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HAWAII ARCHITECT

February, 1981

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Volume 10, Number 2 **February, 1981**

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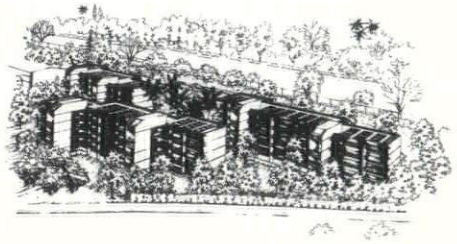
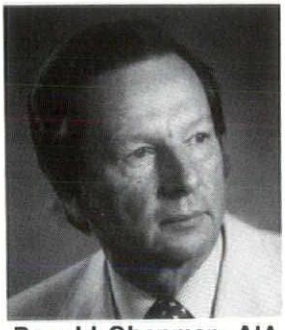


Headlines:

'E' Goals

by DONALD D. CHAPMAN, AIA
President, Hawaii Society/AIA


Donald Chapman, AIA

By the time the mailman delivers this, Christmas 1980 will be but a memory and you will be well into the activities of the new year. I trust all of you enjoyed the holiday season and will look back a year from now on a healthy, happy, prosperous and progressive 1981.

Now for a few thoughts on what lies ahead. The challenges facing our profession in the '80s will seem frightening, and may well prove devastating to those of us who do not put forth the effort now to keep pace with the rapid changes taking place. On the other side of the coin, the opportunities opening up for architects who do keep abreast of advancing technology, energy-conscious design and community/business trends should open doors for total involvement previously not accessible. It will be our own choice, exciting times indeed.

Borrowing from the Navy's practice of awarding their ships an "E" for excellence in the performance of duty, why not each of us set our own "E" goals—those of (E)nvolvement, Energy, Education and Ethics—and reward ourselves with the knowledge of something well done?

Start off with the master key to all doors—(E)nvolvement. Many of you are already generous in the giving of time to worthy activities. Give yourself a big "E." Those of you who attended the December meeting heard Lieutenant Governor Jean King give an excellent address on the power and opportunities our profession offers us to become leaders beneficial to the community. But only if we become involved.

Without a doubt, the largest "E" affecting our lives now and in the foreseeable future is energy. We're all directly aware of the problems and frustrations resulting from an economy far too long wasteful of its energy sources.

All of us from time to time have asked ourselves, "What is the AIA doing for me?" If you believe you never received a dime's worth, I think the energy resource material now available, and that joining the stream of the Institute's public awareness programs, will pay you back—with interest. I have a feeling our benevolent climate has sheltered us from the first thrusts of energy-related design, since we are not exposed to wide weather swings as are other areas. This does not mean, however, that Hawaii is without many excellent examples of semitropical architecture. The Pacific Club is but one such example.

What it does mean is that client awareness, in their pocketbooks, will increasingly demand we produce more energy-effective designs. And rest assured that client awareness is already here.

Look at the considerable publicity given two Navy housing projects at Pearl Harbor that are being designed to utilize natural ventilation in lieu of total dependence on mechanical air conditioning. Not a new concept by any means, but certainly new in the utilization of models and low velocity wind studies as a design tool. Also in the news is the community concern over the use, or misuse, of energy-efficient mirror glass. The community is aware of, and vocal about, what we design.

Nationally, energy has been and will continue to be the prime thrust of the AIA. This year's national convention theme is "A Line on Design and Energy." I recently received a note from Ed Crittenden, suggesting that our Northwest Region meet concurrently with the Western Mountain Region, and join the Design/Energy event that National is planning to hold early November in Denver, Colorado.

The January Grass Roots meeting in Washington will also pass out Energy Idea Kits. If the message still hasn't sunk in, the December issue of Engineering News Record, January issues of Dun's Review and Consulting Engineer, and the forthcoming February issue of National Geographic are but a few of the publications covering energy-conscious architectural design.

What does all of this mean? For most of us, not back to the boards as in the past, but back to class for the big "E" of continued Education—the now world of architectural design integrating the talents of the human intellect, electronic computer, photographic techniques, and advanced materials technology, discussed in a terminology of bytes, daisy wheel printers, photoelectronic cells, collector tilts, cogeneration, retrofits, langleys — stuff like most of us never learned in school!

Exciting times indeed. Let us also approach them with a strong sense of Ethics. For in lifting long-standing restrictions in such areas as advertising and active participation in construction, the Institute has provided us with new avenues of communication and involvement. Left to our own personal sense of ethics, it is our financial responsibility to maintain the highest professional standards. Let us meet the challenges of the '80s (e)nvolved, energy-conscious, committed to education and to a strong sense of ethics. Let us grow together, united by professional goals and the knowledge that we will have contributed to something well done.

Note: All those interested in helping to formulate the monthly AIA meeting programs, please contact me at 524-4200.

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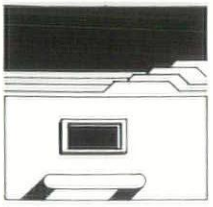

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Navy Architecture

by JEANNIE LIGHT
Public Affairs Officer
Naval Facilities Engineering Command (PacDiv)

As in any other profession, there are advantages and disadvantages to being a Navy architect.

"There's no doubt that the criteria we work with are different from that of outside industry," says Navy architect Art Weber, who heads the Naval Facilities Engineering Command (PacDiv) in Pearl Harbor. "There are size and cost limitations, Congressional and legal requirements, and more stringent controls. We have more fire protection requirements imposed on us than do the outside agencies."

The Navy faces further constraints when it decides to utilize the services of architectural-engineering firms to design and/or construct its facilities. When this happens, as is very often the case, Navy architects move into the roles of supervising and administering the work of the firms selected.

Some of the legal requirements for contracting out projects include advertising the job in the Commerce Business Daily if the cost of the facility exceeds a certain dollar amount. Interested firms must demonstrate their technical knowledge and capability to do the job.

Legally, these and other decisions cannot be made locally. The final OK must come from Washington, from either the home office, the Department of Defense or a higher authority, depending on the fee value of the project.

While this process is time consuming, the controls and restraints are not necessarily a disadvantage, according to Weber.

"We know right from the start how much money we have to design and construct a Navy facility," Weber says. "We also know exactly how many square feet we're allowed. We have definitives which have been proven by past experience. And the success of previous projects tells us the types of designs that work best for certain facilities."

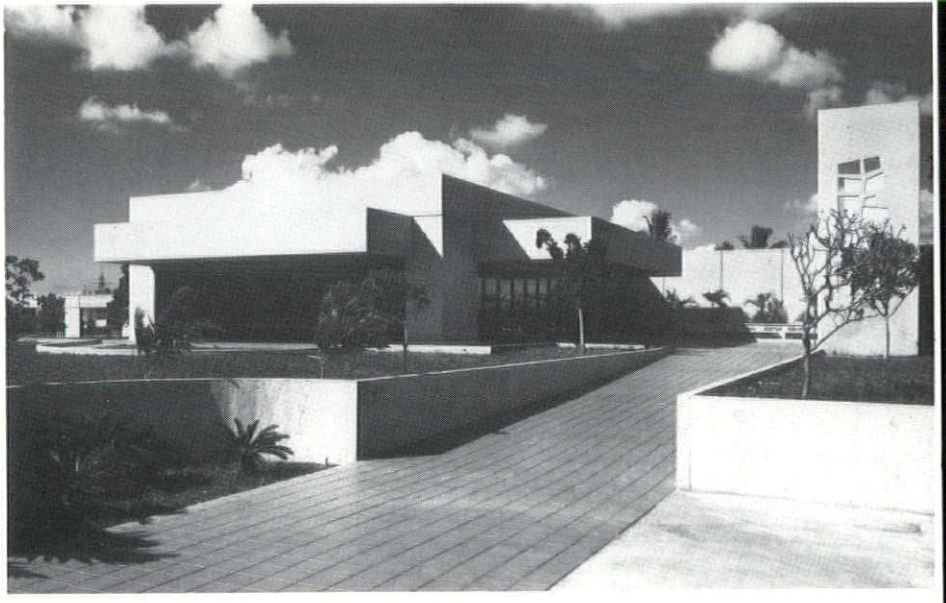
Weber says what he most enjoys about his Navy job is the opportunity to work on a wide variety of projects. "We deal with the hottest climates in the Pacific to the coldest climates in the Antarctic," he says. "How many people do you know who have had the chance to design a building which sits at 12,000 feet on the ice?

The building he is referring to was designed for survival at the highest and coldest location ever to be occupied by the United States in Antarctica where temperatures were expected to drop to -130 degrees Fahrenheit.

As if making the station livable and capable of supporting complex scientific equipment wasn't a big enough problem, it also had to be designed and prefabricated to fit into vans no larger than 8-feet, 4½-inches wide by 8-feet, 6-inches high so that it could be loaded into an LC-130 aircraft for transportation and assembly 5,000 miles away.

Some of the more interesting projects Weber has worked on through the years in Hawaii include the recently completed $5 million USS Arizona Memorial Visitors Center which the Navy turned over to the National Park Service last October.

Plans for the construction were printed in color to enable the general contractor and subcontractors to have a clearer understanding of construction requirements and details and where close tolerances were required. According to the A/E firm of Hogan, Chapman Cobeen Weitz Desai Associates, Inc., this was only the third time that the color technique had been used in Hawaii construction.



USS Arizona Memorial Visitors Center

The facility includes two mini-theaters in which motion pictures of the 1941 attack on Pearl Harbor are shown, and a museum with artifacts of Dec. 7, 1941. An adjoining terrace enables visitors to view the Arizona Memorial, adja-

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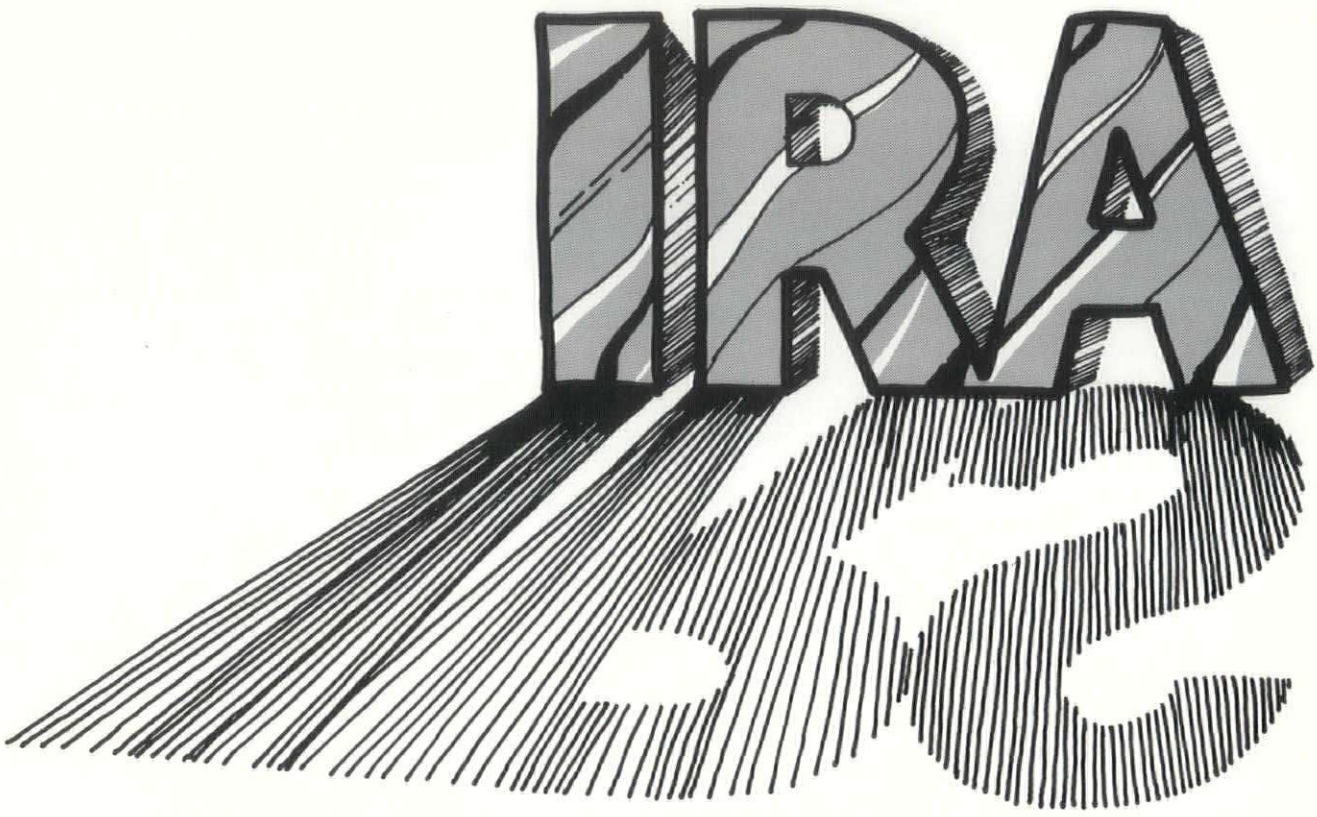

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Going Your Way

Navy Architecture

Continued from Page 6

cent to Ford Island. The visitors use an adjoining dock to board and disembark from tour boats operated by the Navy to take them to and from the memorial.

Design of Oahu's Makalapa Bachelor Officers Quarters (BOQ) and Mess, which posed problems about eligible occupants, location and materials, was among 11 projects cited for excellence by the Hawaii Society of the American Institute of Architects in 1975. The award went to the firm of Hogan, Chapman, Cobeen, Weitz & Associates, Inc. Morrison Knudson was the contractor.

The $2.8 million BOQ, originally conceived as a residential area for junior officers, later was modified to include quarters for senior and flag officers, congressmen, and other high government officials, and visiting state department officials and foreign diplomats. It replaced a termite-ridden World War II wood-frame structure built in 1943, judged substandard for many years prior to construction of the new facility.

The complex did not follow the usual multistory motel row-type BOQ design.

A central L-shape structure houses the public areas—lobby, lounge, bar, dining room and kitchen. Living quarters, located at both ends of the central building consist of two quadrangles each with four two-story buildings. The buildings have off-white unadorned cement plaster walls with contrasting brown stain wood framing, shake shingle roofs, and exterior balcony passageways.

Both quadrangles have a central open patio-landscaped court with outdoor furniture and sun umbrellas. The buildings screen the courts from public view, traffic noise, and prevailing winds. For the occupants this brings a feeling of living in a private residence or small apart-

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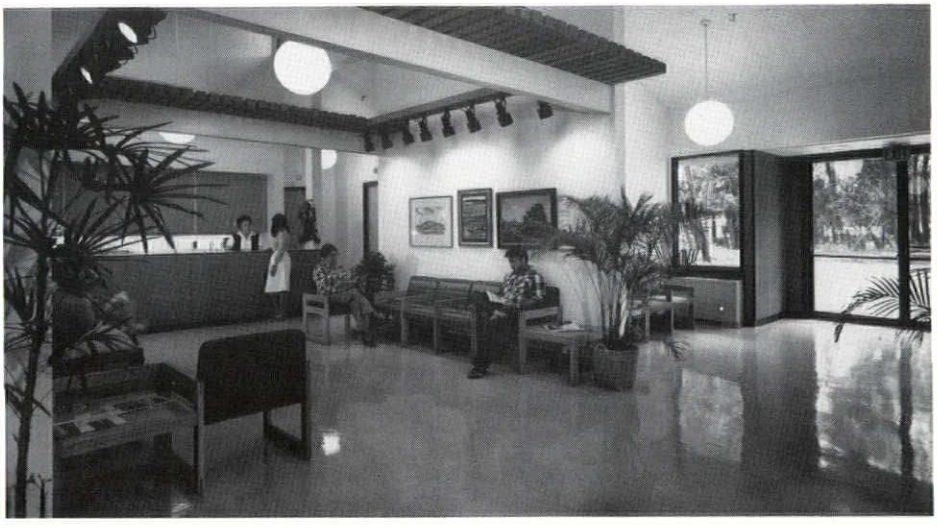
DAVID FRANZEN

PacDiv Chapel



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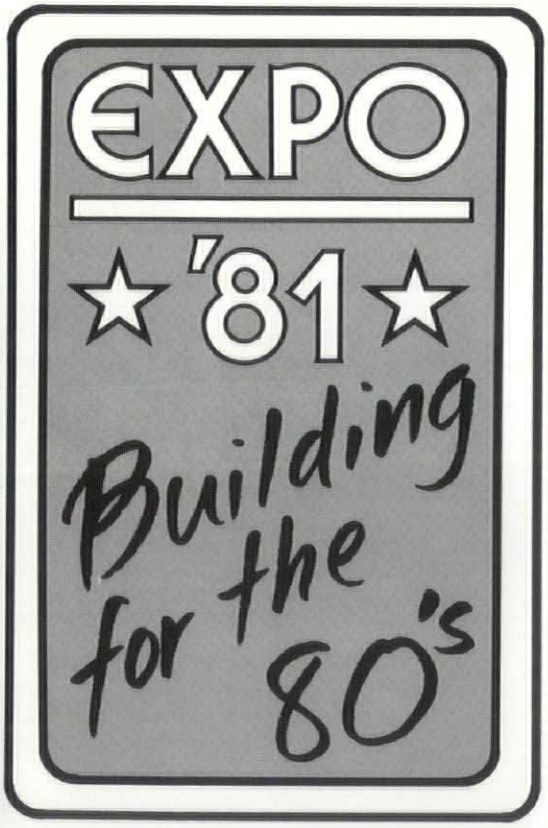

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Navy Architecture

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ment complex.

Another project receiving much attention for its excellence of design is the $1.9 million chapel at the Pearl Harbor Naval Station. Prior to completion of the facility in February 1980, church services were being held in a World War II-era Quonset hut.

The facility, designed by the firm of Group 70, Inc., is composed of four buildings surrounding a landscaped courtyard area. The main chapel has the capacity to seat more than 500 people, and includes special areas for the choir and organ as well as an isolation area for mothers with small children.

In the same building, though separated from the main chapel, is the smaller Blessed Sacrament Chapel and its adjacent reconciliation room. Other buildings are for administration and community program requirements, including 10 classrooms, a fellowship hall, kitchen facilities, and offices.

Basically Hawaiian in theme, the new air-conditioned chapel features wood tones, high ceilings, indirect and spot lighting, and a designed use of natural sunlight to provide a cool, quiet, spacious atmosphere. Low windows permit a natural blend of the landscaping design with the chapel's interior. Three stationary church bells, operated by a programmed clock, are housed in the chapel's modern 37-foot tower.

Another award-winning facility is the dispensary and dental clinic at NAS Barbers Point. It received an Award of Merit for distinguished architectural achievement, sponsored jointly by the Naval Facilities Engineering Command in Washington, D.C., and the American Institute of Architects.

The dispensary and dental clinic was designed by the Honolulu office of Stone, Marraccini & Patterson, architects, planners, and

health planning consultants.

According to E. Alan Holl, AIA, architect in charge of the Barbers Point project, a major challenge was to design a medical facility responsive to Hawaii's environment with interior spaces that would be closely integrated with the outdoors, despite technical requirements for privacy, air conditioning, and noise control.

The solution: a "square donut" configuration around a landscaped courtyard. Waiting areas are grouped around the courtyard, which also provides a point of orientation for patients as they move from clinic to clinic.

Architects at PacDiv are experimenting with a new design concept, one that will save the government and the taxpayers hundreds of thousands of dollars each year in construction, electricity, and fuel costs. The concept is a simple one: use Hawaii's natural trade winds rather than air conditioning to cool military housing projects.

One of two projects scheduled to take advantage of Hawaii tradewind cooling is the Unaccompanied Enlisted Personnel Housing (UEPH) project at Pearl Harbor located near the Naval Base bowling alley.

Weber admits that the idea of using the trades to cool buildings will not work for every building at every site.

"It all depends on whether an area is exposed to the trades," he says. "But if it will work, why not take advantage of it?"

In 1972, the Department of Defense changed its policy and mandated that military and family housing in Hawaii and areas with similar climatic conditions be built with air conditioning.

"But the people who drew up the policy forgot that we have trade winds here," says Warren Johnson,

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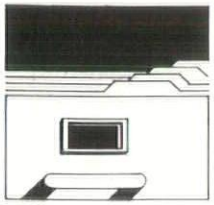

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Army Architectural Design

by GARY NIP
Architectural Section
U.S. Army Corps of Engineers

For some, "good architecture" and the U.S. Army are terms that do not necessarily go together. Instead, these words conjure up images of austere, over-regulated and under-funded building designs.

Those days are gone. Today, the Department of Defense stresses: "Achievement of excellence in architectural design shall be a prime goal for all military construction projects."

Managing this policy of architectural excellence for the Department of the Army, and to some degree the departments of the Air Force and Navy, is the U.S. Army Corps of Engineers. The corps, founded in 1775, is the world's largest engineering organization and is both a major command and a staff element of the U.S. Army. The corps is staffed by 38,750 civilian employees and military personnel.

Here in the Pacific Basin, the Pacific Ocean Division (POD) of the Corps of Engineers is responsible for the design and inspection of military projects not only in the state of Hawaii but also in Korea, Japan, Okinawa, and Kwajalein Missile Range. The corps also does work for host nations such as Korea and Japan whose governments provide construction funds for facilities used by U.S. Army Forces.

In addition, the corps has been called upon to design and inspect construction of non-military facilities.

An example is the Main Post Office Building at the Honolulu International Airport. Architects Hawaii, designers of the building, received an Award of Merit from the Corps of Engineers in its annual nationwide competition. It was the first such award made in Hawaii and one of only three awarded that year. Judging the competition was a three-man jury composed of well-known architects including William Marshall Jr., president of the AIA for 1975.

The design also earned an Honor Award from the Hawaii Society of the AIA. The predominant exterior architectural feature is the precast exposed aggregate wall with the heavy relief forms. These panels accent the facades and present a dynamic pattern.

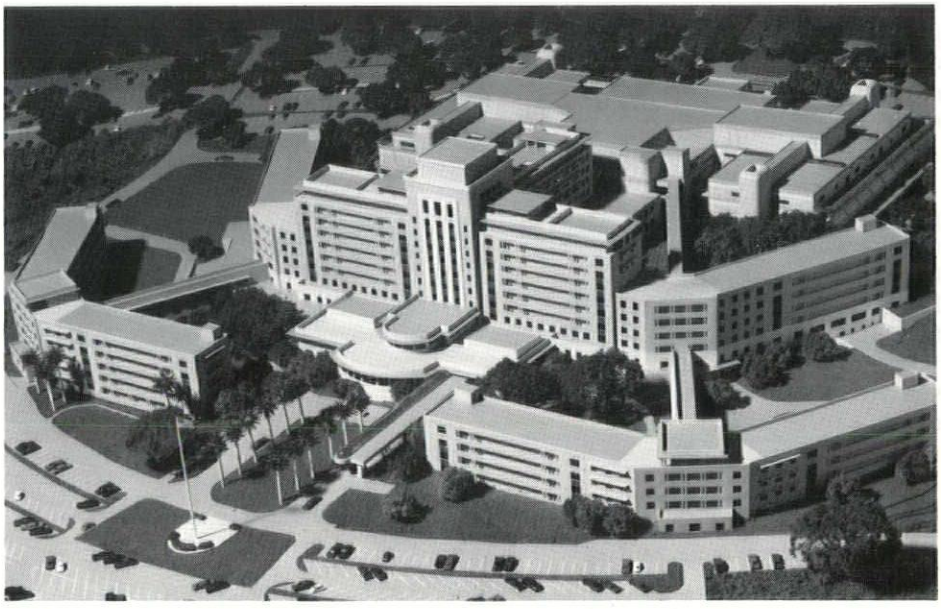
Today's architecture is more complex and costly than ever before. The Army is placing much more emphasis on architectural programming to obtain buildings that are more functional, longer lasting with less maintenance, aesthetically pleasing, and conscious of the environment.

Architectural programming in the Army is emphasized in functional design studies of various building types such as dining facilities, youth activity centers, and chapels. This information is assembled into design guides, which are subject to change due to individual user requirements. Each project program is different and must be considered with equal care.

The modern volunteer army concept focuses on the Army's most valuable resource—people—by providing soldiers and their families with modern facilities which create positive living and working conditions. Hence, traditional open bay barracks have given way to semiprivate bedrooms and baths. Beginning in fiscal year 1972, barracks rehabilitation projects have been completed at Schofield Barracks. For the soldier with a family, modern family housing units also have been built at Schofield Barracks and Aliamanu.

Architecture is also affected by new Army management concepts. An example is the replacement of outdated company kitchens by new consolidated dining facilities with short order lines and self-service scramble areas. The Consolidated Dining Facility at Schofield Barracks was designed by Pacific Ocean Division in-house architects in 1975 to feed soldiers from three barracks quadrangles.

This consolidated has fostered better intra-quad relations in addi-



Model showing how Tripler will look when project is completed.

tion to the cost savings achieved by eliminating nine inefficient and undersized kitchens. Moss rock and landscaping was effectively used to contrast this $1.5 million facility from the harsh architecture of the surrounding barracks buildings.

Other significant influences on architecture in the Army includes environmental impact considerations and energy conservation, particularly solar energy application.

GOVERNMENTALIZATION

Certainly everyone is well aware of the myriad of government regulations. Military facilities are located throughout the world and as such require some degree of regulation or standardization.

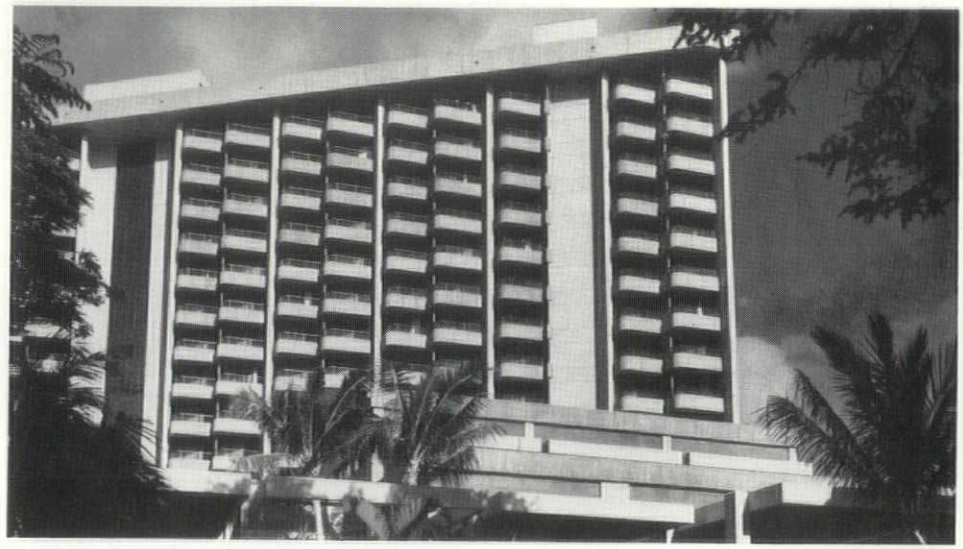
Management, realizing this has recently begun easing regulations and providing more flexibility, creativity, and decision-making to the design professionals in each region. A good example would be new freedoms in choosing materials. Past regulations called for glaze structural units for wall bases. Today the designer can select the type of base and other building materials. Moreover, each division office has the option to evaluate and use new materials and technologies as it sees fit.

A more graphic illustration is color selection. In the past, "Army green" and "Tripler pink" were the only colors authorized, based on the selective whim of the commanding general. As early as 1974, the Army issued a technical manual on colors for buildings. It focused on the psychology of color and its impact on human vision, emotions, and physical well-being. The use of color is highly encouraged in the design of today's Army facilities.

PROJECT FUNDING

Government projects involve public funds in most cases. This requires non-proprietary construction documents and competitive bidding. Since the contract is awarded to the lowest bidder, it is imperative that each bid is estimated on the same and equal basis. Therefore, working drawings and project specifications must be clear, sufficiently detailed and specific, more so than constructive documents on private jobs.

There are also projects funded by non-appropriated monies earned from the armed services



Hale Koa Hotel at Fort DeRussy

post exchanges and clubs. Hale Koa, the $17.4 million Armed Forces resort hotel that opened in 1976 at Fort DeRussy in Waikiki, is a prime example of good architecture constructed at no cost to the taxpayer. This facility was positioned to provide a maximum green belt area in densely populated Waikiki. The firm of Belt, Lemmon & Lo (Architects Hawaii), designer of the hotel, was awarded an honorable mention for architectural design excellence by the U.S. Army Corps of Engineers in its 11th annual distinguished design awards program.

A/E SELECTION

About 30 percent of the projects in each fiscal year is allotted to POD's in-house staff, with the remaining 70 percent contracted to A-E firms. Each firm interested in government work is required to submit a resume-like Standard Form 254 and, if required for a specific job, Standard Form 255. Projects are advertised in the Chicago Commerce Business Daily. A preselection committee of POD project engineers first proposes five or six firms to a selection board of senior POD architects and engineers, which then makes the final selection in a rank-order-listing. The contract is then negotiated directly with the firm selected first and awarded upon price and other terms.

POD desires to help small, disadvantaged A-E firms which may be qualified by the Small Business Association as "socially and economically disadvantaged" under the guidelines of Section 8(a) of the Small Business Act. Sole-source negotiations through SBA, whereby SBA acts as prime contractor and the 8(a) qualified firm as its subcontractor, will almost guarantee these firms government work. However, at present there are no such firms certified by SBA.

FUTURE PROJECTS

The workload at POD has increased tremendously from $47 million in fiscal year 1973 to more than $600 million for fiscal year 1981, and it is expected to continue its upward trend. POD anticipates most of the new construction work will be in the Far East.

In Hawaii, the multimillion-dollar hospital addition/alteration project for the Tripler Army Medical Center will begin construction in 1981. The present facility was completed in 1948. Since then, the emphasis has shifted to outpatient care and there have been vast increases in complex equipment, eligible military population, and new fields of medicine.

The hospital addition/alteration project is being designed by the joint venture of Belt, Collins & Associates Ltd., Lyon Associates, Inc., and Welton Becket Associates. When completed, the four-story, 426,000-square-foot addition and the renovation of the existing hospital will provide modern health care service.

Wherever the workload lies, be it in the Far East or Hawaii, the emphasis on future projects is to provide "good architecture" in the planning and design of facilities supporting the mission of the Army.

1981 Officers and Directors Installation

Donald D. Chapman, AIA, recently was installed president of the Hawaii Society, The American Institute of Architects, at the Hawaiian Regent Hotel. He will serve through 1981.

Other officers and directors installed were: Francis S. Oda, AIA, vice president/president-elect for 1982; Gordon H. Ogata, AIA, secretary; Theodore E. Garduque, AIA, treasurer; Thomas M. Culbertson, AIA, and Rosalina O. Burian, AIA, directors for one year; Charles A. Ehrhorn, AIA, and Dwight C. Lowrey, AIA, directors for two years; and Ann M. Thompson, associate director.

Charles R. Sutton, FAIA, was installing officer.

Lt. Governor Jean King was keynote speaker for the evening affair.

George Mason, president of Crossroads Press, presented the annual Crossroads Press/AIA Scholarship to Stanford Lee, a senior in the School of Architecture, University of Hawaii at Manoa.

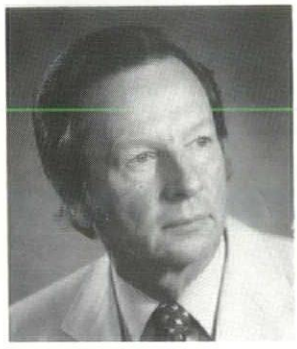
Recognized by the Hawaii Society, retiring president Jack C. Lipman, AIA, made the following presentations:

To Elmer E. Botsai, FAIA, dean, School of Architecture, University of Hawaii at Manoa, a Certificate of Achievement. Under his leadership, architecture was raised to school status at the university.

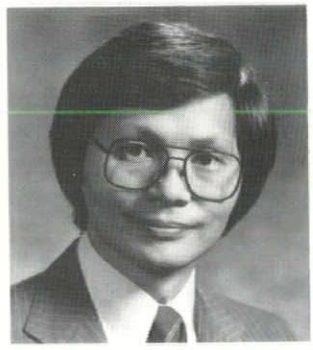
To Gerald R. Tune, reporter for the Honolulu Star-Bulletin, a Certificate of Appreciation for his concern and understanding of design, planning, and the environment as expressed in his numerous housing articles.

To Frank F. Fasi, mayor, City & County of Honolulu, for significantly enriching the urban environment with the development of the Honolulu Civic Center Green beautification project. HA

MIKE CHU



Chapman



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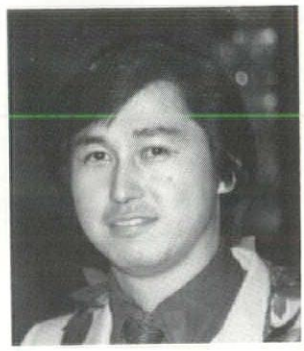
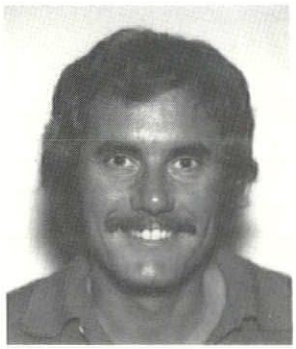


Ogata

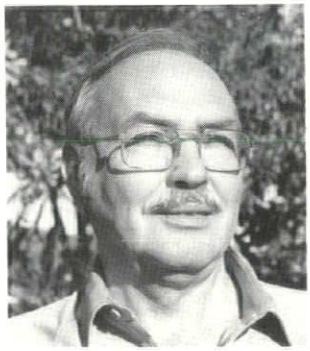
AIA-MAUI MEMBERS ELECT 1981 OFFICERS

At its Dec. 12 meeting held at the Maui Beach Hotel, AIA-Maui members unanimously elected the following officers: President Uwe Schulz; Vice-President/President-Elect Ormond Kelley; and Secretary/Treasurer Dennis Daniel.

Also at the same meeting the following AIA members volunteered to serve on Mayor Hannibal Tavares' advisory committee for high-rise fires: Dennis Daniel, Ormond Kelley, Warren Matsui, Gerald Hiyakumoto, Uwe Schulz, and Frank Skowronski.



Schulz



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Daniel

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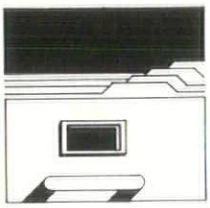

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Honolulu International Airport Noise Levels

by YOICHI EBISU, P.E.
Darby-Ebisu Associates, Inc.

Aircraft noise resulting from Honolulu International Airport (HIA) operations has been the subject of intensive study by the Hawaii State Department of Transportation during the 1970s. By the end of the decade, local communities surrounding the airport had experienced a significant decrease in aircraft noise because of a number of factors. These were: the significant decline in military jet operations; the gradual replacement of noisier narrow-body jets (B-707 & DC-8) with the quieter wide-body jets (B-747, DC-10, & L-1011); the construction of the Reef Runway; and the implementation of an informal Runway Use Program at HIA.

During the latter half of the decade, the State of Hawaii procured the HIA Aircraft Noise Monitoring System, consisting of a total of 17 outdoor microphones located from Ewa Beach to Diamond Head. The system has been and is being used to quantify long-term noise exposure values in the airport environs and to establish the causes of positive and negative aircraft noise impacts on the community.

In February 1980, the federal government, recognizing the national scope of the aircraft noise problem and its potential for undermining the future viability of the U.S. air transportation system, enacted the Aviation Safety and Noise Abatement Act of 1979. Within the provisions of this act are the following:

1—A directive to the Secretary of Transportation to establish a single system for measuring and determining aircraft noise impact, and to identify land uses which are normally compatible with the various levels of noise impact.

2—A provision for the publication of noise impact maps by the airport proprietor and limitation of future liability if non-compatible land developments occur within the noise impact map following publication. This, in effect, transfers some responsibility into the hands of those who were aware of or had access to the noise impact map.

3—The act does not absolve airport proprietors completely, but provides for federal grant monies for reducing existing and future noise impacts.

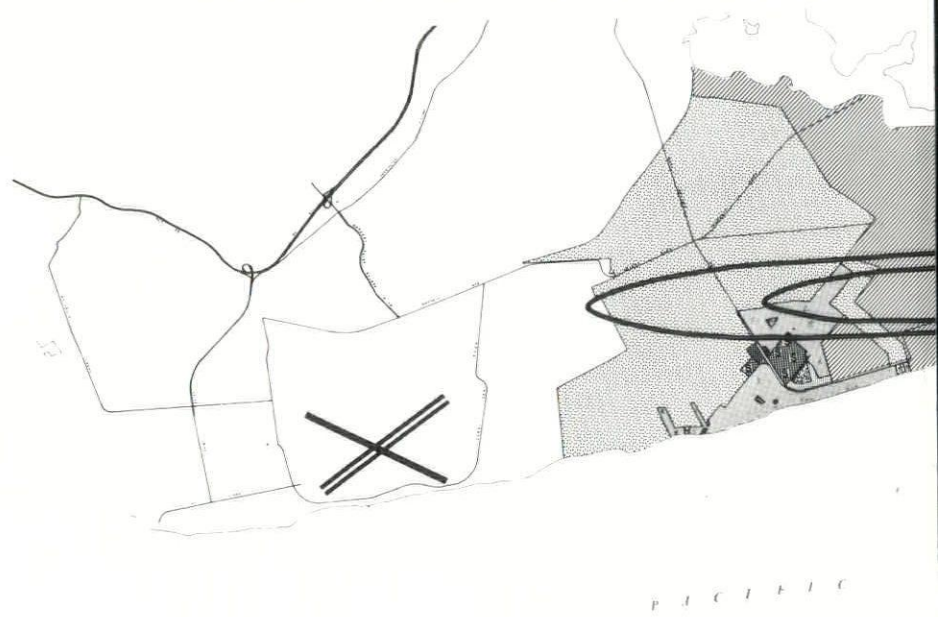
The Day-Night Sound Level or L_{dn} is the most likely candidate for selection as the airport noise descriptor because all federal agencies (HUD, FAA, EPA, DOD, and VA) currently use the L_{dn} system. As late as 1979, at least five airport noise descriptors were in common use, but the transition to the L_{dn} system by federal agencies was complete by 1980.

The L_{dn} is a single number rating in (decibels or dB) which represents a cumulative, 24-hour average of sounds which occur from midnight-to-midnight of each day. Additionally, nighttime sounds which occur between 10 P.M. and 7 A.M. are increased by 10 dB prior to computation of the 24-hour average to account for the relative quietness of nighttime vs. daytime periods.

The L_{dn} system takes into account the intensity of individual sound levels, their duration, frequency of occurrence, and time of occurrence during the 24-hour period. Supporting the validity of the L_{dn} system are sets of scientific community noise studies which relate community reactions to various L_{dn} levels of aircraft noise.

Combined results of British and U.S. social surveys[1] indicate that, on the average, the percentage of the total population highly annoyed by noise increases with increasing

[1] 1961 & 1967 human reaction surveys at London's Heathrow Airport, and 1972 Trasor Study around eight U.S. airports.



HONOLULU INTERNATIONAL A

L_{dn} by the relationship $2x(L_{dn}-50)$. In other words, at 75 L_{dn}, about 50 percent of the population exposed to 75 L_{dn} would be highly annoyed by aircraft noice.

The number of people who actually register complaints are significantly lower than the highly annoyed population. For example, when 17 percent of the population report being highly annoyed, only 1 percent would be expected to voice complaints.

The statistical validity of the annoyance and complaint data deteriorates at levels of 55 L_{dn} or less, where it is suspected that other attitudinal factors, rather than aircraft noise, influenced the survey results. It should be emphasized that the social surveys apply only to aircraft noise, and not other noise sources.

In Honolulu, like other urban communities on the mainland, motor vehicle traffic noise is the most pervasive noise source and 70 L_{dn} measurements near major streets and freeways are a common occurrence. Figure 1 presents typical background or non-aircraft L_{dn} values at various community locations. Values below 55 L_{dn} occur primarily in the non-urbanized areas of Honolulu.

An airport noise map construct-

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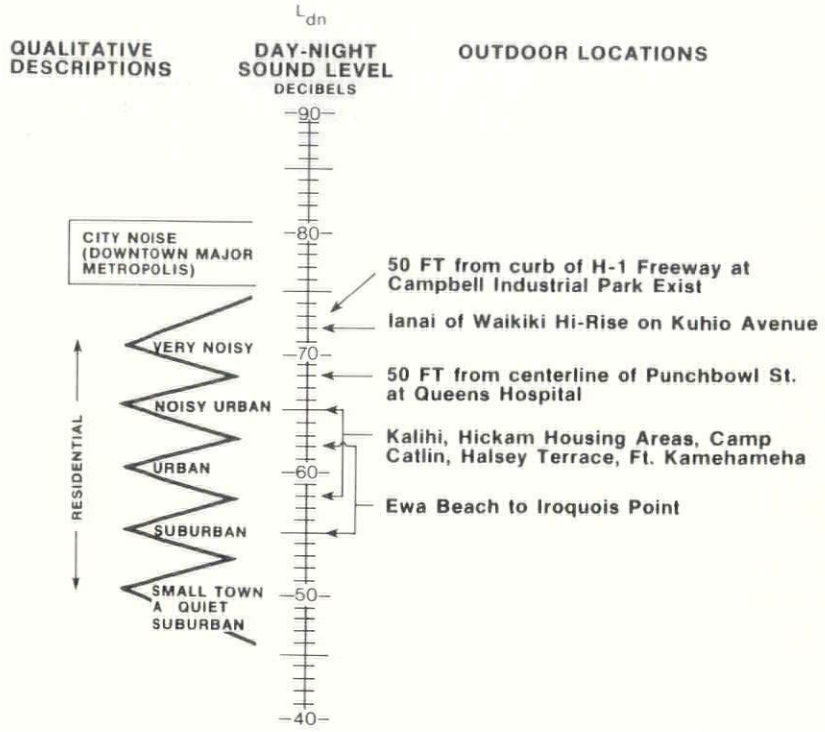
RANGE OF EXTERIOR BACKGROUND AMBIENT NOISE LEVELS



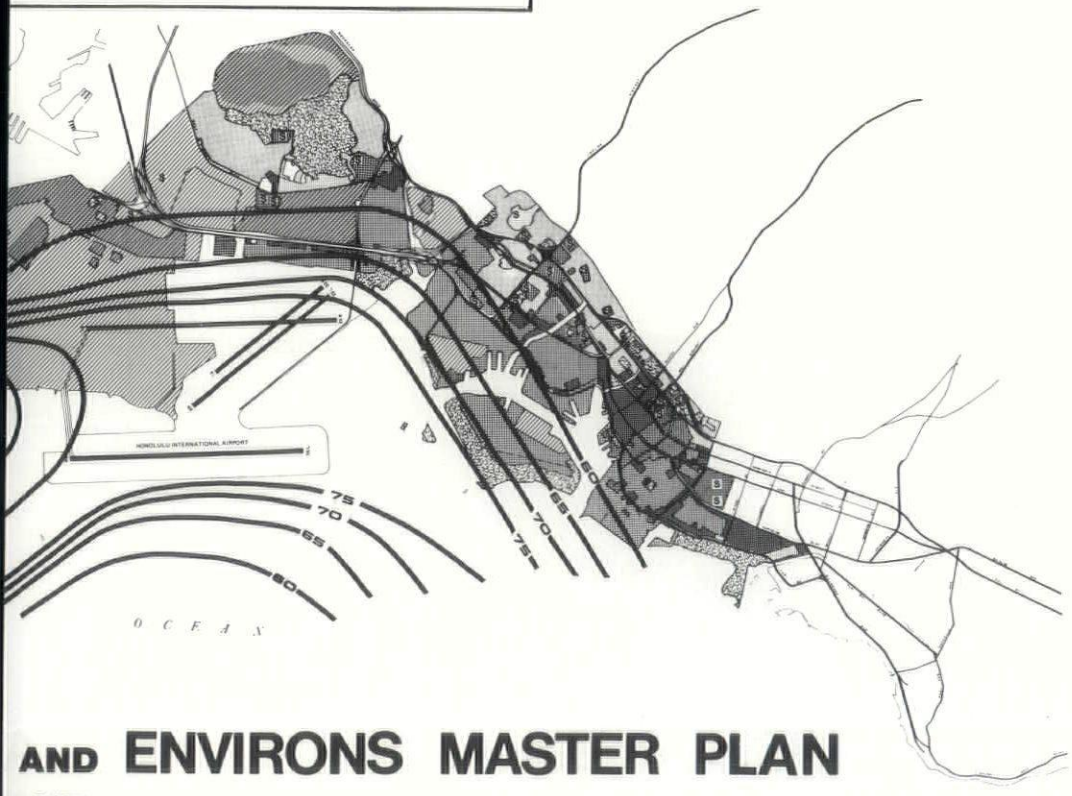


Exhibit 4
1979
L_{DN} CONTOURS

Legend

- Residential (SFD)
- Multi-Family
- Commercial
- Industrial
- Public Facilities (S-School, C-College)
- Parks, Recreation Facilities
- Agriculture
- Military, Non-Residential
- Vacant Space
- Ldn Contour

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Airport Noise

Continued from Page 17

ed for the state's busiest airport, Honolulu International, is shown in Figure 2, and represents annually averaged conditions which occurred in 1979. The contour lines represent increasing levels of noise from 60 to 75 L_{dn}, with L_{dn} values increasing with decreasing distance from HIA.

This noice map was constructed using a computer model, and validated with aircraft noise data acquired by the HIA Noise Monitoring System. Accuracy of the noise map is believed to be within 2 L_{dn} units, which is considered state-of-the-art whenever a Noise Monitoring System is used.

Additional maps for future years 1985, 1990, and 2000 are currently under development under the HIA Master Plan and Environs Study. Because of the uncertainties inherent in the predictive process, these contours will be continually updated as significant changes occur.

By current HUD standards, residential development between the 65 L_{dn} to 75 L_{dn} contour are Normally Unacceptable unless noise attenuation features are incorporated into the residential units which would attain the EPA and HUD of 45 L_{dn} for interior noise levels. Residential development within the 75 L_{dn} contours are generally precluded from HUD support. The Secretary of Transportation, however, has not issued a final rule on noise and land use compatibility which was mandated by the Act of 1979.

For a number of reasons, a lower value of 60 L_{dn} (rather than 65 L_{dn}) is considered more appropriate for land use planning purposes in the Honolulu International Airport environs. These reasons include:

1—The difficulties in achieving sufficient exterior-to-interior noise attenuation with naturally ventilated dwellings.

2—The increasing life-cycle cost of air conditioning and total closure, which historically has been a means of achieving required exterior-to-interior noise attenuation.

3—Open-living conditions in Ha-

waii are not typical on the mainland. Exterior noise criteria of 65 Ldn developed for the nation as a whole, results in interior noise levels which are 5 to 10 dB higher for naturally ventilated dwellings when compared to air-conditioned or heated dwellings.

4—A planning level of 55 Ldn would result in near zero risks of adverse aircraft noise impacts. Although desirable as a long-term goal, 55 Ldn was not considered a practical standard at the national level by HUD due to cost considerations and the general pervasiveness of noise above 55 Ldn in urban communities.

In the Honolulu International Airport environs, the major portion of which is highly urbanized, 60 Ldn is recommended as a compromise planning level. This level does not eliminate all risks of adverse noise impacts in the quieter communities of Honolulu, but affords an additional 5 dB margin of safety over national standards to account for our open-living conditions.

At other airports, such as on the Neighbor Islands, where background noise is lower, 55 Ldn may be a more appropriate planning level.

Naturally ventilated buildings in Hawaii typically have window or doorway openings which range from 10 to 30 percent of total exterior wall surfaces. Because of these openings, values of exterior-to-interior noise reductions for naturally ventilated dwellings range from 5 to 12 dB, with 9 dB of noise reduction being a nominal value.

Noise reductions in the order of 15 dB or greater are not achievable without total closure of windows and doors. Increasing exterior wall anderoof thickness or mass or (or sound transmission class rating) will not increase exterior-to-interior noise reduction if 10 to 30 percent of the total exterior wall surfaces are open for ventilation.

EPA and HUD goals of 45 Ldn interior noise levels are generally achievable for naturally ventilated dwellings located in areas with exterior noise levels of 55 Ldn or lower. For areas with exterior noise levels of 55 to 60 Ldn, a significant degree of closure of ventilation openings to 5 percent (total area of opening) of total exterior wall area plus the use of interior absorptive treatment is necessary to achieve the 45 Ldn interior goal.

The use of interior absorptive treatments could include draperies, carpets, soft furnishings, or suspended acoustical ceilings.

Naturally ventilated dwellings in areas with exterior noise levels between 60 and 65 Ldn represent a compromise situation between the 45 Ldn goals of EPA and HUD for interior noise levels and the practical criteria of 65 Ldn established by federal agencies for exterior noise.

These dwellings will generally have interior noise levels of 51 to 56 Ldn with windows fully open and levels of 40 to 45 Ldn with windows and doors fully closed. Window closure and air conditioning or forced mechanical ventilation of selected rooms such as bedrooms without alteration of wall or roof construction in existing dwellings are possible means of achieving interior levels of 45 Ldn.

Use of double wall construction or special roof construction are not

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Airport Noise

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mandatory for dwellings at exterior noise levels between 60 and 65 L_{dn} since window and doorway openings are the primary weak links in achieving interior levels of 45 L_{dn}.

For areas with exterior noise levels between 65 to 75 L_{dn} double wall construction is necessary to achieve interior noise levels of 45 L_{dn}. Additionally, window and doorway treatments would be necessary and natural ventilation would be precluded if interior noise levels of 45 L_{dn} are to be achieved. Additional window treatments would include use of double glazing or the use of laminated glass.

Additional doorway treatments would include the use of jamb and threshold seals and the use of solid core wood or hollow metal doors. Standard roof construction (shake, pitch and gravel, or asphalt shingles) would be adequate in most cases for achieving the 45 L_{dn} interior noise goal, but roof openings for ventilation or lighting must be acoustically treated.

The issue of what constitutes an acceptable noise level remains to be settled. Recent airport noise litigation in California suggests that tort recovery under nuisance and negligence theories are possible, and that a broader and/or more conservative definition of land use compatibility may be necessary to protect the public welfare.

It remains to be determined whether a specific L_{dn} value can become a part of law, or more broadly, whether land use compatibility can be legislated at the federal level. However, a constructive attempt has been made by Congress to strike a balance among the responsibilities of all parties involved to allow for the orderly growth of the air transportation system. Airport noise maps, if accurately developed, can provide one input to the planning process. HA

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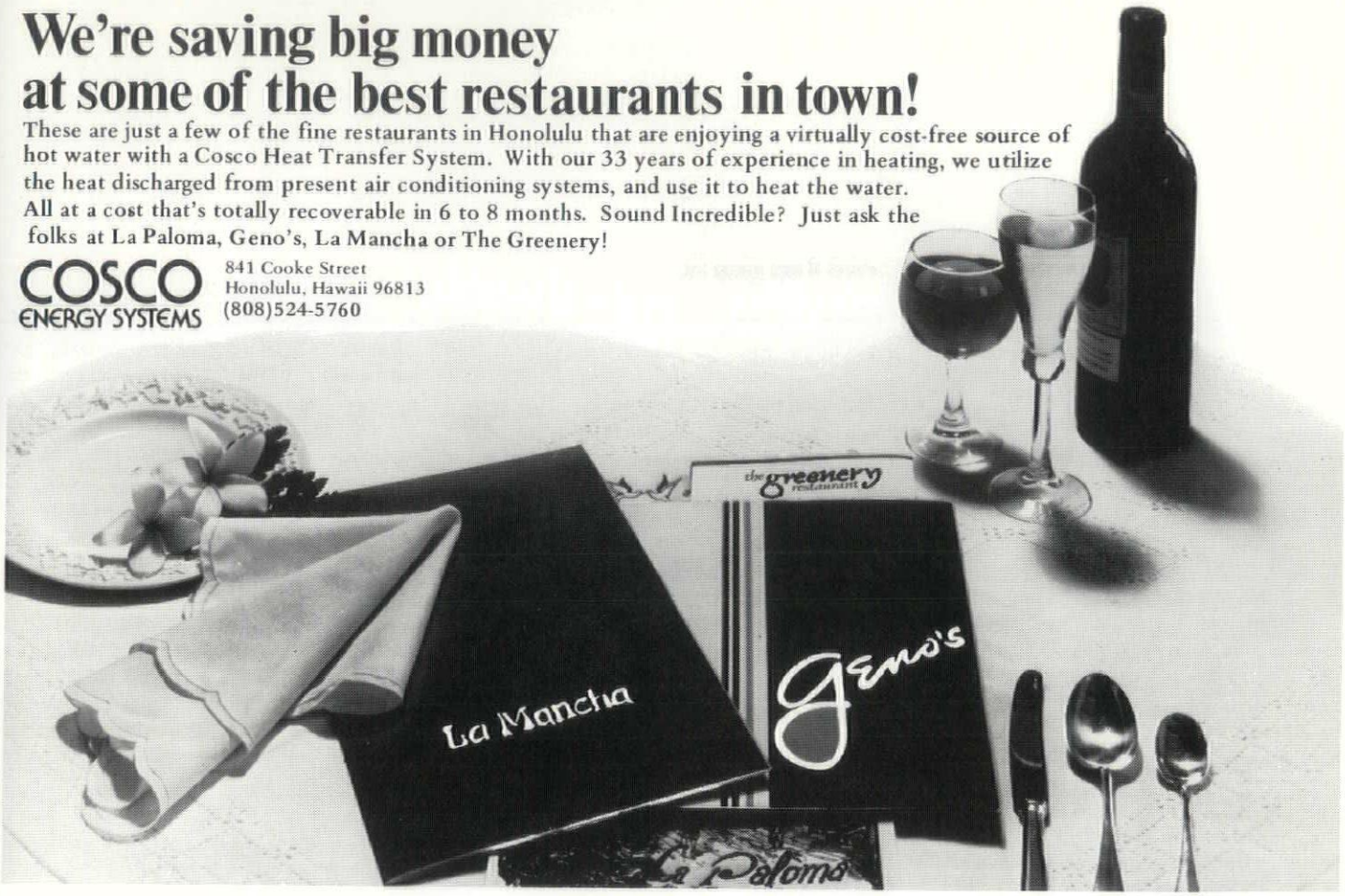

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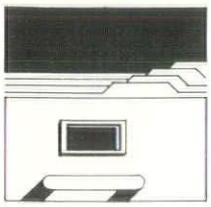

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Air Force Design Excellence

by JAMES H. HUTCHINGS
Architect, Pacific Air Forces

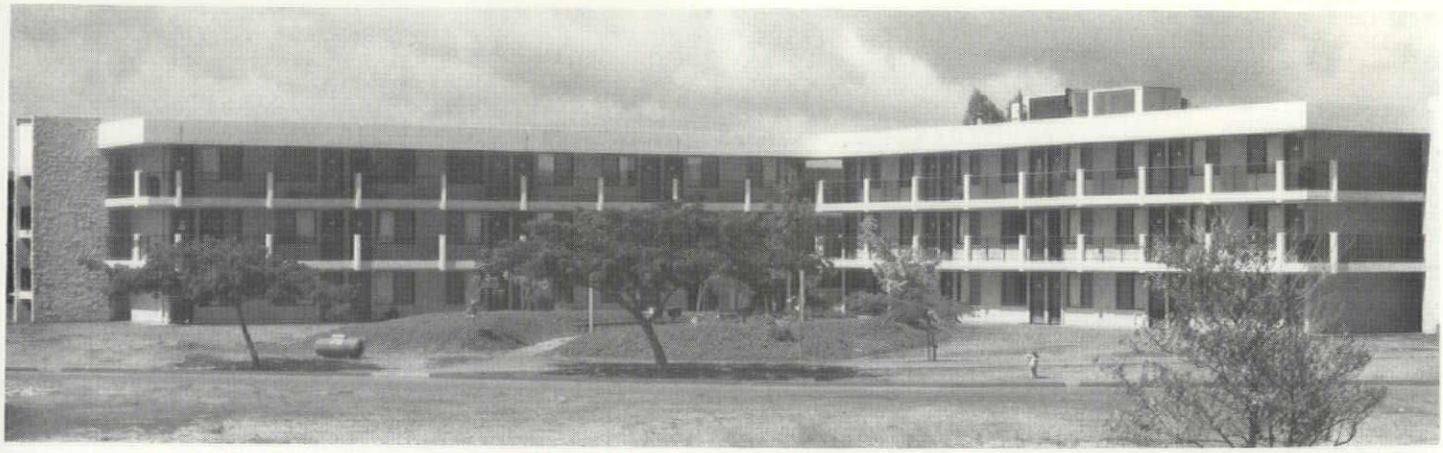
The Air Force has initiated a design awards program in conjunction with the Department of Defense to recognize the achievement of excellence in architectural and engineering design by Air Force installations throughout the world.

Through this design recognition program the Air Force is achieving prominence not only in the military departments but also in the professional communities by encouraging design excellence and publicizing the concern the Air Force has for creating the most livable environment for members of the Air Force and for enhancing the environment of the communities in which military installations are located.

Since the initiation of the Air Force design awards program in 1976, more than 30 Air Force projects have been recognized for showing a respect for and being in harmony with the architectural character of facilities in the approximate area.

In addition to design excellence recognition by the Air Force, increased emphasis is being placed by the Department of Defense on incorporating solar energy collection systems. Through special awards, the design challenge of insuring that solar systems are aesthetically integrated into the design of buildings is being recognized by the Air Force.

The Air Force is encouraging quality design and is emphasizing that solar collection systems must



Hickam AFB 360-man facility Airmen's Dormitory.

not be treated only as an engineering problem that is solved by merely placing the necessary equipment on a building. Recognition of solar design by the Air Force is based on how well the solar collection system is incorporated into the overall building design — whether the solar system is exposed or concealed, and how the building relates to the site and the existing architectural character of nearby buildings and the base.

The Air Force recognizes that a facility which has solar collectors should not cause the designers to ignore all the other design excellence considerations.

The Air Force design awards program is intended to recognize projects which have been designed and constructed under the cognizance of a military department by either in-house (air base engineering capability) or architect-engineer commissioned firms, and funded from non-appropriated sources, military construction programs (Congress approved), commissary surcharge or family housing. Design recognition is given to the design agency, the architect, engineers, graphic and interior designer, and the photographer for the submission presentation.

Several categories of design are recognized which include single buildings, groups of buildings, environment projects, engineering projects, and landscaping and interior design projects. Emphasis is placed on the design presentation format, and submittal of photographs and color slides is encouraged.

Projects which were considered to qualify for the Air Force design

Continued on Page 24

Air Force Design Excellence

Continued from Page 23

excellence award here in the Pacific over the past few years have been few in number. The majority of the Pacific Air Force construction program centers around industrial facilities such as aircraft hangars, maintenance facilities and shops; only a few recreational and welfare facilities which were constructed qualify for design award consideration.

Even with the functional and aesthetic possibilities offered in the design of these types of facilities, construction costs and siting restrictings prevent any but the bare essential building features to be developed.

The Pacific Air Force bases have submitted numerous projects for consideration ranging from schools, churches, commissaries, and recreational facilities to dormitories.

The major problem in developing noteworthy designed facilities is the current design/construction policies which require all major Air Force construction projects in the Pacific to be handled by either the U.S. Army Corps of Engineers or by the Navy Office in Charge of Construction. These agencies assume full responsibility for the design and construction of Air Force facilities in Hawaii, Japan, Korea, and the Philippines.

The development of Air Force facilities normally requires that programming and approval actions be done years ahead of the actual design authorization. This time lapse results in confusion between the current facility user and the originator of the project, as well as the architect-engineer commissioned to design the facility.

Employing the assigned design agency to monitor the design leaves little opportunity for the Air Force Base Engineer or the using agency to have any major input into the facility's appearance. The final project's approved cost is usually below the current cost escalation estimates and barely enough funds exist to cover the basic design without any consideration for design enhancement.

The funding dilemma is currently

being dealt with by requiring the A-E commissioned to do welfare, recreational, and moral facilities, and to design the facility with only a general cost limitation guideline up to the 35 percent stage. At this point an accurate cost estmate is developed, and this figure is submitted for funding approval. This avenue has proven highly successful and gives assurance that these types of facilities can incorporate good design features.

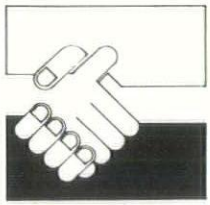
Only a few projects submitted by Pacific Air Force Engineering and Services have received national recognition. Among these is the Hickam Air Force Base Golf Clubhouse which was designed under the direct supervision of the Hickam Base Engineering staff by the firm of Boone & Associates, Honolulu, at a cost of $193,000. The facility includes a pro shop, lockers, toilets, bar, and dining facility with a total area of 4,736 square feet.

Another facility, an airman dormitory, designed and constructed at Hickam AFB by the Pacific office of the Corps of Engineers, received an honorable mention. This facility,

Hickam AFB Golf Clubhouse

designed by Hogan Chapman Cobeen Weitz Desai, Inc., Honolulu, was constructed at a cost of $4,379,000 and consisted of two identical 360-man dorm buildings. The single cross-shaped buildings utilized exterior circulation balconies and individual two-man rooms with adjoining toilet facilities.

One other facility currently under construction at Clark Air Force Base in the Philippines received a special mention for facilities under design. This 25,000-square-foot commissary was designed under the direct supervision of the Central Air Force Region Civil Engineer office in Dallas, Texas, by Cromwell Neyland Treumper, Levy & Gatchell, Inc., Little Rock, Arkansas. The contract was awarded for $5,600,000 and is scheduled to be completed in December 1981.



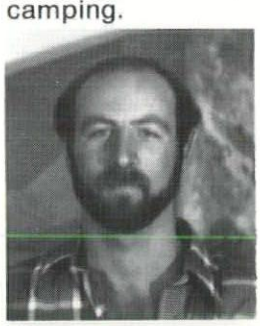
New Members

WES DEGUCHI; AIA Member; Architects Hawaii, Ltd.; B.A. in Architecture, Arizona State University. Hobbies: basketball, golf, fishing, painting.

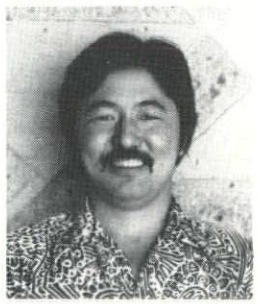
DONNA ELIZABETH YUEN; Associate Member: Wimberly, Whisenand, Allison, Tong & Goo Architects, Ltd.; B.A. Environmental Design, University of Washington; M. Arch. University of Michigan. Hobbies: travel, art, ocean activities.

MITCHELL MILLAR; Associate Member; Media Five Arch.; D. Arch. Kingston Polytechnic College, Surrey, England. Spouse: Joan. Hobbies: shell collecting and sailing.

JUDY H. KAPLAN; Associate Member; Wimberly, Whisenand, Allison, Tong & Goo Architects, Ltd.; B.S. Design, UCLA. Hobbies: swimming, dancing, music, photography, camping.



CHRISTOPHER BELKNAP; AIA Member; Wimberly, Whisenand, Allison, Tong & Goo Architects, Ltd.; B.A. Environmental Design, M. Arch., University of Colorado. Hobbies: skiing, tennis, surfing.



WARREN T. NAKAMURA; AIA Member; LMLI Architects/Planners, Inc.; B.F.A. Environmental Design, University of Hawaii. Spouse: Shea. Children: Rand, six months. Hobbies: golf, amateur carpentry.

ROY H. NIHEI; AIA Member; Group 70, Inc.; B.F.A. in Architecture, University of Hawaii. Wife: Sharon. Hobbies: photography, swimming.

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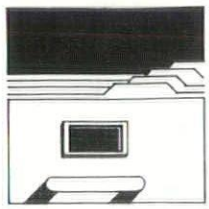

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Graphic Designers Association

The Grapic Designers Association will display the works of its local membership again this year, encouraged by the public interest shown at the association's first exhibit in October 1980. The original show at the Davies Pacific Center was viewed during regular business hours at the top of the escalators on the mezzanine level.

Participating members of the association displayed both original design problems of local clients and the final solutions they prepared. A variety of artwork—from business letterheads to product packages to corporate identity—was shown.

"Initially, we intended to show the work only at a membership meeting," says Nick Kaars, president of the association. "So many people asked to see the work following the meeting, however, that we decided to put it on public display. I think the design work we had in the show is as good as anywhere in the country today.

"Certainly there will be more exhibits to come in 1981." HA

Before & After

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Navy Architecture

Continued from Page 11

head of the PacDiv design division.

The UEPH building was specifically designed to take advantage of the wind. And while the study added about $20,000 to the cost of the project design, Weber says it was money well spent, because it will save nearly $1 million in construction costs alone.

The UEPH project is a 16-story high-rise designed by the Honolulu architectural firm of Media 5. Present plans call for a 192-unit building which will accommodate one to three enlisted persons per unit.

"The unusual staggered design was dictated by the lot size," Weber says.

Omitting air conditioning should save more than $911,000 in construction costs for 1982. Estimated savings also include nearly $50,000 a year in electricity costs.

In addition, the Honolulu firm of CJS Group Architects, Ltd., is designing a four-story, 96-unit UEPH complex at the Pearl Harbor Submarine Base. It, too, is being designed to take advantage of the trades. By eliminating air conditioning, construction savings should amount to more than $177,000, and electricity savings for the first year should amount to nearly $24,000.

Both projects involved lengthy studies of the site to learn about wind conditions, and wind-tunnel tests of the proposed buildings.

Weber stressed that the importance of not air-conditioning the buildings is geared more towards saving barrels of oil rather than actual dollar savings.

"We've come to realize just how precious oil is," he said, "and the days when oil was cheap and plentiful . . . are gone forever."

The wind-study tests indicated that the proposed buildings will have optimum wind conditions 70 percent of the time. Even during 30 percent of the time when wind conditions are not optimum, Weber says the majority of the units should remain fairly comfortable.

"Because of the present Department of Defense criteria," Weber says, "any time we want to do a non-air-conditioned project, we have to go in for a waiver."

He hopes the success of the wind-cooling projects will again cause the criteria to change, "so that we have to get a waiver to add air conditioning."

Problems such as these are just a few of the many challenges that Navy architects will face in the future. And, as Weber says, "To create a good architectural structure within the limits of the government, well, it's quite a feat," and something he looks forward to in the years to come. HA

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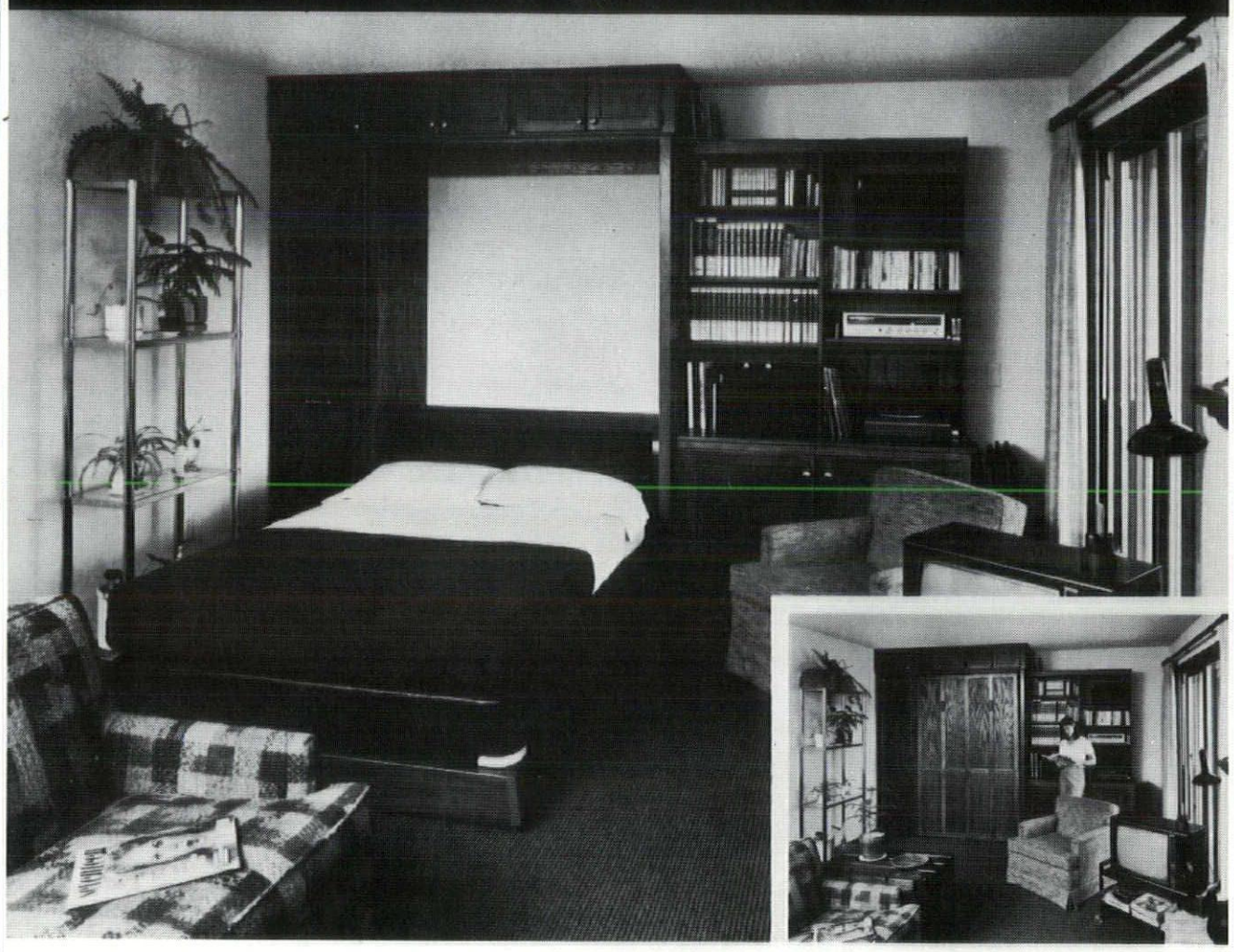

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