

### CONSULTING ENGINEERS RECOGNIZES OUTSTANDING HAWAII PROJECTS

The Consulting Engineers Council of Hawaii (CECH) recently announced their 2002 Engineering Excellence Awards. This year the Council recognized three outstanding projects by local engineering firms.

Top Honor, the coveted Grand Conceptor Award, went to Wilson Okamoto & Associates and URS Corporation for their project, the Hart Street Wastewater Pump Station Force Main Replacement. The two engineering firms teamed up for this City and County of Honolulu project that involved the design of a 5,200-foot pipeline to replace an aging sewer line that connects the Hart Street Wastewater Pump Station to the Sand Island Wastewater Treatment Plant using "trenchless" excavation technologies, horizontal directional drilling and microtunneling.

Prior to the project, the original force main had been in continuous use since 1950. The Hart Street Wastewater Pump Station operated without a back-up line to the Sand Island Wastewater Pump Station. Major line breaks made construction of a replacement force main necessary. The new replacement force main would be required to accommodate the increase in flow demand due to population growth, land use changes and wet weather through the year 2020.

The project involved the use Horizontal Directional Drilling to install twin 46-inch lines beneath Honolulu Harbor which are spaced 20 feet apart and reached a depth of 120 feet below mean sea level to pass beneath pier deck piles. Horizontal Directional Drilling allows the laser-guided excavation of tunnels, or bores, over long distances by drilling a shallow arc from an entry point to a targeted exit point. Microtunneling was also used to install the remaining 2,100 feet of replacement force main from the container yard to the Sand Island Wastewater Treatment Plant (WWTP).

Microtunneling involves the excavation of a shaft to accommodate equipment that simultaneously bores a tunnel while a length of pipe is jacked behind it. The tunnel-boring machine emerges in a second shaft at the end of the pipeline alignment, followed by the lead-end of the pipe string.

The replacement force main is the first sewer force main to be installed using Horizontal Directional Drilling and Microtunneling and both methods were effective in avoiding disruption to Honolulu Harbor operations and water quality impacts to coastal waters. The project construction was completed four

months ahead of schedule and approximately \$2.5 million under budget.

Wesley R. Segawa and Associates' Keaiwa Stream Bridge Replacement Project was named an Honor Award recipient. The new 230-foot, 40-foot wide bridge replaced the original bridge that was devastated by the waters from a storm which brought 16 inches of rain in a two day span to the Ka'u District of the Big Island. The floodwaters changed the stream which once was 80 feet wide to a stream that was now over 200 feet wide. The damage to the original bridge cut off the only access between Hilo and South Point. Communities such as Pahala and Naalehu become isolated from Hilo and commuters had to resort to the 3-hour west route to Hilo. The Hawaii Department of Transportation constructed a temporary roadway through the stream, but a replacement bridge was needed.

The new reinforced concrete bridge consists of two abutments and seven continuous spans with expansion joints at the abutments. It accommodates two 11-foot travel ways and two nine foot shoulders. The reinforced concrete wing walls and concrete rubble masonry (CRM) walls had to be designed to stabilize the stream banks. The bridge was made to have a historical appearance by using an open rail structural system with reinforced concrete posts and beams. Another major concern was the high seismicity of the southeast side of the Big Island. The bridge had to be designed to withstand a peak ground acceleration of 0.8g.

The foundation was designed as a hybrid "sheet pile -continuous footing" structural system, where passive resistance of the basalt provided the lateral and overturning restraint on the embedded portion of the wall piers. "Sandwich" shell elements were also used to model the concrete topping, prestressed-precast planks and joints between the planks of the deck.

The entire project was designed in six  
*(continued on page 9)*



**Hart Street Wastewater Pump Station Force Main Replacement Project.**



**Keaiwa Stream Bridge Replacement Project.**



**Waipio Soccer Complex.**



Published monthly by:

HAWAII COUNCIL OF ENGINEERING SOCIETIES

SERVICE PRINTERS, INC.

1829 Dillingham Boulevard • Honolulu, HI 96819

Telephone: (808) 841-7644 • Fax: (808) 847-1487

ADDRESS ARTICLES FOR PUBLICATION TO:

WARREN YAMAMOTO

1526-C Pukele Avenue • Honolulu, HI 96816

Telephone: 527-6989

**WILIKI MAILING LIST**

Additions and/or corrections should indicate the proper society, institution or association.

**LAVERNE HIGA**

c/o Dept. of Facilities & Maintenance  
City & County of Honolulu  
650 South King Street, 11th Floor  
Honolulu, Hawaii 96813

Phone: 527-6246 Fax: 527-5857

**HAWAII COUNCIL of  
ENGINEERING SOCIETIES**

P.O. Box 2873  
HONOLULU, HAWAII 96802

HOME PAGE:

<http://www.eng.hawaii.edu/~hces/HCESHome.html>

**2002-2003 OFFICERS**

Chairman:	Ather Dar	486-2092
Vice Chair:	Richard Campbell	834-3103
Secretary:	Marites Shoji	841-2811
Treasurer:	Tony Lau	524-3771

<b>SOC</b>	<b>Representative</b>	<b>Alternate</b>
AACE	R. Campbell	
ASCE	T. Lau	H. Brandes
ASME	J. Grogan	E. Chang
EAH	K. Andrade	L. Mansfield
FALEA	M. Shoji	C. Dungca
HALS	L. Nakao	E. Kaneshiro
HSPE	M. Lanuevo	R. Santo
IEEE	F.Kobashikawa	N. Kawachika
ITE	W. Kawano	
LGSEA	M. Kasamoto	L. Nagata
SAME	J. Bersson	
SEAOH	W. Segawa	
SFPE	B.Lohaus	S. Dannaway
UH(assoc)	W.F. Chen	T. Dobry

**GISMAP 2002 CONFERENCE**

**"MISSION POSSIBLE:  
Integrating Technologies for Spatial  
Solutions"**

Produced by Hawaii Geographic Information Coordinating Council (HIGICC)

**WHERE: Waikiki Beach Marriott Resort,  
Honolulu, HI**

**WHEN: May 7-9, 2002**

**FOR MORE INFORMATION, Visit our  
website:**

<http://www.mhpcc.edu/projects/HIGICC/gismap2002/gismap2002.htm>

Or contact:

Lee-Ann W. Choy, Pacific Rim Concepts, LLC, (tel) 808-864-9812,(fax) 808-595-4475, [prc@hawaii.rr.com](mailto:prc@hawaii.rr.com)

**MATHCOUNTS 2002 STATE COMPETITION**

The 19th annual Hawaii MathCounts State Competition was held March 16, 2002 at Kamehameha Schools. The first place team trophy went to Iolani School and the team of Nolan Chung, Bryce Lee, Kevin Sin, and Mai Tsukikawa. The Iolani coaches are Li Ann Wada, Ann Yoneshige, Jill Stewart, and Annette Matsumoto. They will display the State First Place Perpetual Trophy at Iolani until next year's State competition.

The Hawaii Society of Professional Engineers (HSPE) including its local chapters on Oahu, the Big Island of Hawaii, Maui, and Kauai are the local sponsors of MathCounts. Major Hawaii corporate sponsors include Aloha Airlines who without their support would make it difficult to bring the neighbor Island teams to the State Competition. Dr. Michael Chun, President and Headmaster, Kamehameha Schools, is the MathCounts Chairman, and has been its staunch supporter for many years. MathCounts is very grateful for his and Kamehameha Schools' support. Behind the scenes Rowena Blaisdell and Pauline Marcello, both of Kamehameha Schools Bishop Estate, annually lead a steering committee of engineers and educators to put on these competitions.

This year, Iolani School's Li Ann Wada will be the official Hawaii State Team Coach at the National Finals in Chicago, Illinois, on June 14, 2002. Accompanying Wada are the top four winners in the Countdown Round. They include Nolan Chung in first place, Eugene So of Punahou in second place, Kevin Sin in third place, and Bryce Lee in fourth place. Last year Chung, as a 7th grader, also took first place.

Wada takes over for Punahou coach Evelyn Cheong who took the team to last year's National Finals in Washington, D.C. Coach Cheong's Punahou team received this year's second place team trophy.

This year the National MathCounts Competition will be held in Chicago instead of Washington, D.C., which for many years had been the nation's capital and surrounded by many historical attractions. MathCounts says that they are "taking the show on the road," developing a "traveling" model that can be adapted to other geographic areas of the country where MathCounts support is strong. Chicago Mayor Richard Daley is the honorary chairman of the local Chicago "Host Committee" for this National Competition. Many different awesome sites will be used for the different MathCounts events. The mathletes and coaches will be looking forward to a new and thrilling experience in exciting "Windy City" of Chicago, Illinois.

The Hawaii State Competition consisted of the Sprint (40 minutes and 30 problems), Target (four pairs of problems with 6 minutes per pair), Team (20 minutes and ten problems), and Countdown (pairs of mathletes compete against each other and the clock) Rounds. The qualifiers for the Countdown Round are the top ten Mathletes as a result of their total scores in the Sprint and Target Rounds. They included Chung in first place, So in second place, Lee in third place, Sin in fourth place, Collin Takasaki of Waiakea in fifth place, Mai Tsukikawa in sixth place, Kimberly Heu of Kaimuki Middle in seventh place, Tyler Dos Santos-Tam of Punahou in eighth place, Roydan Ongie of Highlands in ninth place, and Drew Robb of Punahou in tenth place.

Ten of the top schools from throughout the State competed for the Team honors. Besides

Iolani School in first place, Punahou School was second, Waiakea Intermediate School was third, Kaimuki Middle school was fourth, Highland Intermediate School was fifth, Kalama Intermediate was sixth, Mililani Middle School was seventh, Waimea Canyon School was eighth, Kamehameha Schools-Kapalama Campus was ninth, and Kamehameha Schools-Hawaii campus was tenth. Waiakea and Kamehameha Schools-Hawaii Campus represented the Hawaii Chapter of HSPE. Waimea Canyon School represented the Kauai Chapter, and Kalama represented the Maui Chapter.

The Master of Ceremonies was Ken Morikami of the Hawaii Society of Professional Engineers. The awards presenters included Ann Mahi, Director of Instructional Services, Office of Curriculum, Instruction and Student Support, Department of Education; Kirk Tanaka, State President, Hawaii Society of Professional Engineers; and Dr. Sheryl Nojima, President of the Honolulu Chapter, HSPE.

MathCounts thanks its major sponsors Aloha Airlines and Hawaiian Electric Company, Inc. for their support and generosity. Their commitment to education is reflected by this continued support to the Mathletes of the 6th, 7th and 8th grades.

Proctor and scorer volunteers for this competition came from Hawaiian Electric Company, Inc., the Army Corps of Engineers, ASME, The Gas Company, Cedric Chong & Associates, and KAI Hawaii.

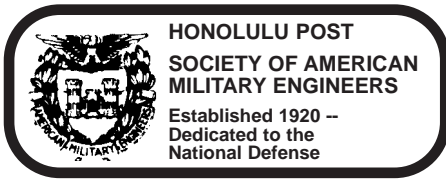


**The Hawaii Nationals Team ( L-R): Kevin Sin, Eugene So, Nolan Chung, and Bryce Lee.**



**First Place Iolani Team(L-R): Kevin Sin, Bryce Lee, Mai Tsukikawa, Nolan Chung.**





P.O. Box 31218; Honolulu, HI 96820

#### 2001/2002 Officers and Directors

##### Officers:

President — COL David Defoliart  
(Air Force, PACAF) 449-5254  
1st VP (Programs) — CAPT (Sel) Brian Scott  
(Navy, PACDIV ROICC) 471-2646  
2nd VP (Sust.Mbr) — Paul Luersen  
(Corporate, CH2MHill) 943-1133  
3rd VP (Membership) — Cynthia Wong  
(Army, Honolulu Engineer District) 438-8855  
Treasurer — Cpt Dave Norton  
(Air Force, PACAF) 448-0283  
Secretary — Cpt Michal Holliday  
(Air Force, PACAF) 449-1971

##### Directors:

CAPT Karin Lynn  
(Navy, CEC, COMNAVREG) 473-2168  
LCDR Roger Wykle  
(USCG, 14th District) 541-2437  
Jim Bersson  
(Army, Honolulu Engineer District) 438-9293  
COL Tom Hayden  
(Air Force, PACAF) 448-0347  
Paul Chinen  
(Corporate, IT Corporation) 474-9142

#### SAME ENGINEER AND CONSTRUCTION SUMMER CAMP

The annual Engineer and Construction Summer Camp is scheduled for 5-11 Jul at the Air Force Academy in Colorado Springs this summer. This is a tremendous program that SAME offers high school students who are on an Engineering college track and interested in Military Science. The camp is run in conjunction with the USAFA, using their world class engineering field lab.

Campers from around the world live and learn at the field site, performing hands-on activities ranging from concrete beam placement to materials testing.

Volunteers from SAME make the camp a success. Positions available include: mentors, leaders, trainers and operators. See website for details: <http://www.same.org/education/afcamp2002.htm>, also linked under "WHAT'S NEW and Education" on the [www.SAME.org](http://www.SAME.org) homepage. The site contains everything needed to generate applications and nominate a Student Camper.

Camp cost is \$500, of which the SAME Honolulu Post will pay \$250 plus airfare to Colorado Springs for one local high school student.

Nominations are due 3 May to:

Society of American Military Engineers  
Honolulu Post  
P.O. Box 31218  
Honolulu, HI 96820.

The Post has sent a mentor each of the last two years and also sponsored a local high school student last summer. The Post is seeking interested individuals to act as the point of contact for the program (answer inquiries, collect applications, evaluate candidates and present recommendation(s) to the Post Executive Committee). Applicants and volunteers for the Engineering Camp may contact Capt. Dave Norton; SAME Honolulu Post Treasurer; DSN Phone: 315-448-0283, Comm (808); DSN Fax: 315-448-8975, Comm (808); if they have any questions.



PO Box 12204 Honolulu, HI 96828

##### OFFICERS

President: Kely E. Nakata 527-6144  
Vice Pres.: Jamie T. Hikiji 521-3051  
Secretary: Bryce T. Yonemura 473-8000 x2456  
Treasurer: Warren H. Hayakawa 543-7060  
DIRECTORS: Lloyd P.C.W. Lee  
Michael Y. Magaoay  
Randolph H. Murayama  
Wayne H. Nakamura

##### EVAN DOBELLE RECEPTION

The College of Engineering and the Engineering Alumni Association co-sponsored a reception for University of Hawaii President Dr. Evan Dobelle on February 28, 2002 at the Honolulu Country Club. Over 100 alumni, faculty, students and friends attended the reception where Dr. Dobelle described his vision for the future of the University and the College of Engineering. Dr. Dobelle also presented the 2001-2002 EAAUH Freshman Scholarship Winners with their awards. Mahalo to all for their support of the College of Engineering.

##### 2002 EAAUH GOLF TOURNAMENT

Mark your calendars, it's golf time once again with the Engineering Alumni Association. The 2002 EAAUH Golf Tournament will be held on Friday, July 26, 2002 at the Leilehua Golf Course. This golf tournament is an annual event sponsored by the EAAUH to raise funds for six UH College of Engineering Freshman Scholarships. Now in its 25th year, the EAAUH Golf Tournament has become an extremely successful fundraiser and is attended by over 200 Alumni and friends. The tournament announcement flier will be sent out to the general membership in May.

##### COLLEGE OF ENGINEERING OPEN HOUSE


On April 13, 2002, EAAUH volunteers will join other faculty and students at the College of

Engineering Open House. Alumni will join prospective engineering freshmen and their parents on a tour of the college, to illustrate that the UH College of Engineering is the right choice for an exciting and fulfilling education and lifelong career.

The EAAUH is always in need of volunteers to help recruit Hawaii students into the College of Engineering. If you would like to show your support and volunteer for the Open House, or for more information, please contact Carrie Matsuzaki at 956-2286.

#### PLATINUM KEY SERVICE AGREEMENT/GOLD KEY SERVICE BEIJING SUMMARY


The U.S. Embassy-Beijing Platinum Key Service is an agreement between the State of Hawaii, Department of Business, Economic Development and Tourism and the U.S. Embassy-Beijing that will provide specific project information and business development assistance to Hawaii energy, engineering, environmental and planning firms interested in work on the estimated \$20 billion infrastructure projects planning by Beijing to prepare the city to host the 2008 Summer Olympics. Currently, Hawaii is the only State with such an agreement. Due to this agreement, the selection of the eight Hawaii companies that qualify for the Gold Key Service will be done on a competitive basis. Those companies that are selected will be processed at no cost. A forum is being planned in Beijing during the August to September time frame to help Hawaii companies meet government representatives responsible for projects. To be eligible for consideration for participation in the "feeless" program, companies must submit their application to Mr. Alva Nakamura, Energy Analyst (586-2751) or Dr. James P. Dorian (586-2352), Energy Resource Economist, Department of Business, Economic Development and Tourism/Energy Resources and Technology Division, P.O. Box 2359, Honolulu, Hawaii 96804 or no later than April 1, 2002. Notification of the successful applicants will be made during the week of April 15, 2002.



PROVEN RESULTS

- Prestressed solid planks, tees & beams
- Hollowcore planks
- Prestressed piles
- Structural precast components
- Architectural precast

**Project:** Pier 5 Extension, Barbers Point Harbor  
**Products:** 20" Octagonal P/S Piles, 11" P/S Planks  
**Contractor:** Hawaiian Dredging Construction Company



**WHERE EXCELLENCE ENDURES**

91-063 Malakole Street  
Kapolei, Hawaii 96707  
Ph: (808) 682-5761  
Fax: (808) 682-5764



P.O. Box 917, Honolulu, Hawaii 96808-0917  
Website: [www.ascehawaii.org](http://www.ascehawaii.org)

#### 2001-2002 OFFICERS

		Phone	Fax
President	Tony Lau	524-3771	538-0445
	<a href="mailto:tlau@hawaiiapacificengineers.com">tlau@hawaiiapacificengineers.com</a>		
Pres-Elect	Horst Brandes	956-8969	956-5014
	<a href="mailto:brandes@willki.eng.hawaii.edu">brandes@willki.eng.hawaii.edu</a>		
Vice-Pres	Westley Chun	488-0477	488-3776
	<a href="mailto:engrsol@verizon.net">engrsol@verizon.net</a>		
Secretary	Keith Niiya	533-3646	526-1267
	<a href="mailto:kniiya@atahawaii.com">kniiya@atahawaii.com</a>		
Treasurer	Walter Billingsley	539-1432	538-7819
	<a href="mailto:wbillingsley@beltcollins.com">wbillingsley@beltcollins.com</a>		
YMF Dir	Willie Gacutan	847-3763	843-0294
	<a href="mailto:wgacutan@hotmail.com">wgacutan@hotmail.com</a>		
Past-Pres	Joanna Seto	586-4329	586-4352
	<a href="mailto:jseto@eha.health.state.hi.us">jseto@eha.health.state.hi.us</a>		

#### APRIL DINNER MEETING

Program:

- 1) Zone IV Vice President Charles Rendall – update from ASCE National.
- 2) Presentation by Dyon Vithanage, PhD, PE, Technical Director, Oceanit. Dr. Vithanage will discuss the design of the Board of Water Supply's Kalaeloa reverse osmosis desalination facility. Initially the desalination facility will have a capacity of 5 mgd with potential expansion to 35 mgd.

Date: **Thursday, April 18, 2002.**

Location: Treetops at Paradise Park, Manoa Valley

Time: 5:30 p.m. - Social Time  
6:30 p.m. - Dinner  
7:30 p.m. - Program  
9:00 p.m. - Adjourn

Menu: Multi-entree buffet

Cost: \$22.00 for Hawaii Section members  
\$25.00 for non-section members and guests  
\$11.00 for University of Hawaii at Manoa Student Chapter members

Make check payable to "ASCE-Hawaii Section." Mail to Walter Billingsley, ASCE Treasurer, Belt Collins Hawaii, Ltd., 680 Ala Moana Blvd., 1st Floor, Honolulu, HI 96813-5406 postmarked by Monday, April 15, 2002. Reservations to Walter Billingsley by Monday, April 15, 2002 by phone at 539-1432, fax at 538-7819 or email at [wbillingsley@beltcollins.com](mailto:wbillingsley@beltcollins.com).

#### EXECUTIVE COMMITTEE MEETING HIGHLIGHTS

March 12, 2002

#### 2002 CALENDAR OF EVENTS (subject to change)

May 2002 – Hosted by the Legislative Affairs Committee

June 2002 – Hosted by the Construction Committee

July 2002 – Hosted by the Geotechnical Committee

August 2002 – Hosted by the Structural Committee

#### ASCE HAWAII SECTION 150TH ANNIVERSARY POLO SHIRTS FOR SALE

The ASCE Hawaii Section, in support of ASCE's 150th Anniversary, is selling navy blue Polo Shirts in men and women styles for \$30. The polo shirts have the "ASCE Hawaii Section Founded 1937" logo on the left chest area and the official ASCE 150th Anniversary logo on the left sleeve. Support ASCE's 150th Anniversary

by buying a Polo Shirt. Contact Tony Lau at or by phone at 524-3771 to place your order. Get yours today!!

#### HAVE AN ENGINEERING POSITION TO FILL?

Have you visited the ASCE Hawaii Section Job Listing web site recently? Yes, ASCE Hawaii Section has developed a new web page that allows the posting of job openings for the civil engineering community. For a minimum monthly fee of \$40/month, you can advertise up to five job openings to over 1,000 ASCE Hawaii Section members. The ASCE Hawaii Section website is linked with other ASCE section and ASCE student chapter websites, expanding the number of civil engineers with access to your job listing to over 123,000 worldwide. Over the last two years, there have been over 6,000 visitors to the ASCE Hawaii Section website.

Your job listing can be designed to include your company or department logo and any information you require. Please visit our ASCE Hawaii Section website to view our current posted job openings at [www.ascehawaii.org](http://www.ascehawaii.org).

For further information, please contact ASCE Hawaii Section's webmaster, Joanna Seto at (808)586-4329 or at [jseto@eha.health.state.hi.us](mailto:jseto@eha.health.state.hi.us).

#### ASCE/WALTER LUM SCHOLARSHIP AWARD APPLICATIONS AVAILABLE

Applications for the annual ASCE/Walter Lum Scholarship Award are being accepted by the ASCE Hawaii Section until April 30, 2002. The ASCE/Walter Lum Scholarship assists those with financial need who are pursuing a degree in Civil Engineering. Applications are available from the ASCE Student Chapter Office in Holmes Hall Room 143C or the ASCE Hawaii Section web site. The scholarship is open to all juniors, seniors, and graduate students majoring in Civil Engineering at the University of Hawaii at Manoa with a cumulative GPA of 3.0 or above. Preference will be given to active UH-Manoa ASCE Student Chapter members and to those students who demonstrate financial need without other substantial financial assistance. The ASCE Hawaii Section Scholarship Committee will award one (1) \$1,500 scholarship at the end of the Spring semester. Please contact Joanna Seto at 586-4329 or [jseto@eha.health.state.hi.us](mailto:jseto@eha.health.state.hi.us) for more

information.

#### DONATION REQUEST FOR SECOND ASCE SCHOLARSHIP FUND

Did you receive a tax return this year? Why not show your support for our Civil Engineering students at the University of Hawaii by sending in a portion of your tax return as a donation for the second ASCE Hawaii Section Endowed Scholarship Fund. Please send your contribution to Scholarship Chair Joanna Seto at the ASCE Hawaii Section address.

#### ASCE NATIONAL AWARDS

ASCE National Awards objective is towards the advancement of the engineering profession through the recognition of exceptionally meritorious achievement and has done so by offering numerous awards throughout the year. The following is a list of the upcoming awards and their due dates.

**ASCE Excellence in Journalism** - This award honors a newspaper journalist(s) for their outstanding articles that enhance the public understanding of the role and impact of civil engineers and the designing of civil engineering solutions. Due June 1, 2002.

**Civil Government** - This award recognizes engineers who have rendered meritorious service in elective or appointive positions in government. Due June 1, 2002.

**Edmond Friedman Professional Recognition** - This award recognizes engineers who have contributed substantially to the status of engineering by established reputation for professional service, improving conditions under which professional engineers serve the public, education and guidance of young engineers. Due June 1, 2002.

**John I. Parcel -Leif J. Sverdrup Civil Engineering Management** - This award recognizes the contributions of an engineer in civil engineering management. Due June 1, 2002.

Please contact our Awards Committee Chair, Bert Saito, at 842-1133 or [berts@rmtowill.com](mailto:berts@rmtowill.com) for more information.

#### MEMBERSHIP COMMITTEE

Can you use \$5,000? Members who recruit 150 new, paid members between April 1, 2001 and September 30, 2002 will receive \$5,000

(continued on page 8)

STRIP IN TILECO AD



**HAWAII CHAPTER**

P.O. Box 508, Aiea, Hawaii 96701  
Phone: (808) 485-1400 Fax: (808) 485-1500  
Web Page: www.lgsea.com

**2002-2003 OFFICERS & DIRECTORS**

Position	Name	Phone	Fax
President	Brian Ide	536-2108	521-3000
Vice Pres.	Akira Usami	682-5747	682-2928
Secretary	Jeffrey Hanyu	521-6958	533-6701
Treasurer	Garret Muranaka	946-2277	946-2253
Director	Bennett Fung	531-1308	521-7348
Director	Ron Iwamoto	533-2210	533-2686
Director	Mike Kasamoto	955-6834	955-2483
Director	Jim Walfish	737-0141	734-2177
Director	Colleen Miyasato	735-3211	735-3280
Director	Darin Okuda	689-5400	689-5406
Past Pres.	Les Nagata	951-5916	941-6489

**2001-2002 COMMITTEE CHAIRS**

Program:	Akira Usami	682-5747	682-2928
Technical:	Bennett Fung	531-1308	521-7348
Membership:	Adrian Lee	951-5916	941-6489
Corp. Spon.:	Ron Iwamoto	533-2210	533-2686
HCES:	Ather Dar	486-2092	486-9261

**MEMBERSHIP UPDATE**

In an effort to update the membership database, Membership Committee Chair Adrian Lee sent out questionnaires regarding members' contact information. The membership is requested to complete and return their questionnaires regardless whether or not their contact information has changed. For more information, contact Adrian Lee at 951-5916.

**TECHNICAL COMMITTEE PROJECTS**

Chair Bennett Fung announced that the Technical Committee would be developing tables of values for screw capacities in various thicknesses of light gage steel. Tables will be based upon equations from AISI specification for cold formed steel and the UBC.

The technical committee will also be revising its listing of the resources available to members in the LGSEA membership and making that listing available to members.

**COMING EVENTS**

April 4, 2002, 12:00 p.m. - HI Chapter LGSEA Board of Directors Meeting at Hawaii Pacific Steel Framing Alliance conference room.

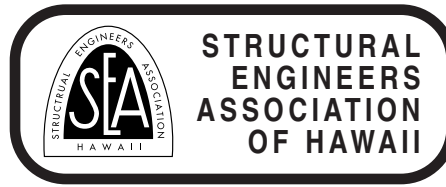
June 13, 2002 General Membership meeting: "Steel Trusses: The Latest Technologies" Presentations by truss material manufacturers, truss fabricators, and fastener suppliers.

August 7, 2002 General Membership meeting: "Issues in Light Gage Steel Design and Construction Today" Joint meeting with HPSFA in a round table discussion format.

November 6, 2002 General Membership meeting: "Vibrations in Light Gage Steel Framing Design" or "Project Profiles".

**MEMBERSHIP IN LGSEA**

LGSEA membership is open to engineers, architects, and trades people interested in light-gauge steel framing. Membership is \$50 per year. Call Brian Ide at 536-2108 with any questions and Adrian Lee at 951-5916 for membership forms.



P.O. BOX 3348, HONOLULU, HI 96801  
Web Page URL <http://www.seaoh.org>

**2002 OFFICERS & DIRECTORS**

Position	Officer	Phone	Fax
President	Tom Tanimura	536-7692	537-9022
Vice Pres	Randy Chu	373-7950	373-7950
Secretary	Russ Miyahara	593-0933	593-9339
Treasurer	Craig Ellingson	946-2277	946-2253
Director	Wes Segawa	935-4677	935-2070
Director	Ibbotson Kellett	540-1030	526-1989
Past Pres	Dennis Hanatani	737-9488	735-1432

**HIGHLIGHTS OF BOD MEETING**

March 6, 2002

**Committee Reports:**

**Program:** The schedule and topics for General Membership Meetings and Seminars are being finalized. Contact Randy Chu for any suggestions on meeting and seminar topics.

The first general membership meeting will be held on March 20, 2002 at the Pagoda Hotel, Williston Warren, IV will be speaking on "National Certifications for Professional Engineers". Updating the membership on the latest licensing rules and regulations was suggested. Another consideration was having a representative from American Polysteel to give a short presentation on insulated concrete forms.

Japan Convention reminders have been sent out and placed on the web page. Discounted registration must be postmarked on or before March 15, 2002. Registration deadline is on May 1, 2002.

**Old Business:**

Ramesh Chandra has graciously volunteered to represent SEAHO as a jury member for the Hawaiian Cement Concrete Achievement Award.

HHRF: The Senate Bill on the Hawaii Hurricane Relief Fund loss mitigation has passed with amendments.

Access Database: Motion to hire outside assistance for database did not carry.

**New Member Applications:**

Merrick H. Nishimoto of Nagamine Okawa Engineers, Inc. has applied for membership as an Allied Member.

Timothy S. Folks of Hawaiian Cement has applied for membership as an Allied Member.

Please notify any SEAHO Officer prior to the

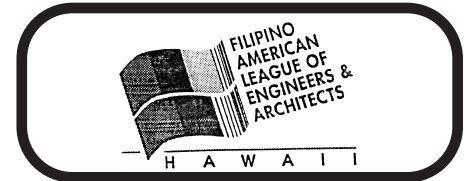
May Board Meeting if you wish to comment on prospective members.

**2002 CALENDAR OF EVENTS**

May 1, 2002 - Deadline for registration for the Japan Convention.

November 9-16, 2002 - SEAHO Annual Convention in Tokyo, Japan.

**Next BOD meeting:** Wednesday, April 3, 2002, 11:45 am.



P.O. Box 4135, Honolulu, Hawaii 96812

Website: <http://www.falea.org>

**2001-2002 Officers and Directors**

President	Oscar C. Paez, Jr.	676-2797
Pres-elect	Rogelio A. Urbi	693-8913
Vice-pres	Marites Calad-Shoji	671-3961
Secretary	Daina G. Legaspi	671-3460
Treasurer	Elvira Marie B. Pineda	780-2858
Asst. Treas	Diosdado M. Urgasan	836-7507
Auditor	Francisco T. Cruzata	677-9477
Bus. Manager	Gregorio S. Garcia	833-7985
P. R. O.	Zam Louie P. Criste	947-3405

**FALEA & The Filipino Community Center**

The much-anticipated completion of The Filipino Community Center is almost here. The Center is "substantially complete" and should be turned over to the owners in two weeks. FALEA members, serving as members of FilCom Building Construction Committee, assisted in inspecting and preparing the punchlist. Interior and Graphics Design works has commenced and is expected to be completed by mid-May, 2002. The Center will have a "soft" opening in June and the grand opening in October.

FALEA members volunteered to serve in various committees. Members were involved in the Design Review, Contractor Selection, Building Construction, Interior Designer Selection, and Interior Design Construction. These FALEA members are: Manny Lanuevo, Roger Urbi, Art Lucio, Lyna Burian, Joel Francisco, Francisco Cruzata, Bert Yumol, Ernie Endrina, Sid Baquilar, Silvestre Ulep, and Oscar Paez, Jr.

**Zippy's Fundraising for Scholarship Fund**

The annual Zippy's Chili Fundraising has begun! Each tickets costs \$5.00 and last day of pick-up is May 15, 2002. For tickets, please call any officer or director. Proceeds will be added to our Scholarship Fund.

**STRUCTURAL SYSTEMS, INC.**

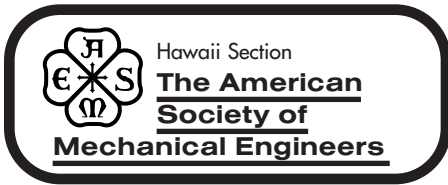
AC-13555 / A - General Engineering, C - 31 Masonry, C - 38 Post Tensioning

**STOP CORROSION!!**

**Protect Exposed Concrete Structures:  
Parking Decks, Lanais, Marine Applications**  
(Existing & New Construction)

- Galvashield® Sacrificial Galvanic Anodes
- Cathodic Protection Systems
- Post - Tensioning Repairs
- 3M® Zinc - Hydrogel Anodes

1275 Mikole Street, Sand Island Industrial Park, Honolulu, HI 96819 **(808) 845-2474**



**2001-2002 OFFICERS**

Chairperson	James Grogan	254-2947
Vice-chair	To be determined	
Treasurer	Chester Kaitoku	527-6063
Secretary	Sam Gillie	543-4739
Dir 1-yr	Ed Chang	543-4227
Dir 2-yr	Ron Flegal	455-0254

**APRIL 2002 MEETING NOTICE**

To Be Announced.

**THE RAISING OF THE EHIME MARU PRESENTATION**

On March 13 twenty-five members and guests, including four UH-M mechanical engineering students, met in the Pagoda Hotel & Restaurant Iris Room and saw the brilliant PowerPoint presentation of the recovery of the Ehime Maru by Navy LCDR Steven L. Stancy. The presentation was very detailed covering the eight phases of the recovery from the initial discovery to the final survey and clean up of the shallow water recovery site. Also covered in the recovery presentation were much environmental impact studies, the use of international salvage ships, equipment, and personnel, and special relationship with the Ehime Maru victims' relatives and Japanese government. The descriptive slides described the condition of the Ehime Maru, the lifting technique and equipment, and route taken from lift, to salvage site, and finally to the final resting place.

LCDR Stancy is the Deputy Director for Carrier and Surface Ship Maintenance, Pacific Fleet Diving and Salvage Officer. 0 He is native of Chicago with a bachelor degree in Mechanical Engineering from Northwestern University and a master degree in Mechanical Engineering from the Navy Post-Graduate School in Monterey, California. He has been in the navy for 15 years planning to retire in five years and returning to the Chicago area.

Navy CAPT Joseph M. Bradley, Force Maintenance Officer, COMSUBPAC, and member of ASME arranged this presentation. The Hawaii Section would like to thank all the members and guests for attending.

**KAKAAKO PUMPING STATION/MUSEUM CONCEPT**

As announced in last month's Wiliki, Chairman Jim Grogan is looking into a Hawaii Engineering and Architecture-type museum in the old Kakaako Pumping station, a designated historical building. On February 26, Jim Grogan toured the site at Ala Moana Blvd. and Keawe Street with a representative of the state agency involved with the Kakaako development program and a commercial real estate group representing a client. The building floor area covers about 3400 sq. ft., which includes four detached buildings. One of the buildings was erected in 1940. A possibility is to share the site with a commercial user who most likely would be happy if someone else took care of the designated historical building. Stay tuned for future developments.

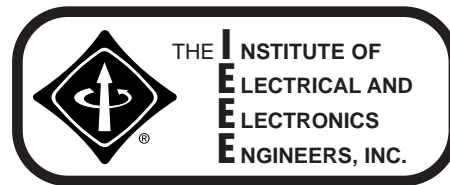
**NOMINATIONS FOR ASME-HI 2002 PROJECT/DESIGN OUTSTANDING ACHIEVEMENT AWARD**

The nomination deadline is April 30, 2002. If you know of any mechanical engineering-type project or design worthy of recognition, please

contact Ed Chang, 543-4227 or [echang@hei.com](mailto:echang@hei.com). The project or design must have been completed within the past five years. The nomination process is very simple, easy and fast.

**TOUR PLANNED OF THE HAWAII MEDICAL VITRIFICATION PLANT**

As ASME-HI's Power Technical Chapter on-going bimonthly activities, a tour of the Hawaii Medical Vitrification plant in Campbell Industrial Park is planned for Saturday, May 25, 2002, starting at 10:00 a.m. This facility deploys the Plasma Enhanced Melter technology to eliminate medical waste products in an environmentally responsible way. It produces virtually no pollutants, generates no unwanted by-products, recycles most of the end-of-process materials, and creates an economical alternative to existing waste management practices. The Plasma Enhanced Melter uses temperatures equal to that of the sun in an oxygen-free vessel. Please contact Ed Chang for more information.



IEEE Hawaii Section  
 P. O. Box 37895, Honolulu, Hawaii 96837  
 Email: [sec.hawaii@ieee.org](mailto:sec.hawaii@ieee.org)  
 Web Page: <http://community.hei.com/ieee/>

**2002 Hawaii Section Officers**

Chairperson:	Oscar Libed	441-8567
	<i>(oscar.libed@ieee.org)</i>	
Vice Chairperson:	Grant Torigoe	833-8889
	<i>(torigoe@ieee.org)</i>	
Secy/Treas:	Mark Rognstad	956-8712
	<i>(mark_rogstad@ieee.org)</i>	
Past Chair:	Norm Kawachika	531-1308
	<i>(normk@ieee.org)</i>	
Past Chair:	Fred Kobashikawa	543-7753
	<i>(fkobashi@ieee.org)</i>	

**Section Committee Chairpersons**

HCES Representative:	Norm Kawachika	531-1308
Membership:	Eddy Conway	282-0747
	<i>(EddyConway@ieee.org)</i>	
Past Membership:	Al Toda	455-1331
	<i>(aet@ieee.org)</i>	
Webmaster:	Steven Sano	543-7981
	<i>(ssano@hei.com)</i>	
Professional Activities:	Grant Torigoe	833-8889
	<i>(torigoe@ieee.org)</i>	
Student Activities:	Tep Dobry	956-9740
	<i>(tep@ieee.org)</i>	

Ocean Engineering Society:	Mark Rognstad	956-8712
	<i>(mark_rogstad@ieee.org)</i>	

**IEEE Monthly Meeting**

(non-members are always welcomed to attend)

Date: April 16, 2002 (Tuesday)  
 Time: 11:45 am Luncheon  
 Where: University of Hawaii Campus Center Cafeteria (Buffet Lunch)  
 Cost: \$10(UH IEEE Students are free)  
 RSVP: Oscar Libed at 441-8567 by April 12th  
 Topic: Implementing Interactive Video Services

More than two years ago, Time Warner - Oceanic Cable made available Video-on-Demand services to all digital cable subscribers on the Island of Oahu. It turns out this was the first large deployment of fully interactive VOD in the world and remains one of the few activated to date. You will find out from a technical perspective how it was engineered, implemented and how it works.

Speaker: Met Lebar, Transmission Systems Director for Time Warner Oceanic Cable (ex. UH EE student)

**HECO announces new Power Supply Vice President**

Tom Simmons was promoted to the position of Vice President, Power Supply at Hawaiian Electric Company (HECO), effective February 25. He will oversee the operations and maintenance of Oahu's generating facilities, the Environmental, Planning and Engineering Departments and the Fuel and Power Purchase Divisions.



Simmons began his career with HECO in 1967 as a student intern and started full time as an engineer in the System Planning Department in 1971. In subsequent years Simmons held positions of Electrical Engineer and Senior Planning Engineer. In 1992, he was named the Manager of the Generation Planning Department.

Simmons graduated from the University of Hawaii at Manoa with a Baccalaureate (with honors), a Master of Science degree in Electrical Engineering and a Masters in Business Administration. He is also a Waianae High School graduate. Simmons is a registered Professional Engineer and is a Senior member of the Institute of Electrical and Electronics Engineers. He is also a founding member of the Hawaiian Electric Toastmasters Club, has served in the Hawaii Army National Guard and as a coach for the Police Activities League (PAL) and the American Youth Soccer Organization (AYSO).

**United We Stand - Creating a Different Future**

**2002 Corps of Engineers Workshop**

Date: Friday, 12 April 2002  
 Time: 7:30 a.m. - 1:30 p.m.  
 Place: Hale Koa Hotel

Registration Fee: \$99 if received by April 5/\$120 after that date. Refund/Cancellation Deadline: April 5, 2002, (Fee includes continental breakfast, lunch, coffee breaks, hosted parking and one copy of the workshop manual)

Sponsored By:  
 U.S. Army Corps of Engineers  
 American Institute of Architects, Honolulu Chapter

Session Topics: Best Value Contracting; A-E Negotiation Preparations; DrChecks Automated Review System; After Action Reviews; Mechanical Engineering Aspects of Sustainable Design; Doing Business with the Honolulu Engineer District (HED); Increase Your Opportunities Through SBA Programs and Services; A-E Services and SF254/255; RMS for Contractors - Quality Control System (QCS); Anti-terrorism and Force Protection; and IDIQ Contracts.

For more information call AIA at 545-4242.





www.eng.hawaii.edu/~hspe

#### 2001 – 2002 STATE OFFICERS

	Phone	FAX
President Kirk Tanaka <i>rttanaka@gte.net</i>	242-6861	244-7287
Pres-Elect Scott Seu <i>sseu@hei.com</i>	543-4500	543-4511
1st VP Tom Pack <i>tgkona@hawaii.rr.com</i>	325-2216	325-1415
2nd VP Riley Smith <i>rsmith@parkerranch.com</i>	885-2306	885-5602
Secretary Eric Yamashige <i>ehy@mauigateway.com</i>	242-8611	244-7510
Treasurer Ken Rappolt <i>ken@lyonassociates.com</i>	536-6621	523-1738
Past Pres Curtis Beck <i>cbeck@hei.com</i>	969-0134	969-0135
Nat Dir Bruce Witcher <i>bewitch@ilhawaii.net</i>	334-0322	334-0831

#### Highlights of State BOD Conference Call March 13, 2002

Membership Chair Curt Beck presented an overview of the Collaborative Membership Marketing Plan prepared by consultant Annette Petrick. The plan identifies personal invitations, marketing & publicity, and reference to talking points developed by NSPE. Big Island will prepare a radio clip as a test site. The board approved moving forward with the membership plan. Each chapter needs to identify 2 E-team members to coordinate implementation of the plan.

NSPE Western Region Vice President V. Alan Werner, PE, NSPE (Washington) will participate in the HSPE annual meeting and installation of officers in June. The schedule is Maui (Thursday, 06/13 luncheon installation), Hilo (Friday, 06/14, joint dinner installation with Kona chapter), and Honolulu (Saturday, 06/15 morning state annual meeting with joint dinner installation with Honolulu chapter). Please mark your calendars and support your chapter and state officers. Contact your chapter officers for details.

The chapter MathCounts competitions were very successful. MathCounts is a national mathematics program sponsored locally by HSPE for intermediate schools. Congratulations to the following chapter winners who will participate in the March 16 state competition at Kamehameha Schools: Honolulu: Iolani, Punahou, Highlands, Kaimuki, Mililani, Kamehameha; Big Island: Waiakea, Kamehameha; Maui: Kalama; and Kauai: Waimea Canyon. HSPE expresses its appreciation to Kamehameha Schools, and to Aloha Airlines for their generous support of the MathCounts program.

The City and County of Honolulu has confirmed Friday, September 20, 2002, 12:30 pm as the shotgun start of the HSPE Scholarship Golf Tournament at the West Loch Golf Course. The tournament supports the award of three \$2,000 scholarships to the University of Hawaii College of Engineering. The tournament is open to all golf enthusiasts and hackers, so mark your calendars!!

Remaining BOD meeting schedule is: 04/10 and 05/15 conference calls, and 04/26 and 06/15 face-to-face meetings on Oahu.

Visit the HSPE website to keep abreast of these and other issues.



#### 2001-2002 OFFICERS

		Phone
Director: Willie Gacutan <i>wgacutan@hotmail.com</i>		847-3763 x212
Admin: Jamie Hikiji <i>jamie_hikiji@metcalfeddy.com</i>		521-3051
Social/Comm.Act: Jeff Kalani <i>jeff_kalani@urscorp.com</i>		593-1116
Web page: Lori Ikeda <i>lori@ikedanet.com</i>		455-3569
PE Refresher Course: Tony Lau <i>tlau@hawaiiapacificengineers.com</i>		524-3771
Past-Dir: Lorna Heller <i>lheller@hbws.org</i>		527-5202
St/Liais: Meris Ota		957-1643
Nwsltr: Lori Nishida <i>lornish@hotmail.com</i>		583-7489

#### Next YMF General Meeting

The next YMF general meeting is scheduled for Tuesday, April 2, at 6:00 pm. Location to be determined. If you are interested in attending to find out what the YMF is all about and how much fun we have, please call Director Willie Gacutan at 847-3763, x212.

#### Western Regional Younger Member Council (WRYMC) Awardees for 2002

Younger Member Awards were presented at the 2002 WRYMC this March in Reno, Nevada. A hearty congratulations and a job well done for the following groups/people from the Hawaii YMF:

- Outstanding Student Chapter/Club - UH Student Chapter
- Outstanding Young Engineer in the Public Section - Joanna Seto

#### ASCE Job Classified

Looking for work? Visit the ASCE's job listing page at <http://www.ascehawaii.org/jobs/jobinfo.html>.

#### Post P.E./ E.I.T./F.E. Exam Party

In celebration of completing the P.E. or E.I.T./F.E. exams survivors are invited to attend a post exam party. The party will be held at the Crow's Nest at Lalea in Hawaii Kai on Sunday, April 28, 2002 beginning at 12:00 p.m. If you would like to attend or for more information, please contact PE Refresher Course Chair Tony Lau at 522-7426.

#### Summer 2002 YMF PE Refresher Course

For the first time, the State of Hawaii will be offering engineers in Hawaii to sit for the pro-

fessional civil engineering exam in October 2002. ASCE YMF is considering organizing a refresher course for this exam. 3-hour classes would be held over 11 Saturdays beginning in July 2002. If you are interested, please contact YMF PE Refresher Course Chair Tony Lau at 522-7426 or e-mail him at [tlau@hawaiiapacificengineers.com](mailto:tlau@hawaiiapacificengineers.com). A minimum of 10 attendees is required to hold the class.

#### Hawaii Food Bank Volunteers Needed

The YMF is seeking volunteers to help at the 13th annual Hawaii Food Bank Food Drive on Saturday, April 27, 2002 from 2:00 p.m. to 5:30 p.m. at Restaurant Row. Volunteers will be waving signs and collecting food and monetary donations. If you are interested, please contact Tony Lau at 522-4726 by Thursday, April 5, 2002.

#### YMF Storm Drain Stenciling in May

The YMF will be participating in the City and County of Honolulu's Storm Drain Stenciling program in May 2002. If you would like to volunteer your time to help keep waste out of our storm drainage systems, please contact Tony Lau at 522-7426. Lunch will be provided.

#### YMF Beach Cleanup in June

The YMF will be cleaning up one of our state beaches in June 2002. For more information, please contact Director Willie Gacutan at 847-3763, x212. Lunch will be provided.

#### UH Student Chapter Zippy's Chili Fundraiser

The YMF is assisting the University of Hawaii Student Chapter with their Zippy's Chili Fundraiser. If you would like to help them by buying and/or selling chili tickets, please contact Student Chapter Liaison Meris Ota at 956-5805.

#### 2003 Western Regional Younger Member Council

Hawaii has been selected as the host of the 2003 Western Regional Younger Member Council (WRYMC). The WRYMC will be held from February 28 to March 2, 2003. The WRYMC consists of delegates representing younger member groups from the states of Montana, Idaho, Washington, Oregon, California, Nevada, Utah, Arizona, Alaska and Hawaii. The meeting allows young engineers to develop leadership skills, share activity ideas, interact with ASCE National officers and network. With the conference in Hawaii, it will allow the Hawaii YMF to share our state with the mainlanders. The Hawaii YMF is looking for volunteers to assist in organizing the WRYMC. If you would like to help, please contact 2003 WRYMC chair Tony Lau at 522-7426 or e-mail him at [tlau@hawaiiapacificengineers.com](mailto:tlau@hawaiiapacificengineers.com).

## C.I.P. PROJECT MANAGERS

### Salary Negotiable

The City and County of Honolulu, Department of Design and Construction have available, personal services contracts for Architects, Engineers and Planner with experience in project management and/or construction management.

Mail or fax resume and cover letter to Director, Department of Design and Construction, 650 South King Street 11th Floor, Honolulu, Hawaii 96813. Phone: 523-4716 or fax 523-4567.

*An Equal Opportunity Employer*

## KNOW YOUR ASCE HISTORY

by C.S. Papacostas

Discussing georeferencing coordinate systems and map projections in my Geographic Information System (GIS) class, I point out to my students a log entry by Captain James Cook on his second voyage to Polynesia:

"I must here take note that indeed our error (in Longitude) can never be great, so long as we have so good a guide as [the] watch."

Cook was a notable surveyor who had charted the St. Lawrence River and was sent on secret missions in search of a Northwest Passage and a yet undiscovered Southern Continent (Australia). What he called "our trusty friend the watch" was a marine chronometer, the invention of which solved a long-standing problem of determining longitude at sea. Captain Cook also carried the experimental marine chronometer (known as K1) on his third voyage when he visited the Big Island of Hawaii where he met his ultimate end in 1779.

The story of longitude, by many accounts, begins with Eratosthenes of Cyrene who lived between 276 and 194 before the Common Era (BCE). He was the first to suggest the use of lines of latitude (parallels) and longitude (meridians) on a spherical earth. He also came up with a good estimate of the earth's circumference!

Hipparchus of Rhodes [190-120 BCE] mapped places on the earth using lat/long with the prime meridian set at his home island of Rhodes. He suggested calculating latitude by computing the ratio of the longest to the shortest day at a given location. His theory of longitude estimation was based on the difference between local time and an "absolute time" derived from knowing the moon's eclipses.

To us, the basic idea sounds simple enough: given a 24-hour day, two places that have a local time difference of one hour are  $(1/24) \times 360$  or 15 degrees of longitude apart. The difficulty lies in having a means of accurately measuring local time simultaneously at the two locations. Other complications include the sidereal day being slightly less than 24 hours, the elliptic (rather than circular) orbit of the earth around the sun, the inclination of the earth's axis, etc.

Greek (e.g. Ptolemy [c. 85-165]) and Arab (e.g. Al-Biruni [973-1048]) mathematicians and astronomers managed to approximate this by observing the motions of celestial bodies. In 1514, Johann Werner [1468-1522] commenting on his translation of Ptolemy's "Geography," put forth what became known as "the lunar distance method" of determining longitude. This was based on the motion of the earth's moon relative to fixed stars. In 1530, Dutch scientist Regnier Gemma Frisius [1508-1555] proposed the main competing theory: using a clock can best solve the problem.

As European expansionism grew during the 16th century, large fortunes were lost due to the mere fact that ships could not precisely fix their longitude. By the way, latitude was relatively easy to find, say by using a sextant to calculate the altitude of specific stars and consulting "tables of inclination." In response to losses at sea, the Royal Houses of Europe began to offer sizeable rewards to anyone who could come up with a practical solution to "the longitude problem."

In 1616, even Galileo Galilei [1564-1642] responded to a 1598 offer by Phillip II of Spain by proposing a method of measuring "absolute time" by observing the eclipses of Jupiter's moons he had studied via his telescope. After 16 years of negotiations he failed to reach an agreement with Spain! Galileo then turned to a Special Commission in Holland that took his claim seriously but by then he was unreach-

able, kept under house arrest by the Inquisition for his "heretical" writings.

The French Acadmie Royale des Sciences, with the help of a who-is-who constellation of scientists, refined Galileo's method and solved the problem of longitude on land by timing the eclipses of Jupiter's moons. Accurately fixing longitude at sea, however, remained elusive. As Robert Hooke [1635-1703] put it:

"Difficulties were proposed from the alteration of climates, airs, heats and colds, temperature of springs, the nature of vibrations, the wearing of materials, the motion of the ship..."

Sir Isaac Newton [1643-1727] later agreed: "...by reason of the motion of the Ship, the Variation in Heat and Cold, Wet and Dry, and the Difference of Gravity at different Latitudes, such a watch hath not yet been made."

In 1714, the British Parliament passed the Longitude Act "...providing a public reward for such person or persons as shall discover the longitude..." The prize money would depend on attaining specified degrees of accuracy. The best minds of the time were set on astronomical solutions. And yet, John Harrison, a clockmaker without formal education managed to overcome all the seemingly insurmountable mechanical difficulties and to come up with a reliable timekeeper. Between 1730 and 1759 he developed four marine chronometers (H1, H2, H3 and H4). The last was essentially a pocket watch. On a test between England and Jamaica carried out by Harrison's son William aboard the ship "Deptford" in 1761, H4 was found to be only about 5 seconds slow. Unfortunately, the Board of Longitude repeatedly denied awarding Harrison the full 20,000-sterling pound prize. Members of the panel of judges, including Royal Astronomer Nevil Maskelyne, were after the prize themselves!

Following an appeal to higher authority, H5, a copy of Harrison's No. 4 (H4), performed extremely well on a test conducted by King George III in 1772. Finally, Captain Cook's second voyage put the matter to rest by successfully testing K1, another copy of H4 built by Larcum Kendall. John Harrison died on his 83rd birthday (March 24, 1776) almost one year after Cook's return to England.

Do you know of a civil engineering accomplishment or event that your fellow ASCE members might find interesting? Please send a brief description to C.S. Papacostas (fax 956-5014, email [msp@williki.eng.hawaii.edu](mailto:msp@williki.eng.hawaii.edu)). Previous articles in the series may be found at the Section's web site. Just point your browser to <http://www.ascehawaii.org>.

### Hawaii Chapter of APWA Now Accepting Nominations for the Public Works Project of the Year Award

It's time to showcase your public works projects and compete for the 2002 Public Works Project of the Year Award. This prestigious award promotes excellence in public works, and recognizes the importance of the managing agency, consultant/architect/engineer and contractor in working together to successfully complete projects.

The Hawaii Chapter of the American Public Works Association is now accepting nominations for this prestigious event.

Nomination forms must be submitted no later than April 15, 2002. For more details and a nomination form, please contact:

Ensign Michael D. Goolsby  
 ROICC Pearl Harbor,  
 Construction IDIQ Operations, R221  
 4262 Radford Dr.  
 Honolulu, HI 96818-3296  
 Phone: 474-1443 Fax: 474-3997  
 e-mail: [goolsbymd@pwcpearl.navy.mil](mailto:goolsbymd@pwcpearl.navy.mil)

## ASCE, from page 4

from ASCE. Please contact our Membership Chair, Stacie Saito, at 449-9195 or [Stacie.Saito@hickam.af.mil](mailto:Stacie.Saito@hickam.af.mil) for more information.

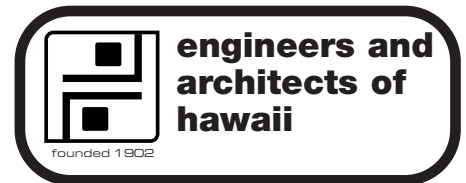
### 150th ANNIVERSARY OF ASCE

ASCE is the nation's oldest national engineering society. ASCE has begun its yearlong 150th Anniversary celebration. The Hawaii Section is looking for volunteers to help out with ASCE's 150th Anniversary. Please contact Delwin Ching ([dching@hgea.org](mailto:dching@hgea.org)) to find out more information and how you may assist in this effort.

### GET CONNECTED AND KEEP UPDATED

Do you currently receive ASCE dinner meeting notices by e-mail? If not, get onto the ASCE Hawaii Section's e-mail list. Sign up now to receive quick updates on all ASCE Hawaii Section activities such as legislative affairs, Section meetings, workshops, field trips, new job listings and future issues of *Williki O Hawaii*.

Visit our website at [www.ascehawaii.org](http://www.ascehawaii.org) and register to be on the ASCE e-mail list. There is no charge. However, you must be a current member of the Hawaii Section and have your ASCE membership number available when registering.



po box 4353, honolulu, hawaii 96813

An association for Hawaii's Engineers and Architects  
 New WEB Address <http://community.hei.com/eah>

### 2001-2002 OFFICERS

President	Victor Russell	949-4155
1st V.P.	Maria Tome	587-3809
2nd VP	Martin McMorrow	247-1794
Treasurer	Ralph Dobson	543-4754
Secretary	Sam Gillie	543-4739
Director	Alan Mueiting	523-1519
Director	Bob Morrissey	521-4711
Director	Tit Mun Chun	524-2270
Director	Neil Guptill	
Past Pres	Kai Andrade	521-4711

### EAH Plans Centennial Dinner Banquet

On March 1st Sam Gillie gave a Power Point presentation on the 100-year History of the Engineers and Architects of Hawaii. Starting with EAH's first President Alanzo Gartley, Manager of the Hawaiian Electric Company, Sam talked about the first half of EAH's history. EAH is planning a Centennial Dinner Banquet on **May 11th at the Willows Restaurant** for all current and former members. Please contact either Kai Andrade (521-4711) or Sam Gillie (543-4739) for details.

### EAH April Program

Friday April 5th, Speaker: **Howard Wigg**, Hawaii State Department of Energy. Revisions to the Model Energy Code. Howard will talk about efforts to establish voluntary efficiency guidelines for the building industry.

Other meetings will be held on **April 12th, 19th and 26th**. Programs to be announced. Contact the Secretary Sam Gillie at (543-4739) or [sgillie@hei.com](mailto:sgillie@hei.com).





[http://www.geocities.com/hals\\_us](http://www.geocities.com/hals_us)

#### OFFICERS FOR 2001

President	Byron Komatsu	692-7599
Vice-Pres	Kendall Hee	591-8116
Secretary	Dennis Chong	523-4482
Treasurer	Eric Hee	591-8116
Director	Kevin Kea	521-7491
	David McDonald	536-2705
NSPS Gov	Patrick Cummins	247-6602
Past Pres	Layton Nakao	543-7317

The newly registered Professional Land Surveyors are:

Alan "Chris" Pimental  
 Jeffrey Sato  
 Arden Torcuato

### HAWAII ASSOCIATION OF LAND SURVEYORS PRESENTS AUTOCAD 2002

Pagoda Hotel, C'est Si Bon Makai Room  
 Saturday, May 25, 2002  
 8:00am till 2:00pm

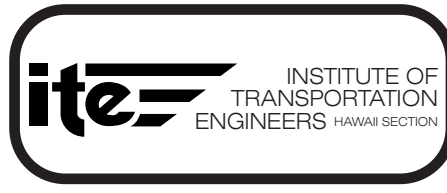
Cost: \$20.00 (Members) \$25.00 (Non-Members)

Featuring Ms. Felicia Provencal

Felicia Provencal is an Autodesk AEC Consultant, e-Learning Provider, and Technical Specialist based on Maui. She has over 15 years of experience working with CAD products in various fields within the AEC industry. She currently offers consulting, training, and customization services and teaches CAD drafting and design, networking, and programming classes through Maui Community College and Hawaii Community College on the Big Island.

A brief description: This workshop will teach you how to use the tools in Autodesk Land Development Desktop to quickly and accurately create topographic maps from survey data. We will start with raw survey point data and use description key codes to add symbols and layering, and the elevation data to create contour maps. Topics also include how to use breaklines and creating mapcheck reports from survey points. Linework will be generated and annotated for property lines, tree lines, and topo features such as road centerlines, EP's, and banks.

For more information, please call Kevin Kea at 521-7491.



#### 2001-2002 Officers

Name	Office	Phone	Fax
Wayne Kawano	President	833-1882	833-6125
Richelle Suzuki	V. Pres	541-2530	541-2700
Cathy Leong	Secretary	946-2277	946-2253
Susan Uejo	Treasurer		
Irene Quiaoit	Stud.Cont	946-2277	946-2253

#### FEBRUARY MEETING HIGHLIGHTS

The February luncheon meeting was held on February 21, 2002 at the City and County of Honolulu's Traffic Control Center. The meeting included a tour of the traffic control center and presentations by five featured speakers. The first speaker was Don Hamada of the City and County of Honolulu's Department of Transportation Services (DTS), Traffic Signals and Technology Division, who described City's current traffic camera system coverage, communications system, and traffic data collection system. He explained that with the help of these tools and an ITS regional architecture plan, the City plans to develop usable products such as traveler information, travel time information, and incident management. The second speaker was Sgt. Robert Lung of the Honolulu Police Department who discussed the current traffic laws being proposed by the legislature. The current bills cover topics such as the implementation of a Pedestrian Bill of Rights, revision of the driver's licensing program, and harsher penalties for racing on the highways. The third speaker was Paul Steffens of DTS's Public Transit Division who discussed the City's on-going efforts to improve public transit. The City is already in the process of converting their bus routes to a hub and spoke system with transit centers and hubs. In addition, they are continuing to make bus stop improvements and plan to implement a community access service, conduct a system wide rider survey, provide user friendly bus information, and implement the use of smart cards in the future. The fourth speaker was Ty Fukumitsu of DTS's Traffic Signals and Technology Division who gave an overview of the engineer's role as a witness in legal proceedings. The fifth speaker was Jason Yotsuda, a traffic reporter for KSSK radio station, who gave an overview of his job as a traffic reporter and how it has been impacted by the City's traffic camera system.

#### April Meeting Announcement

The April Section meeting date, location, and guest speaker will be announced at a later date. Meeting notices are forthcoming.

#### Consulting Engineers, from page 1

weeks instead of the usual six month design schedule and the construction finished two months ahead of the seven month construction schedule.

An Honor Award was also presented to Belt Collins and Associates who provided the planning, civil engineering, environmental consulting, and landscape architecture services for the Waipio Soccer Complex. They were selected by the City and County of Honolulu to create a world-class soccer facility that could accommodate the National Collegiate Athletic Association (NCAA) and Federation of International Football Association (FIFA) soccer matches. The City and County of Honolulu wanted to have a facility that would allow the public to use the facility and at the same time benefit Oahu's position within the world-sports tourism market and attract the international sports community to train and compete here.

The soccer complex, located at the end of Waipio Point Access Road, in Waipahu consists of 288.3 acres of 19 soccer fields and a stadium with a seating capacity of 3,000 plus room for portable bleachers. Built on large earth mounds, stadium blends in with the surrounding fields and provides protection from the wind. The stadium buildings include space for concession stands, restrooms, locker rooms, storage, offices, referee room and custodial supplies.

All fields can be lined off to Federation of International Football Association regulation size of 80 yards by 120 yards. 140 acres are finished and another 144 acres are available for an additional 14 to 16 fields. The use of ground tire rubber was mixed in with the soil to aid in aeration, drainage and resistance to compaction since the existing soils found on-site contained fine textured clay with a relatively high pH. Amendments were also added to adjust the pH level.

Over 6,000 cubic yards of tire rubber and 7,000 cubic yards of organic compost were incorporated into the field prior to planting. The stadium features a sand-capped playing field with a gravel and perforated pipe sub drainage system to maximize playability and durability.

Similar projects have completed on the mainland using tire rubber, but a project of this size is the first of its kind in Hawaii. The project construction was completed on time and within budget.

CECH's Engineering Excellence competition showcases Hawaii's finest engineering projects. The competition is held annually to recognize those engineering achievements which demonstrate the highest degree of outstanding features, unique aspects, and innovation.

## Professional Directory

<p><b>STRUCTURAL SOLUTIONS</b>  <b>Finite Element Analysis</b>          Structural • Mechanical • Marine          98-030 Hakaha St., Suite 20 • Aiea, HI 96701          Tel: (808) 488-0655 • Fax: (808) 488-1655</p>	<p><b>WES THOMAS ASSOCIATES</b>          Land Surveyors          75-5749 Kalawa St., Kailua-Kona, Hawaii 96740-1817          Tel: 808 329-2353 Fax: 808-329-5334          Surveying Hawaii Since 1975</p>	<p><b>WALTER P. THOMPSON, INC.</b>          ENGINEERS • SURVEYORS          333 QUEEN ST. SUITE 210 P.O. BOX 3281 HONOLULU, HI 96801-3281 PH: (808) 538-2705          MAUI SUITE 208 WAILUKU, HI 96793-1451 PH: (808) 242-5722</p>	<p><b>R. M. TOWILL CORPORATION</b>          SINCE 1930          PLANNING • ENGINEERING • ENVIRONMENTAL SERVICES          PHOTOGRAMMETRY • SURVEYING • CONSTRUCTION MANAGEMENT          420 WAIKAMULO ROAD HONOLULU HAWAII 96817-4941 808 842 1133</p>
<p><b>URS</b>          Engineers          Scientists          Program and Construction Managers          Environmental Planners          575 Piikoi Tower, 1777 Ala Moana Blvd., Honolulu, Hawaii 96814-3141          Ph: (808) 593-1196          Fax: (808) 593-1199  <a href="mailto:hen@urscorp.com">hen@urscorp.com</a> <a href="http://www.urscorp.com">www.urscorp.com</a></p>	<p><b>WALKER INDUSTRIES, LTD.</b>          Precast Concrete Products    <b>AARON UNO</b>          P.O. Box 1568 Kahului, Maui, Hawaii 96732          Maui (808) 877-3430          Fax (808) 871-7282</p>	<p><b>Washington</b>          Contact John Shrewsbury at (808) 543-6449          Seven Waterfront Tower • 500 Ala Moana Blvd., Suite 400 • Honolulu, HI 96813</p>	<p><b>WILSON OKAMOTO &amp; ASSOCIATES, INC.</b>          ENGINEERS • ARCHITECTS • PLANNERS          1907 SOUTH BERETANIA STREET HONOLULU, HAWAII 96826          946-2277</p>

# Professional Directory

 <p><b>D.L. ADAMS ASSOCIATES, LTD.</b> dba <b>DARBY &amp; ASSOCIATES</b> ACOUSTICAL CONSULTANTS PALM PALMS PLAZA, SUITE A311 970 N. KALAHEO AVENUE KAILUA, HAWAII 96734-1870 808 • 254 • 3318 FAX 808 • 254 • 5295</p>	 <p><b>Earth &amp; Environmental, Inc.</b> Tel: 808-545-2462 Fax 808-528-5379 www.amec09.com</p> <p><i>Full service environmental, archeological and GIS consulting support</i> <i>Formerly Dyer &amp; Environmental</i></p>	 <p><b>AUSTIN, TSUTSUMI &amp; ASSOCIATES, INC.</b> Civil Engineers • Surveyors 501 Sumner Street, Suite 521 Honolulu, HI 96817 Tel: 533-3646, Fax: 526-1267, Email: atah@atahawaii.com Branch Office: Wailuku, Maui CIVIL • TRAFFIC • SANITARY • STRUCTURAL</p>	 <p>www.beltcollins.com</p>
<p><b>BROWN AND CALDWELL</b> <i>Environmental Engineering And Consulting • Analytical Services</i> 119 Merchant Street, Suite 200 Honolulu, HI 96813 (808) 523-8499 Fax (808) 533-0226</p>	 <p><b>Carter-Burgess</b> Consultants in Planning, Engineering, Architecture, Construction Management, and Related Services 1001 Bishop Street, Suite 850 Pauahi Tower Honolulu, Hawaii 96813 (808) 523-9096 Fax (808) 523-9699 www.c-b.com</p>	<p><b>S.S. DANNAWAY ASSOCIATES, INC.</b> <i>Fire Protection Engineers Building Code Consultants</i> 720 Iwilei Road, Suite 412, Honolulu, HI 96817 Tel: (808) 526-9019/Fax: (808) 537-5385</p>	<p><b>Y. Ebisu &amp; Associates</b> Acoustical and Electronic Engineers 1126 12th Avenue, Room 305 Honolulu, Hawaii 96816 (808) 735-1634</p>
 <p><b>Esaki Surveying and Mapping, Inc.</b> Lihue, Kauai, Hawaii Ph. (808) 246-0625 • Fax (808) 246-0229 esmap@hawaiian.net <b>ENGINEERS • SURVEYORS</b> Established 1979</p>	 <p><b>900 HALEKALUWILA STREET HONOLULU, HAWAII 96814</b> Phone: 591-8116 <small>ENGINEERS, SURVEYORS, HAWAII, INC. (FORMERLY WILLIAM HEE &amp; ASSOCIATES, INC.)</small></p>	 <p><b>FEWELL GEOTECHNICAL ENGINEERING, LTD.</b> OAHU: 96-1416 Waihona Place • Pearl City, Hawaii 96782-1973 (808) 455-8569 • FAX (808) 456-7062 MAUI: (808) 873-0110 FAX (808) 873-0906</p>	<p><b>MASA FUJIOKA &amp; ASSOC.</b> A PROFESSIONAL PARTNERSHIP ENVIRONMENTAL • GEOTECHNICAL • HYDROGEOLOGICAL CONSULTANTS <b>MFA</b> 99-1205 Halawa Valley Street, Suite 302 Aiea, Hawaii 96701-3281 Phone 808 484-5366 • Fax 808 484-0007</p>
<p><b>FUKUNAGA &amp; ASSOCIATES, INC.</b> 1388 Kapiolani Blvd. Honolulu, HI 96814 Phone: 944-1821 Email: fainc@aloha.com Website: www.fainc.org</p>	 <p><b>GEOLABS, INC.</b> <i>Geotechnical Engineering and Drilling Services</i> 2006 Kalih Street Honolulu, Hawaii 96819 Phone: 841-5064 Fax: 847-1749</p>	<p><b>GEOTECHNICAL GROUTING CONSULTANT</b> Edward D. Graf 182 Lumahai St. Tel: 808-396-9451 Honolulu, HI 96825 Fax: 808-396-2075</p>	<p><b>Engineering and Environmental Services</b> <i>(formerly known as Harding Lawson Associates)</i> <b>Harding ESE</b> 98-1247 Kaahumanu Street, Suite 305 • Aiea, Hawaii 96701 Phone: 808-486-6009 / Fax: 808-486-7184 • Civil Engineering and Design • Environmental Services • Geotechnical Engineering • Construction Monitoring</p>
 <p><b>CIVIL ENGINEERING AND PLANNING CONSTRUCTION MANAGEMENT SERVICES</b> <b>Hawaii Pacific Engineers, Inc.</b> 1132 Bishop Street • Suite 1003 Honolulu, Hawaii 96813-2830 Phone: (808) 524-3771 • Fax: (808) 538-0445 E-mail: hpeinc@hawaiipacificengineers.com</p>	<p><b>HIDA, OKAMOTO &amp; ASSOCIATES, INC.</b> CONSULTING ENGINEERS The Commerce Tower, Suite 1120 1440 Kapiolani Boulevard Honolulu, Hawaii 96814 Phone: (808) 942-0066 Fax: (808) 947-7546</p>	 <p><b>ERNEST K. HIRATA &amp; ASSOCIATES, INC.</b> Soils and Foundation Engineering 99-1433 Koaha Place • Aiea, Hawaii 96701 Fax (808) 486-0870 • Phone (808) 486-0787</p>	 <p><b>SAM O. HIROTA, INC.</b> Engineers &amp; Surveyors 864 S. Beretania Street Honolulu, Hawaii 96813 Telephone: 537-9971</p>
 <p><b>INABA ENGINEERING, INC.</b> 273 WAIANUJENUE AVENUE HILO, HAWAII 96720 Phone: (808) 961-3727 / Fax: (808) 935-8033 Civil Engineering • Structural Engineering Land Surveying</p>	 <p><b>IT Corporation</b> Nation's leader in on-site remediation services Bldg. 223, South Avenue • Pearl Harbor, HI 96860-4936 P.O. Box 30526 • Honolulu, HI 96820-0526 Tel: (808) 474-8172 • FAX: (808) 474-0811</p>	 <p><b>KFC AIRPORT, INC.</b> PROJECT MANAGEMENT CONSULTANTS PLANNING • ARCHITECTURAL/ENGINEERING DESIGN • CONSTRUCTION MANAGEMENT 3372 Koapaka Street, Suite F220-48 Honolulu, HI 96819 Phone: (808) 836-7787 Fax: (808) 834-4833</p>	<p><b>KN CONSULTING SERVICES, INC.</b> Civil Engineers 1451 S. South King Street, Suite 412 Honolulu, Hawaii 96814 Phone: (808) 941-8882 Fax: (808) 941-8828 Email: kncons@pixi.com</p>
<p><b>THE LIMTIACO CONSULTING GROUP</b> CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS 615 Piikoi Street, Suite 1605 • Honolulu, Hawaii 96814 Tel (808) 596-7790 • Fax (808) 596-7361 • www.tlcghawaii.com</p>	 <p><b>LYON ASSOCIATES, INC.</b> Engineers/Construction Managers 841 Bishop Street, Suite 2006 Honolulu, Hawaii 96813 Tel: (808) 536-6621 Fax: (808) 523-1738 Email: admnh@lyonassociates.com</p>	 <p>Surveying Civil Engineering &amp; Design Environmental Engineering Water Treatment &amp; Supply Construction Management Wastewater Collection &amp; Treatment 1001 Bishop Street, Suite 500, Pauahi Tower Honolulu, HI 96813, telephone 808-521-3051</p>	<p><b>NAGAMINE OKAWA ENGINEERS INC.</b> CONSULTING STRUCTURAL ENGINEERS 1001 Bishop Street • Pauahi Tower, Suite 725 Honolulu, Hawaii 96813 Phone: (808) 536-2626 • FAX: (808) 536-3926</p>
<p><b>NAKAMURA, OYAMA AND ASSOCIATES, INC.</b> CONSULTING ENGINEERS ELECTRICAL/TELECOMMUNICATIONS 1314 South King St., Suite 401 Honolulu, Hawaii 96814-2004 Telephone (808) 591-8887 Fax (808) 596-2383</p>	 <p><b>NEWCOMER - LEE LAND SURVEYORS, INC.</b> 1498 Lower Main Street, Suite "D" Wailuku, HI 96793-1937 Tel: (808) 244-8889 Fax: (808) 244-8422</p>	 <p><i>...innovation through engineering and scientific excellence...</i> Environmental Engineering Pacific Tower #2970, 1001 Bishop Street Coastal Engineering Honolulu, HI 96813-3654 Civil Engineering (808) 531-3017 / Fax: (808) 531-3177 Planning oceani@oceanit.com / www.oceanit.com</p>	 <p><b>Okahara &amp; Associates, Inc.</b> Engineering Consultants 200 Kohala St., Hilo, HI 96720 / Ph. (808) 961-5527 Fax (808) 961-5529 677 Ala Moana Blvd., Suite 703, Honolulu, HI 96813 Ph. (808) 524-1224 Fax (808) 521-3151 735574 Moku St., Bay View, Kailua-Kona, HI 96740 Ph. (808) 329-1221 Fax (808) 329-1006</p>
 <p><b>Pacific Geotechnical Engineers, Inc.</b> <i>Soils &amp; Foundation Engineering Consultants</i> 429-B Waiakamilo Road Honolulu, Hawaii 96817 (808) 841-8024 FAX (808) 848-5102 E-mail: pge@pacificgeotechnical.com</p>	 <p><b>PACIFIC MACHINERY INC.</b> 94-025 Farrington Hwy. Waipahu, Hawaii 96797 808/676-0205 FAX 808/676-0264 CATERPILLAR &amp; OLYMPIAN Generator Sets, Engines, Switchgear and Ancillary Equipment. (Prime Power &amp; Standby Power, 8-2000 kW) CATERPILLAR 3600 Utility Plant Generator Sets (1.5-5 MW)</p>	 <p>SUITE 300, KAWAIAHAO PLAZA 567 SOUTH KING STREET HONOLULU, HAWAII 96813 TELEPHONE: (808) 531-1676 <b>ParEn, Inc.</b> dba <b>park engineering</b> <i>Engineers, Surveyors, Planners</i></p>	<p><b>PROSTAFFING</b> Contract-Permanent We put engineers to work 524-1733 Fax 523-3435 www.prostaffing.com</p>
 <p><b>Sato &amp; Associates, Inc.</b> HONOLULU 2046 South King Street Honolulu, HI 96826 Tel: (808) 955-4441 Fax: (808) 942-2027 MAUI 2115 Wells Street Wailuku, HI 96793 Tel: (808) 244-9265 Fax: (808) 244-5303 CONSULTING ENGINEERS • CIVIL &amp; STRUCTURAL</p>	<p><b>SHIMABUKURO, ENDO &amp; YOSHIZAKI, INC.</b> CIVIL &amp; STRUCTURAL ENGINEERS  1126 12th Avenue, #309 Honolulu, Hawaii 96816 Phone: (808) 737-1875 Fax: (808) 734-5516 Email: seyeng@aloha.net</p>	 <p>• CIVIL • STRUCTURAL • ENVIRONMENTAL • OCEAN Consulting Engineers <b>Marc M. Siah &amp; Associates, Inc.</b> 810 Richards Street, Suite 888, Honolulu, HI 96813, Ph: 538-7180</p>	 <p>501 Sumner Street, Suite 502 Honolulu, Hawaii 96817 Ph (808) 531-1308   Fax (808) 521-7348 Project Managers, Planners, &amp; Engineers www.ssfm.com</p>

HAWAII COUNCIL OF  
ENGINEERING SOCIETIES  
P.O. Box 2873  
Honolulu, Hawaii 96802

Presorted  
Standard  
U.S. Postage Paid  
Honolulu, Hawaii  
Permit No. 1400