



Structural Engineers Association of
Southern California

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SEAOSC

Founded in 1928

Vol. 14 May 2004

NEWS

President's Message

**"NOT EVERYTHING THAT CAN BE COUNTED COUNTS,
AND NOT EVERYTHING THAT COUNTS CAN BE COUNTED."**



I do not know to whom this quotation can be originally attributed, but I do know that Albert Einstein thought it important enough to be prominently displayed over his desk. He had reason to understand its significance.

If these words had meaning before the use of electronic calculators and computers became commonplace, it certainly has become even more important to consider now when reams and tons of paper containing calculations are produced in a never ending stream, often by people who do not know what or why they are doing so.

(Continued on Page 3)

PD&D Seminars May 5, 12

The following Practical Design & Detailing (PD&D) Seminar and Dinner Meeting will be held May 5 in Monterey Park and Jan. 12, 2005, for the Tri-Counties Chapter: "Unified Design Approach for Reinforced & Prestressed Concrete" by Atila Beres, Ph.D., P.E., "Assessment of R.C. Vertical Load Carrying Elements on Existing Buildings" by John Wallace, Ph.D. "Application of Pre-Cast Hybrid Frame System on a Four-Story Medical Office Building" by Joe Sanders will be presented after dinner. See blue inset for details.

The following PD&D Seminar and Dinner Meeting will be held May 12 in Santa Barbara: "Volume Changes for Concrete" by George Battey,

(Continued on Page 4)

L.A. Seminar & Dinner Mtg.

Wednesday, May 5

Program: Part 3 of PDD: Pre-Cast Hybrid Frame Systems

Speakers: Joe Sanders

Location: Luminarias Restaurant, Monterey Park

Time: 5 p.m. Social Hour

6 p.m. Dinner

7 p.m. Program

Menu: Chicken

Cost: \$30

(See blue insert for reservation form and details.)

Tri-Counties Seminar & Dinner Mtg.

Wednesday, May 12

Program: Part 3 of PDD: How to Eliminate Joints, Cracking, & Curling Using Shrinkage-Compensating Cement

Speaker: David Flax

Location: Harry's Café, Santa Barbara

Time: Social hour: 5 p.m.

Dinner: 6 p.m.

Program: 7 p.m.

Menu: Chicken

Cost: \$30 (Full-time students \$15)

(See green insert for reservation form and details.)

May & June Calendars

MAY

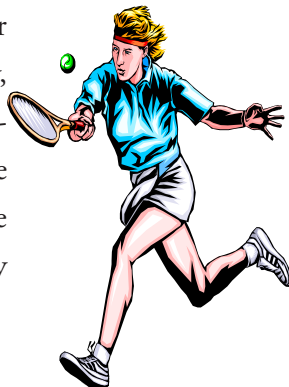
5	Noon	SEAOSC Board Meeting	Luminarias Restaurant, Monterey Park
	3:30 p.m.	L.A. PD&D Seminar	Luminarias Restaurant
	5 p.m.	L.A. Joint Dinner Meeting with ACI	Luminarias Restaurant
11	2 p.m.	Quality Assurance Committee	SEAOSC Offices, Whittier
	4 p.m. E	Existing Buildings Committee	SEAOSC Offices, Whittier
12	3:30 p.m.	Tri-Counties PD&D Seminar	Santa Barbara
	5 p.m.	Tri-Counties Dinner Meeting	Santa Barbara
15	8 a.m.	Macro Seminar	Wyndham Hotel, Commerce
18	1 p.m.	Code Committee Meeting	SEAOSC Offices, Whittier
26		July/August Newsletter Deadline	

JUNE

2	2 p.m.	SEAOSC Board Meeting	Luminarias Restaurant, Monterey Park
	5 p.m.	L. A. Dinner Meeting	Luminarias Restaurant, Monterey Park
19	8 a.m.	Plan Checking, Quality Assurance Seminar	Wyndham Hotel, Commerce

Field Day To Be Held Thursday, Aug. 12

Save Thursday, Aug. 12 for SEAOSC's annual Field Day, which will be held at the California Country Club, a private club in Whittier. There will be golf, softball and tentatively tennis.



If there is adequate interest, tennis may return as a concurrent Field Day event or as a separate event the weekend prior to Field Day. Please contact John Saggiani at (714) 840-2208 or Jeff Crosier at (949) 253-4623 if you are interested in playing tennis.

Bring all your friends as this year's outing promises to be one to remember with an excellent golf course and the usual good company.

President's Message *(Continued From Page 1)*



In structural engineering, we are able to analyze stresses and deflections with amazing accuracy. We now have “performance

based” engineering, where we separate the parts of a structure into components and design to compute their performance in conjunction with each other under the influence of design forces. We input the exact forces from earthquakes, although they may not be the ones that will affect the structure in the future.

We like to think of how “scientific” we have become. No longer do we depend on “seat of the pants” decisions, since we are now able to compute actual stresses and deformations with almost infinite accuracy.

In reality, however, the numbers that we arrive at so precisely are not all that pure, because experience has shown us that the results have to be adjusted by factors such as R , a , m , assumed damping, etc., to make the solution come out close to what experience tells us the answer should be.

If one computes half of the problem to 99.9% accuracy, but fails to deal with the other half, you are still only 50% correct. The answer, then, is to understand what the solution should be like so that we can know where we are going with the calculations and how to deal with what cannot be counted.

I found an example of how to understand the structure that, although written over 70 years ago, still has validity:

“One of the first objects of the analysis of indeterminate structures is to see how the structure deforms. If the analysis fails to give the designer a clear mental picture of the action of the structure under load, it is dangerous to proceed with the design. This is especially true of reinforced concrete structures where bars are often placed on only one side of a section; flexure which produces tension on the other face may cause failure.

“It is possible by training, by simple crude models, and by computation, to develop imagination in visualizing the function of each part of a structure in resisting the load. It is then possible to sketch directly the shape of the deformed structure. If this can be accurately done, the forces, moments and shears can all be computed by statics. This procedure is scientific in principle but, of course, lacks precision. It is always the first thing to be tried in designing a new type of structure, and it is the last thing that should be done in all cases after an analysis has been made, in order to give meaning to the computations. Many times the results obtained from sketching the deformed structure, though somewhat lacking in precision, will be sufficiently accurate to satisfy the needs of the designer.

“What is eruditely called the theory of elasticity deals with the simple fact that, if a structure does not break, it holds together. The word ‘theory’ here is used in the sense of an assembly of systematically arranged facts and not in the sense of scientific hypothesis. Practically all of what constitutes the theory of elasticity – it might better be called the theory of continuity – is

(Continued on Page 4)

Code Seminars Important

Those who missed the SEAOSC seminar on steel frames last Saturday, March 20 missed an excellent chance to keep up with the current thinking on Code changes.

I want to repeat my thanks to Henry Huang, Peter Maranian, Bob Lyons, and all the speakers and members of the Steel Committee, who put in so much time to provide this information.

Many people think that, since we are in a time of uncertainty in the Code adoption process, they will just wait and see what eventually comes out. However, the Code will not be published until 2006 or possibly 2008. Those who wait will find themselves far behind in understanding the requirements. In addition, local jurisdictions must implement and require certain provisions from the various FEMA documents and other stan-

dards, such as the FEMA 350 series, in order to ensure that buildings are made as safe as possible.

Structural engineers must remember that we are responsible for the design of our structures up to the state of the art as to what is known about the forces that they will encounter and how structures are expected to respond to them. In my opinion, not being aware of this is not an excuse for designing something that may cause death and property damage in the future because current knowledge was not employed. One of the best ways to keep up to date is to come to the SEAOSC seminars. Therefore, don't forget to come to our PD&D seminars on May 5th and 12th, and June 2nd and 9th, and look at what we have to offer as far as useful information in our Saturday seminars on May 15th and June 19th. See you all there.

Richard Hess,
President

PD&D Seminars Apr. 7, 14 (Continued From Page 1)

P.E., and John Halverson. The second topic, "How to Eliminate Joints, Cracking & Curling by Using Shrinkage-Compensating Cement" by David Flax will be presented following dinner. (See green insert for details.)

Building Code Update

MAY, 2004

“Building Code Update” is an information bulletin presented by the SEAOSC Building Code Committee.

A number of months ago (late last year actually), I reported that the California Building Standards Commission (BSC) had selected the NFPA 5000 as the model code for California. The commission has 11 members, minus the structural engineering position which was left vacant at the time, who are appointed for four-year terms by the governor. The vote, 8 to 2 in favor of the NFPA code over IBC 2003, was made on July 16 of last year. I noted that the political makeup of the commission was a governing factor in the decision, in spite of testimony against the NFPA and for the IBC by representatives of SEAOC, AIA, CALBO, and others in the construction industry who had worked for years to develop the IBC with public input from all sectors. The selection of the NFPA was made prior to the recall election, in which Californians elected a new governor, and much has transpired since then.

Shortly after being elected governor, Arnold Schwarzenegger issued Executive Order S-2-03, which had two key provisions: it temporarily halted proposed or pending regulations, and it required state agencies to report on the impact of the pending regulations on business in California. This order seems to apply to the decision made by the BSC, although there is some disagreement over this. In any case, the executive order clearly demonstrated the governor’s intent concerning to review past politically-motivated decisions in California.

SEAOC has taken a strong position in favor of the IBC and is actively at work to get the BSC to reconsider and overturn its decision. A coalition was formed consisting of SEAOC, AIACC (American Institute of Architects, California Council), CALBO (California Building Officials) and CBIA (California Building Industry Association). Lee Adler, SEAOC’s Executive Director, has been extremely active in this pursuit, and his latest report on the code process was presented in the November/December 2003 “Plan Review.” The coalition recommended candidates for the BSC positions that were coming up for reappointment as well as actively presenting the merits of the IBC to the new state administration.

In a recent newsletter, our association’s president, Richard Hess, wrote an open letter to Governor Schwarzenegger outlining the importance of reassessing the BSC’s decision. It was an excellent article and stated the case in a very convincing manner.

Meanwhile, there have been some significant changes in the makeup of the BSC. First, the governor’s office (still Gray Davis at that time) made the structural engineering appointment to the commission: Kent Sasaki, a northern California structural engineer who works for a well-known forensics company (sorry, no direct advertising here).

By law, the cabinet secretary of the State and Consumer Services Agency serves as chair of the commission. This position is now held by Fred Aguiar, a Schwarzenegger appointment, who is supported by the coalition. Also, three commission members came up for reappointment. The public member, James Barthman, was reappointed, the organized labor member was replaced with Bob Pernell, and the local building official appointment was replaced with Isam Hasenin. These three appointments were confirmed just prior to the BSC’s March 18 meeting. All of the three members mentioned are also endorsed by the coalition.

Also at issue in the decision-making process is the time frame for implementing the model code. Two of the state’s agencies that are tasked with adapting the model code are the Division of the State Architect (DSA) and Office of Statewide Health Planning and Development (OSHPD). These two agencies have indicated that the adoption/revision process will be longer for the NFPA (due in part because it had not had the public input that the IBC has had) than the IBC, putting California deeper into code purgatory if the adoption plans for the NFPA continue.

What happens next? The coalition continues their advocacy role. Meanwhile, the March 18 meeting of the BSC came and went without much fanfare, being the first meeting with the latest two appointments. The next milestone will likely be the May 12 meeting of the BSC. The BSC website is located at www.bsc.ca.gov.

The SEAOSC Building Code Committee meets on alternating months on the third Tuesday of the month. The next meeting is May 18 at 1 p.m. at the ICBO office in Whittier. Visitors and new members are always welcome.

Carl Sramek

Chair, SEAOSC Building Code Committee

1931



1981

The Evolution of the Structural Engineers Association of California

Some Historical Notes by Thomas G. Atkinson, S.E.



*Leaders of the Structural Engineering Profession in a Panel Discussion at the 1971 Convention
Pictured L to R: James H. Thompson, Henry J. Degenkolb, Hans G. Steinmann, Clarkson W.
Pinkham*

Editor's Note: This was written shortly after the 1981 SEAOC Convention. It has been published in the SEAOSC NEWSletter in three parts:

Part 1 – In the Beginning – March 2004

Part 2 – The 40's, The 50's, and the 60's – April 2004

Part 3 – *The 70's, The Present (1981), and Past Association Presidents* – May 2004

THE 70's

The decade of the 1970's marked the development of the time-history technique for analysis of buildings under earthquake motion. The practical aspects of ductile moment resisting concrete frame design were reported on at the annual convention in Lake Tahoe in 1970. Ductile weldable reinforcing bars were a new material that structural engineers were just beginning to hear about and the association was considering what

role it should play in seeking a standard specification for this material.

The disastrous earthquake which occurred on February 9, 1971, in the San Fernando Valley had profound effects upon the activities of the profession both immediately after the disaster and for many years to come. One of the first significant actions resulting from this earthquake was the enactment of legislation requiring that a structural engineer prepare the structural design and supervise the construction of all hospitals in the state of California. This legislation established the structural engineering title as a practice requirement under state law.

The Applied Technology Council, a subsidiary non-profit corporation of SEAOC, was formed by the SEAOC board of directors shortly before the 1971

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The Evolution of SEAOC *(Continued From Page 6)*



convention. This was in response to the stated need by the federal government and others for a research oriented organization, particularly in the area of earthquake engineering research. The convention in 1971 was again held at the Hotel del Coronado. Most of the technical papers had to do with the San Fernando Earthquake. By that time, much of the data had been compiled, and the engineers in attendance eagerly awaited the reports which were to be presented. Excellent strong motion records had been obtained, and a summary was presented to the membership. An extensive report was made on freeway structures and the design deficiencies which had led to the widespread destruction of these structures. A complete report was given on the Olive View Hospital and overall studies and recommendations were made for code changes.

In 1972 structural engineers in California were continuing to digest the lessons learned in the San Fernando earthquake. The Applied Technology Council received significant grants from the National Science Foundation and other agencies of the U.S. government for research. The 1972 convention featured a report on the new University of California shaking table which had the capability of subjecting large prototype structures to simulated earthquake motion. The term "lamellar tearing" became known to many engineers for the first time during 1972 as a result of unfortunate failures in heavy steel structures with welded joints.

The 1972 convention marked the introduction of the Saturday Morning Aquatic Races, which have now become a tradition. The exact nature of the races is a closely guarded secret until the early morning hour when they begin. Nonetheless, they have pitted the hardier

convention attendees from the four associations against each other for several years and are enjoyed by all.

At the end of 1972, during the holiday season, a destructive earthquake occurred in Managua, Nicaragua. Many of the buildings in Managua had been designed under modern building codes as used in California, and the investigation and report on this earthquake was of intense interest to California engineers. A number of structural engineers from California participated in the examination of the damage as well as in the analysis of the structures with respect to their condition.

Following heroic efforts on the part of the Seismology Committee a new issue of the "Blue Book" was developed in 1973. Many unselfish hours of study, analysis and discussion went into the preparation of this important document, and many lessons learned in San Fernando and Nicaragua were incorporated. The convention in 1973 featured talks on precast segmental construction of bridges, problems associated with the design and construction of tapered glued-laminated wood beams, and the phenomenon of soil-structure interaction under the forces induced by earthquake motion.

The profession continued to progress and grow during 1974. The Applied Technology Committee Council was very busy that year on its second contract, an analysis of the response spectrum approach to seismic design of buildings. Their third contract, also well under way, was to prepare national comprehensive design provisions for earthquake resistant structures.

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The Evolution of SEAOC *(Continued From Page 7)*



The importance of cooperation between the geotechnical engineer and the structural engineer in the development of seismic design criteria was a featured subject at the convention in 1975. Their work together in subsequent years led to a strong relationship of mutual respect by these two professions as they were involved in establishing seismic design criteria for structures.

The seismic rehabilitation of the State Capitol Building was the featured topic at the 1976 convention. This was a gigantic project which began that year and which continued for several years thereafter. By 1977, many firms had gained experience in the design of hospitals under the codes which had been developed as a result of the 1971 earthquake. Henry Degenkolb's organization reported upon their struggles in the design of the Moffatt Hospital in the San Francisco area; steel plate shear walls had to be used because of the immense design forces involved. Masonry research was being developed, and the liquefaction of soils under seismic motion was something which many engineers became acquainted with for the first time in the 1970's, largely as a result of the 1971 San Fernando earthquake. More refined criteria and methods of design for these conditions were presented at the convention in 1977, information which subsequently became the basis for building ordinances in many California cities.

Responding to the obvious need for some reliable method of rehabilitating old unreinforced masonry buildings, a group of Los Angeles structural engineers came up with recommendations, and reported on their design criteria at the 1978 convention. During 1978 and 1979 the various constituent associations formed

earthquake damage assessment teams consisting of engineers who would be available to assist in the examination and assessment of damage immediately following an earthquake. It was not long before these teams were brought into service, first at a landslide in Laguna Beach, near Los Angeles, and later in response to the need for help in the Imperial Valley following the earthquake of October, 1979. In both instances the services rendered were found to be extremely helpful by the people who needed them, and much was learned about the procedures which should be followed in any subsequent disaster.

The expression "eccentric braced steel frame" came into widespread use in 1979 as a result of studies made at the University of California by Professor Egor P. Popov. Soon afterward this valuable technique for designing and building multi-story steel frames was employed in several buildings in California cities. The growing problem of professional liability and litigation leveled against the structural engineer had been present throughout the 1970's, and as the decade ended it was of increasing concern to all engineers in private practice.

The decade of the 1970's also witnessed the demise of the slide rule as the universal aid to the structural engineer in making his calculations. In the early years of the decade engineers waited eagerly to buy their first hand-held electronic calculator or small desk-top model at a cost of \$400 and up. By 1979 smaller and more sophisticated models were available for less than \$50. Young engineers now entering the profession would find it difficult to imagine the mental fatigue as well as the

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The Evolution of SEAOC (Continued From Page 8)



increased tendency to make numerical errors that resulted from the use of the slide rule for carrying out calculations. The electronic calculators and accompanying computer systems were a development of the 1970's for which all engineers certainly can be thankful.

THE PRESENT

Since 1980, structural engineers have been enjoying an ever widening construction economy throughout the state. There has been much ferment in the profession regarding proposed changes in the Professional Engineers Act. While it is not as yet resolved, the proposed changes in the law seem to point toward an expanded and more appreciated role for the professional structural engineer in California.

Members of SEAOC are deeply Indebted to their representatives who have served on the Board of Registration through the years, including Paul Jeffers, Steve Barnes, John Minasian, Roy Johnston and Jim Yee. Also, the long dedicated service of Don Wiltse as Executive Secretary of SEAOSC until his retirement in 1980 will be gratefully remembered.

As we enjoy this 50th anniversary, we are grateful to our predecessors for all of their efforts during a half-century of steady development and growth. Although they are too numerous to mention, it is their dedication that has enabled this Association to enjoy a reputation of respect throughout the world for its accomplishments and service to mankind.

SEAOC

PAST PRESIDENTS

1932	Oliver G. Bowen	Southern
1933	E. L. Cope	Northern
1934	Robert V. Labarre	Southern
1935	John B. Leonard	Northern
1936	Murray Erick	Southern
1937	A. V. Saph, Jr.	Northern
1938	Frederick J. Converse	Southern
1939	A. W. Earl	Northern
1940	C. G. DeSwarte	Southern
1941	Clement T. Wiskocil	Northern
1942	Blake Beatty	Southern
1943	J. Bertrand Wells	Northern
1944	Charles D. Wailes, Jr.	Southern
1945	J. G. Wright	Northern
1946	Ernst Maag	Southern
1947	William W. Moore	Northern
1948	S. B. Barnes	Southern
1949	John Blume	Northern
1950	Harry W. Bolin	Southern
1951	Arthur W. Anderson	Northern
1952	Donald F. Shugart	Southern
1953	John E. Rinne	Northern
1954	Harold P. King	Southern
1955	G. A. Sedgwick	Northern
1956	C. M. Herd	Central
1957	Henry M. Layne	Southern
1958	Henry J. Degenkolb	Northern
1959	Joseph Sheffet	Southern
1960	J. Albert Paquette	Northern
1961	Walter D. Buehler	Central
1962	Roy G. Johnston	Southern
1963	John M. Sardis	Northern

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The Evolution of SEAOC



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1964	Lawrence G. Amundsen	Central
1965	Cydnor M. Biddison, Jr.	Southern
1966	Robert D. Dalton, Jr.	Northern
1967	John F. Meehan	Central
1968	David L. Narver, Jr.	Southern
1969	F. Robert Preece	Northern
1970	Jack S. Barrish	Central
1971	William F. Ropp	Southern
1972	H. Robert Hammill	Northern
1973	Thomas G. Atkinson	San Diego
1974	Henry C. Reyes	Central
1975	Clarkson W. Pinkham	Southern
1976	H. S. Kellam	Northern
1977	Albert J. Blaylock	San Diego
1978	Ajit S. Virdee	Central
1979	John A. Martin	Southern
1980	Stephen E. Johnston	Northern
1981	James A. Willis	San Diego

President's Message

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simply a statement of certain geometrical relations which must exist in order to have continuity preserved. The relations between the forces and the deformations are based on certain assumptions, which may be open to debate, as to properties of materials. The geometrical relations themselves are open to no debate.”

This was first published in 1932 in the textbook “Continuous Frames of Reinforced Concrete” by Hardy Cross and Newlin Dolben Morgan.

SEAOSD Golf Tournament

The 3rd Annual SEAOSD (SEA of San Diego) Golf Tournament will be held on Friday, May 21 at The Vineyard at Escondido. Join us for an enjoyable afternoon of golf with friends, as well as a chance to forge new relationships with other engineers, architects and members of the local construction community. We are also looking for sponsors and donors for raffle prizes. If you are interested in participating, sponsoring or want additional information, please contact us at: SEAOSD, c/o Arcon Engineers, 6819 Convoy Ct., San Diego, CA 92111; Phone: (858) 503-7854; Fax (858) 503-7858; Mike West or Wayne Deming; E-mail: mike@arconengineers.com.

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SEAOC

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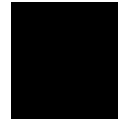
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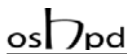
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- **Recent CE graduate or college senior with strong computer & AutoCAD skills**
- **PE with experience in performing structural observation of light framed construction**

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Office of Statewide Health Planning and Development

Facilities Development Division

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State of California – Health and Human Services Agency
Arnold Schwarzenegger, Governor



**Next SEAOSC
Newsletter
Deadline
April 26**

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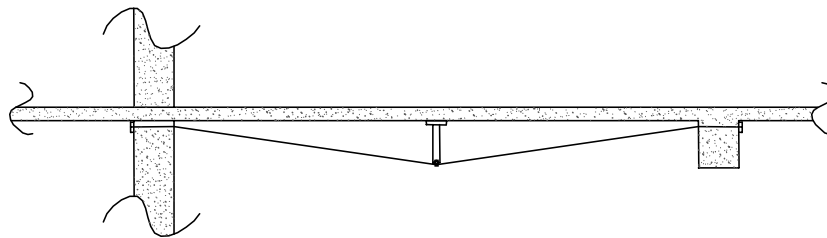
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CHECK IN @ 9:30 AM SHOTGUN START @ 11:30 AM
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RESERVATION FORM – SAVE \$\$ – SUBMIT BY MAY 7, 2004 – SPACE LIMITED TO 144 GOLFERS

MAKE UP YOUR OWN FOURSOME, THRESOME, TWOSOME OR SINGLE WE WILL FIT YOUR GROUP OR PLACE YOU WITH ANOTHER

Golfer #1 _____
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 Golfer #3 _____
 Golfer #4 _____

MY NAME _____ TEL _____
 COMPANY _____
 ADDRESS _____

GOLF & DINNER
 RESERVATION RECEIVED BY MAY 7, 2004 **\$125.00 EA**
 LATE RESERVATIONS (AFTER 5-7-04) **\$150.00 EA**

____ TOTAL GOLFERS @ _____ EA = \$ _____

DINNER ONLY (no golf) X _____ @ \$50.00 = \$ _____

TOTAL AMOUNT OF CHECK \$ _____

PAR SPONSOR \$ 50.00

(PROGRAM LISTING)

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CIRCLE YOUR CHOICE ABOVE AND INCLUDE A BUSINESS CARD OR LETTERHEAD FOR RECOGNITION

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welderton@mwdh2o.com

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Get involved! Members and interested parties are invited to join a SEAOSC committee. Contact the chairperson for information on current projects and meeting times, dates and locations.

SEAOSC Officers

& Board Members

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