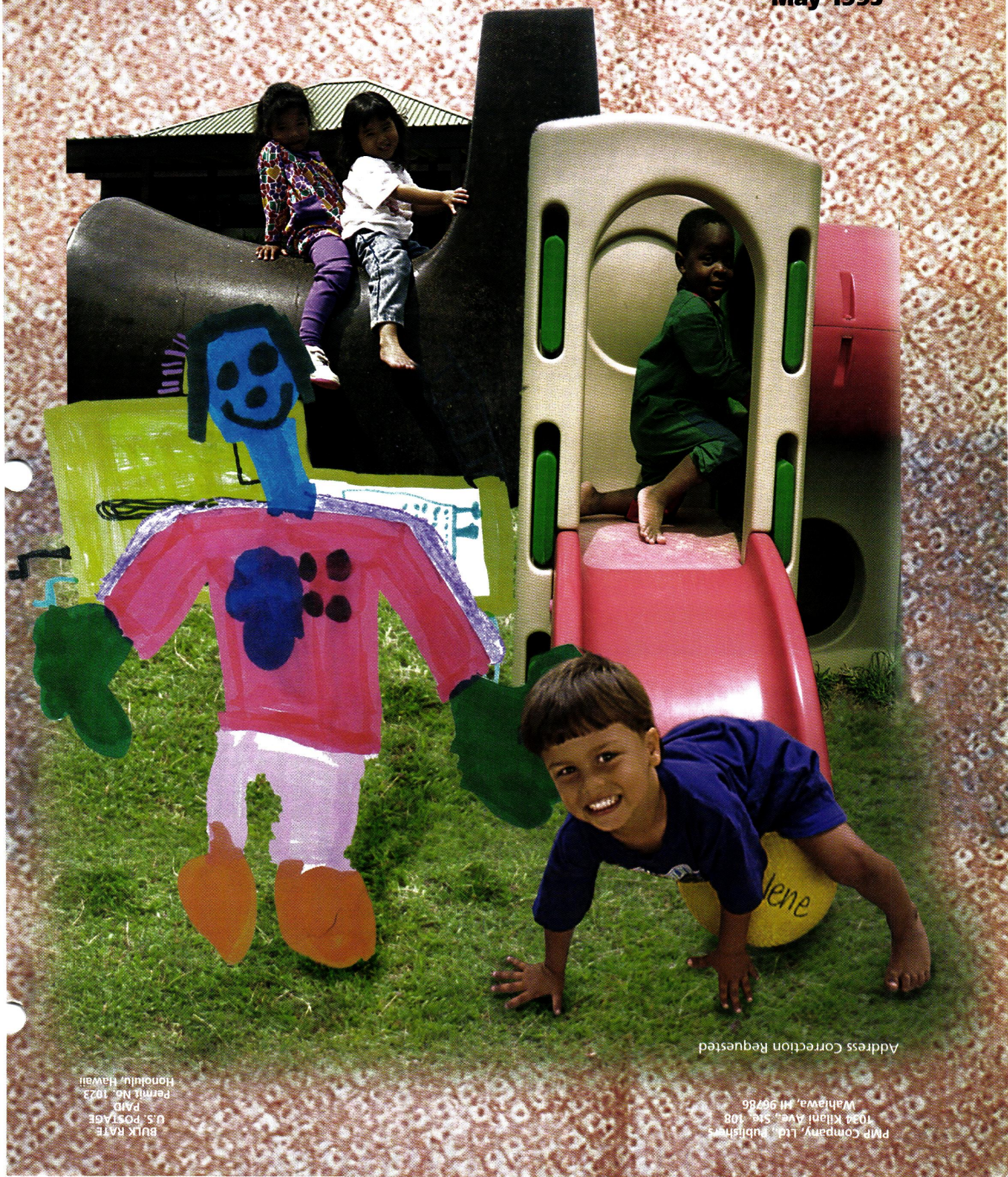


# Hawaii Pacific Architecture

May 1995

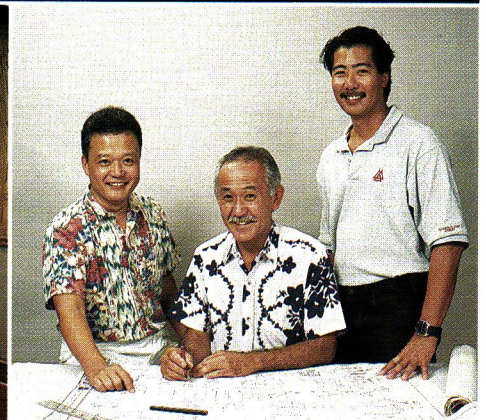


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## Tampering with Tradition

In 1953, Like Like Drive Inn Restaurant opened in Honolulu as a drop-in diner that was slated to become as isle-style tradition.

Allied Builders was tapped for contracting duties in 1994 when Roy and Dora Hayashi, owners of the one acre Keeaumoku property, decided to create the two-story Like Like Plaza, enhancing the popular restaurant, adding ADA amenities, and offering new tenant opportunities.

Observes Doc Sasaki, senior designer for Architects Hawaii, Ltd.: "Renovations can be technically and emotionally tough. Without available records, there were a few surprises — even some old railroad track. Allied's people were always cooperative and efficient. The working chemistry was good."

"Keeping hospitality in place was important to us," recalls Hayashi of Like Like's remodeling.

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Architect Doc Sasaki, Owner Roy Hayashi,  
ABS Project Engineer Winton Saito



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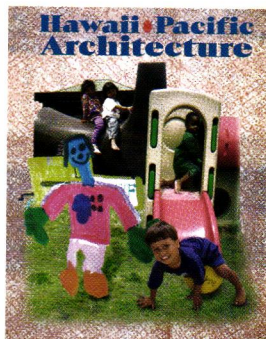
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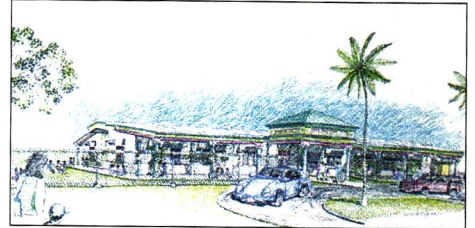
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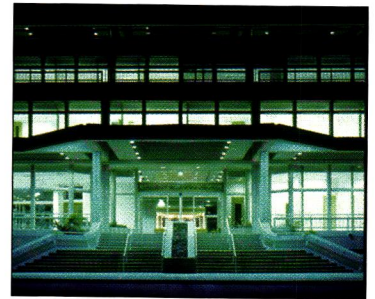
This issue of *Hawaii Pacific Architecture* focuses on designing for childcare. Articles address childcare facility and playground equipment designs. Glenn Mason, AIA, discusses who the major childcare providers are for the state and what new facilities are being constructed for military and private industry childcare providers. Ned Nuding talks about how today's playground equipment and surfacing materials are providing children with more age-appropriate and safer areas to play. The University of Hawaii Student Service Center, designed by Franklin Gray & Associates Architects Inc., is the 1994 AIA Honolulu Design Award featured in this issue. The Hawaiian Tapa design used on the cover and throughout the magazine is courtesy of the Bishop Museum.



Design by Maria Bracho



6 New Childcare Centers



26 Design Award

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# *Hau'oli lā o nā mākuahine.*

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The Sub-Zero 'ohana: Seated (from left to right) Rick DeLa Cruz, Hawaii Manager; Colleen Garrett, Sales Coordinator; Standing (left to right) John Garofoli, Regional Manager; Glen Fujihara, Consultant; Derek Agaran, Service Department; and Robert Riggs, President and CEO of Sub-Zero Distributors, Inc.



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## Kauai Gets New Deputy Planning Director

Architect Ian Costa has been named Kauai's deputy planning director, replacing Neil Aaland.

Costa was in private business in Honolulu from 1983-90 with Costa Architectural Design.

He also served with the Kauai County Housing Agency in the development department where he was project coordinator for the Paanau Housing Complex.

Costa, born and raised on Kauai, is a 1978 graduate of Kapaa High School and a 1983 graduate of the University of Oregon School of Architecture.



**GYA Architects Inc. designed this 20-story Beijing office building.**

ternational market.

In Beijing, GYA Architects Inc. is the design architect for two projects. One project is a \$35 million, 20-story downtown office building; the other is a \$15 million project to design 50 villas located on the city's outskirts.

Despite the surge in international business, GYA president Alvin Yoshimori remains cautiously optimistic about the firm's prospects. He recently noted that business is picking up locally as well, and that for the first time in the past couple of years, the firm will need to consider increasing its staff to meet its expanding international work.

## AIA Golf Tournament Set for May 13

The Maui Chapter of the American Institute of Architects and Wailea Resort Company Ltd. recently announced the 8th annual AIA Scholarship Golf Tournament will be held May 13 at the new Wailea Emerald Golf Course.

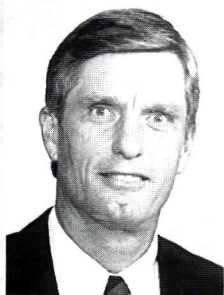
Tournament proceeds go toward scholarship funds which will assist Maui students studying architecture as well as other architectural educational events.

The tournament features three-man teams competing in a one ball/two ball/three ball format. Check-in begins at 6:30 a.m. with a shotgun start at 7 a.m. Individual handicap maximum for men is 30, 36 for women.

Players will have a chance to win prizes, which include a 1995 Dodge Dakota Sport Pickup, a 7-day Caribbean cruise for two, trips to Las Vegas, inter-island golf packages and more. An awards luncheon will be held immediately after play at Seawatch, the new Wailea Golf Club Restaurant.

Entry fees are \$100 per person or \$300 per three-person team. Space is limited. For more information on the tournament and how to become a tee sponsor, call Gregory Skog, 242-8144.

## Cornuelle Joins Honsador



**Richard Cornuelle**

Richard Cornuelle (Ditto) Cornuelle was recently appointed to the newly-created position of vice president, sales and marketing for Honsador Inc. Cornuelle will be responsible for continuing the growth of Honsador's core business as lumber and building materials supplier to Hawaii's construction industry.

Cornuelle joins Honsador after 21 years with the Otis Elevator Company, where most recently he was regional general manager for Hawaii and Guam.

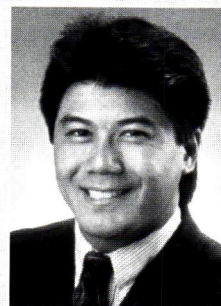
## Architectural Firm Changes Name

Gima Yoshimori Miyabara Deguchi Architects Inc. has announced a name change to GYA Architects Inc.

The firm changed its name because of the recent growth of business obtained with design projects in the in-

## Albert Chee Named BIA Parade of Homes Chair

The Building Industry Association of Hawaii has announced that Albert D. K. Chee, Jr., will chair the 1995 BIA Parade of Homes. He has been a member of the Parade steering committee for the past three years.



**Albert Chee**

Chee, senior project manager of Horita Development Inc., has been with the Horita organization since 1989. He holds a degree in mechanical engineering from the University of Hawaii and is a graduate of the Kamehameha Schools.

The 39th annual BIA Parade of Homes will be held weekends from Sept. 9-24. For more information, contact Kim Mitsunaga at the BIA, 847-4666, Ext. 204.



Facilities are being tailored for children's needs

## **Four New Childcare Centers**

by Glenn Mason, AIA

**A** glance at the yellow pages under "Childcare" or "Daycare" quickly illustrates one of the historical facts of life in the childcare business: a tremendous number of providers are housed in churches. Of the approximate 120 childcare centers listed in the yellow pages, 45 are under church names and at least another 20 use church space, but are listed under the school name.

This occurs for one very simple reason: childcare providers need their space during times when the churches often do not. The churches maximize the use of the building space, whether the preschool is church-run or the church uses the space to make some additional income by leasing it to a childcare provider. For the school, it becomes affordable space, which, as any director of a childcare center will attest, is vital to a business often run on the thinnest of margins.

In many cases this marriage of two users involves some compromise. For example, the rooms often have to be emptied of some or all of the childcare equipment before weekends, which creates excess work for staff and limits the customizing of the space for children.

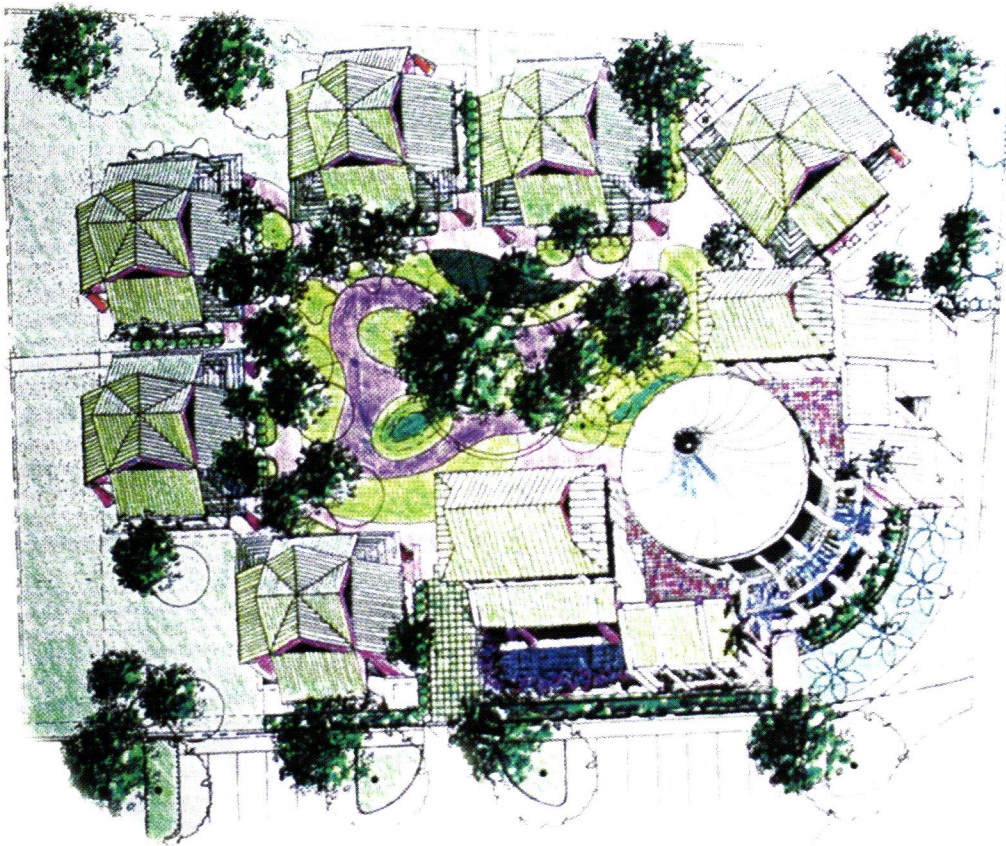
Often, rooms are not optimally-sized for preschool classes, which have much higher teacher ratios than necessary for older children. Toilet locations and visibility, counter heights, layout and other physical characteristics are rarely optimally designed for preschool-age children.

In recent years, increasing attention has been paid to the physical design of early childhood facilities. Although the conversion of spaces which had different original uses will continue to be a dominant method of providing cost-effective childcare facilities, there has been an increase in the con-

**The Marine Corps childcare center, designed by INK Architects, has a residential feel, which is enhanced through the use of a hipped roof and dormer windows.**







**This view of the Media 5-designed Kapolei Seagull site shows the courtyard and pavilion scheme. The fabric volcano form covering the common lanai area is part of the second phase, which is scheduled for completion in 1996.**

struction of spaces designed from the ground up for early childhood education.

What follows are descriptions of four childcare facilities which are either under design or have been recently constructed. Three of those facilities are being designed for the military, a demonstration of the concerted effort by the various branches of the military to improve the neighborhoods and support facilities on installations.

Two projects were done by the firm Thomas T. Agawa & Associates. The first project, near the naval hospital on Guam, designed for 80 children, was completed this past March. The second project, designed to care for 88 children at the Barbers Point Naval Air Station family housing area, is slated to start construction later this month.

Both were based on Navy standards, which somewhat control the size and basic configuration of the childcare facility design. However, within these provided parameters, some flexibility is encouraged to customize the facility for the particular needs of the neighborhood where it is located.

Both plans use the mandated double-loaded corridor circulation system and are centrally air-conditioned. Both are designed to be fairly self-sustaining, that is, the structures have kitchens, offices and laundry facilities which allow them to function inde-

pendently.

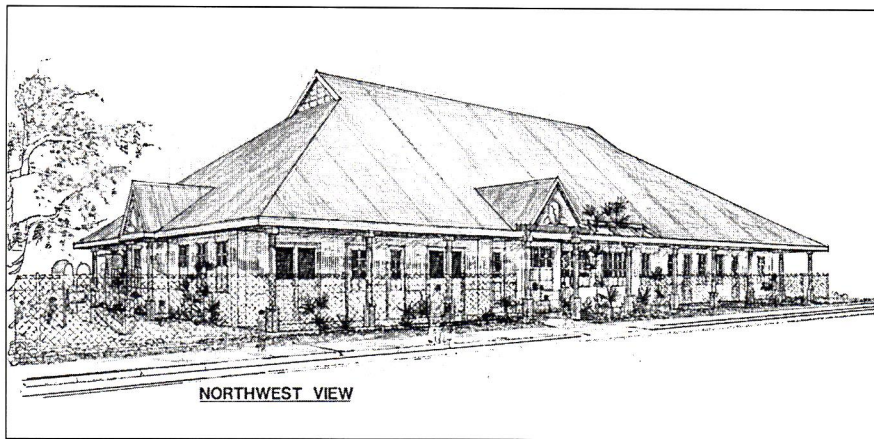
While the amount of common space is limited by overall building area controls, how that space is utilized can be different. For example, the kitchen at the Barbers Point facility is proportionally larger than the Guam facility because the operator's requirements were different.

The exterior designs of the two buildings are a study of how similar buildings can be "dressed" quite differently, depending on the surroundings and other functional constraints. The Barbers Point building is located within a residential area, so an attempt was made to have the building appear more residential, with the addition of elements like gable roof ends.

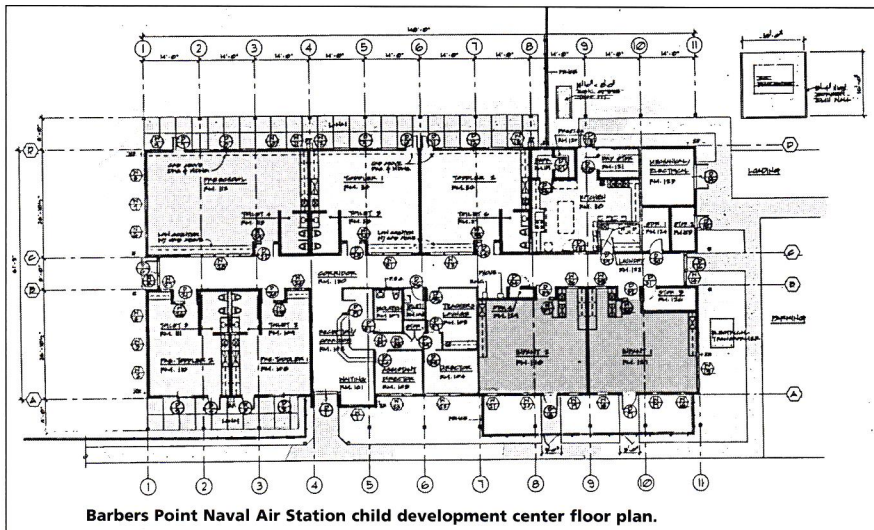
The building on Guam, located near the hospital, needed to respond to the island's severe hurricane threat. With its flatter roof and details incorporated into the design, like storm panel coverings for its windows, the building has a decidedly different appearance than its Barbers Point cousin.

A third building for the military, shown on the facing page, is being designed for the Marine Corps Base Hawaii, Kaneohe Bay, by INK Architects. This facility, designed for 222 children, is scheduled for design completion this month. Construction is tentatively planned for the end of summer. The childcare





NORTHWEST VIEW



Barbers Point Naval Air Station child development center floor plan.

**The Barbers Point Naval Air Station child development center, above, and the child development center near the naval hospital on Guam, below, illustrate how a similar plan can be "dressed" differently.**

center will join two others currently operating on the Marine Base and will be by far the largest when completed.

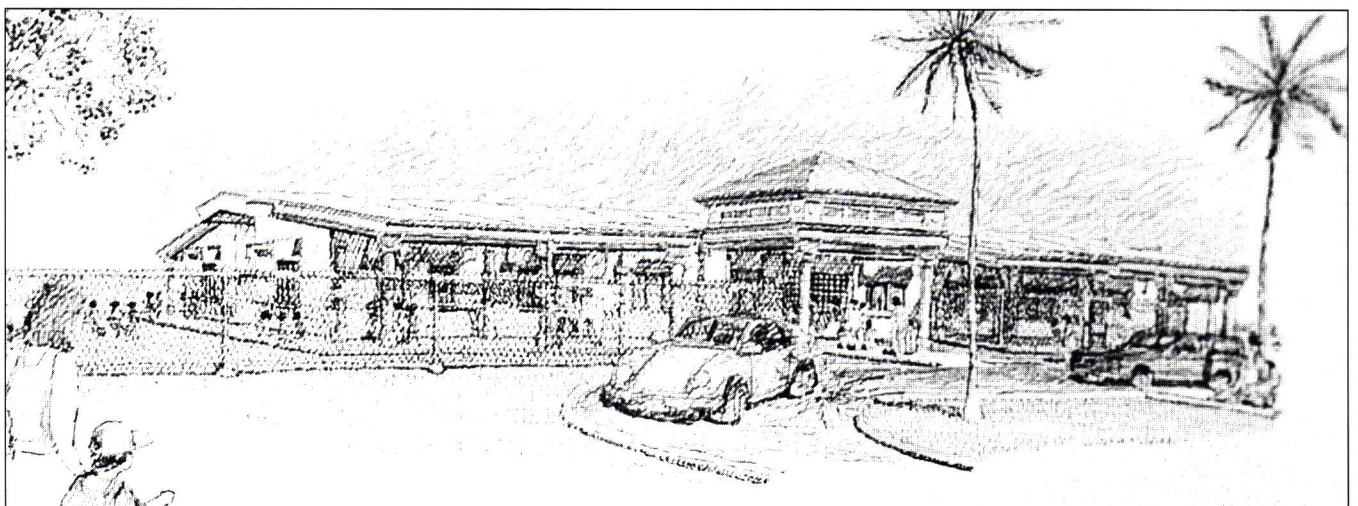
While also based on Navy childcare standards, the project is markedly different from the two discussed earlier. The classroom spaces and support functions were grouped around a courtyard, which becomes part of the secured play area. Each classroom opens directly onto an outside play area, either the courtyard or one of the spaces around the

building. This feature, as well as the extensive development of the outside play area, was designed so the outdoors would be a natural extension of the classroom area.

The community desired a lot of space for parent gatherings. Standards limited the amount of space in the building which could be used for these functions, so the parent gathering spaces at the entry and in the courtyard are trellis-covered exterior spaces. Operable windows were incorporated into the building to allow the use of natural ventilation if exterior conditions permit.

Seagull Schools Inc., a nonprofit childcare provider, is the owner of the new Kapolei Seagull School. Designed by Media 5, the first phase opened last month. The initial phase provides space for 220 children and interim administrative offices. The second phase, scheduled for completion in 1996, will provide space for an additional 60 children, administrative offices, a fully-equipped kitchen and large, covered, central lanai for children's play during inclement weather.

The Kapolei Seagull School will rely on natural ventilation in all the classroom spaces. The high roofs with gable vents are designed to keep the spaces cool through both cross-ventilation and chimney-effects. Chuck Larson, director of the Seagull system, said he strongly feels that air conditioning is unnecessary in Hawaii. Larson added that he believes air conditioning promotes the spreading of illnesses among children and staff, a problem which is significant in all childcare facilities.





The eight-year experience of successfully operating the naturally-ventilated Early Education Center, designed by Johnson Tsuchima Luersen Lowrey Inc. for the City and County of Honolulu, strengthened Larson's conviction to eliminate air conditioning. One of the fringe benefits of this decision is the elimination of the high energy and maintenance costs associated with air conditioning systems.

The pavilion plan of the Kapolei facility developed from several goals. One objective was to reduce the scale of a larger facility by breaking it into manageable building sizes for small children. This also was done to improve natural ventilation performance and to help create a protected central area which would become the community grounds for the school.

The Kapolei Seagull site is bordered on two sides by the Kapolei regional park. While an ideal location, until the planned construction

occurs on its other flanks, it will appear alone on the edge of the park, which made the protected central area concept all the more appealing.

Probably the most important thing about these four facilities is that all seem to represent a new commitment by the military and private childcare providers in the state to provide facilities optimally designed for young children. This is not an easy task. When completed, the privately-funded Kapolei facility will represent a nearly \$3.8 million investment.

Led by Dave McCoy, the chief executive of Campbell Estate, and Larson, the fund-raising campaign for the Kapolei facility received \$1 million in donations from both the state of Hawaii and the Weinburg Foundation, with Bank of Hawaii, Campbell Estate and other foundations making sizable donations to provide this badly-needed facility. This kind of fund-raising is difficult in the best of times, so it will not be

the answer for all childcare needs—one of the reasons why the military's response to fulfilling the needs for childcare have been so gratifying.

Throughout the state, it is clear that the chronically under-funded early childhood education providers have become very creative in looking for corporate and government partners to augment the traditional base of church support for the provision of childcare environments. This movement will continue as communities and childcare providers face the fact that the valuable experiences offered to children in their most formative years are deserving of environments tailored to their special needs.

♦ Glenn Mason, vice president and secretary of Spencer Mason Architects, has been president of the Board of Seagull Schools for three years. He has been a board member since his daughter first attended one of the Seagull Schools approximately seven years ago.

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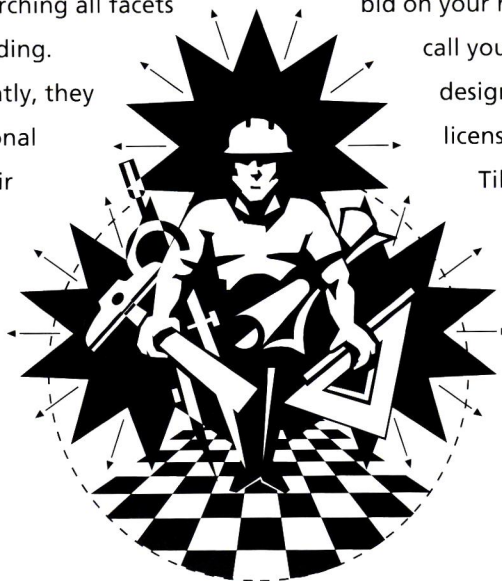
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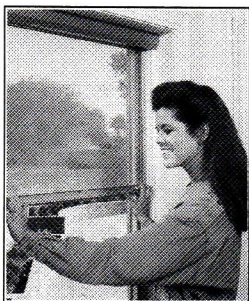
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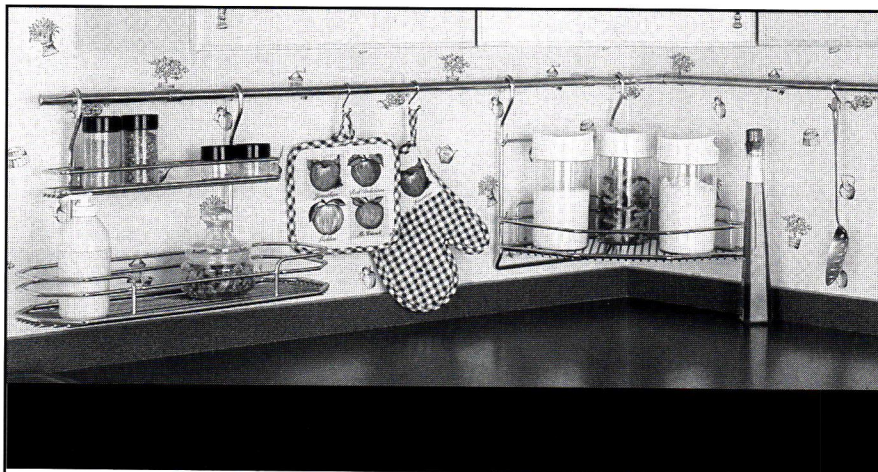
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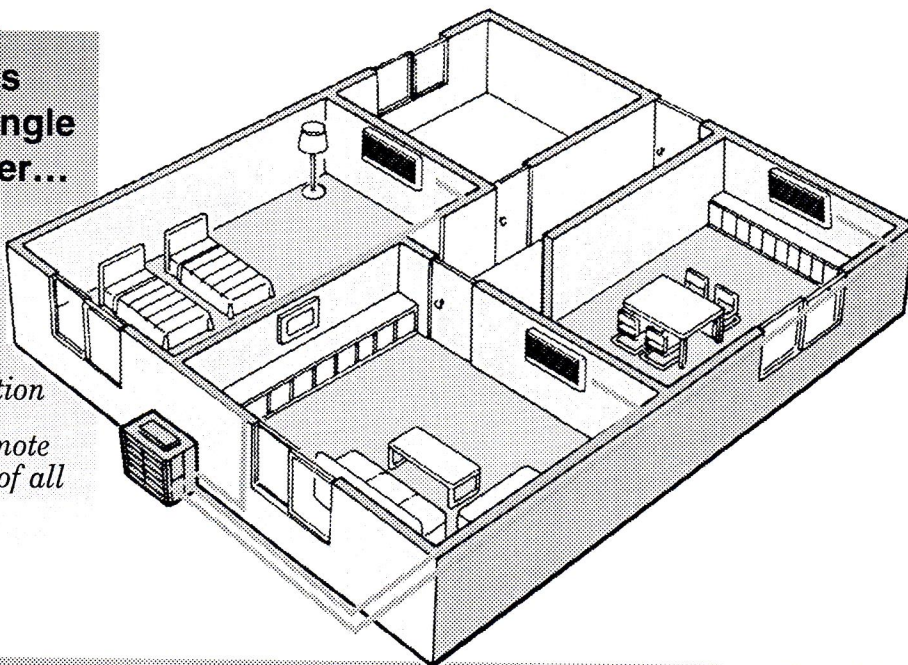
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Preschool programs offer more than 'baby-sitting'

## **Major Childcare Providers**

by Glenn Mason, AIA

**T**here are approximately 17,000 preschool children in some form of childcare center in Hawaii. The need for childcare has always been strong when both parents work, which is common in high-cost Hawaii. In the past two decades there has been an increasing recognition that childcare can, and should be, much more than glorified baby-sitting.

Today, parents recognize and often expect "preschool" care to provide a developmentally-appropriate education, including the building of social skills. The role of childcare centers also has been expanded in some cases to offer related programs like parent education about children's health and child development, and services for special needs children.

As the demand for childcare has grown, an increasing amount of it has been provided by childcare systems composed of more than one school. This has occurred because the exper-

tise required to run a quality childcare program has increased. Also, many of the leaders of these systems, as advocates and activists for quality early childhood education, have taken it upon themselves to develop programs which increase the availability of these services for parents and children.

These providers include about 10 private childcare companies which operate more than one site. In addition, the federal Head Start program and programs like the Kamehameha Early Education Program meet the needs of thousands more children through the use of federal and Bishop Estate funds, respectively.

The Kamehameha Early Education Program has a traveling preschool program and center-based childcare located on all islands. According to Bob Springer, director of the early education division, the program involves about 10,000 children per year. Some of these children are in the program a short time, and many are year-round participants.

The program is considered as much a parent education service as it is a childcare service, which is reflected in the fact that it starts with prenatal parent services and goes through pre-kindergarten childcare.

The Head Start program provides comprehensive health, family support and childcare services for 3- and 4-year-olds from low income families. It operates 65 centers which serve more than 1,300 children. A Head Start program will be started "wherever there is a need," according to Roland Gella, the local executive director of Head Start. These centers are located primarily in Department of Education facilities and churches.

Some of Hawaii's most significant private suppliers of early childhood education include the following.

**Children at the City and County of Honolulu Early Education Center, operated by Seagull Schools Inc., enjoy various play activities while at preschool.**







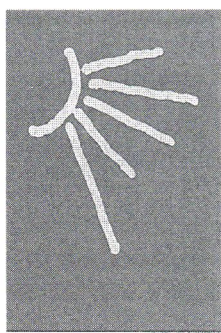
## KCAA Pre-Schools of Hawai'i

This grandfather of childcare systems in Hawaii is 100 years old. The list of founders of KCAA reads like a "Who's Who" of 19th and early 20th century *kama'aina* families. Its schools were first set up to provide free education for kindergarten-age children. KCAA established the Honolulu Kindergarten Training School in 1894 and also played an important early role in the efforts to build community playgrounds in Hawaii.

KCAA lobbied for many years to have kindergarten-age children included in the public school system, an effort which reached its goal in 1943 when such a measure passed through the territorial legislature. After that date KCAA directed its major efforts toward preschool children.

Today, the KCAA system includes seven preschools which serve more than 900 children. It is the only preschool system in Hawaii which owns all its own buildings. It also owns the 1.1-acre Mother Rice parcel, which one of its centers occupies. According to Jim McCoy, KCAA executive director, there are no immediate plans to expand. School officials prefer to focus their efforts on continually upgrading current facilities.

### Sunrise Preschools Inc.



**Sunrise  
Preschools  
Hawaii**

Sunrise Preschools Inc. is one of the few for-profit preschools in Hawaii. The company now has six locations in the state, three in churches, two in renovated, formerly commercial spaces. The sixth school is located in Farrington High School to help teenage mothers with childcare while finishing their high school education.

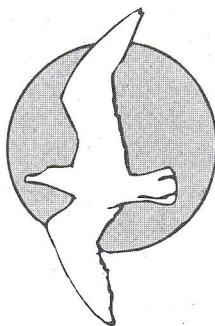
Sunrise was started in 1981 in Scots-

dale, Ariz., by entrepreneur Jim Evans. There are 20 Sunrise locations in that area with a licensed capacity of more than 3,000 children. In Scottsdale, the company has promoted partnerships with corporations which

realize that providing childcare for employees offers benefits to both the company and the

employee. In lower-cost Arizona, Sunrise, the system, will often build the childcare center in exchange for a promise by the corporate partner to subsidize a portion of the employees' childcare costs.

### Seagull Schools Inc.



Seagull Schools Inc. is a nonprofit childcare system with a licensed capacity of 721 children in its five schools. The school began in the Kailua Christ Church in 1972 and still has a school there with a capacity of 38 children.

Its business office

and food service also operate out of the church.

The school has operated the City and County of Honolulu Early Education Center since 1986, which has a capacity of 264 children. Seagull Schools Inc. also has a childcare facility in a Kalihi transitional housing complex; operates a childcare center for the Mauna Lani Resort on the island of Hawaii; and opened the first phase of its Kapolei Child Care Center last month.

The Kapolei facility is built on land owned by Campbell Estate and is the first facility Seagull will own outright. Its Mauna Lani, Early Education Center and Kapolei centers were all built from the ground up as custom





facilities for early childhood education.

Seagull Schools Inc. also operates a small elementary school in Kailua. Its food service, in addition to providing meals to its schools, has contracts for meal service for other organizations.

### Rainbow Schools



According to Steve Albert, Rainbow Schools executive director, the company opened its first school in Kahuku in 1972. That school, which has a capacity of 135 children, had the distinction in 1986 of becoming the first childcare center in Hawaii to be fully accredited.

After operating out of its Kahuku facility for 17 years, Rainbow Schools opened three additional schools in quick succession. In 1989 it opened its first school in Wahiawa. In 1991 it opened a school in Kaneohe and in 1993 opened a second school in Wahiawa. Today, the Rainbow School system has a capacity of 380 children.

### Hawaii Child Centers/ Kama'aina Care



Hawaii Child Centers/ Kama'aina Care currently operates six schools, and has a capacity of 520 children. Five of the facilities are in churches. Hawaii Child Centers began 27 years ago as a for-profit childcare system,

but became nonprofit eight years later. HCC always provided some school-age care. However, when the opportunity appeared two years ago to merge with Kama'aina Care, the marriage was ideal. Kama'aina Care provides after-school care to children in DOE schools.

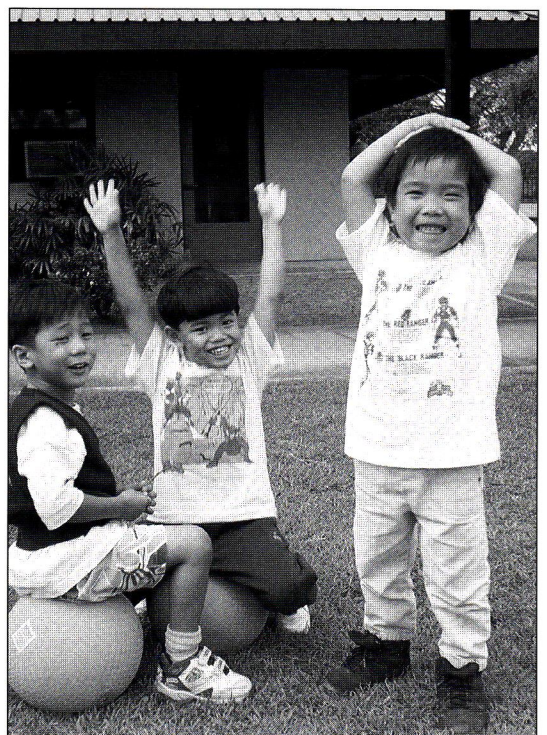
The school has four "divisions" according to Jan Lee, vice president of the school's preschool division. It operates a preschool division and one division for school-age chil-

dren. The school also runs Lei's School of Gymnastics and Camp Timberline, which cater to young children.

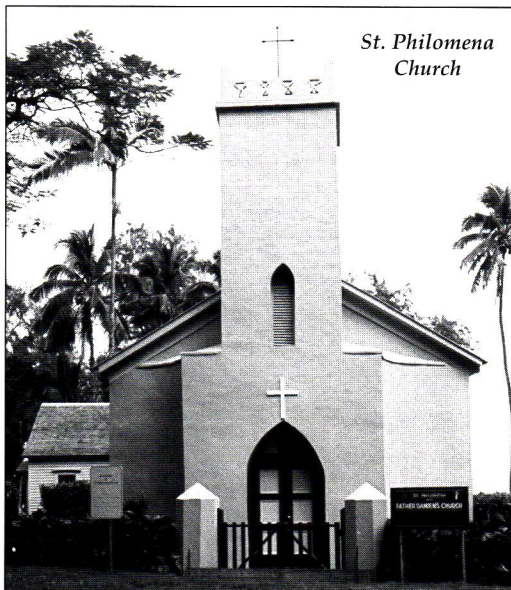
According to Lee, the system plans to add three new centers within the next two years. In December of this year HCC/KC will begin operating a school built by Kaiser Permanente to serve its new Mililani Industrial Park facility. Sometime in the summer of 1996 HCC/KC is slated to open a new childcare center at the site of the former commuter airline terminal at the Honolulu International Airport. In September 1996 HCC/KC will begin managing a facility in Ewa as a part of a comprehensive family center operated by Child and Family Service.

Private providers of early childhood education may care for children, but their business is not child's play. Each of these systems is a good-size small business, some with more than 150 employees. Moreover, because these companies hire professionally-trained teachers and have very low teacher-to-student ratios, the struggle to contain costs—to be able to supply a service that parents can afford—is constant.

All of these providers must be resourceful and creative to survive, let alone grow. As the previous descriptions attest, the providers mentioned have done this through government, corporate and foundation partnerships and ancillary activities, such as a food service, which can provide outside capital to the system.







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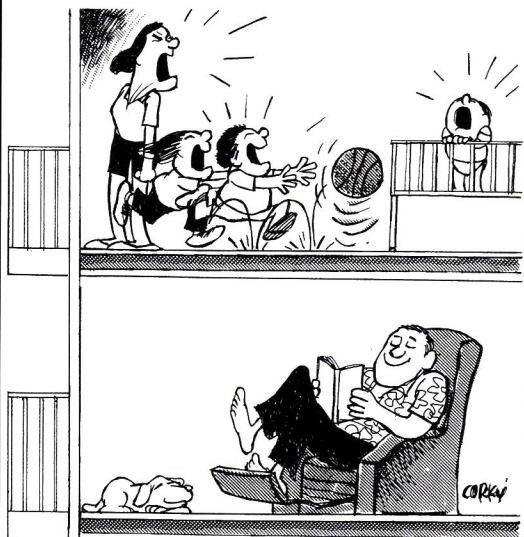


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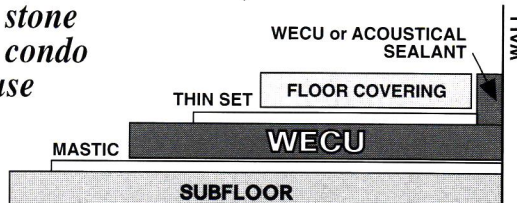
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## Playground Equipment and Surfaces

by Ned Nuding

**This section of the Hauula Community Park on Oahu provides many age-appropriate activities for preschool children.**

In the past, playgrounds had slides, seesaws, swings, a metal climber and maybe a spring riding toy. From the 1950s to the 1980s there wasn't much for children to play on, except for the three or four pieces that were accepted as the "norm" for most playgrounds.

There were high horizontal overhead ladders, where if a child couldn't reach the first rung, he wasn't old enough to play. The fear of the plunge down the steep slide was something to overcome. Play equipment was not designed for the user's size or skill level.

A child with a handicap was often completely unable to use the play equipment. In essence, the playground was there for those who were physically able and the right size

for the equipment. The play apparatus was usually placed on asphalt, hard ground or concrete. Times have changed and so have playgrounds.

Manufacturers like GameTime have creatively designed a whole new concept in play equipment by studying the experiences of children and how the play environment affects their development. Equipment manufacturers have redeveloped their products to meet the demands of today's environment by seeking information from childcare professionals and implementing new safety standards.

Today, play apparatus are designed for specific age and skill levels. Manufacturers offer activity-oriented, strength-building and imagination-generating equipment. The combination of each of these three categories, used in balance with each other, is what comprises a well-designed composite structure. One concept that has gained popularity is the use of a multi-activity climber or composite structure. Although this is not a new concept, the expanded use, variety and design is.

A composite structure is a playground piece comprised of several different activities connected to each other, usually with one or more decks. GameTime offers four different complete lines of modular composite structures: one designed entirely for preschool-age children; one for public parks with a combination of age groups; another for budget-conscious customers; and another for customers who prefer the nat-





ural look of wood.

Today's childcare centers can focus on play equipment that is designed for children's sizes and skill levels. Play equipment can be chosen to fit into the center's available space, budget and design preference. Also, equipment does not have to be selected from a pictured unit in a catalog. Instead, childcare providers can give their input to a skilled playground representative and create the type of playground desired by the center.

Various manufacturers offer a line of play equipment designed for handicapped children. Less mobile or children in wheelchairs can use ramps, wheelchair turnarounds, interactive panels and equipment designed for their specific needs. This incorporates individuals into the play activity and adds to their abilities and socializing experiences. As mandated by the passage of "The Americans With Disability Act," each playground is required to provide access to the handicapped.

One of the most important issues involving playgrounds is the use of safety surfacing under and around play equipment. It has been determined that most injuries on playgrounds are caused by falls to the surface below the play apparatus.

Sand, wood chips, pea gravel, rubber mats and poured-in-place surfacing can be used to help cushion the fall from the play apparatus. The different types of safety surfacing are categorized into two types—loose-fill and unitary material. The determining factor is if the material is displaceable.

Sand, pea gravel and wood chips are the primary types of loose-fill materials. The most common types of unitary materials are rubber mats and poured-in-place surfacing. Each material has different qualities.

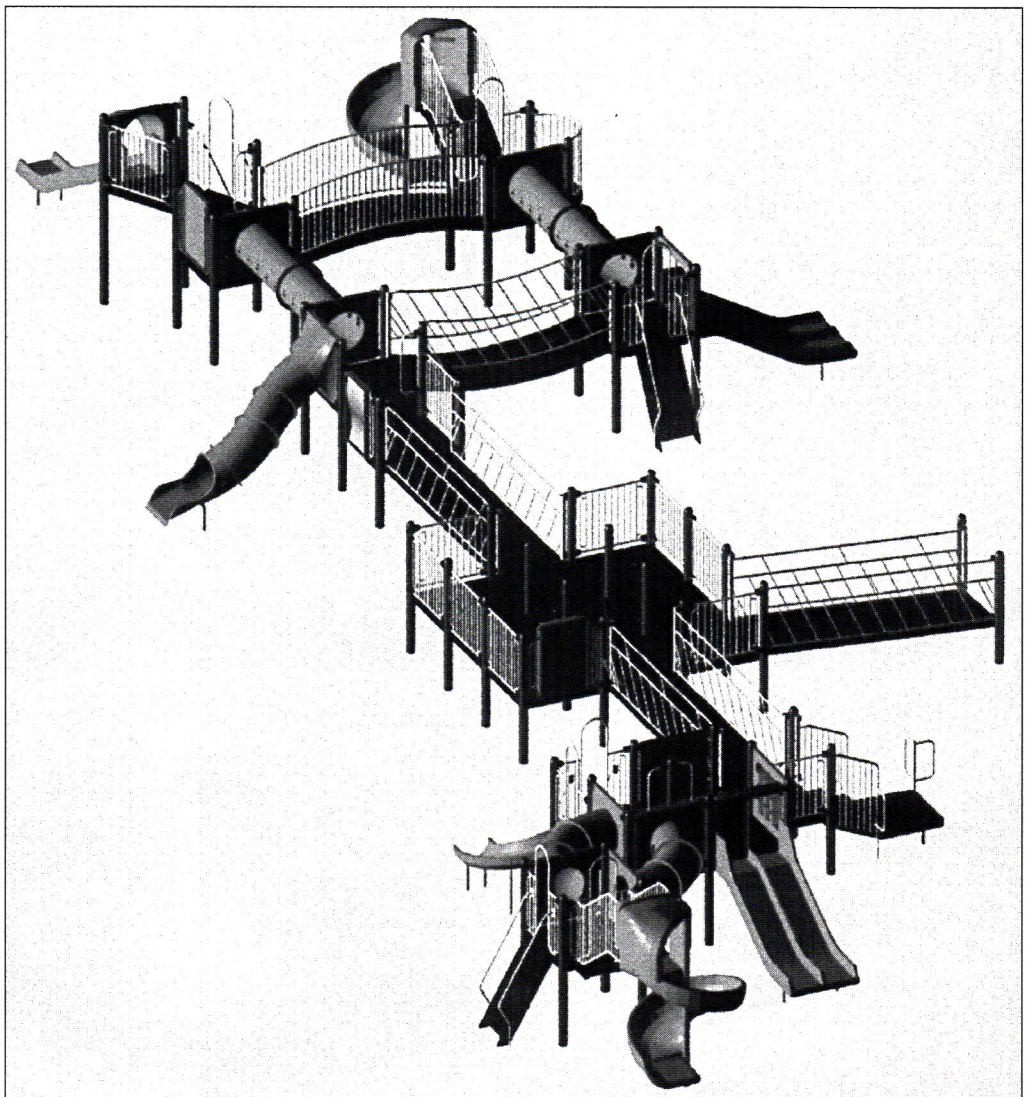
One disadvantage of all displaceable materials is that they can be carried off and lost as

cushion. The advantage of sand is cost, especially for people in Hawaii. Its disadvantage is its high probability of contamination by fecal matter, unless the area is secured from animals. Sand also can hide foreign objects, such as broken glass.

Pea gravel is suited to areas with a high rainfall level and can be a fairly inexpensive choice. The disadvantages of pea gravel are availability and that certain types have some sharp edges. Wood chips are a good choice for the budget-conscious customer and can provide a high degree of resilience.

The ideal choice, if budget permits, is to use a unitary material. Rubber mats can have mechanical fasteners or an interlocking design that makes continuous mats. This design is not as permanent as a poured-in-place system. Poured-in-place surfacing offers a colorful, fireproof, slip-resistant, water-permeable surface that is directly bonded to a firm and stable subgrade. Manufacturers such as Vitriturf offer a

**This computer-generated image is an example of a custom-designed composite structure.**





variety of colors and thicknesses trowelled down in two lifts or layers.

The thickness of the cushion layer of poured-in-place systems is determined by the fall height of the play equipment. The fall height is measured by the highest accessible point on the play structure from which a fall could occur. The thicker the cushion layer, the higher the degree of resilience.

There are two measurements for

the resiliency of the safety surfacing below play equipment. One is called the head injury criteria or HIC. This measurement quantifies the resiliency of the material beneath the play equipment.

Another method is the 200 G-max test. If the peak deceleration of the head during impact does not exceed 200 times the acceleration due to gravity (200Gs), a life threatening head injury is not likely to occur. No matter which material a

customer selects, the materials rating should not exceed an HIC value of 1,000 and 200Gs.

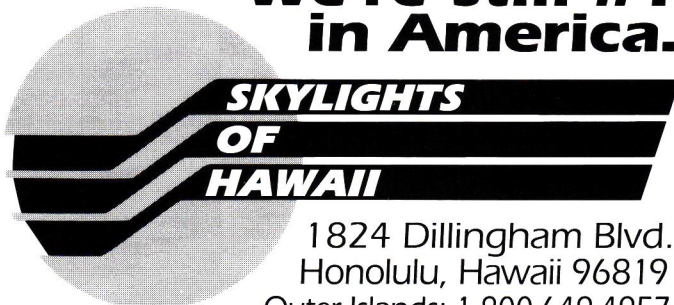
The Consumer Product Safety Commission has published a set of guidelines for playground equipment, surfacing and design. This document has become the governing set of rules for playgrounds and has helped to standardize safety guidelines. This publication is available from the United States Consumer Product Safety Commission, Washington, D.C., 20207.

Playground equipment and surfacing are not the only components of a childcare facility playground. Landscape design using berm hills and shrubbery can accent and enhance the playscape. The natural lay of the land, used in conjunction with play events, can generate play activity. The childcare facility play area is changing, and conscientious design should be a part of any plan.

♦ Ned Nuding is assistant sales manager for Specialty Surfacing Co. Hawaii Inc.

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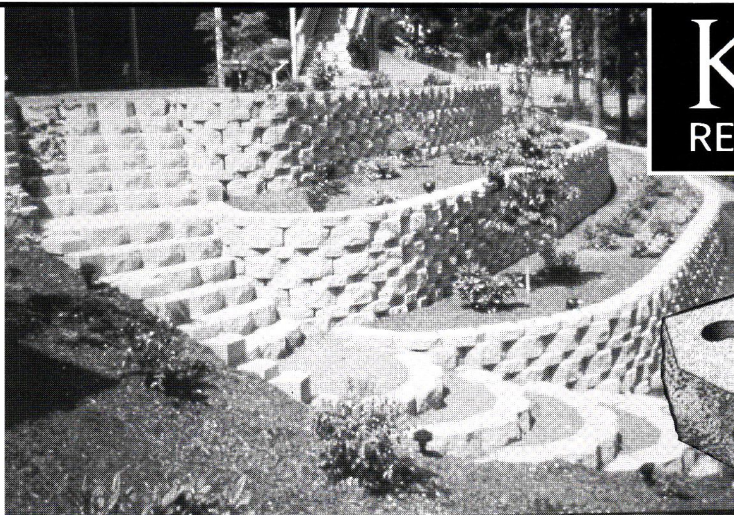
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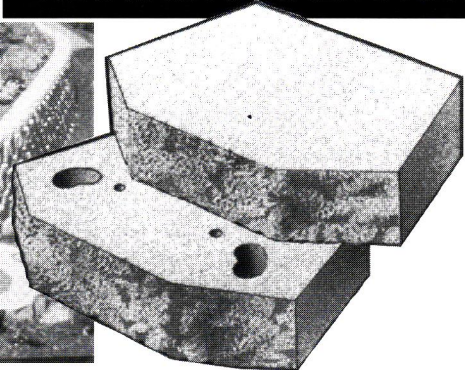
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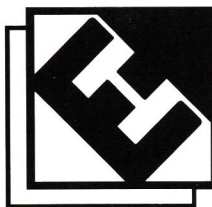
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# Letters

## Dear Editor:

I read with interest the February 1995 issue of *Hawaii Pacific Architecture*, relating to the needs of conserving the very environment which we are all too often accused of exploiting in the name of tourism. As it emerged from the various articles, the issue is not a clear one, and conservation measures to one set of eyes are still plunder to others. It all depends where you're looking from, like the ecologist and the lumberjack on a hilltop; one sees a priceless virgin forest, the other a million square feet of lumber.

In the article *A Holistic Approach to Eco-Tourism*, one of the experiences described was that of visiting Stonehenge in England. It described recent changes in design and management undertaken to ensure the preservation of this monument and an improved visitor experience.

This may be so, but to the Department of the Environment it is still nowhere near good enough. At present, the preservation of these ancient stones is the subject of a prolonged debate. About two years ago a major design competition was held for a complete new design of a visitors' center and related facilities.

Some of the design alternatives included; siting the center underground, siting it about a mile or so from the actual site, burying of a major trunk road which passes less than a half mile from the stones and the realignment of the site access road.

The pursuing debate and resultant non-acceptance of any of the design proposals, as they stood, indicates the complexity of the problem. No one appears to be confident enough to say—yes, this is the best solution—for fear of being accused from another direction of destroying the national monument. The project, to my knowledge, is now back

in discussion with one of the contestants.

So, perhaps all we can do as designers, in whatever field—planning, landscape or architecture—is to design with as much knowledge and understanding as possible of the processes involved in conservation or preservation. For no matter how well a development is conceived, designed and executed, it won't be good enough for everyone.

Robert Day

Helber Hastert, Planners  
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## Correction

The photo credit for the AIA Honolulu Design Award featured in the April 1995 *Hawaii Pacific Architecture* was inadvertently omitted. The credit for the Sheraton Waikiki Hotel Porte Cochere and Entry Court should have been listed as "Photos by Kyle Rothenborg." *Hawaii Pacific Architecture* regrets the error.

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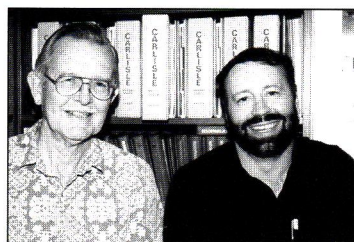
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## Leadership Message

# Hopes and Fears for the Future

by Stanley S. Gima, AIA  
President

**T**raditionally May is a happy month in Hawaii. The multi-ethnic culture celebrates May with many diverse events and activities that are upbeat and joyful. Visions of flowers, leis, dancing children and happy faces are a few images of May that come to mind.

For the AIA Hawaii State Council, May is the last month of its operating year. Thus, in this last of my messages as president, let me discuss my hopes and fears about the future for Hawaii's construction professionals.

What I fear most is the departure of Hawaii's young graduates to more economically favorable locales, due to the uncertain future of Hawaii's construction industry. Perhaps this fear is related to my own personal experience of being forced out of Hawaii as a young college graduate due to lack of employment opportunities here. It was an extremely painful and emotional experience because I love Hawaii, my birthplace.

A visitor from the Orient once told me that the word "crisis" in Chinese is written by combining the characters for "danger" and "opportunity." In these times of crisis, Hawaii needs brave and visionary leaders to face the economic dangers and to look for the opportunities of the future.

One of my strong hopes is that Gov. Cayetano will soon complete and announce his plans for enhancing Hawaii's business environment. Of major interest to AIA members will be a program to encourage growth and export of our "soft goods" industry, of which architectural and engineering services are a part. This industry has tremendous growth potential in the Pacific Basin.

One of the handicaps impeding the competitive export of our services to

overseas projects is the excise tax—currently 4.17 percent—added to our fees. Since the state does not tax tangible "hard" goods

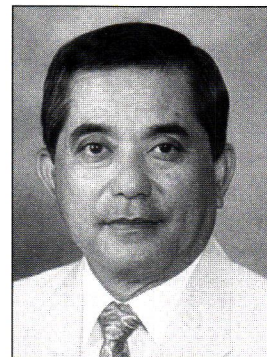
produced and exported from Hawaii, why tax our "soft" goods? Certain "soft" goods, such as exported computer services, already are exempted.

Hawaii's design professionals would be able to compete for many more projects in the Pacific Basin if the state were to provide incentives such as the excise tax exemption. The revenue to the state would be a great net gain—there would be a large gain in income taxes from the increased number of employees needed for the "imported projects." The initial loss from the excise tax would be counterbalanced by the greater gain in personal and corporate income taxes.

This idea should be explored immediately. Hawaii's design professionals are well-versed and respected in their areas of expertise. Most are computerized with the latest hardware and software, able to transmit their work electronically to any Pacific Basin country via telephone modem connections. Hawaii-based professionals also have a big advantage over mainland competitors because of cultural ties to the rest of their Pacific Basin "neighbors."

Indeed, Hawaii's future is full of hopes and fears, but if we work hard to realize some of our hopes the fears will recede.

Aloha and best wishes for the future!



**Stanley S. Gima**



Navy storage tanks named historical site

## Red Hill 'Underground'

by Darcy Boykin

**Men lay 1/2" steel plates at the bottom of tank #2 at the Red Hill facility.**

(Navy photo, Aug. 5, 1942)

**T**his summer, nearly 4,000 engineers, carpenters, steelworkers, contractors, miners, welders, electricians and laborers finally will be honored for a massive, three-year project that was one of Hawaii's best-kept secrets of World War II.

This revolutionary feat of engineering is known today as the Red Hill Underground

Fuel Storage facility. Located a few miles east of Pearl Harbor, it then was known only as the "Underground."

In April 1994, the American Society of Civil Engineers History and Heritage Committee accepted the 55 year-old facility as a "National Historic Civil Engineering Site."

On June 24 of this year, a dedication will be held at Camp Smith to welcome Red Hill to the ranks of other historic sites such as the Hoover Dam, Washington Monument and the Golden Gate Bridge.

The Navy Fleet and Industrial Supply Center (FISC), which still operates the facility, will host the invitation-only event during which dozens of project workers will be reunited and recognized for their war contributions at Red Hill. The event will include a tour of the facility for men who may have never seen the completed project which they began Dec. 26, 1940.

Jim Gammon, superintendent of the FISC, said the dedication is "to honor the men who built it. Other people in other projects have basked in the glory of recognition, but not these people."

Because Red Hill was a national defense secret, Gammon said, the men couldn't talk about it. Even though it was officially declassified in the 1940s, it hasn't been widely publicized until recent years.

"We just felt that the world situation is such now that the least we could do is honor the men who built it before they passed away," Gammon said. Most of the men now would be in their 70s and 80s.

### Red Hill is born...

In 1938, the Navy Shore Development Board began searching for a more secure and adequate method for storing the near 4 mil-





lion barrels of fuel kept to supply the Pacific Fleet.

The intention was to move the fuel from the exposed Doheny oil tanks in the back of the Navy Yard to a series of underground horizontal tanks.

Contractors located a ridge of volcanic rock, or *puka-puka*, that stretched from the Koolau Range to the Pearl Harbor shoreline. Because of the red dirt coloring the ridge, this became Red Hill.

The Navy purchased 345 acres in the area at an average \$242 per acre, most of which was owned by Damon Estate. In late 1940, the unharvested cane and pineapple blanketing the hill was plowed under, and construction began the day after Christmas.

Great engineering minds from across the nation were recruited, including James Growden, a hydraulics engineer with Aluminum Company of America, and George Youmans, project manager for Morrison-Knudson, the primary contractor.

Because of the urgency of the project, Growden searched for a less time-consuming method of tunneling and removing muck than by conventional methods of the time.

On the back of a cocktail napkin over dinner with Youmans, Growden sketched his plan for a series of 20 tanks positioned vertically instead of horizontally in the ridge. The unprecedented idea was received with mixed reviews by peers but was approved by Adm. Ben Moreel, then chief of the Bureau of Yards and Docks.

In the end, Growden's design was the reason the project finished nine months ahead of schedule.

## Building from the inside out...

First, a base tunnel and an upper access tunnel were created. Running the length of the base tunnel was the five-mile-long system of conveyor belts designed specifically for the project by B.F. Goodrich.

Twenty narrow shafts then were sunk from the ridge top to the base tunnel. Miners were lowered into the shafts where they picked and blasted it to a diameter of 30 feet. Then a circular platform was lowered by pulleys and suspended to where hollowing would begin.

Charlie Boerner of Maui described it best.

"All we're doing is getting inside a hole that doesn't exist and digging until it does. O.K., so the miners keep widening the hole out from the shaft, making it v-shaped so the rock will roll down." Boerner was the civil engineer inspector of the Navy's supervisory group.

Muck then was carried by conveyor to a quarry. Eventually, all of the five million tons excavated from Red Hill was used in surfacing highways, making concrete and as landfill to connect Kuahua Island to the Pearl Harbor shoreline.

After the tanks were hollowed, the walls were lined with  $\frac{1}{4}$ " steel plating, much like stained-glass pieces create a Tiffany lamp shade, Gammon described.

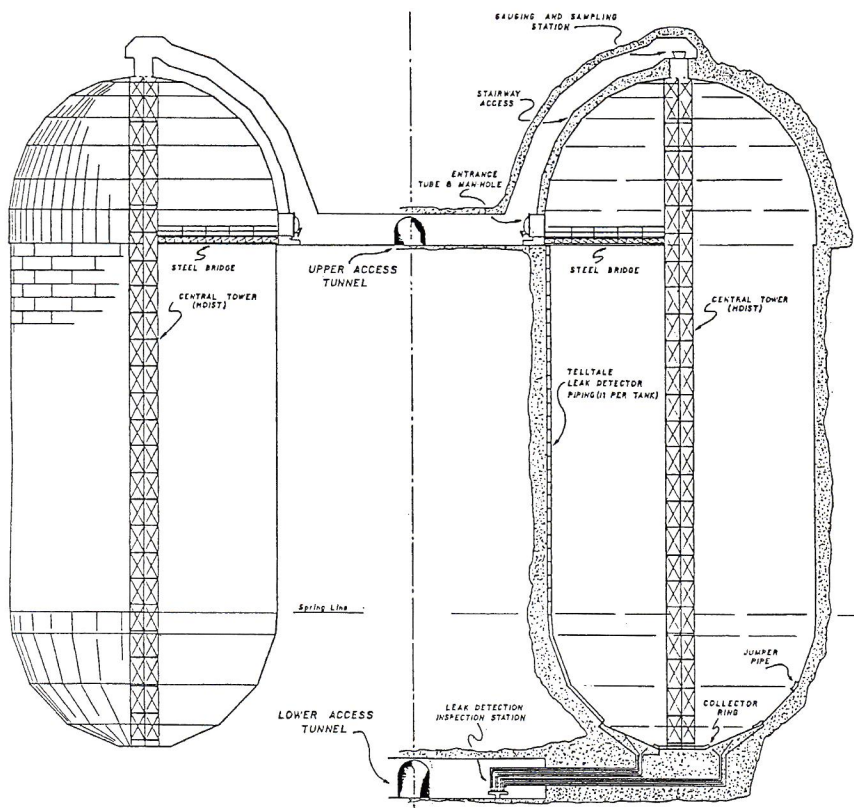
Gaps between the steel plates and rock were filled with concrete, at places reaching a thickness of 8 feet. Each tank sat on a plug of concrete 20 feet thick. A 72-hour continuous pour was required to avoid cold joints which could lead to leaks. Gammon said that the only tank with a cold joint was the one being poured on Dec. 7, 1941.

Subsequent gaps between the shrunken, cured concrete and the rock walls were pressure-filled with grout so that steel, concrete and rock were consolidated.

Before the tanks were filled with oil, they were filled with water to test for leaks.

The tanks were arranged in two parallel

**Cross-section schematic of tanks showing access and service tunnels.**  
(U.S. Naval Supply Center, Pearl Harbor)





rows, with adjacent tanks spaced by 100 feet at least. The parallel arrangement allowed access by tunnels built between them with branches to each tank. Tops and bottoms of the tanks were dome-shaped for strength.

The first tank was completed and immediately utilized on Sept. 26, 1942. The last, on Sept. 30, 1943. Total cost, \$43 million.

### Conditions and casualties...

Ninety percent of the work was done underground, below at least 110 feet of earth. Outside night work was done under blackout conditions brought on by the war. A 20-watt bulb mounted inside a tin can and suspended three feet from the ground was a typical light source.

Temperatures inside hovered around 120 degrees Fahrenheit in the darkness and was exacerbated by welding torches and sweating bodies. Welders often fainted from the heat and fumes, saved only by lines tying them to the scaffold.

Work was continuous, in three shifts, seven days a week.

Two men drowned during a leak test. One was electrocuted, one mistakenly shot by a Marine guard, and one was shot in the Pearl Harbor attack. One drove into a train, and several died in falls and conveyor belt mishaps. Seventeen in all gave their lives in this particular war effort.

"The existence of Red Hill is really a tribute to the guys," Gammon said. "They weren't in the service, but this was their contribution to the war," he added.

### Project facts and figures...

The only continuously-operated railroad on Oahu runs the 3½ miles from Red Hill to a pump house at Pearl Harbor. The "Howling Owl" train runs 450 feet underground, transporting men and equipment. At the pump house, only four men at a time are needed to monitor the elaborate system that took thousands to build.

Red Hill's portal doors are blast-resistant, and its tunnels sectioned by automatic doors that will close in case of flooding.

Changes at the facility have been few. All the tanks have been re-lined, and four were converted for jet fuel storage. A bulkhead was also installed to separate these tanks from the remaining 16.

Contractors currently are cleaning 10 of the tanks and inspecting the bottoms for leaks. This is done every 10 years. One tank will be kept vacant for tours during the June dedication.

Besides the Red Hill facility and the adjoining Hotel Pier, used by tankers that refill the tanks and by ships taking fuel, the project also includes a bombproof underground pump house and a water development tunnel that can handle 30 million gallons a day.

Gravity alone propels fuel from the tanks to Pearl Harbor, Hickam Air Force Base and Barbers Point Naval Air Station.

The only visible sign of the 32-month project and the 3,900 laborers involved are three massive iron doors on the ridge and, come June 24, a plaque recognizing them.

### Memories from the men...

Keith Leventon of San Jose, Calif., would certainly like to return for the dedication if he could. Now 80 years old, Leventon was at Red Hill from January 1941 until completion. He was first nipper foreman then general labor foreman.

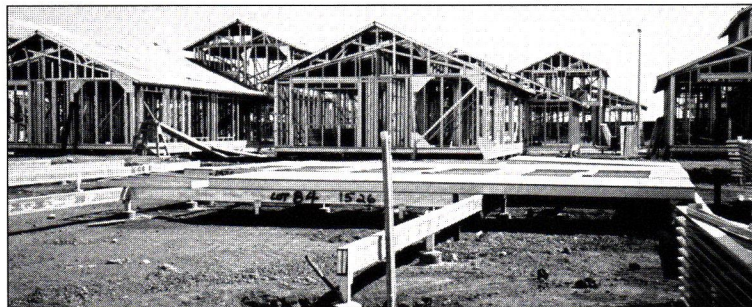
"It was probably the most unusual and interesting job I ever had," Leventon said. "There was such a closeness involved with the men. It was such a unique project that everything was a challenge."

Leventon also has fond memories because his father, Hiram L. "Lev" Leventon was brought in as a supervisor. "He was a well-liked leader."

Joe Halversen, 75, former miner, now lives in Sidney, Mont. "It was the biggest underground pro-

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ject ever attempted in the world," Halversen said.

"I worked on all the tunnels clear down to the Harbor. We even built a stope into the headquarters of Adm. Nimitz so he could get down into the tunnel in case of an air raid."

Halversen remembers he was in his bunk recovering from a sprained ankle and sound asleep when he heard the first bomb on Pearl Harbor.

"It almost knocked me out of bed. I thought they were just blasting again, and I yelled 'Hey! Cut that out!' But then my roommate came in and said that Japs just blew the hell out of Pearl Harbor."

Halversen said he undoubtedly would return for the reunion.

"Maybe I'll see some guys I know."

No story can be written about Red Hill without the name of Charlie Boerner. Boerner, now 83, lives in Maui and is called upon by the Navy frequently for information. He was a civil engineer inspector of the Navy's supervisory group for the project.

"It was a tremendous undertaking, carried on for the most part under war-time conditions," Boerner said. "The people involved were just

tremendous. Everyone involved was doing their utmost to provide what the Navy needed. They knew it was something for the war effort."

"It's being used now for more than it was originally designed for. For the first 20 years, it was just Navy, but now everyone depends on Red Hill. It should be a useful facility for many years to come.

"It was the best dollar ever spent by the armed forces."

## Red Hill at a Glance

**Field Work Began:** Aug. 19, 1940

**Completion:** Sept. 28, 1943

**Location:** Ridgeline between South Halawa Valley and Moanalua Valley

**Number of fuel tanks:** 20

**Tank Height:** 250'

**Diameter:** 100'

**Capacity of one tank:** 300,000 barrels

**Capacity of 20 tanks:** 6 million barrels (252 million gallons)

**Depth:** Tops of tanks range from 110' to 175' below the surface; tank bottoms range from 360' to 425' below the surface

**Deepest Point:** Lower tunnel beneath tanks 19 and 20—approximately 450'

**Contractor:** Pacific Naval Air Bases

**Primary Contractor:** Morrison-Knudsen

**Number of workers on project:** 3,900 at peak

**Underground temperature:** Roughly 120°F

**Fatalities:** 17

**Strangest fatalities:** Drownings (2)

**Total length of all tunnels:** 7.13 miles

**Owner:** Fleet and Industrial Supply Center, Pearl Harbor, U.S. Navy

(The Center Relay, U.S. Navy Fleet and Industrial Supply Center, Sept. 23, 1994)

## CONCRETE ACHIEVEMENTS

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*ALII PLACE* is a private office building located at 1099 Alakea Street in Honolulu, Hawaii. We congratulate the following companies and their employees in the development of this structure.

Architect:	Daniel, Mann, Johnson & Mendenhall of Hawaii
Engineer:	Richard M. Libbey, Inc.
Owner:	US WEST Real Estate, Inc.
Developer:	BetaWest, Inc. and US WEST Real Estate, Inc.
Contractor:	Nordic/Mortenson A Joint Venture



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# Award of Excellence

Office, Commercial and Institutional

**Franklin Gray & Associates Architects Inc.**

Student Service Center, University of Hawaii

**T**he University of Hawaii Manoa Campus's \$16.5 million Student Service Center, completed last summer, provides a spacious, energy-efficient, durable and friendly environment for its users. The building also complies with Uniform Federal Accessibility Standards for the handicapped.

The design goal was to create a functional yet sympathetically-designed and appointed environment which would respond to students' needs beyond the level of basic utility.

The five-level building was developed utilizing a central courtyard surrounded by a single loaded corridor serving the main departmental areas. This configuration provides maximum interior and exterior light and allows natural ventilation through the exterior windows' horizontal mullions in case of a mechanical shut-down.

The southern entry facade was developed with formal

symmetry echoing the Neo-Classic articulation of Hawaii Hall.

The first floor features a full-length arcade which visually softens the vertical scale and provides a shelter for student registration, an event which has caused congestion in the past. The second, third and fourth floors are stepped back with thumbogia vines cascading from the first and fourth floors.

Materials used in the building include poured, sand-blasted and pre-cast textured concrete, Roman travertine, walnut travertine, giallo dorato marble and three types of quarry tile.

Exterior window glass is light bronze with white aluminum frames. Colors used are natural tones, such as sands and tans, accented by maroons, tans and browns.

The building provides 118,000 square feet of space for 21 various student and faculty functions.



The southern entry at twilight displays a formal Neo-Classic design.



## Jury's Comments

*"A handsome execution of a contemporary building which exhibits a subtle 'Hawaiianess' in its forms, details and their successful combinations."*



Cool tones in the floor design add to the airy, outdoor feeling of the building, even on the fourth floor.

Photos by David Franzen



## Credits

### Owner/Client

University of Hawaii

### Architect

Franklin Gray & Associates Architects Inc.

### Civil Engineer

Hida, Okamoto & Associates

### Structural Engineer

Richard M. Libbey Inc.

### Mechanical Engineer

Benjamin S. Notkin/Hawaii

### Electrical Engineer

Bennett, Drane & Karamatsu Inc.

### Landscape Architect

Miyabara Associates

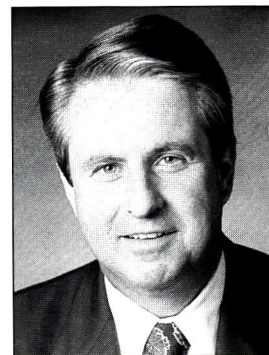
### Contractor

Albert C. Kobayashi Inc.

The first floor arcade at the southern facade provides shelter during student registration.



## Gaggenau Offers Built-in Kitchen Equipment



**Bob Riggs, President  
Sub-Zero Distributors  
Inc.**



**Above, the Gaggenau 350 ventilation system can be raised or lowered to maximize its efficiency. Right, food can be broiled with the door open or closed in the Gaggenau 900 extra-large oven.**

**B**ob Riggs, president, Sub-Zero Distributors Inc., recently announced that in addition to Sub-Zero built-in refrigeration, the company also has been appointed the exclusive Hawaii Distributor for Gaggenau built-in kitchen equipment.

"Manufactured in Germany, Gaggenau cooking, cleaning and ventilating products have long been renowned for their beautiful design, advanced features and superb quality," Riggs said.

Gaggenau offers a wide array of state-of-the-art cooktops which can be built in separately or together to form custom cooking centers ideally suited to an individual family's needs. The Gaggenau 24-, 27- and 36-inch convected wall ovens offer multi-function baking and broiling modes, optional self-cleaning and a host of accessories designed to deliver professional results in the home.

Gaggenau wall mount ventilator hoods and expandable downdraft ventilator systems, along with the company's fully-integrated stainless steel dishwasher, provide outstanding kitchen design flexibility.

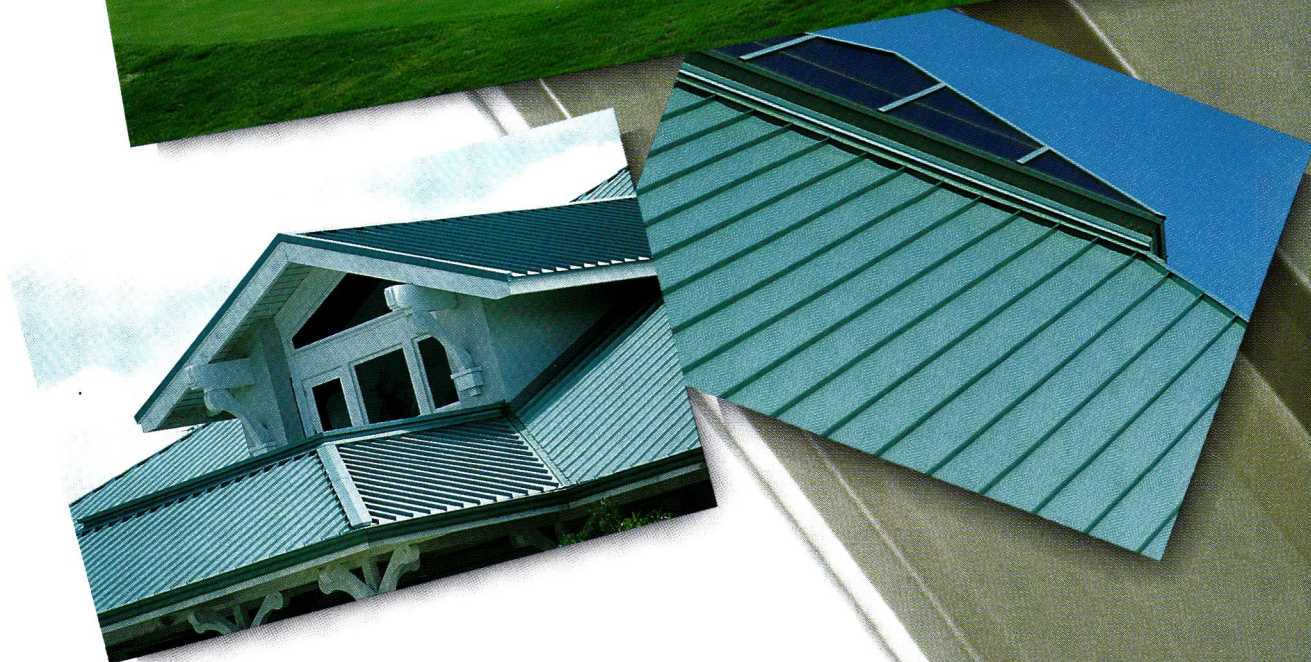
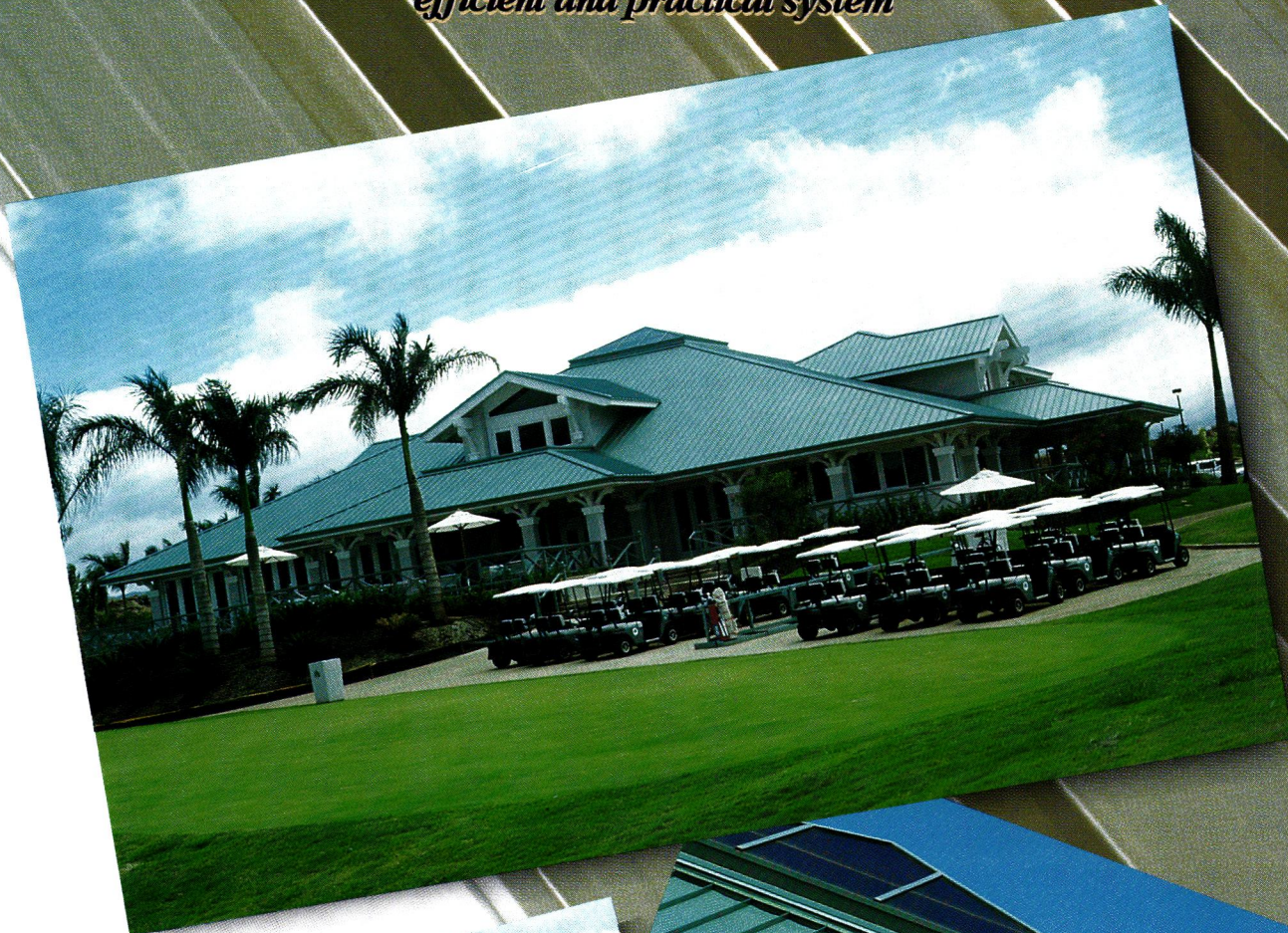




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## General Electric Debuts New Kitchen Products

**Servco introduces the GE Profile 30-inch double wall oven which couples a convection oven with a thermal oven.**

**S**ervco Special Market Group is debuting two new General Electric products in the Profile line, created in 1992 as a high-end appliance line, which provides a personalized kitchen decor without the expense of a total custom renovation.

Building on last year's successful debut of the Profile 30-inch built-in convection wall oven, GE now is introducing the Profile 30-inch double wall oven. It has four cooking modes and the largest capacity convection wall oven, coupled with the largest capacity thermal wall oven available.

To benefit designers, builders and consumers, the double wall oven provides 8 cubic feet of total capacity and is installed easily in standard 30-inch or 33-inch cabinetry.

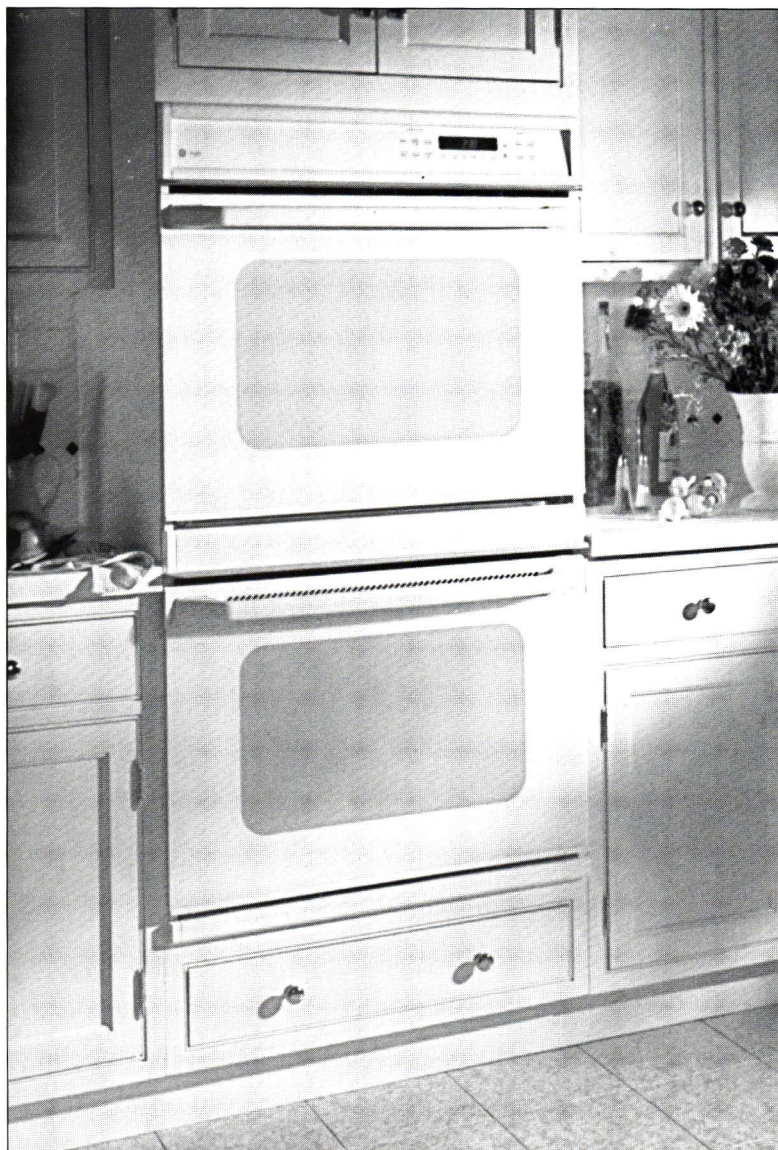
Increased cooking capacity and flexibility, combined with easy-to-read electronic touch-pad controls, seven rack positions and GE's exclusive Big View window all add to the user-friendly appeal.

Other features include an automatic oven timer, automatic meat thermometer and variable broil and control lockout for added safety.

A new line of Profile electronic dishwashers feature a revolutionary CleanSensor system designed to measure the soil level of the dish load and automatically adjust water usage and cycle length, choosing the most efficient way to get dishes their cleanest.

The combination of CleanSensor with GE's multiple wash arm SmartWash system offers outstanding wash performance and efficiency. The CleanSensor features the CircuClean pump, also for improved wash performance, and the GE Profile QuietMotor, an active venting system and sound insulation package. Larger graphics and a virtually seamless, trimless exterior provide a sleek look that is easier to clean than any previous GE model.

Both the Profile dishwasher and double wall oven are offered in three colors, white-on-white, black-on-black and almond-on-almond.





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*The new Profile XL44 ranges are crafted for ease of cleaning with a scratch-resistant tempered-glass backguard, electronic control panel and upswept cooktop, coupled with an extra-large, self-cleaning oven.*



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