 Ultimate Strength Design Handbook Room B
544 Fiber-Reinforced Concrete Room C

6:30 p.m. - 8:30 p.m.
348 Structural Safety Parlor D
350 Sanitary Engineering Structures Parlor G
352 Joints and Connections in Monolithic Concrete Structures French Parlor
524 Portland Cement Plastering Parlor C

WEDNESDAY, APRIL 3
9:00 a.m. - 12:00 noon
GENERAL SESSION—See Page Grand Ballroom

1:00 p.m. - 3:00 p.m.
--- Convention Committee Room A
216 Fire Resistance and Fire Protection of Structures Parlor E
336 Combined Footings and Pier Foundations Forty-Niner
359 Sub-Group on Materials, Construction, and Examination Room B
546 Repair of Concrete Royal Suite California
548 Polymers in Concrete

1:30 p.m. - 3:30 p.m.
--- Specifications Review Committee Parlor D
318 Standard Building Code Comstock
506 Shotcreting Sierra
E-703 Enrichidia—Construction English Room

2:00 p.m. - 4:00 p.m.
--- Standards Board Parlor G
120 History of Concrete French Parlor
349 Concrete Nuclear Structures Golden Gate
435 Deflection of Concrete Building Structures Bonanza
E-702 Enrichidia—Structural Design Parlor C
2:00 p.m. - 5:00 p.m.
SYMPOSIUM ON REINFORCED CONCRETE
STRUCTURES IN SEISMIC ZONES (Cosponsored
by Structural Engineers Association of
California and American Concrete Institute)
(first session) See Page Rose Room
SYMPOSIUM ON CONCRETE BRIDGE DECKS
(Sponsored by ACI Committees 345, 443, and
546) (first session) See Page Concert Room

3:00 p.m. - 5:00 p.m.
Convention Committee Room A
216 Fire Resistance and Fire Protection of
Structures Parlor E
359 Sub-Group on Materials, Construction, and
Examination Room B
546 Repair of Concrete Royal Suite

3:30 p.m. - 5:30 p.m.
Specifications Review Committee Parlor D
318 Standard Building Code Comstock
506 Shotcreting Sierra
E-703 Enchiridia Construction English Room

4:00 p.m. - 6:00 p.m.
120 History of Concrete French Parlor
349 Concrete Nuclear Structures Golden Gate
435 Deflection of Concrete Building Structures Bonanza

THURSDAY, APRIL 4

8:00 a.m. - 10:00 a.m.
532 Lightweight Concrete Masonry California

8:30 a.m. - 10:30 a.m.
311 Inspection of Concrete Sierra
318 Standard Building Code Comstock
356 Industrialized Concrete Construction English Room

9:00 a.m. - 11:00 a.m.
103 Monographs French Room
344 Circular Prestressed Concrete Structures Royal Suite
349 Concrete Nuclear Structures Golden Gate
359 Joint ACI-ASME Working Group Forty-Niner
359 Joint ACI-ASME Working Group Parlor E
359 Joint ACI-ASME Working Group Parlor D
359 Joint ACI-ASME Working Group Parlor G
359 Joint ACI-ASME Working Group Room A
359 Joint ACI-ASME Working Group Room B
359 Joint ACI-ASME Working Group Room C
504 Joint Sealants Bonanza

9:00 a.m. - 12:00 noon
SYMPOSIUM ON REINFORCED CONCRETE
STRUCTURES IN SEISMIC ZONES (second
session) See Page Rose Room
SYMPOSIUM ON CONCRETE BRIDGE DECKS
(concluding session) See Page Concert Room

10:00 a.m. - 12:00 noon
TAC Task Group on Transportation California

10:30 a.m. - 12:30 p.m.
311 Inspection of Concrete Sierra
318 Standard Building Code Comstock
356 Industrialized Concrete Construction English Room

11:00 a.m. - 1:00 p.m.
359 Joint ACI-ASME Working Group—See listing
under 9:00 - 11:00 a.m. time.

1:30 p.m. - 3:30 p.m.
318 Standard Building Code Comstock

2:00 p.m. - 4:00 p.m.
359 Joint ACI-ASME Working Group—See listing
under 9:00 - 11:00 a.m. time.

2:30 p.m. - 5:00 p.m.
New Board of Direction Sierra

2:30 p.m. - 5:30 p.m.
SYMPOSIUM ON REINFORCED CONCRETE
STRUCTURES IN SEISMIC ZONES (concluding
session) See Page Rose Room
SYMPOSIUM ON CONCRETE PAVEMENT
DESIGN AND CONSTRUCTION (Sponsored by
ACI Committees 316 and 325)
See Page Concert Room

3:00 p.m. - 5:00 p.m.
209 Creep and Shrinkage in Concrete California

3:30 p.m. - 5:30 p.m.
318 Standard Building Code Comstock
356 Industrialized Concrete Construction English Room
4:00 p.m. - 6:00 p.m.
Strength Design Handbook Cassette Program
Preview
302 Concrete Floor Finishes Parlor C
345 Concrete Bridge Decks Bonanza
359 Joint ACI-ASME Working Group—See listing Golden Gate
under 9:00 - 11:00 a.m. time.
533 Precast Panels French Parlor

5:00 p.m. - 7:00 p.m.
209 Subcommittee II, Creep and Shrinkage in Concrete California
318 Standard Building Code Comstock

5:30 p.m. - 7:30 p.m.
302 Concrete Floor Finishes Bonanza
359 Joint ACI-ASME Working Group—See listing under 9:00 - 11:00 a.m. time.
533 Precast Panels French Parlor

6:00 p.m. - 8:00 p.m.
308 Curing Concrete Golden Gate

7:00 p.m. - 9:00 p.m.
308 Curing Concrete Golden Gate

FRIDAY, APRIL 5

8:30 a.m. - 10:30 a.m.
332 Residential Concrete Work Parlor D
359 Concrete Components for Nuclear Reactors Comstock

9:00 a.m. - 11:00 a.m.
TAC Task Group on Progressive Collapse Golden Gate
333 Composite Construction Parlor G
512 Precast Structural Concrete Parlor C

9:00 a.m. - 12:00 noon
RESEARCH IN PLAIN AND REINFORCED CONCRETE (Sponsored by ACI Committee 115) See Page Ralston Room

SYMPOSIUM ON DEFLECTIONS OF CONCRETE STRUCTURES (Sponsored by ACI Committee 435) See Page Rose Room

SYMPOSIUM ON INDUSTRIALIZED CONCRETE CONSTRUCTION (Sponsored by ACI Committee 356) See Page Concert Room

10:30 a.m. - 12:30 p.m.
359 Concrete Components for Nuclear Reactors Comstock

11:00 a.m. - 1:00 p.m.
TAC Task Group on Progressive Collapse Golden Gate
Friday, March 29
9:00 a.m. - 12:30 p.m.

**OFFSHORE CONCRETE STRUCTURES**

Princess Kaiulani Hotel

Sponsored by ACI Committee 357 and the cement and concrete products industry of Hawaii

**First Session**

**Session Chairman:** Eivind Hognestad, chairman, ACI Committee 357, and director, Engineering Development Department, Portland Cement Association, Skokie, Illinois

**Introduction to the Symposium**

Robert L. Muller, president, Cement and Concrete Products Industry of Hawaii, Honolulu, Hawaii

Robert E. Philleo, president, American Concrete Institute, and chief, Concrete Branch, Office, Chief of Engineers, Washington, D.C.

**Concrete Structures: Key to Development of the Oceans**

Ben C. Gerwick, Jr., professor of civil engineering, University of California at Berkeley, Berkeley, California

**Submerged Concrete Structures on the Ocean Floor**

Harvey H. Heynes, research structural engineer, U.S. Naval Civil Engineering Laboratories, Port Hueneme, California

**A Feasibility Study of Prestressed Concrete Tanker Ships**

Johannes Moe, president, Technical University of Norway, Trondheim, Norway

**Design and Construction of Oceangoing Pretensioned Concrete Barges**

Alfred A. Yee, president, Kalfred B.T. Lum and Vicente S. Galevo, associates, Alfred A. Yee & Associates, Honolulu, Hawaii

1:30 p.m. - 5:30 p.m.

**Second Session**

**Session Chairman:** Robert L. Muller, president, Cement and Concrete Products Industry of Hawaii, Honolulu, Hawaii

**DNV Certification Scheme for Offshore Concrete Structures**

E. M. Q. Røen, general manager, DNV Division for Marine Technology, Det Norske Veritas, Oslo, Norway

**Seismic Resistance of Offshore Concrete Structures**

Masatomo Kokubu, professor, Department of Civil Engineering, and Choshiro Tamura, associate professor, Department of Applied Physics and Applied Mechanics, University of Tokyo, Tokyo, Japan

**Floating Exposition Sites**

John P. Craven, dean of marine programs, University of Hawaii, and marine affairs coordinator, State of Hawaii, Honolulu, Hawaii

**Gravity Concrete Structures in Petroleum Fields**

Eivind Hognestad, director, Engineering Development Department, Portland Cement Association, Skokie, Illinois

**Epilogue**

**Discussion**

__Wednesday, April 3__

9:00 a.m. - 12:00 noon

**GENERAL SESSION**

Grand Ballroom

**Session Chairman:** Everette W. Osgood, chairman, 1974 Annual ACI Convention, and director of technical services, Granite Rock Company, Watsonville, California

**Presidential Address—"... which the days never knew."

Robert E. Philleo, President, ACI, and chief, Concrete Branch, Office, Chief of Engineers, Washington, D.C.

**Presentation of Delmar L. Bloem Distinguished Service Awards**

**Awardees**

**CALVIN C. OLESON**

"For his long service as Chairman of Committee 308 during which time the committee produced, 'Recommended Practice for Curing Concrete (ACI 308-71),’ the Institute’s first standard for curing."

**W. GORDON PLEWES**

"For consistently distinguished activity in ACI committee work, particularly as a member of Committee 318 and the Technical Activities Committee and as Chairman of Committee 437."

**PROGRAM SESSION:**

**Concrete Lining of the California Aqueduct**

Robert F. Adams, staff concrete engineer, California Department of Water Resources, Sacramento, California

**Post-Tensioned Box Girder Bridges in California**

W. J. Jurkovitch, supervising bridge engineer, California Department of Transportation, Sacramento, California

**Historic Concrete Structures in the Bay Area**

Herbert A. Braun, Chapter Historian, Northern California Chapter, ACI, and chief engineer, Prestress Division, Santa Fe Engineering and Construction Company, Petaluma, California

**BUSINESS SESSION:**

**Presentation of Proposed Revisions to "Building Code Requirements for Reinforced Concrete (ACI 318-71)" (second interim revision)**

Wednesday, April 3
2:00 p.m. - 5:00 p.m.

SYMPOSIUM ON REINFORCED CONCRETE STRUCTURES IN SEISMIC ZONES

Rose Room

cosponsored by structural engineers association of California and American Concrete Institute

aci committees involved are: 318, 348, 352, 426, 441, 442, and 443

Session I: Reinforced Concrete Structural Systems for Seismic Zones

Session Chairman: James O. Jirsa, chairman, Symposium Steering Committee, and associate professor, Department of Civil Engineering, University of Texas at Austin, Austin, Texas

Introduction to Symposium
John F. McLaughlin, chairman, American Concrete Institute Technical Activities Committee, and head, School of Civil Engineering, Purdue University, West Lafayette, Indiana

and

H. S. Kellam, president, Structural Engineers Association of Northern California, and partner, Graham & Kellam, Structural Engineers, San Francisco, California

Earthquakes—Problems and Possible Solutions
Roland L. Sharpe, consulting engineer and executive director, Applied Technology Council, San Francisco, California

Seismic Design of Reinforced Concrete Buildings
Robert Englekirk, vice-president, Ruthoff and Englekirk, Consulting and Structural Engineers, Los Angeles, California

The Structural Design and Construction of Structures for Earthquakes in Puerto Rico

Earthquake — Repair — Earthquake
Raul Rios Jimenez, partner, Gallegos, Rios, Casabonne, Uccelli, Icochea, Consulting Engineers, Lima, Peru

Techniques for Retrofitting Existing Bridges to Reduce Susceptibility to Earthquake Damage
R. R. Robinson, research engineer, George Ojdrovich, assistant research engineer, Engineering Mechanics Division, IIT Research Institute, Chicago, Illinois; and James D. Cooper, structural research engineer, Structures and Applied Mechanics, Federal Highway Administration, Washington, D. C.

Session II

Sponsored by ACI Committees 345, 443, 546

Session Chairman: Philip D. Cady, chairman, ACI Committee 345, and professor, Department of Civil Engineering, Pennsylvania State University, University Park, Pennsylvania

The Decade of the Deck
Orrin Riley, associate, Howard, Needles, Tammen and Bergendoff, Fairfield, New Jersey

Preconstruction Planning, Inspection, and Post-Construction Care
Charles Klise, regional construction engineer, Pennsylvania Department of Transportation, Harrisburg, Pennsylvania

Falsework and Formwork, Reinforcement, and Concrete Materials and Properties
Paul Kliger, director, Concrete Materials Research Department, Research and Development Laboratories, Portland Cement Association, Skokie, Illinois

Better Bridge Deck Concrete
W. M. Stingley, assistant engineer of planning and development—research implementation, State Highway Commission of Kansas, Topeka, Kansas

Overlays and Two-Course Bridge Deck Construction
Wallace T. McKeeel, Jr., and S. S. Tyson, highway research engineers, Virginia Highway Research Council, Charlottesville, Virginia

Polymer-Impregnated Precast, Prestressed Concrete Bridge Decks
William C. Cowan, structural research engineer, Polymer Concrete and Structural Section, U. S. Bureau of Reclamation, Denver, Colorado; and Allen G. Thurman, consulting structural engineer, Denver, Colorado
Thursday, April 4
9:00 a.m. - 12:00 noon

SYMPHONY ON REINFORCED CONCRETE STRUCTURES IN SEISMIC ZONES

Rose Room

Session II: Shear Problems in Seismic Zones

Session Chairman: A. C. Scordelis, professor, Department of Civil Engineering, University of California at Berkeley, Berkeley, California

Presentation of ASCE-SEAOC Report on Shear Walls
Paul F. Fratessa, structural engineer, Ruthroff and Englekirk, Consulting Structural Engineers, Oakland, California

The Ductility of Reinforced Concrete Shear Walls for Seismic Areas
Thomas Paulay, senior lecturer in civil engineering, University of Canterbury, Christchurch, New Zealand

Behavior of Low-Rise Shear Walls
Felix Barra, lecturer, University of New South Wales, Kensington, New South Wales, Australia (formerly associate structural engineer, Structural Development Section, Portland Cement Association); W. G. Corley, manager, Structural Development Section, Portland Cement Association, Skokie, Illinois; and J. M. Hanson, director of structural engineering services, Wiss, Janney, Elstner and Associates, Northbrook, Illinois (formerly assistant manager, Structural Development Section, Portland Cement Association)

Multistory Reinforced Concrete Structures Subjected to Simulated Seismic Base Motions
S. Otani, research associate, Department of Civil Engineering, University of Illinois at Urbana-Champaign, Urbana, Illinois

Shear Strength Decay in Reinforced Concrete Columns Subjected to Large Deflection Reversals
James K. Wight, professor, Department of Civil Engineering, University of Michigan, Ann Arbor, Michigan; and Mete A. Sozen, professor of civil engineering, University of Illinois at Urbana-Champaign, Urbana, Illinois

Seismic Shear Transfer Across Cracks in Reinforced Concrete
Peter Gergely, associate professor, Richard N. White, professor, and O. A. Fajardo, research assistant, Department of Structural Engineering, Cornell University, Ithaca, New York; and Jeffrey P. Laible, assistant professor, Worcester Polytechnic Institute, Worcester, Massachusetts

AWARDS LUNCHEON TODAY...
thursday, april 4
2:30 p.m. - 5:30 p.m.

SYMPOSIUM ON REINFORCED CONCRETE STRUCTURES IN SEISMIC ZONES

Rose Room

Session III: Design Problems in Reinforced Concrete Frame Structures

Session Chairman: Loring A. Wyllie, Jr., associate, H. J. Degenkolb and Associates, San Francisco, California

Seismic Behavior of Framed Tubes
James C. Anderson, engineering analyst, Sargent & Lundy, Engineers, Chicago, Illinois; and German Gurfinkel, associate professor of civil engineering, University of Illinois at Urbana-Champaign, Urbana, Illinois

Biaxial Inelastic Frame Seismic Behavior Using Yield Theories
L. G. Selma, assistant professor, and Kenneth B. Morrill, student, Department of Civil Engineering, University of California at Los Angeles, Los Angeles, California

Strength of Beam-Column Joints
S. M. Uzumeri, associate professor of civil engineering, University of Toronto, Toronto, Ontario, Canada

A Steel Fibrous, Ductile Concrete Joint for Seismic-Resistant Structures
Charles H. Henager, senior engineer, Battelle-Northwest, Richland, Washington

Moment-Resisting Reinforced Concrete Subassemblages Under Cyclic Loading
E. P. Popov and V. V. Bertero, professors of civil engineering, University of California, Berkeley, California

Bond Deterioration Under Simulated Seismic Loading
Faisal M. Hassan, design engineer, Bechtel Power Corporation, Los Angeles, California; and Neil M. Hawkins, professor of civil engineering, University of Washington, Seattle, Washington

thursday, april 4
2:30 p.m. - 5:30 p.m.

SYMPOSIUM ON CONCRETE PAVEMENT DESIGN AND CONSTRUCTION

Concert Room

sponsored by aci committees 325 and 316

Session Chairman: W. M. Stingley, chairman, ACI Committee 316, and assistant engineer of planning and development-research implementation, State Highway Commission of Kansas, Topeka, Kansas

Performance of Concrete Pavements Subjected to Wide-Body Jet Aircraft Loadings

Ronald L. Hutchinson, pavement program manager, U. S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi

First Progress Report on the Performance of Experimental Concrete Finishes

William B. Ledbetter, professor of civil engineering, A. H. Meyer, assistant professor of civil engineering, Texas A & M University, College Station, Texas; and J. L. Davis, engineer, E. I. DuPont Company, Corpus Christi, Texas

Greene County Fibrous Concrete Overlay Research Project

M. J. Knutson, manager, Iowa Concrete Paving Association, Des Moines, Iowa

Evaluation of Parameters Significantly Influencing the Performance of Continuously Reinforced Concrete Pavements

Asif Faiz, graduate instructor, and Eldon J. Yoder, professor of highway engineering, Joint Highway Research Project, Purdue University, West Lafayette, Indiana

Airfield Pavement Construction—Slip-Form Paving Method

Frazier Parker, Jr., research civil engineer, Soils and Pavement Laboratory, U. S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi

Concrete Road Design

William C. Balfour, engineer, Genesee County Road Commission, Flint, Michigan
SYMPOSIUM ON DEFLECTIONS OF CONCRETE STRUCTURES

Rose Room

sponsored by aci committee 435

Session Chairman: Gajanam M. Sabnis, chairman, ACI Committee 435, and engineering supervisor, Bechtel Power Corporation, Gaithersburg, Maryland

Time Dependent Deflections of Reinforced and Prestressed Concrete Beams
W. H. Dilger and Amin Ghali, professors, V. Jagannadha Rao, reader in civil engineering, and M. K. Tadros, graduate assistant, Civil Engineering Department, University of Calgary, Calgary, Alberta, Canada; and G. A. Abele, design engineer, Philip Holzmanner AG, Frankfurt, Germany

Deflection Characteristics of Reinforced and Prestressed Beams of High Early Strength Normal and Lightweight Concrete
R. N. Swamy, senior lecturer, and Krishan Lal Anand, research engineer, Department of Civil and Structural Engineering, University of Sheffield, Sheffield, England; and Adnan B. Ibrahim, instructor, Department of Civil Engineering, University of Mosul, Mosul, Iraq

A Comparison of Measured and Calculated Deflections of Flexural Members in Four Reinforced Concrete Buildings
J. L. Heiman, civil engineer, Commonwealth Experimental Building Station, North Hyde, New South Wales, Australia

Simplified Deflection Computations
Russell S. Fling, president, R. S. Fling and Partners, Inc., Columbus, Ohio

Deflections of Model Perforated Reinforced Concrete Slabs
Frederic Roll, professor, Towne School of Civil and Mechanical Engineering, University of Pennsylvania, Philadelphia, Pennsylvania; and Gajanam M. Sabnis, engineering supervisor, Bechtel Power Corporation, Gaithersburg, Maryland

friday, april 5
9:00 a.m. - 12:00 noon

RESEARCH IN PROGRESS ON PLAIN AND REINFORCED CONCRETE

(Right and confidential unpublished reports)

Ralston Room

sponsored by aci committee 115

Session Chairman: Herbert K. Cook, chairman, ACI Committee 115, and vice-president of engineering, Master Builders, Cleveland, Ohio

Behavior of Confined Lightweight Aggregate Concrete
Boris Bresler and V. Bertero, professors, Department of Civil Engineering, University of California, Berkeley, California

The Design of Web Reinforcement for Prestressed Concrete Elevated Guideway Girders
Michael P. Collins, professor, and Basile G. Rabbac, student, Department of Civil Engineering, University of Toronto, Toronto, Ontario, Canada
Time-Dependent Behavior of the World's Tallest Reinforced Concrete Building

Structural Response Investigation of Reinforced Concrete Frame Structures Subjected to High Magnitude Lateral Forces.
S. A. Freeman, associate, and R. E. Scholl, director of research, URS/John A. Blume and Associates, Engineers, San Francisco, California and Las Vegas, Nevada

On the Properties and Behavior of Polymer Impregnated Fibrous Lightweight Concrete Subjected to Thermal Shock
M. Gunasekaran, senior engineer, Ceramics and Glasses, Westinghouse Research Laboratories, Pittsburgh, Pennsylvania

Application of Acoustic Emission Techniques to Non-Destructive Evaluation of Concrete
V. M. Malhotra, materials engineer, Construction Materials Section, Mineral Processing Division, Mines Branch, Department of Energy, Mines and Resources, Ottawa, Ontario, Canada

Inflation Formed Fibrous Concrete Dome Structures
D. J. Naus, materials research engineer, and Ronald Merritt, civil engineer, Department of the Army, Construction Engineering Research Laboratory, Champaign, Illinois; and Gordon B. Batson, professor, Clarkson College of Technology, Potsdam, New York

Effects of Cyclic Loading and Eccentricity on Laterally Reinforced Concrete
S. P. Shah and F. A. Webster, professors, Department of Materials Engineering, University of Illinois at Chicago Circle, Chicago, Illinois

Closed Loop Fiber Reinforcement for Concrete
Michael A. Taylor, assistant professor of civil engineering, University of California at Davis, Davis, California

Dry Cast Concrete
12,000 PSI Concrete
Mrs. W. Ernest Willis II, business development, Dry Cast Concrete, Inc., San Francisco, California

friday, april 5
9:00 a.m. - 12:00 noon

SYMPOSIUM ON INDUSTRIALIZED CONCRETE CONSTRUCTION

sponsored by aci committee 356

Concert Room

Session Chairman: N. F. Sames, secretary, ACI Committee 356, and chief, Structures Section, Building Research Division, National Bureau of Standards, Washington, D.C.

Industrialized Concrete Construction for the U.S. Department of Housing and Urban Development

Abnormal Loading and Building Safety
E. Burnett, associate professor, Department of Civil Engineering, University of Waterloo, Waterloo, Ontario, Canada; N. Sames, chief, and E. V. Leyendecker, structural research engineer, Structures Section, Building Research Division, National Bureau of Standards, Washington, D.C.

Catenary Action in Damaged Concrete Structures

Effects of Vertical Keyed Shear Joints on the Design of Reinforced Concrete Shear Walls
S. Øivind Olesen, director, BKF Centrale (Danish Structural Research and Development Center), Lyngby, Denmark

Internal and Foundation Forces in Multistory Pierced Bearing Walls Under Vertical Load
I. Varga, associate in charge, Weidlinger Associates, Cambridge, Massachusetts; and R. Ratay, assistant professor, City College of New York, New York, New York

An Analysis of Precast Shear Wall Structures Subjected to Seismic Forces
Sepp Firnkaas, president, Sepp Firnkaas Engineering, Inc., Boston, Massachusetts
EXHIBITION
Gold Ballroom

hours:
Tuesday 12:30 p.m. to 5:00 p.m.
Wednesday 10:00 a.m. to 5:00 p.m.
Thursday 10:00 a.m. to 5:00 p.m.

Exhibitors:
Adhesive Engineering Company—Structural concrete bonding process.
Almar Specialty Machines Inc.—See Eirich Machines Inc.
Challenge-Cook Bros., Inc.—Concrete pumps and quick-set shotcrete system.
Crown Zellerbach Corporation—Additive to cement which allows for less water usage.
Eirich Machines, Inc.—Eirich mixers.
Erico Products, Inc.—Mechanical splices for reinforcing bars.
Fox Industries—No-slip reinforcing steel coupling for large diameter bars.
R. A. Hanson Company, Inc.—Continuous concrete plant and canal paving machines.
ITT Phillips Drill Company—Concrete anchors, drills, and accessories.
Master Builders—Polymer-type admixture for improving all types of concrete.
National Ash Association, Inc.—Concrete and concrete products using ash as an admixture and aggregate.
Plard Power Tools, Division of J. R. & S. Company—Torque multipliers (mechanical power equipment).
Protex Industries Inc.—Concrete admixtures, epoxy bonding agents, and other concrete specialty products.
Reed Manufacturing Company Inc.—Guncrute machine.
Sika Chemical Corporation—Concrete adhesives and coatings.
Wang Laboratories, Inc.—Advanced programmable desktop calculators and computer systems.

THURSDAY, APRIL 4, 12:15 p.m.
awards luncheon
Ralston Room

Come meet the awardees and new ACI officers at noon. Have fun, enjoy a good lunch, and watch the multi-media awards presentation show.

program

Honorary Memberships:
Graydon E. Burnett
Samuel Hobbs
Masatane Kokubu
Telemaco vanLangendonck

Henry C. Turner Medal:
Ben C. Gerwick

Alfred E. Lindau Plaque:
Max Zar

Henry L. Kennedy Award:
Emil Schmid

Charles S. Whitney Medal:
Concrete Laboratory
Waterways Experiment Station
U. S. Army Corps of Engineers

Arthur R. Anderson Medal:
George J. Verbeck

Roger H. Corbetta Award:
Charles J. Pankow

Construction Practice Award:
Charles Novacek

Wason Medal for Most Meritorious Paper:
Y. C. Yang

Wason Medal for Materials Research:
Tony C. Y. Liu
Arthur H. Nilson
Floyd O. Slate

Raymond C. Reese Structural Research Award:
K. S. Rajagopalan
Phil M. Ferguson

Recognition of Retiring Officers
Report of Tollers
Introduction of New Officers
New President’s Address
Presentation of Memento to Retiring President

FUTURE ACI CONVENTIONS

1974—October 26 - November 1
Sheraton-Biltmore Hotel
Atlanta, Georgia

1975—April 6 - 11
Sheraton Boston Hotel
Boston, Massachusetts

1975—November 1 - 7
The Bayshore Inn
Vancouver, British Columbia, Canada

1976—March 28 - April 2
Benjamin Franklin Hotel
Philadelphia, Pennsylvania
ladies program
Ladies’ Hospitality Room: Regency Room

MONDAY
9:00 a.m. - 5:00 p.m.
Registration

TUESDAY
9:00 a.m. - 10:30 a.m.
Registration

10:30 a.m. - 5:30 p.m.
Napa Valley—Wine Country Tour
Includes tour of Robert Mondavi Winery with catered lunch; tour of Beringer Bros. Winery; shopping at Vintage 1870, an art center in Yountville.
Both men and women are invited to enjoy this tour.

WEDNESDAY
9:00 a.m. - 10:00 a.m.
Registration

10:00 a.m.
First bus leaves for cable car bus tour to Ghiradelli Square and Fisherman’s Wharf. Includes lunch and one Margarita at Senor Pico’s in Ghiradelli Square.

4:00 p.m.
Last bus leaves Fisherman’s Wharf.

THURSDAY
9:00 a.m. - 12:00 noon
Registration

12:15 p.m.
Awards Luncheon
Both men and women are invited to this luncheon.

FRIDAY
10:00 a.m. - 2:00 p.m.
San Francisco Bay Cruise
Cruise San Francisco Bay in chartered vessel and view Alcatraz Island, Golden Gate Bridge, Angel Island, Treasure Island, and San Francisco-Oakland Bay Bridge. Lunch included.
Both men and women are invited to enjoy this cruise.

Morning coffee and light refreshments will be provided in the Ladies Hospitality room starting Monday morning.

SAN FRANCISCO CONVENTION COMMITTEE

Executive Committee
General Chairman
Everette Osgood
Granite Rock Company

Co-Chairmen
S. D. Burks
W. R. Grace and Company

Milos Polivka
University of California at Berkeley

Secretary-Treasurer
Wilbur E. Moulton
Lone Star Industries

Finance Committee Chairman
Jack Cedarblade
Aggregates and Concrete Association

Tours/Transportation Committee Chairman
Kelly Moffitt
Basalt Rock Company, Inc.

Social Events Committee Chairman
Dave Frankel
Granite Rock Company

Publicity Committee Chairman
Gray Minor
Public Relations-Promotions-Advertising

Membership Committee
Chairman
Shelly Bailey
California Division of Highways

Assistant Chairman
Horace G. Hill
Concrete Chemicals of California, Inc.

Education Committee Chairman
Milos Polivka
University of California at Berkeley

Housing Committee
Chairman
Merlyn Isaak
Testing Engineers, Inc.

Assistant Chairman
Claude Trusay
Calaveras Cement, Division of Flintkote Company

Ladies Activities Committee
Chairman
Bob Nieman
Hales Testing Laboratory

Co-Chairwomen
Mrs. S. D. Burks
Mrs. Robert Nieman

The officers, staff, and members of ACI would like to thank the Local Committee, the Hostesses, and the Chapter for their part in the 1974 Annual Convention.