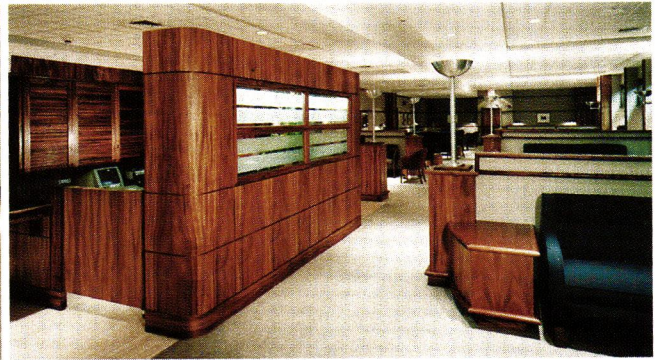


HAWAII ARCHITECT

April 1994

- ▶ *Continuing Education*
- ▶ *Plantation Village*
- ▶ *Building Facades*

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Continental Airlines' new 5,000 sf executive lounge (which more than doubles its original space at Honolulu International Airport) is a case in point.

"We wanted our *President's Club* to be a relaxing, peaceful haven for travelers to unwind in quiet comfort," observes Continental's *Bill Martin*. "And, we wanted the job done as fast as possible to accommodate our clients."

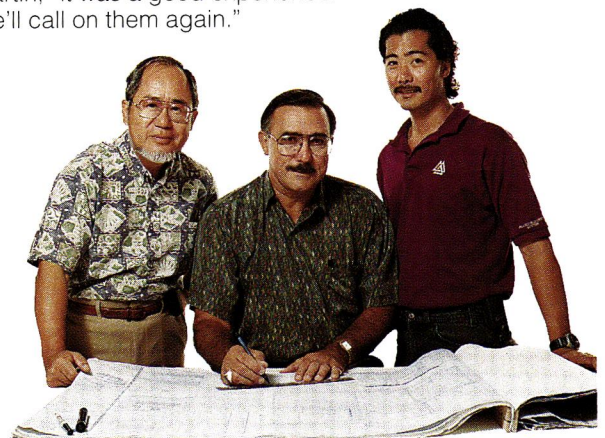
Recalls Project Architect *Dennis Lee*, AIA, of Peter Hsi & Associates: "Both budget and schedule were concerns. Our design response was a living room like setting with kamaaina styling—using subdued lighting, koa wood and natural stone."

Both owner and architect applaud Allied Builders' seasoned contracting skills, sensitivity and "as advertised" spirit of cooperation. "All things considered," concludes Martin, "it was a good experience. We'll call on them again."



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Architect Dennis Lee, Continental Hawaii Manager Bill Martin,
ABS Project Manager Winton Saito



The relaxed elegance of The Hawaii Prince Hotel was ideally suited to natural stone flooring. Burlington slate, from England, was honed and polished for the entrance lobby with natural cleft slate used for the pool deck and exterior areas. Creative tile design. Fit for a Prince.

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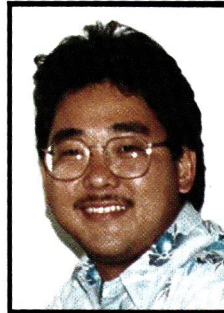
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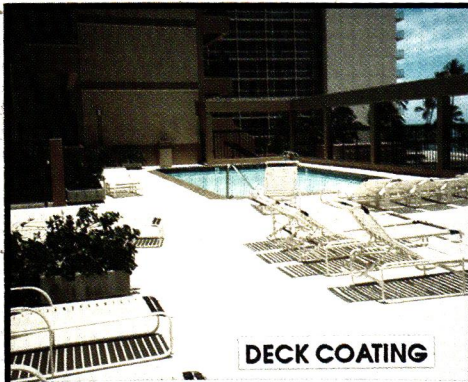


Heading a team of over 40 technicians are left to right:
Alvin Nishikawa, Ken Matsumura, John Kobayashi,
Al Gardner, Steve Kramer, and Jim Hiramatsu

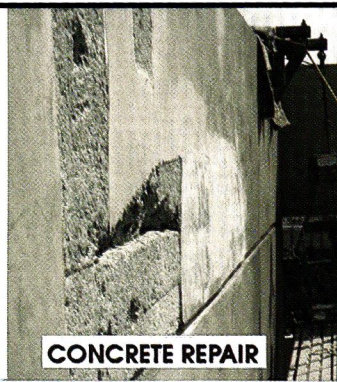
Meet Alvin Nishikawa.



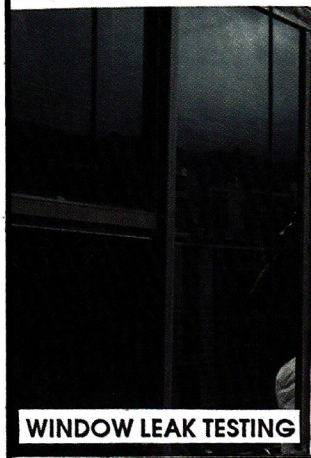
Alvin is Vice President of The American Coating Company. He is in charge of all field and estimating operations. Previously, Alvin was employed with an engineering firm in Chicago and Honolulu where he focused primarily on restoration and water infiltration problems. Alvin holds a M.S. and B.S. in Engineering from Purdue University.



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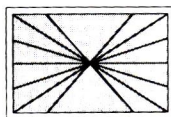


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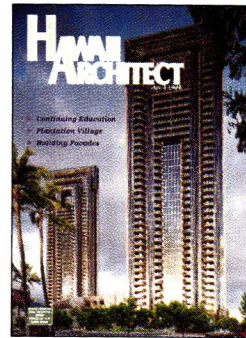
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In this issue ...



Structural engineering is the focus of this issue of Hawaii Architect.

The cover depicts One Waterfront Towers designed by Boone & Boone Design, Inc. and Architects Hawaii Ltd., twin structures incorpo-

rating unique skylight systems which required structural engineering attention.

The primary responsibility of the structural engineer is to provide support to architects and contractors. Designers imagine a structure and give it a visual identity. Engineers take this creation and set out to prove its feasibility.

Their contributions, however, do not necessarily stop with concept validation. Structural engineers provide innovative, cost-effective solutions to complex construction problems, often inventing processes, materials or techniques required to achieve the desired results.

For instance, inventions over the past 45 years by Alfred Yee, structural engineer, inventor, property developer, entrepreneur and president of Applied Technology have transcended the project for which these solutions were intended and revolutionized Hawaii's construction industry.

The introduction of unique rigging techniques, materials and processes in building the University of Hawaii's Sports Arena have helped keep this project on schedule and within budget.

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A marriage made in heaven Structure and Skylights



Skylight systems have evolved from simple, box-like devices to highly sophisticated architectural forms requiring structural engineering attention. Many of Honolulu's high-rise buildings feature unique skylight systems. To keep up with the demand for skylight systems, Super Sky

Products, Inc., a leading manufacturer and Skylights of Hawaii, Inc. have developed one of the nation's top team of professionals.

Notable skylight projects done by the two companies are One Waterfront Towers, Queen Victoria Condominiums and the main terminal at Honolulu International Airport.

The One Waterfront Towers, completed in December 1987, feature 10 segmented vaults of tinted laminated glass totaling more than 17,000 square feet. The system, spanning between the 39th and 45th story penthouse areas of the mauka and makai towers, interfaces directly with the Cupples curtain wall. The landmark was designed by Boone & Boone Design, Inc. and Architects Hawaii Ltd. and built by Fletcher Pacific Construction Co., Ltd.

The structural significance of this skylight work is found on several levels. Full glass vaults below the top of the towers are turned 90 degrees on their sides, spanning two levels. The top and bottom edges are anchored into steel imbeds in the concrete floor slabs. The midpoint (or ridge line of a normal oriented vault) is also anchored into imbeds at the protruding floor slab. The occupants of the lower units can stand at the edge of space looking down through the lower portion of the vaults.

Designing glass vaults is an art, a balance between structural necessities and visual perceptions. Mullion/rafter spacing was altered along with the optimum glass sizes from the original design, a cooperative effort between the architect and



▲ Unique custom enclosures at Queen Victoria Condominiums transcend labeling as bay windows, greenhouses or other architectural forms.

the manufacturer. This is the first project where the weight of the vault glass rests on the retainer caps.

Honolulu International Airport, completed in September 1987, features a structural system that links multiple (184) pyramids into a reliable watertight skylight system. The extruded aluminum gutter system spans node to node on the supporting aluminum space frame. There is no need for continuous bearing. Instead, the gutter stands off the nodes on threaded pedestal supports which allows precise leveling of the gutters assuring proper drainage. The structure was designed by Harry T. Miyachi and constructed by Fletcher Pacific Construction Co., Ltd.

Queen Victoria Condominiums, completed in June 1990, is crowned with 10 unique custom enclosures. Hawaii's first totally flush glazed skylight system transcends labeling as bay windows, greenhouses, or other common architectural forms. The primary structural feature of each skylight is the use of one aluminum structural framing system for vertical and segmented sloped planes. Super Sky's engineers arranged the unique aluminum extrusion to allow maximum vision area and overcome the monumental challenge of designing framing members which resist forces in directions other than their major and minor axes. The condominiums were designed by Irie, Nakamoto, Kondo Architects and built by G.W. Murphy Construction.

Other unique and structurally challenging installations include Waikapu Golf Clubhouse which incorporated the first round glass skylights to curve in both the horizontal and vertical directions; and the Ihilani Hotel at Kapolei which features a custom triangular skylight at the atrium supported by structural steel tubes.

♦ Ron York is president, Skylights of Hawaii.



▲ Incorporation of complex skylight systems at One Waterfront Towers required structural engineering consideration.

DAVID FRANZEN PHOTO

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Incorporating innovative solutions UH Sports Arena

by
Paul
Sanders

Structural engineering is the art of the feasible based on abstract calculations, experience and intuition. But then, there is structural engineering and *structural engineering*. Structural engineers are often asked to qualify a design, period. This is a straightforward task. But it makes all the difference in the world if a structural

engineer is encouraged to go a step further towards creativity.

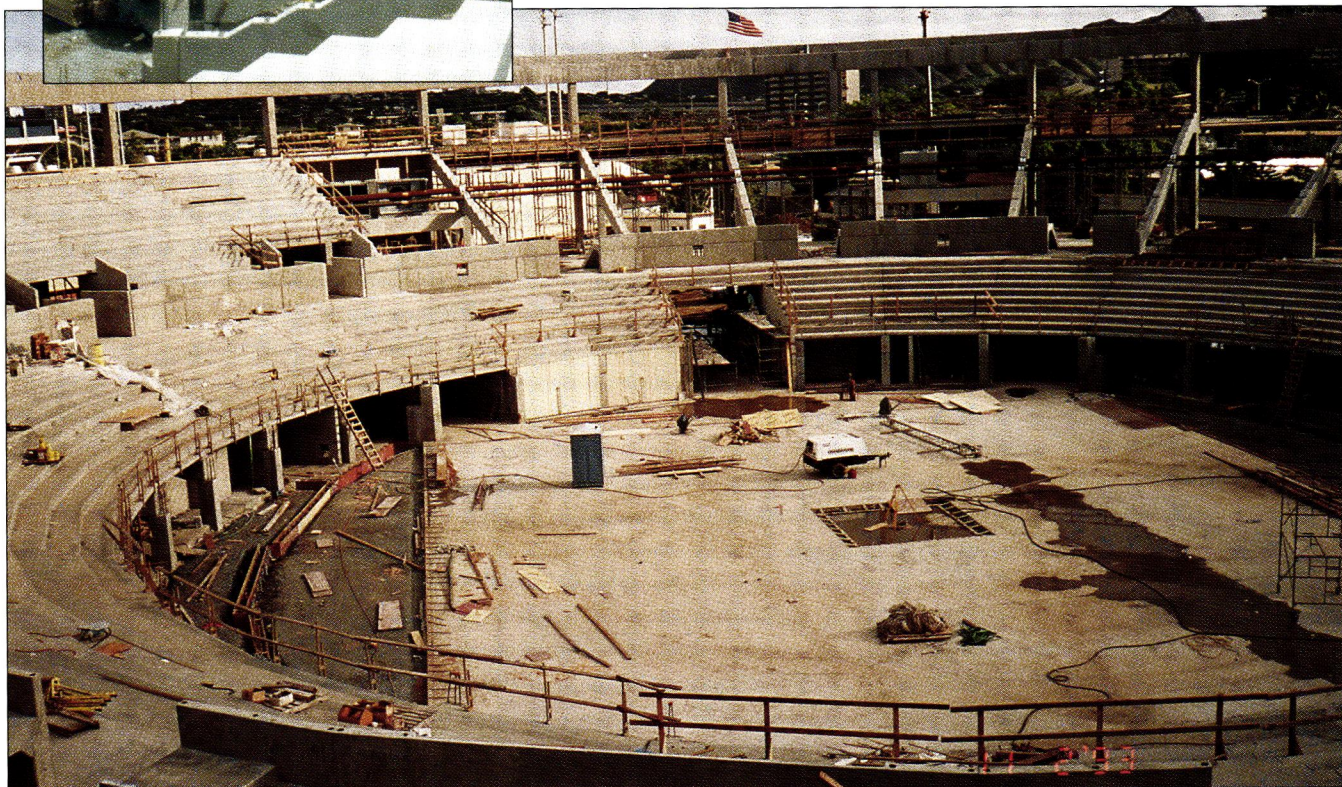
American Structural Engineers is project structural engineer for the University of Hawaii's Sports Arena now under construction at the Manoa Campus. Itzhak Tepper, a principal of this 24-year-old firm, has been a practicing structural engineer for many years and has participated on projects all over the world.

It generally requires years of training and experience to acquire expertise in this profession and to remain innovative. This, according to Tepper, "is the key to good structural engineering—fresh, money-saving ideas that hold water."

The Sports Arena design evolved from the



◀ Concourse level consists of poured-in-place beams connected to radial frames; pre-stressed "double-L" seats are attached to the frames.



▲ Innovative construction techniques are being used to build the University of Hawaii's Sports Arena.

PHOTOS COURTESY OF CHARLES PANKOW BUILDERS, LTD.

basic idea of having a solid and innovative multi-purpose facility where people would gather to enjoy activities ranging from sporting events to concerts.

Tepper pointed out, "Engineers have a basic obligation to protect life and property."

"With this goal in mind," Tepper added, "Structural members must be well-designed and economical; they must be capable of withstanding stresses induced by gravity, high wind, temperature changes, earthquakes and other conditions."

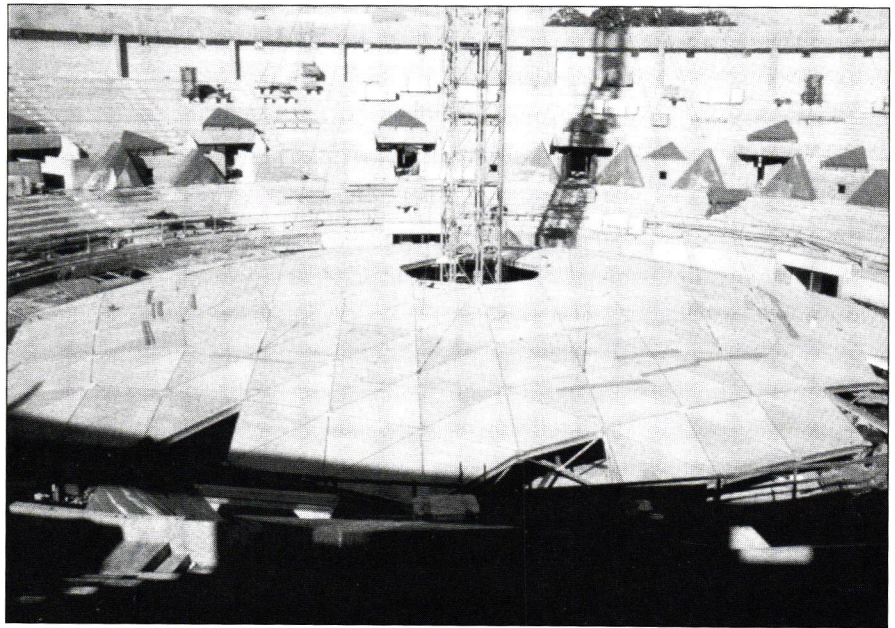
Additionally, Tepper believes it is the engineer's responsibility to provide architects and contractors with ideas and options that will fit the overall design philosophy. To achieve this requires the ability to listen and understand 1) how the architect envisions the structure and its functionality and 2) the contractor's requirements and constraints.

"Teamwork may involve changes in architectural philosophies and at times some table pounding and passionate exchanges," Tepper said.

According to Tepper, Charles Pankow Builders' participation in the team brought to the table a wealth of experience and understanding of the building process.

"Although concerned with costs, they were not afraid to adopt more expensive solutions if it meant creating a better building, without compromising the client's position," Tepper remarked. "The team's main concern on this project was to make the idea work."

The arena's slab-on-grade was used as a casting bed for 32 radial frames; a special rigging technique was used to erect the frames and place them onto the foundation. These frames are crowned with a supporting ring beam for the dome roof. The ring beam—a tension/compression ring—was cast in segments around the perimeter of the structure then lifted onto the columns and joined together using a special connection to make it



▲ A unique technique is used to assemble and install the anodized aluminum dome roof.

continuous.

The concourse level consists of poured-in-place concrete beams connected to the radial frames. Additionally, pre-cast, pre-stressed "double-L" seats are solidly attached to the frames.

The aluminum roof, fabricated by Temcor in California, was shipped in crated sections to Hawaii. A unique and clever technique is being used to install the anodized aluminum dome roof. A 90-foot tower was first erected at

the center of the structure to serve as a guide and temporary support.

Extruded aluminum beam assemblies are connected on the floor, one layer at a time, around the base of this tower. Each completed layer is then raised with wires to its proper elevation. This process is repeated, with each completed layer being raised with wires, adding to the diameter of the roof until the entire roof is in place. The construction techniques used for this project make scaffolding unnecessary.

The Architect and the Structural Engineer

Daniel G. Chun, AIA, of Kauahikaua & Chun Architects, local architects for the UH arena, looks to the structural engineer for creative and economical solutions.

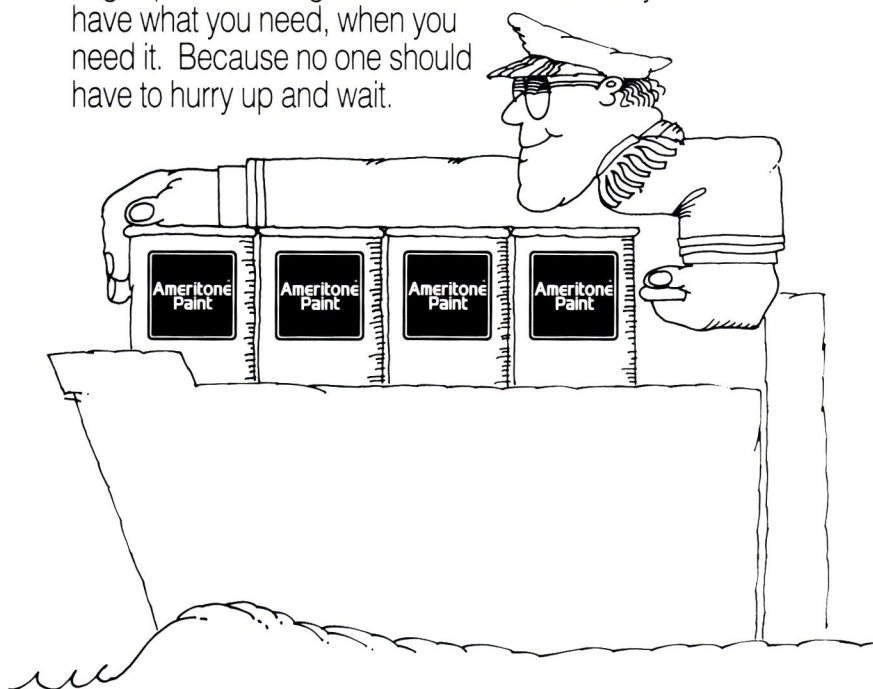
"In many buildings the foundation and the structural frame are not even seen," said Chun. "Therefore, architects want the most economical engineering solution to support the building. Using this tactic more money can be spent on the architecture of the building." Chun indicated that American Structural Engineers provided innovative solutions for concrete radial frames.

"The concrete radial frames used for the arena are a wonderful solution," he explained. "I sometimes regret that these rather delicate frames are not more visible in the finished building. The available land area is too tight to allow for a more dynamic exterior expression of this structure. Instead, concrete masonry walls hide the precast concrete frames."

Chun also indicated that the university wanted the arena to have an almost neo-classical approach with a solid ground floor.

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In Tepper's opinion, the team effort approach involving professionals from different disciplines, makes for a better project.

The chemistry between team members is important. This usually stems from having experienced and knowledgeable professionals on the team who have respect for each others' abilities.

"The days of slide rules are over," Tepper declared. "Sophisticated analytical tools are readily available. However, that is not enough. It takes judgment and intuition, based on years of experience and knowledge of available construction techniques."

Tepper added that professionals are sometimes skeptical of the team approach, but this particular project proves its effectiveness. "We made it work. In the final analysis, it is not important who contributed which ideas to the project. Rather, the objective is to complete a project—the arena—as designed, on schedule and within budget."

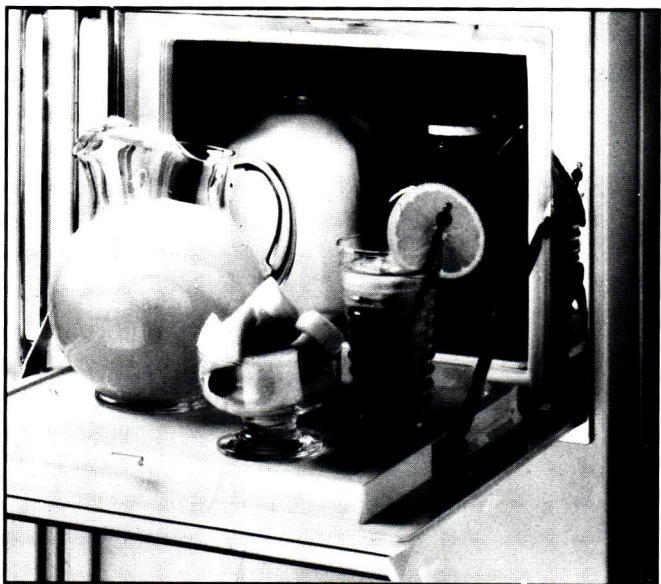
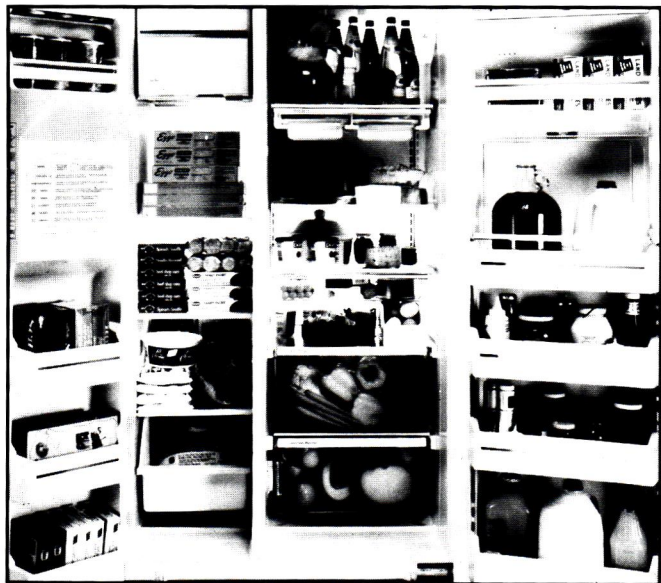
A Company Profile

American Structural Engineers was founded in Honolulu in 1970 by its current president, Dimitri Bratakos. The firm expanded over the years, establishing offices in California, the metropolitan Washington D.C. area and, last year, Guam.

The company has completed major structural engineering projects throughout the United States, Asia, and the Pacific Basin.

"Most companies usually start on the mainland and then establish offices in Hawaii," said Bratakos. "We went against the trend. The firm was established in Hawaii and then we expanded east."

This is what happens

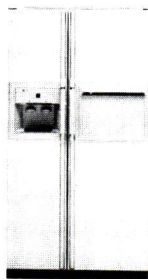


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Determining membership interests **Lifelong Learning**

by
**Barry John
Baker**

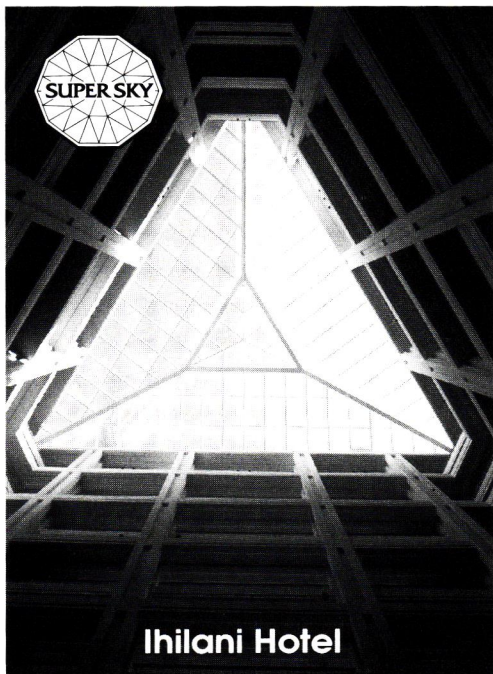
In late December, 1993, and early January, 1994, AIA Honolulu and the University of Hawaii at Manoa, School of Architecture polled the chapter membership to determine interest in and views regarding the chapter's decision to require mandatory continuing education for membership.

Continuing education will promote lifelong learning, enhance expertise and add considerable value to professional activities

for the mutual benefit of architects and the consumers of architectural services. More than 100 members, or almost 17 percent of FAIA/AIA membership, responded to the survey, an outstanding response to a mail survey and indicative of the membership's concerns for professional improvement, lifelong learning and improved service to clients and consumers.

A summary of survey results follows:

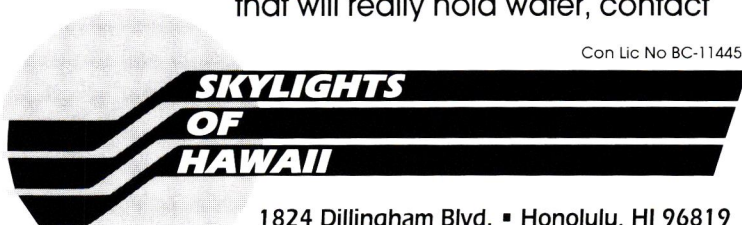
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Preferred CE Program Types and Time Commitment

Program type:	% of responses hours/year	time commitment
Level 1 (1 AIA CE credit/hour of activity/ self-directed learning)	40	10
Level 2 (2 AIA CE credit/hour of activity)	31	8
Level 3 (3 AIA CE credits/hour of activity/ interactive programs approved by AIA)	26	7
Unclear responses	3	

Preferred CE Program Length

Program length/ scheduled time:	% of favorable responses	% of unfavorable responses
Long/4 hours	60	23
Short/1 hour	47	43
During business hours	38	39
During evenings	44	33
On weekends	47	41

A respondent from a neighbor island suggested organizing and packaging programs over particular weekends so that architects located away from Oahu could be better served. Several others recommended the use of video programs to assist neighbor island membership.

Membership Access to Computers

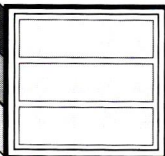
Computer operating system	% of responses
Apple/System 7	38
DOS	57
Windows	30
Unix	3
No response or access to computers	12

Existing CE Patterns

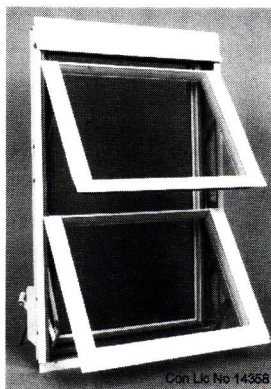
Respondents reported that 33 percent of professional offices now offer CE programs or plan to do so in the future. Nineteen percent reported expertise in particular professional areas they would be willing to share with colleagues

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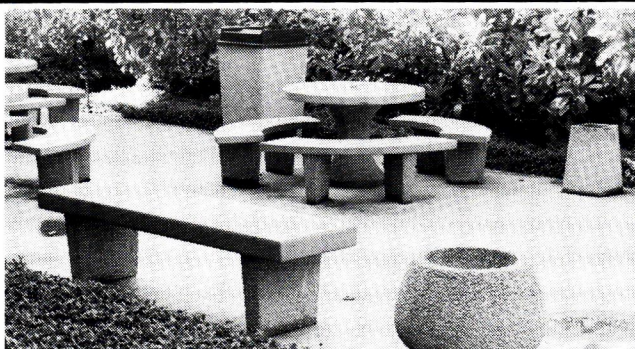
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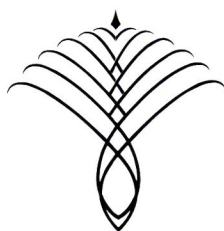


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through CE programs. An additional 10 percent of respondents were not sure about this question, which suggests they have particular expertise but are undecided about participation in offering CE programs.

Reported areas of expertise included accessibility and ADA, adaptive reuse of buildings, AutoCAD, automated management, computer applications, conceptual design, construction administration, construction management, disaster preparedness, historic preservation, landscape design and water features, passive environmental control systems, presentation and delineation, professional practice and management, programming, project delivery, site planning, sustainable environments, termite control, water infiltration and zoning.

Survey respondents reported spending an average \$325 annually on CE but expressed a preference for annual expenditure between \$110 and \$315. This is a perplexing response, because it suggests

Survey Results to Assist Committee

The results of the continuing education program survey were communicated to David Miller, AIA, chair of the AIA Honolulu Professional Development Committee to assist the committee, chapter and UH-Manoa School of Architecture in coordinating the Continuing Education Pilot Program. A subcommittee has been formed to develop a formal program that is responsive to the survey results and the wishes of the membership.

Further correspondence on this matter is welcomed; additional comments should be directed to the AIA Honolulu Secretary, Professor Barry John Baker, AIA, Associate Dean, University of Hawaii at Manoa School of Architecture, 1859 East-West Road, Honolulu, HI 96822, or fax 956-7778.

members wish to reduce continuing education cost at a time when AIA is initiating mandatory continuing education and requiring more.

CE Topics

Several proposed topics on technical subjects received strong backing, and no suggested topic was considered valueless by more than 20 percent of respondents; two thirds of topics received negative responses of 10 percent or less. Eleven respondents suggested additional topics which have been included in the reported areas of expertise in the preceding section. Seventy-six percent of respondents declined comment on this question. A breakdown of responses to continuing education topics follows:

Continuing education topic	% of favorable responses	% of unfavorable responses
Building technology	83	2
Building failures	73	5
Liability and legal issues	72	10
Uniform Building Code	68	10
Seismic and hurricane design	64	5
Environmental systems/ energy issues	63	4
Risk management	62	9
Land Use Ordinance	61	16
Building case studies	59	6
Marketing	58	9
Site visits	58	13
Urban planning	54	20
Contract administration	59	5
Financial management	48	10
Social issues	47	17
History	44	14
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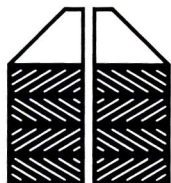
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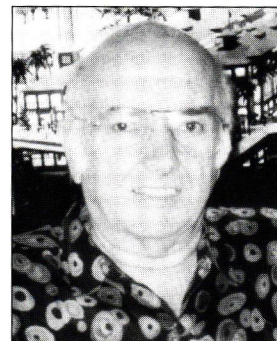
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The economical solution **Finish Materials**



J. Norman Lacayo, AIA

by
**Paul
Sanders**

Applying cosmetics to building exteriors is like adding icing on a cake. It can make a structure appetizing or sink it into anonymity. Therefore, it is not surprising architects agonize over finish materials for building facades, especially in today's economic climate.

Norman Lacayo, AIA, president of Lacayo Group Inc., said that with the "fantasy world of the '80s now being history," it is difficult to justify implementing facades designed in the '80s. "Architects have to design buildings that make financial sense to developers," said Lacayo.

Lacayo selected exterior insulated finish system (EIFS) for the Harbor Court building under construction at Bethel Street and Nimitz Highway, although his initial selection called for cast stone. If money wasn't a factor, Lacayo said his preference would be 1) lime stone/sand stone, 2) cast stone, or 3) large tiles, as used in the '30s. Although EIFS is last on his list, it is the most popular facade material today.

"A value engineering review made us aware it would be impossible to implement a cast stone structure," he said. "Cost would be prohibitive. We had to prioritize and compromise."

The owners—The Beam Harbor Venture, a joint partnership between McCormack Harbor Properties and Bradley Harbor Holdings—left it to the architect to select a course of action within their established program without compromising product appearance.

"EIFS was the only product allowing us to retain important design features," said Lacayo. "This decision freed funds—more than two percent of the entire budget—to invest on artifacts and detailing."

EIFS is not new. It has been used worldwide for more than 30 years. Lacayo knew what it could do, having used it on the Gateway building and other projects in Hawaii.

"Use of a different system would have forced elimination of all articulations which create dynamic shadows and instill romantic qualities," Lacayo said. "EIFS is a versatile and flexible material that allows imaginative sculpting that would be prohibitive with any other material."

Harbor Court features a unique vocabulary consistent with a renaissance Deco architecture of the '30s, which is uniquely "Hawaiian."

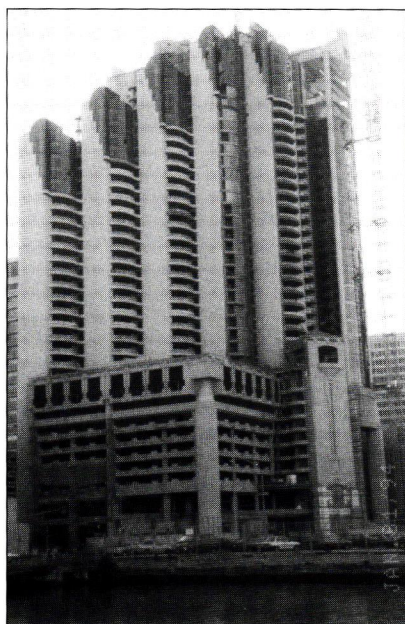
The Hawaiian Kahili inspired a lot of the articulations done with EIFS.

"We tried to create a building with few shining materials," he said. "A concrete mix was especially designed for architectural concrete. Then we used stainless steel light fixtures, gates and accessories that carry the Kahili theme."

The result is a facade rich with shadows, spaces and forms," he said. "I hope use of EIFS in this building will encourage other architects to create dynamic effects as we have been able to achieve with the system."

Building acceptance rests with the people who will occupy the building and visitors who will take advantage of open public spaces.

"I am pleased with the strong homogeneous look we achieved with EIFS," Lacayo said. "When light shines on the building, the result is as good as if we had used cast stone."



▲ The architect selected EIFS for the facade of the mixed use Harbor Court building which is nearing completion.

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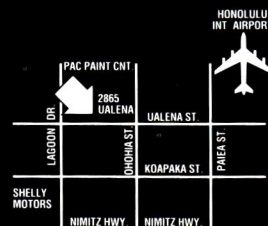


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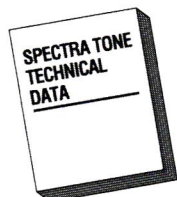
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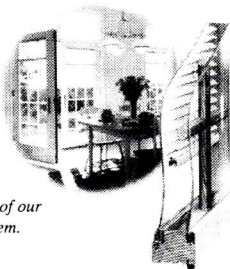
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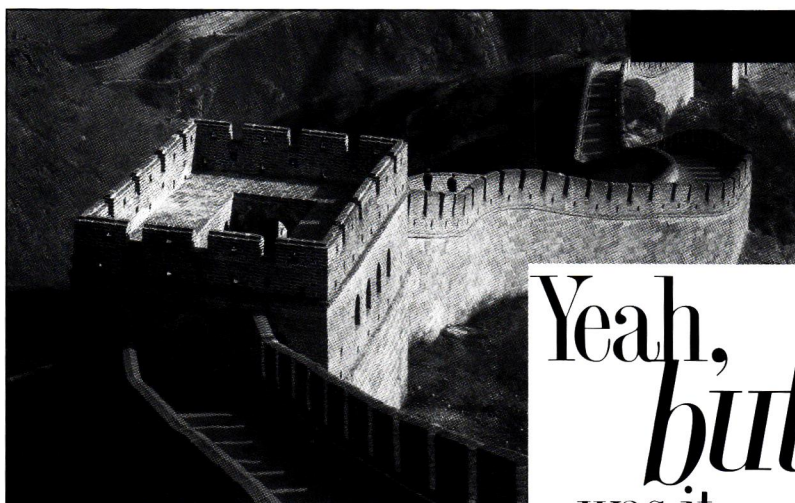
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Letter to the Editor

Dear Editor:

We were shocked to read the Lanai article in your February issue in which Arnold Savrann claimed that the designs for the Lodge at Koele and the Manele Bay Hotel were based on his "sketches." We categorically reject his allegation in the strongest way. Group 70 International was the design architect as well as the architect of record for both projects. Mr. Savrann was a client representative and a liaison to Mr. Murdock, Chairman of Dole.

Evidence supporting our claim has been sent to you including a sample of our competition entry for the Manele Bay Hotel. Five Honolu-

lu firms, listed separately, participated in the competition which we won and none were privy to "sketches" by Mr. Savrann. Any of these firms can be contacted for confirmation. The building was completed in accordance with our competition concept. In addition, we have given you the names of several impartial and unimpeachable sources who played key roles in the projects and who will substantiate our authorship of both projects. We have also pursued this issue by filing an action with the AIA against Mr. Savrann for unethical conduct.

We are disturbed that a professional journal such as the Hawaii Architect should print unsubstantiated assertions from someone who has no professional or legal claim to the design of these buildings. As you must realize, correct attribution is a critical issue in architecture as it is in any artistic

field. We, therefore, feel a retraction disassociating the Hawaii Architect from Mr. Savrann's statement is professionally required.

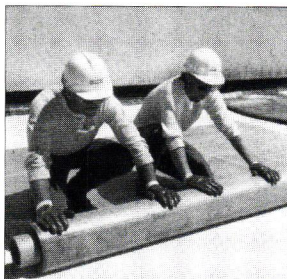
Francis S. Oda, AIA, AICP
Chairman
Group 70 International, Inc.

Editor's Note: According to information from the Honolulu Chapter/AIA design awards given to the Lodge at Koele in 1990 and the Manele Bay Hotel in 1991, credit for design was jointly given to Group 70 and Arnold Savrann. The article was based on information obtained in an interview with Savrann.



Quiz on Specialty Roofing Products

- Q:** What is the most popular commercial low slope roofing in America?
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- Q:** Which single-ply company is doing the best overall job including product quality, weatherability, availability, and technical support?
- A:** **Carlisle SynTec Systems** is No.1 according to a report published in *Building Design & Construction* magazine. Carlisle received 3 times as many votes as its nearest competitor.
- Q:** How is Carlisle EPDM membrane faring in Hawaii?
- A:** Very Well. Recent projects include MCAS Commissary (70,000 SF) BYU Aloha center (55,000 SF), Honolulu International Airport-Gates 31 thru 34 (71,000 SF), K-Mart Kahului (110,000 SF), and Coca-Cola Bottling (39,000 SF).
- Q:** Sounds great, How do I go about getting a Carlisle Catalog, samples, or technical design assistance?
- A:** Call MAP and ask for Bill South or Bob Hockaday.



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Architects appointed

Governor Waihee has appointed architects Penny Hamilton Posedly, A.I.A., Morris Schechter, A.I.A., and Kenneth Chang to the Architectural Access Committee (AAC).

The trio joins engineer Charles Clark and committee chair Thomas F. Jackson, Equal Employment Opportunity for the Department of Labor.

A new AAC coordinator, Dean Aoki, replaced Susan Taylor Beury, Americans with Disabilities Act (ADA) March 26. Beury is now coordinator with the state Department of Transportation.

The Architectural Access Committee hears variance requests on state and county projects including those that are built for the state or will be turned over to the state. In addition, the AAC may develop accessibility guidelines above and beyond the Americans With Disabilities Act Accessibility Guidelines (ADAAG) to meet state needs.

News

Since Jan. 1, state and county buildings must comply with the ADAAG and any other design guidelines issued by AAC.

Sustainable Communities

Three AIA Honolulu committees, in conjunction with "Greenhouse Earth," an exhibit to run at the Bishop Museum through May 8, will make a presentation on "sustainable communities" Tues-day, April 26. The presentation will take place at the Bishop Museum's Atherton Halau from 7 to 9 p.m.

Participating committees include the Housing Committee, Sustainable Communities Subcommittee and the Urban Design Committee.

Call 848-4168 for information.

AIA Convention Set

The 126th American Institute of Architects (AIA) National Convention and Design Exposition will be held May 13-16, at the newly expanded Los Angeles Convention Center (designed by Gruen Associates/Pei Cobb Freed & Partners). This year's theme is "Edges: Succeeding through Change."

For more information or to obtain a registration booklet, call the LA94 hotline, (202) 626-7395; fax, (202) 626-7518.

Architect Chairs Group

N. Robert Hale, AIA, president of Architects Hawaii Ltd., has been elected 1994 chair of the Economic Development Corporation of Honolulu. He succeeds outgoing chair Clifton Kagawa.

AIA selects McDermott

Terrence M. McDermott, a publishing executive with 20 years of experience in building and design magazines, has been named executive vice president/chief executive officer of The American Institute of Architects (AIA), effective March 1.

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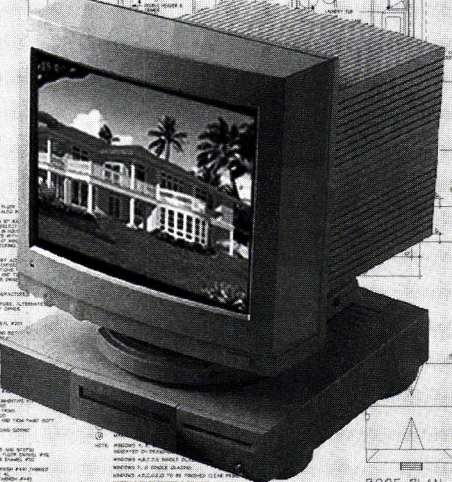
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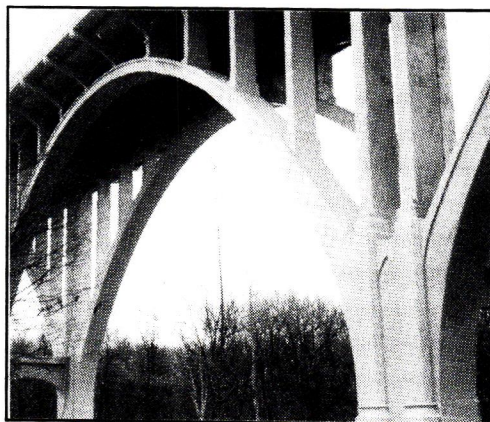
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Leadership Message

A threat to creativity

Proposed Commission

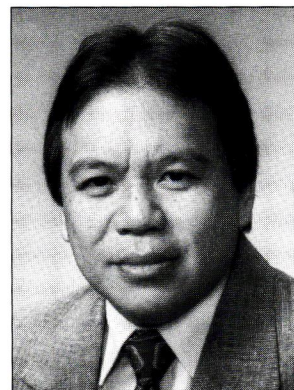
The American Institute of Architects is opposed to the Architectural Oversight Commission which would be established by House Bill No. 2940, which reads:

"There is hereby established the architectural oversight commission, to be placed in the Department of Land and Natural Resources for administrative purposes. The purpose of the commission shall be to issue initial approval for every commercial public and private building in the State.

The sole criteria by which each building shall be judged shall be whether the building demonstrates an exterior, including landscaping, that reflects a Hawaiian sense of place. The board shall establish and publish standards to define that term."

AIA is opposed to such widespread design control. When creative people come to power there is less creativity. While we may end up with quiet, tasteful buildings, we will not be able to drive local architectural creativity toward future forms which may prove even better at reflecting a Hawaiian sense of place. We do not want strict DLNR standards.

We also do not want loose DLNR standards which will allow widespread architectural debate. A recent court decision in Washington state said that requirements, such as cultural appropriateness, which are to be used to regulate building construction must be easily understood by applicants. If sloping roofs are wanted, the law must say so in plain language. We have even heard allegations that in other states these types of permits can lead to political



Daniel G. Chun

rather than aesthetic considerations.

The language of the bill is actually too weak. If the legislature desires to mandate design which reflects a Hawaiian sense of place, then the Commission needs to regulate highways, airports, mass transit systems, and all other public works which can make even larger positive contributions than individual buildings.

The AIA might be willing to accept such a commission if it started its Sisyphean task with state buildings and public works.

Legislative initiatives typically originate from good ideas meant to address public concerns. Architecture which reflects a sense of place is a good idea. It may be news that not only architects determine the appearance of Hawaii. The bill is also sending a message to developers and financial institutions that the public is upset with architecture which disregards its Hawaii location. If we do not intensify our private efforts to remedy this perceived problem, then it is only natural for legislation to seek a final solution.

♦ Daniel G. Chun, AIA, is president, Hawaii State Council/AIA.

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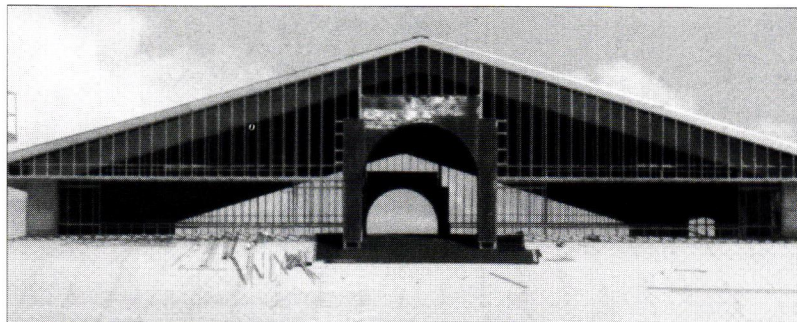
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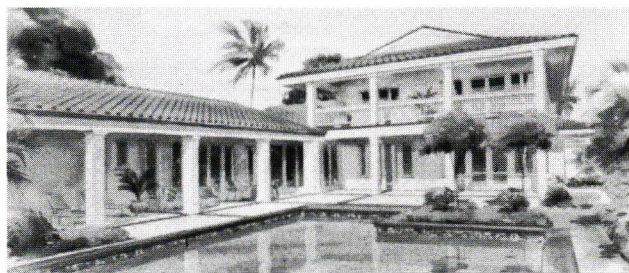
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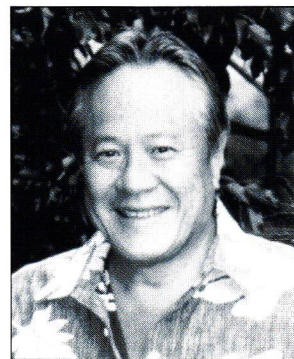
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A lifetime of achievements Alfred Yee



Alfred Yee



Simplicity plays an important role in Alfred Alphonse Yee's business life. In fact, Yee, a structural engineer, noted inventor, property developer, entrepreneur and president of Applied Technology Corporation, says "Nothing excites me like a difficult design problem that can be met by a simple solution."

Yee's distinguished career spans 45 years, and his professional curiosity in many disciplines continues unabated as he already envisions simple solutions to complex problems for the 21st century.

"All these fields are interrelated," Yee said. "As a structural engineer I observe problems that need solving and invent devices to remedy the situation."

Yee derives a great deal of satisfaction and pride from his first real estate development project—Queen Emma Gardens in downtown Honolulu—an apartment complex done 31 years ago in association with architect Minoru Yamasaki, Castle & Cooke and E.E. Black.

"Since its inception, the project is regarded as the most successful urban renewal project in the entire United States," Yee said.

According to Yee, no income limitations were placed on tenants except that the rentals be made affordable to families earning as little as \$7,500 per year. The demand was such that there was a constant waiting list of at least 1000 people during the first 20 years of the building's existence.

"I strongly believe behavior is influenced by architecture," he said. "If you have good architecture, people feel good and behave better. If people live in a slum, they feel and react accordingly."

The complex, consisting of two 25-story buildings and one 14-story building, has 582 apartments.

"At opening, the units looked expensive," he recalled. "But they were constructed for \$20,000/unit, including the land. Rent was from \$110 to \$220 per month, utilities included. Today, rent is up to \$900 per month or more, which is considered still reasonable when compared to other complexes."

The Koro-Babethuap Bridge, Micronesia, displays one of the world's longest spans—a cast-in-place, post-tensioned, cantilevered concrete structure. ▼



After World War II, Yee enrolled under the GI Bill at Rose-Hulman Institute of Technology in Terre Haute, Indiana from which he graduated with a bachelor of science degree in civil engineering in 1948.

"I was about ready to return to Hawaii and apply for a job with the Board of Water Supply," said the Hawaii native, "but one of my professors persuaded me to apply for graduate studies at MIT and Yale."

Yee was accepted by both schools but chose Yale because he wanted to study structural engineering under professor Hardy Cross. From Cross, he learned to focus on building structures "without getting lost in mathematical details."

"Engineers sometimes forget that mathematical calculations are only based on assumptions," he pointed out. "It is more important to visualize how a structure articulates and how the materials behave."

Yee said engineers should first know what is important and design structures using math only as a guide, but never replacing judgment. He also stated that with experience and judgment one can intuitively know the answer "before starting the mathematical analysis."

"Although professor Cross' philosophical approach was useful," he said. "You still have to know the laws of physics, mechanics, etc."

Upon graduation from Yale with a master's in structural engineering, Yee was hired by the Bridge Design Section, Territory of Hawaii Highway Department.

Following a two-year stint with the Public Works Office in Pearl Harbor, Yee, then in his twenties, opened a consulting firm in partnership with Kwan Doo Park. "This was the birth of the pre-stressing, pre-casting industry in

Hawaii," he recalls.

In 1954, he designed and constructed the first thin shell concrete structure in Hawaii, followed by the first pre-cast, pre-stressed concrete mass production facility on Sand Island. In 1964 he designed and constructed the first-pre-tensioned,



Novel construction techniques utilizing Yee-developed splice sleeves were used for the first time in the 38-story Ala Moana Hotel.

pre-stressed concrete barges. Some of these barges he built in the Philippines 30 years ago are still operating today.

He also holds a patent for giant offshore platforms "the size of football fields." One of them, built and launched in Singapore and towed to Baja California is used as a support base for a phosphate processing plant. A similar platform was adapted for offshore oil exploration in Alaska.

Another Yee invention, the splice sleeve, developed 23 years ago, is the world's strongest mechanical reinforcing steel bar connector.

The device is selling well espe-

cially in areas of high seismic activities. The manufacturers of Yee's splice sleeve connector sold \$20 million worth of splice sleeves last year—\$15 million to Japan alone.

Yee also designed the Koro-Babelthuap Bridge in Micronesia—one of the world's longest spans (790 feet)—a cast-in-place post-tensioned cantilevered concrete structure.

Yee also worked with architect Alfred Preis, FAIA, on the Arizona Memorial. "Because the Arizona Battleship is unstable and slowly settling in the mud," he remarked, "we devised a pre-cast platform spanning across, but not touching the ship. Then the memorial was cast on this platform."

Of Preis, Yee said, "He is brilliant as an architect and a man. He understands engineering and architecture. He is inspired and has a strong sense of idealism—a pleasure to work with."

In recognition for his work in concrete technology, Yee was awarded an Honorary Doctor of Engineering in 1976 from Rose-Hulman Institute of Technology and was elected to the National Academy of Engineering.

Yee currently has two inventions in the works. Patents are pending for a double-hull system that would prevent oil tanker breakups and oil spills. His idea is to build an outer hull only 12 inches from the main existing tanker hull. The space between hulls would be reinforced with tensioning steel and filled with reinforced concrete, which is subsequently put under compression by pre-stressing.

"Because of this method of developing strong hulls, impacts would not cause major breakups as in the case with the Exxon Valdez in Alaska," he explained.

"Discounting military applications, which are considerable, there

are 3,500 oil tankers in the world today," he remarked. "Retrofitting these tankers would create jobs at local and national shipyards and ensure against disastrous oil spills."

Another idea under consideration is to construct floating mobile landing strips at sea using modular units connected with articulated connectors.

"These connectors would relieve material stress between modular units on the high seas," he explained. "Hydraulic systems would automatically adjust the landing strip to the movement of the waves."

At 68, Yee is not quite ready to retire. "It's an exciting world," he said. "Many problems remain to be solved for the 21st century."

The writer is indebted to Lee Manfredi, a School of Architecture student at the University of Hawaii/Manoa who graciously shared a draft of her thesis, which also included an interview with Alfred Yee.

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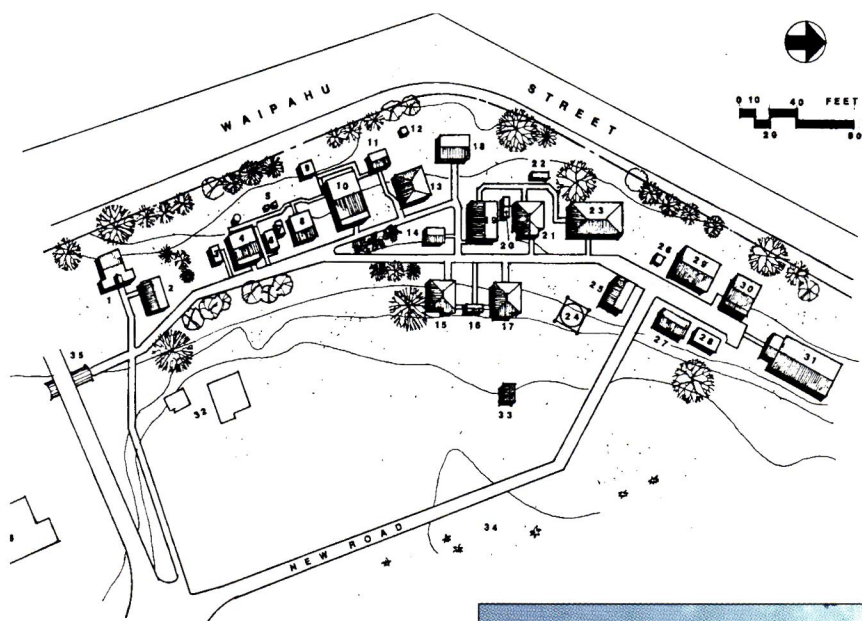
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Historic Preservation/Adaptive Reuse

Spencer Mason Architects, Inc.
Plantation Village, Waipahu



In 1989, Spencer Mason Architects was asked by the Waipahu Cultural Garden Park to design Hawaii's Plantation Village as a living museum to foster a better understanding of the origins of Hawaii's cosmopolitan society as it evolved during the late nineteenth and early twentieth century.

The village was the idea of a group of retired plantation workers concerned that the history of plantation camps would disappear

- | | |
|-----------------------------|-------------------------------|
| 1 Chinese Society Building | 18 Inari Shrine |
| 2 Cook House - Existing | 19 Camp Furo |
| 3 Free-Standing Kitchen | 20 Chicken Coops |
| 4 Portuguese House & Oven | 21 Single Men's Dormitory |
| 5 Duplex Privy | 22 Communal Toilet & Sink |
| 6 Laundry Building | 23 Filipino House |
| 7 Free-Standing Kitchen | 24 Sumo Ring |
| 8 Puerto Rican House | 25 Garage |
| 9 Family Furo | 26 Saimin Stand |
| 10 Japanese Duplex | 27 Camp Office |
| 11 Tofu-Ya | 28 Future Public Toilet |
| 12 Electrical Closet | 29 Plantation Store |
| 13 Japanese Christian House | 30 Infirmary |
| 14 Barber Shop | 31 Social/Union Hall |
| 15 Okinawan House | 32 Pang's House - Future Work |
| 16 Multi-Use Outbuilding | 33 Hawaiian Hale |
| 17 Korean House | 34 Taro Fields |
| | 35 Tunnel |
| | 36 Administration Bldg. |

The Chinese Society Building in Hawaii's Plantation Village is a reconstruction on the original site of the 1906 Tsoong Nyee Tongg. ►

AUGIE SALBOSA PHOTOS



as camps were redeveloped. The museum attracts thousands of school children and visitors each year.

The project required groupings of restored and replicated structures to serve as an outdoor living museum of plantation ethnic history.

Development of the appropriate physical context for the Village involved several types of historic preservation activity—restoration, relocation and reconstruction of historic structures and construction of additional replica buildings.

All new structures needed to comply with the requirements of Uniform Building Code and the American Accessibilities Act.

The architects conducted extensive research of plantation architecture at libraries, archives, museums and sugar plantations to determine development of plantation architecture over time. This also included field visits to various plantation camps. The resulting research formed the basis for construction drawings. The buildings are organized by ethnic groups in chronological order which reflects the arrival in Hawaii of those plantation workers.

Original construction techniques, particularly single wall construction, were carefully reconstructed in each of the 31 wood buildings. Landscaping was carefully undertaken to provide the appropriate context for each building.

Credits

Owner

Waipahu Cultural Garden Park

Architect

Spencer Mason Architects, Inc.

Principal-in-charge

Spencer Leineweber, AIA

Civil engineer

Park Engineering

Structural engineer

Ray Kenning

Electrical engineer

Ronald N. S. Ho & Associates, Inc.

General contractor

Chaiko & Heath

Jury's Comments:

"Captures the culture and history of plantation life ...

Well-researched restoration project ...

Provides a memorable teaching experience for kids and adults ...

Sensitive siting, landscaping and respect for materials ...

Contractor cleverly 'aged' the buildings so as not to appear brand new."



◀ Outbuilding representative of ethnic structures developed within plantation communities.

Reconstructed Filipino family house kitchen. ▼



▲ An Okinawan house was designed circa 1919 in an attempt to build family-oriented communities.

Much more than pretty pictures ArchiCAD

In today's competitive market place, computer advanced design (CAD) capability is no longer the domain of the technically innovative or large architectural firm. CAD capability has virtually become a requirement. With the advent of more powerful desktop computers, CAD has entered the next phase of evolution, 3D visualization.

Beyond the pretty pictures and the fly-through animation sits a database of enormous capability. Volumetric calculations, massing studies and material take-offs are a computer (mouse) stroke away.

For the buyer it can be a moment of truth—a time of “oohs” and “ahs”—as a design sketch becomes a photo-realistic step into the future. A CAD model appears on the screen. The completed 3D model with sun shadows and reflecting pools commands attention and when the model starts moving in the “fly-through” animation mode, the presentation becomes a most effective tool. And with this kind of computer accuracy,

nothing can be misinterpreted and anything can be changed.

One such system, ArchiCAD from Graphisoft creates what is called a living document. This integration of all aspects of the design means that a change involving any one aspect—deleting a window in the floor plan, for example—is reflected in the materials take-off, dimensions and in other views. While the floor plan is being developed, ArchiCAD is tracking all of the building components and managing three-dimensional information. At any time during the drawing phase, ArchiCAD can be asked to create cut-away sections, elevations or perspective views of work in progress as well as develop a complete list of building materials.

For the architect it is freedom from the drawing board, an option both expeditious and inviting.

For information about this product, contact Paul Ponthieux, envision, which represents ArchiCAD from Graphisoft in Hawaii.

Lisa Kelso, AIA,
Kelso Architects,
modeled this Aina
Haina home
remodeling project
using ArchiCAD.
Background
rendering was
executed by
envision.



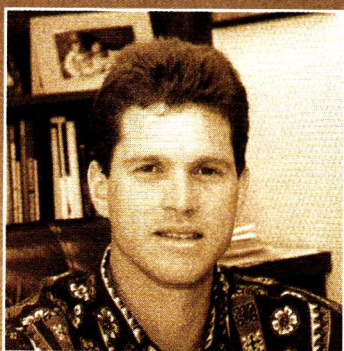
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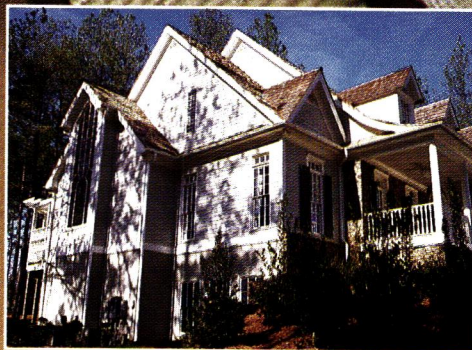


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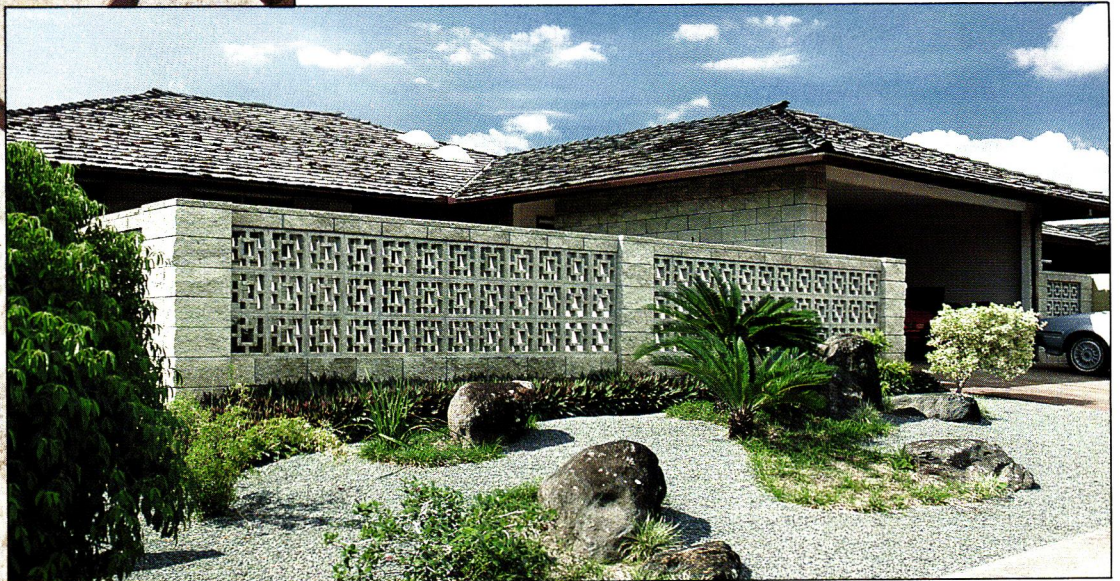
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