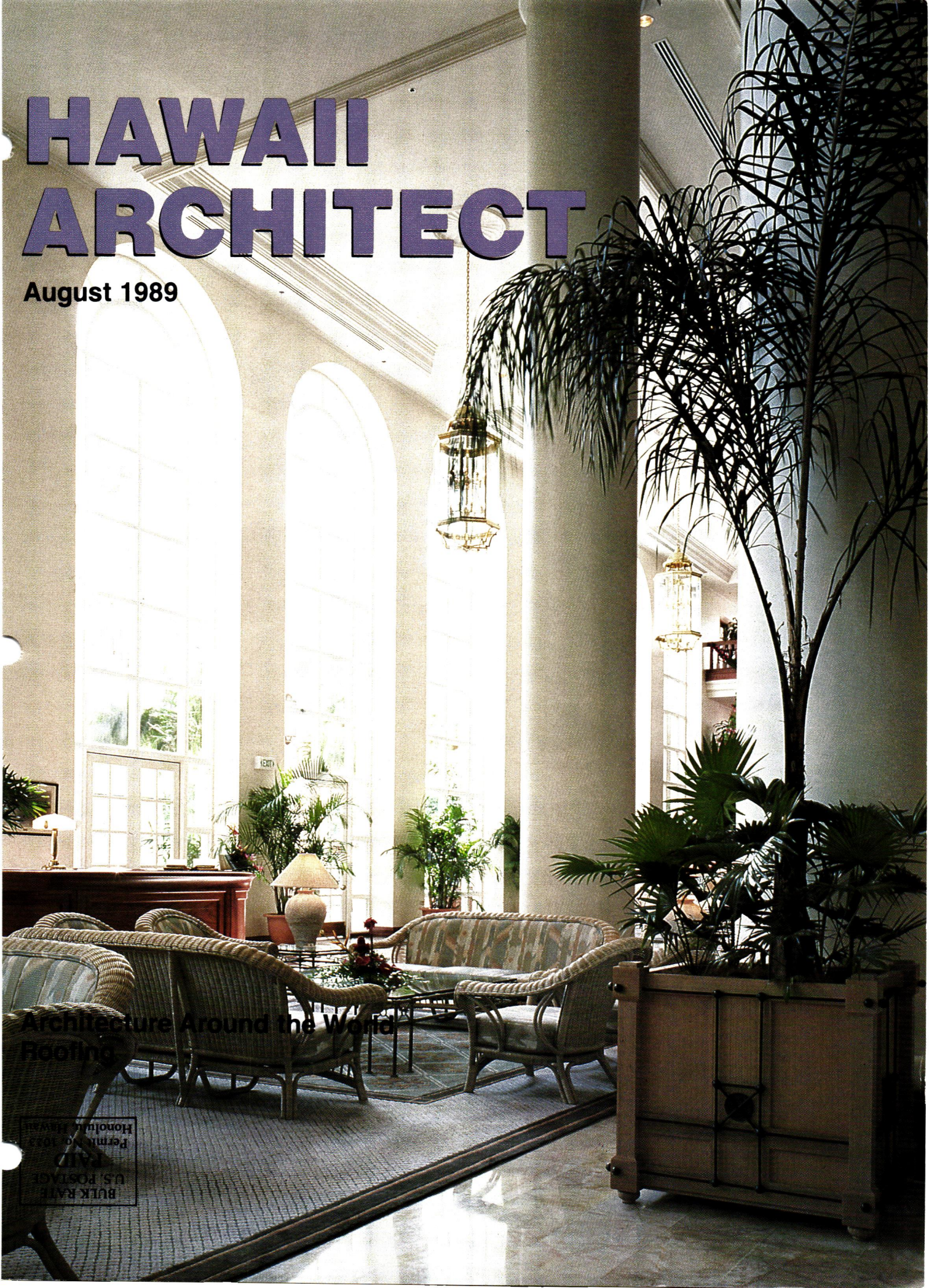
# HAWAII ARCHITECT

August 1989



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Volume 18, Number 8 August 1989

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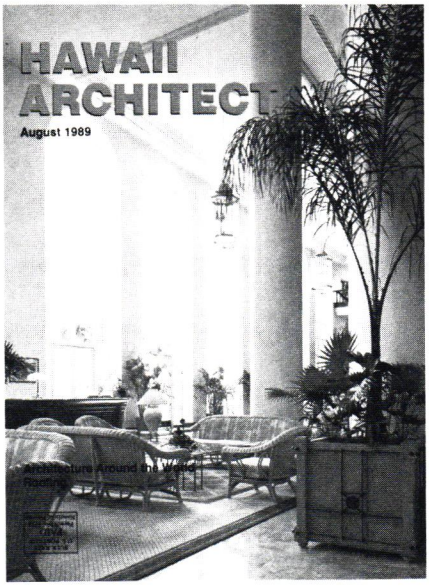


***Cover:*** *Recently completed in Cairns, Australia is the Parkroyal Cairns Hotel and Shopping Village. The hotel and adjacent retail complex are patterned after the Victorian colonial architecture typical of Far North Queensland at the turn of the century.* Photo by William Rethmeier


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# Fostering a Sense of Community

*by Ann Matsunami, AIA, Guest Columnist*

Professional organizations often suffer under the liability of vague perception — everyone knows the initials, but no one knows exactly what they do.

The goal of this article is to dispel this notion, at least insofar as AIA is concerned.

In the broadest sense, AIA serves to foster a sense of community among architects, the ultimate goal being creation of an interactive network of shared functions and ideas.

The results are manifested most obviously at the national level in creation of the standardized AIA contractual documents, deemed to be the fairest and most comprehensive in the industry.

On a local level, various functions serve not only to build camaraderie among members, but also as information clearinghouses.

AIA seeks wider community involvement to avoid the pitfalls of insular societies. Presently, the idea of admitting public members — private citizens with an interest in architecture — is being studied.

The Society's educational activities also reflect concern for the larger picture.

Ongoing studies research social issues such as the health care crisis in relation to the building environment. Preserving the heritage of historic places in Hawaii also is a vital concern.

As a volunteer organization, AIA also seeks to enhance the professional well-being of its members by actively encouraging continuing education through lecture series, workshops and seminars which highlight current issues of architecture and the construction industry.

Presently, the idea of admitting public members . . . is being studied.

The educational arm of the Society also helps prepare apprentices for the licensing exam through seminar and review courses.

This has been a very good year in terms of membership growth. Enrollment is soaring. New members are taken through an orientation program and encouraged to involve themselves in various committees.

Our challenge for the coming year and beyond will be to keep involvement and interest high, preserve and infuse vitality into the organization and define the identity of the architectural community while emphasizing its place in the fabric of culture. **HA**

*In lieu of her monthly message, Carol Sakata, 1989 HS/AIA president, has invited guest writers to contribute to her column to inform Society members on a variety of topics.*

*Ann Matsunami of Media Five is commissioner of the Membership Services Commission.*

# Waterfront Redevelopment: Harboring Visions of the Future

*by Robert M. Fox, AIA*

There is an international movement to focus awareness on waterfront redevelopment.

As in Honolulu, many of the world's waterfronts have become inaccessible and cluttered by underutilized, aging facilities which block public access to those valuable resources.

The Singapore government decided to re-evaluate waterfront resources to determine if they can be better utilized.

The Kepple Shipyard was originally built by the British in 1852. It was used as the main ship repair facility for their fleets sailing Asian waters during the 19th and early 20th centuries.

Since the independence of Singapore in 1965, the shipyard has become a quasi government company.

With new methods of ship repair and relocation of ship repair facilities to other parts of Singapore, the government decided to study a better use for this site to make it more accessible to the public and enhance its economic viability.

In 1987, Fox Hawaii Architects/Planners and Belt Collins Planners/Landscape Architects were appointed as the design team to prepare a long-range master plan.

The design concept was to develop a comprehensive, marina-oriented master plan incorporating a wide variety of

*Originally built by the British in 1852, Kepple Shipyard in Singapore is currently undergoing re-evaluation to incorporate a variety of residential and commercial components to establish new vitality for the site.*

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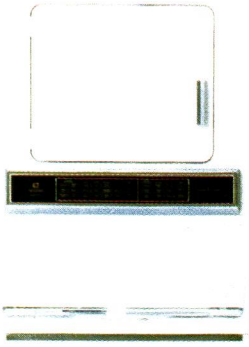

# Okay, four pages should do it.

Washers. Dryers. Refrigerators. Ranges. Wall ovens. Cooktops. What's left?

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residential and commercial components to establish a new vitality for the site.

The site consists of 70 acres of land, including a small island which provides an ideal location for a marina. A causeway and breakwater were designed to provide protection for a proposed 700-boat marina and vehicular access to the island.

In addition to the marina, the project concept included a major commercial/recreation festival marketplace utilizing the existing repair wharfs to provide public access to the water and marina.

A yacht club, restaurants, shops and a 500-room hotel also are located along the wharf.

A major maritime heritage center, featuring the fore and aft sections from a large cargo vessel, will be sectioned and used as the internal maritime center to be located in an 850-foot dry dock currently on the site.

A number of smaller historic boats also will be floated in the remaining 450 feet of dry dock. They will include *buamb,* side wheel river and an assortment of other historic boats that sail the waters of Southeast Asia.

Marina-oriented commercial space will be part of the project for retail, wholesale and office use.

Two 30-story towers will house the Kepple Land home offices and additional office space for other maritime-oriented shipping companies.

Space will be made available for cruise ships, water taxis, dinner cruise boats, pleasure craft and recreation boats with public access.

A variety of residential units will be located around the site, including low-rise residences adjacent to the waterfronts utilizing existing flooded dry docks for slips in front of individual units, with mid-rise and high-rise residential structures stepping back away from the waterfront.

## Many of the design concepts . . . have application to our own waterfront in Honolulu Harbor.

The island will be used for mid-rise terraced condominium units with a view toward central Singapore.

The intent is to create a mixed-use, marina-oriented commercial, retail and residential complex with the primary focus on marina activities.

This comprehensive approach to the master plan will assure an orderly development using the best planning principles to locate and design each component with the project.

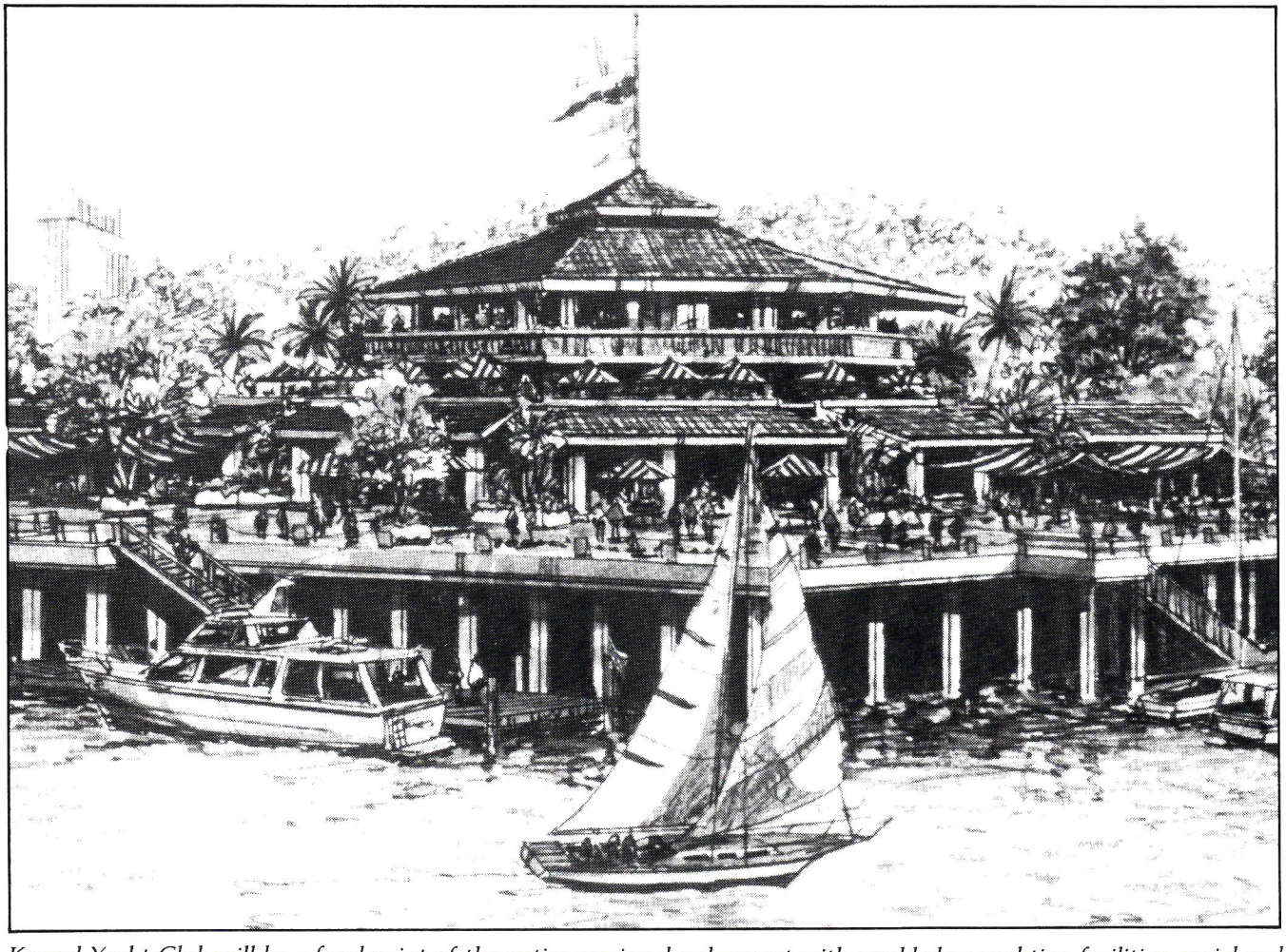
The project consists of 700 marina slips, 2 million square feet of commercial space, 2,000 residential units, a 500-room hotel and an assortment of smaller commercial/retail uses combined with the historic maritime center.

This type of comprehensive planning approach assures public access, maritime activity combined with residential uses and commercial and historic use to assure an open waterfront plan to enhance this valuable waterfront asset.

Many of the design concepts which were developed for Kepple Shipyard have application to our own waterfront in Honolulu Harbor. It is time a comprehensive, integrated master plan be developed for Honolulu Harbor which incorporates shipping, recreation and residential interests.

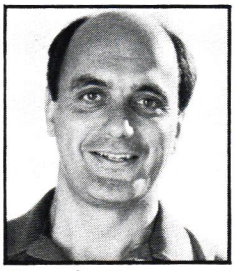
It is time we opened the harbor to the people of Hawaii and maximize the potential of this underutilized resource. **HA**

*Robert M. Fox is president of Fox Hawaii Inc., an architectural and planning firm.*



*Keppel Yacht Club will be a focal point of the entire marina development with world-class yachting facilities, social and recreation activities and food, beverage and function facilities.*

# MEET HAWAII'S TEAM IN ROOFING... WATERPROOFING AND TILE!



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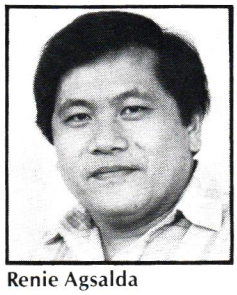

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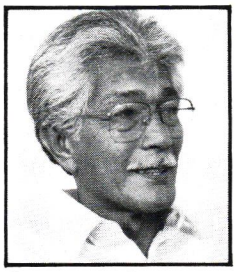

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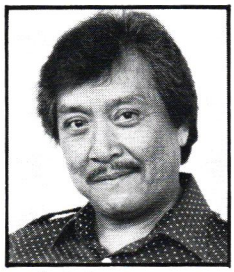

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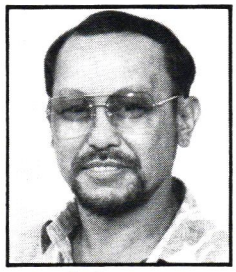

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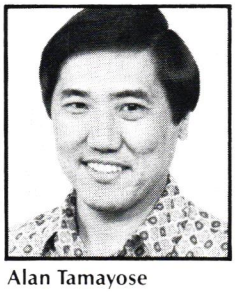

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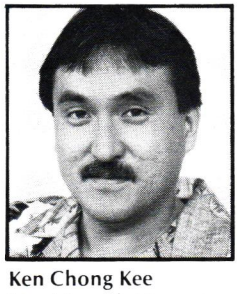

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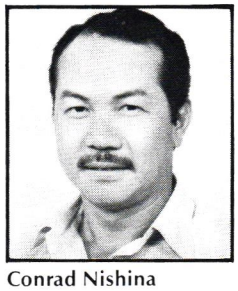

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# Bearing With the Design Constraints of a Polar Scientific Lab

*by Peggy L. Stern*

Designing a scientific laboratory is no run-of-the-mill project — especially when the lab is on the continent of Antarctica and the firm is in Hawaii. Yet this was the task undertaken by The CJS Group Architects for the National Science Foundation.

In the May issue of *Hawaii Architect,* an interview about living and working in Antarctica was a preface to this story about the design of a science facility at McMurdo Research Station.

It is, in part, an edited version of a report by Robert J. Haehnle, PE, Engineering Manager, U.S. Antarctic Program, Division of Polar Programs, National Science Foundation, Washington, D.C.

**Background**

In 1984, The CJS Group deployed architects Lee Davis and Joe Ferraro to Antarctica to conduct an investigative survey. Upon completion of the programming, presentation of their plan to members of the polar science community and subsequent adoption by NSF, additional consultants were added.

They include Wayne Higuchi of Shigemura, Lau, Sakanashi, Higuchi, Associates; Mike Yamaguchi of Calvin Kim and Associates; and Jeff Thomas and Yefim Sheynis of Syska and Hennessy, Inc., Engineers, San Francisco.

Construction at McMurdo is possible only from October through February during the austral summer. All materials and manpower must be imported, and there is only one supply vessel each year.

These factors played a role in determining construction methodology and predicting the period of construction, which will not end until 1992.

Additionally, the lower portion of the structure's exterior walls was inwardly sloped 45 degrees to create a "venturi" or funneling effect of the wind.

The type of scientific experiments typically conducted by international researchers inside the building also dictated the design approach.

Because the diversity will range from atmospheric analysis to geophysical research, some of the more highly sensitive experiments are incompatible. To prevent contamination, the experimental labs had to be physically isolated in separate wings.

Finally, because scientific research is evolving exponentially, and the building is planned to accommodate the future, flexibility and expandability were paramount. The interior space planning systems were carefully designed to satisfy these long-term needs.

Construction . . . is possible only from October through February . . .

**Design Philosophy**

As one would imagine, design considerations for the facility were heavily dictated by the unique combination of a hostile macroenvironment with a highly sensitive microenvironment.

Severe weather constraints guided the architects to review and study all options which would incorporate understanding snow dynamics.

In one wind tunnel simulation using "the vortex shedding" theory, they were able to study how snowdrifts are created.

Thus, the team was able to compare the effects of wind and snow on different shapes, heights and lengths of the proposed building design, as well as its orientation to the site.

Through such wind and snow modeling emerged a design which relied on an elevated structure, approximately 8 feet above grade, enabling snowdrifts to be "cleaned" by the force of the wind.

**Exterior Program**

The facility is on approximately 1.5 acres of mildly sloping terrain with a view of McMurdo Sound from each wing. Due to the ground's immensely hard surface, it took an entire season just to cut, fill and level the site for each building wing.

Existing potable water, salt

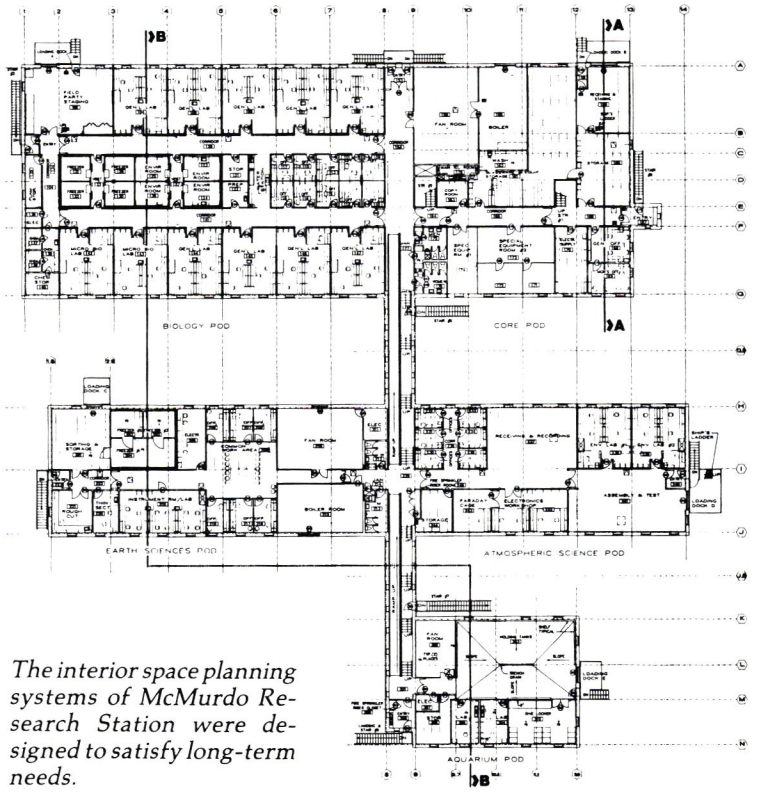
water and electric utilities stretching above ground on steel supports are joined by waste water and sewage in insulated heat-traced pipes stretching across the project sites.

The structures have a hybrid framing system incorporating steel, wood and precast concrete. The elevated buildings are completely enclosed within an insulated skin of factory fabricated building panels, providing a maximum U-factor of .05.

The only structural elements penetrating the skin are concrete columns supported by concrete foundation blocks. Wood bearing plates and wood blocking provide a thermal break between the inside and outside of the buildings.

Although capable of being fully functional year-round, portions of the building can be deactivated

*(continued on page 33)*




*The interior space planning systems of McMurdo Research Station were designed to satisfy long-term needs.*

# Getting Back to Nature

*by Stephen C. Haus*

One of the failures of the modern movement in architecture has been exclusion of the garden. The split of landscape architecture from architecture during the Industrial Age has created a loss of a sense of place in the urban environment.

The international style was heralded as a building that could go anywhere in the world and survive the climate and culture.

Le Corbusier's "Radiant City" was architecture on a featureless plain. The mass-produced building unit, stripped of art or embellishment and stacked to the heavens, was to be the savior of the working class.

All workers could afford an apartment, but the aesthetic price was high. The model of minimalism, filtered through Japan, achieved its success by being a complementary opposite to the complexity of the garden.

Mies van der Rohe simply forgot the garden or treated it as an architectural extension of the house. The dominance of architecture over nature in the Western world owes its origin to the Middle Ages.

The Judeo-Christian tradition gave man authority to subdue nature. The guild system of the Middle Ages saw the emergence of the master mason, the design/builder. Gravity defying cathedrals were a symbol of earthly transcendence.

In Michaelangelo's St. Peter's the unity of art and spirit to create a self-contained

*The Imperial Palace in Beijing is essentially a monolithic courtyard house with perimeter wall, central court and wraparound buildings. The courtyard house may be the prototype for China's architectural future.*

## The split of landscape architecture from architecture during the Industrial Age has created a loss of a sense of place in the urban environment.

transcendent environment reached its full flowering.

The Borromini Colonnade extended Christiandom into the uncivilized world. This was architecture over nature in a real sense. St. Peter's was built over a pagan spring site.

The Italian *giardeno segreto*, or secret garden, was a recessed, walled, architectural extension of the villa.

In England, alternatives to the garden grid were emerging out of the China trade. Views of naturalistic gardens were reaching England via the blue and white porcelain trade which depicted an approach to landscaping far more naturalistic than anything yet seen in Europe.

The Japanese version of the garden was unavailable because of Japan's self-imposed isolation.

Emergence of the Industrial Age produced specialization of knowledge that fractured design responsibilities. The master mason could no longer claim design/builder credit.

The engineer, architect, landscape architect and contractor often had competing interests. It was the engineer who emerged triumphant.

The engineered stacked box which has dominated every city of the world is a universal symbol of the Industrial Age. Airtight structures designed in the past 15 years to be energy efficient are an expression of this engineered building.

Their bubble-like environment traps and recycles contaminants and cigarette smoke in complete exclusion of man from his environment.

Frederick Law Olmsted, father of the landscape architecture profession in America, introduced the urban park as an alternative to the congestion of cities. New York's Central Park is an urban oasis that signals land as the most valuable commodity, not the building that goes on top of it.

What are the alternatives to architecture versus landscape architecture? Perhaps integration

is in order. The following types may be useful.

## The Atrium

Essentially this is a monolithic courtyard house. The urban high-rise insulates occupants from the hubbub of the city while offering the stacked gardens of Babylon on interior terraces. The street level is articulated as a colonnaded courtyard to invite participation.

## Architectural Deconstruction

Cubism revisited: An exploded view of the house that allows freestanding walls, windows and doors. Landscape then penetrates and is predominant. The house becomes the proverbial roof in a garden with potential for resort architecture in the tropics.

## The Chinese Courtyard House

The urban residence offers "living walls" that wrap around a central open space. An "H" plan would allow a double courtyard or garden.

The exterior architectural wall takes full advantage of the site, providing security and a noise buffer. The central open space is a reservoir of sunlight and communal activity.

The effects of the industrial revolution — urban congestion, environmental pollution and architecture without a garden — can be allowed to reverse themselves.

Nature is resilient. The Chinese tradition of gardens and courtyard houses may provide the prototypes for China's architectural future. **HA**

*Stephen Haus has been selected as a Citizen Ambassador to the People's Republic of China, an exchange program founded by former President Dwight D. Eisenhower to promote peacemaking through professional exchange.*

*This article is the text of a presentation he gave last year as a guest of the Beijing Institute of Landscape Architecture and the Architectural Society of China.*

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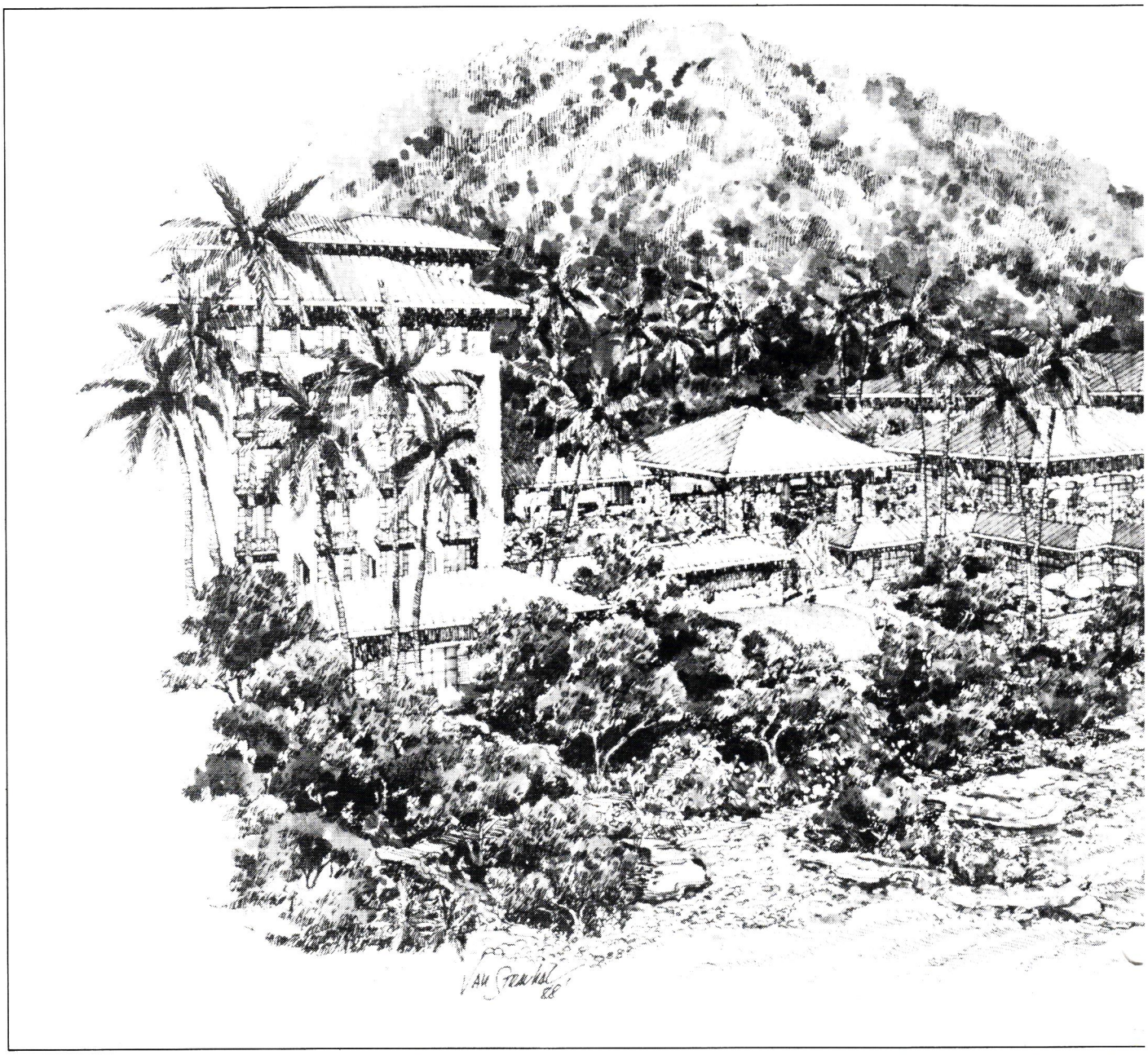
# Creating a Global Opportunity

*by Gregory M.B. Tong, AIA*

Every year "Architecture Around the World" becomes a more nearly accurate phrase to describe the work of Wimberly Allison Tong & Goo.

While we always maintain a strong presence in Hawaii (Four Seasons Hotel, Wailea; Hyatt Regency Kauai; and Ritz-Carlton, Mauni Lani are among current projects in the Islands), we have kept a consistent and growing international focus since the 1950s, when we began our foreign work with a small hotel in Tahiti.

Until the 1980s, efforts were concentrated around the Pacific Rim with projects in many countries of Oceania, Southeast



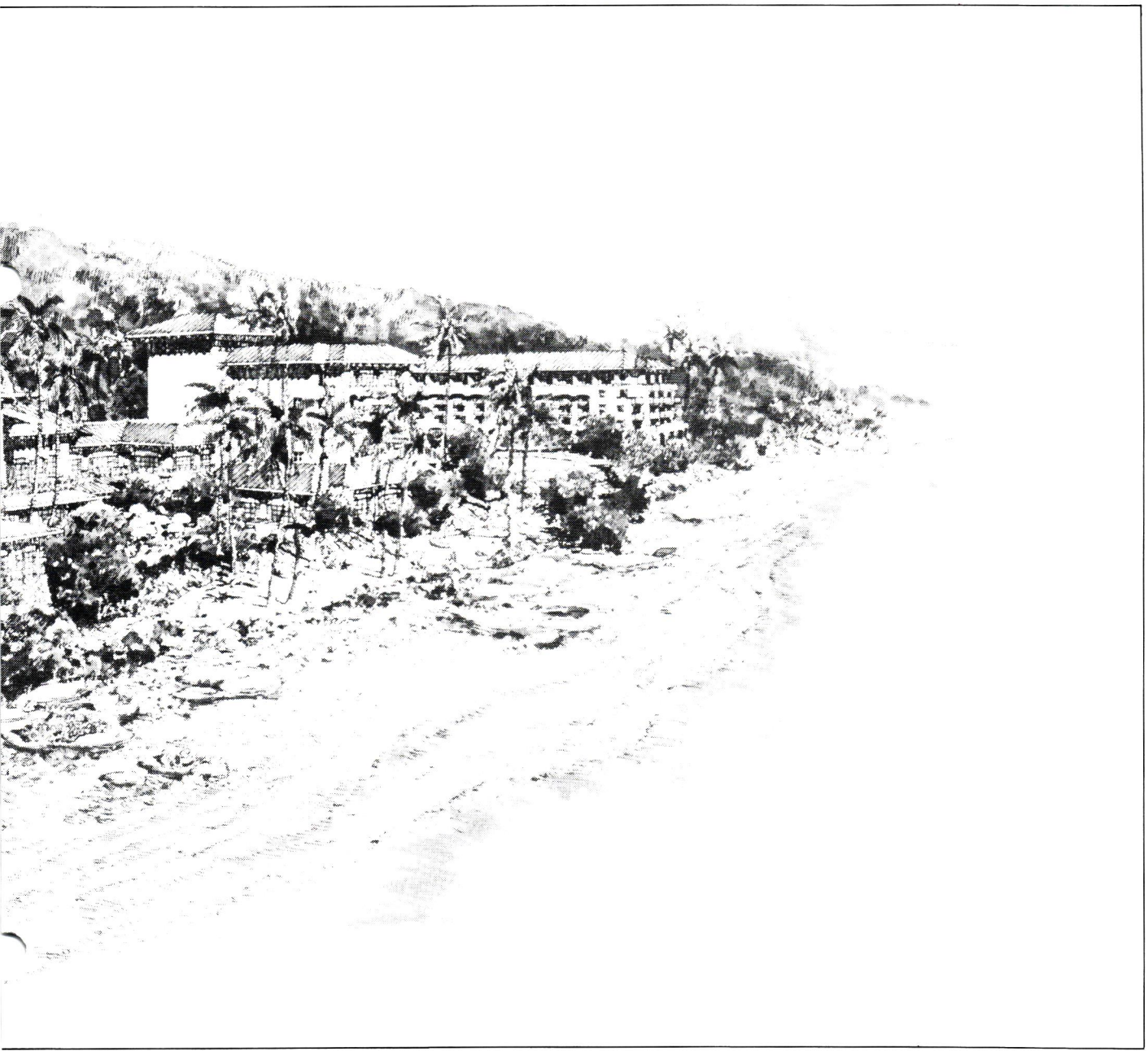
Asia and the Far East. With establishment of a California office in 1981, we were able to expand our global stretch eastward from Hawaii for the first time.

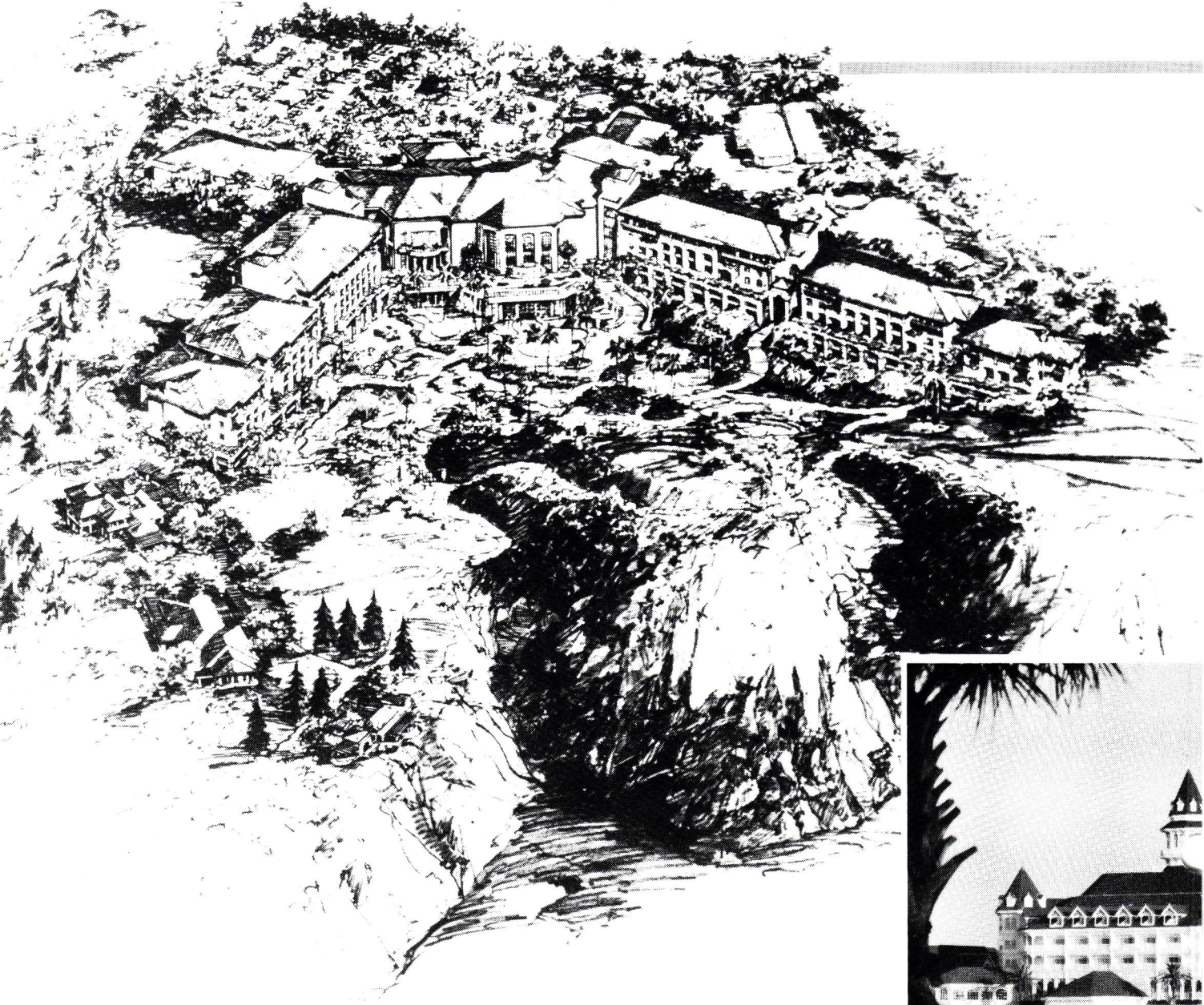
We may not be completely "around the world" yet. At the rate we're going, however, it won't take long.

We currently have projects extending from India, Bali, Korea, Malaysia, Japan, Taiwan, Guam,

*(continued on page 21)*

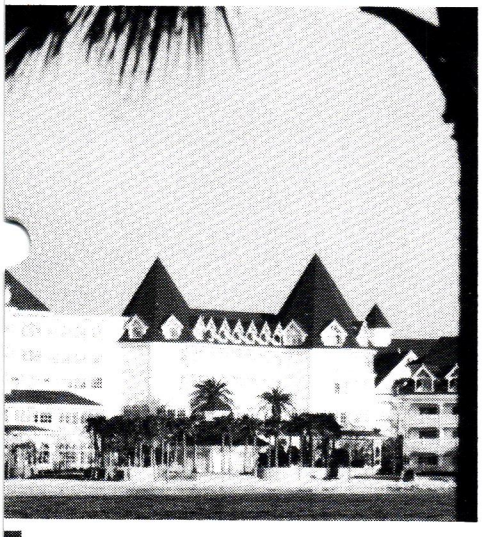
*The Ritz-Carlton on St. Croix in the U.S. Virgin Islands will be a 350-room resort and conference center on 13 acres combining beach frontage and mountainous terrain. Architecture will reflect Island culture and history and have exceptionally large guest rooms, each with view terrace or balcony.*







*Top Left: The Shilla Cheju Resort on Cheju Island, Korea, is a 21-acre, 400-room resort being developed in two phases. Phase I, with completion expected in June 1990, will encompass 330 guest rooms, indoor/outdoor pool, bowling alley, health club, sport courts and a casino. Center: The Grand Floridian Beach Resort at Walt Disney World in Florida is a lighthearted version of the grand old summer hotels built in the early part of this century. The design reflects more a stage setting and composite of essential Victorian elements rather than something that ever really existed.* Photo by Ronald Moore & Associates. *Bottom left: Hyatt Regency Nusa Dua on the southern end of Bali is under construction, with estimated completion date in late 1990. The resort's architecture will reflect the serene and mystical lifestyle of Indonesia. Designed as a "water village," four clusters of low-rise buildings will be surrounded by lagoons.*



*(continued from page 19)*

Australia, New Zealand, Thailand, Saipan, eastward from Hawaii to Mexico, throughout the U.S. mainland, into the Caribbean and across the Atlantic to France, Spain and Italy — and we expect continued expansion.

The phrase "around the world" is meaningful to us because it offers a world of opportunity and a global perspective we feel is good for the company and the country.

The accompanying pictorial offers a "trip around the world" with WAT&G. **HA**

*Gregory M.B. Tong is chairman of Wimberly Allison Tong & Goo.*

# The Society Salutes an 'Excellent Quartet'

*by Bianca Kaplanek*

With an emphasis on quality, not quantity, the Hawaii Society/AIA last month recognized four local firms for their contributions during the annual Design Awards banquet.

Noting that there were four times as many winners last year, Ronald Lee, Design Awards Committee chairman, said that while "the number (of winners) may be small, the quality is not." He described this year's winners as an "excellent quartet."

Lee, along with Carol Sakata, 1989 HS/AIA president, presented one award of excellence and three of merit during the July 11 event at Waialae Country Club, which attracted 165 attendees.

The City and County of Honolulu took top honors for West Loch Estates Master Plan. Accepting on behalf of Mayor Frank Fasi was managing director Jeremy Harris.

Harris said the "number one goal" was to "dispel the myth that a government agency couldn't produce a quality project."

"By honoring us with this award you're saying we accomplished our goal," said Harris.

Accompanied by a slide presentation for each project, Lee read jury comments before announcing the winners, which were chosen from 36 entries.

The award-winning projects will be featured with jury comments, additional photographs and an explanation of the design approach in upcoming issues of *Hawaii Architect.* HA

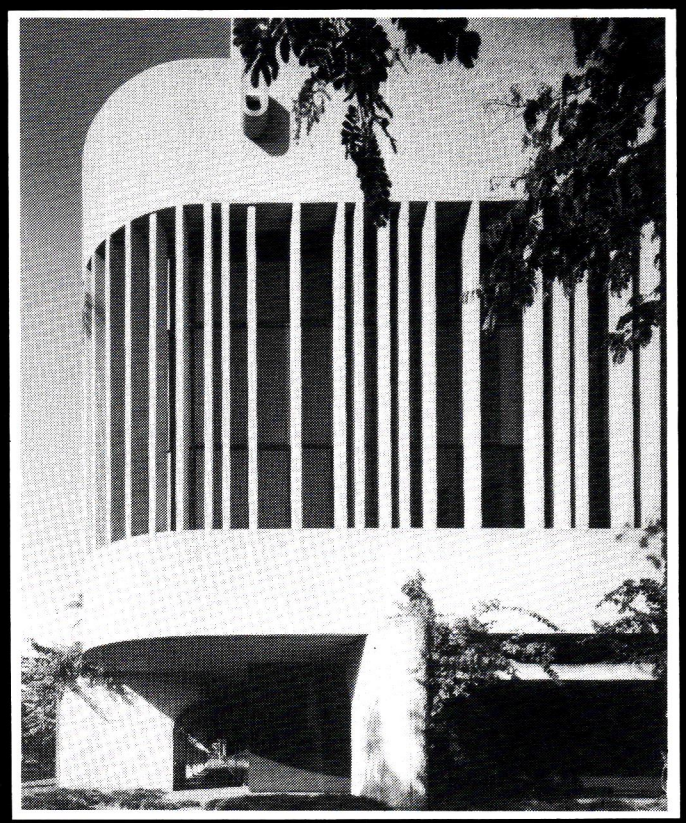
## AWARD OF EXCELLENCE

**West Loch Estates Master Plan**
Benjamin B. Lee, AIA

## AWARDS OF MERIT

**First Interstate Bank**
**Marine Center, Hawaii Kai**
Franklin Gray & Associates

**Keelikolani Hale**
**State Office Building**
Architects Hawaii Limited



**Cooke Hall**
The CJS Group
Architects Limited

# Producing an Enduring Roofing System

*by Annette Vierra*

Roofing occupies an important place in the overall design scheme and ongoing success of a structure.

While it adds up to a small percentage of the overall cost, it can produce gigantic headaches, even litigation, if the results are not sound.

Professional roofing contractors know they are one of many subcontractors working on a given job. They try to be sympathetic to the critical coordination requirements sometimes involving 25 to 50 different trades, especially in this age of fast-track design.

That is why they must tune in closely to the myriad of manufacturing materials, product specs and code specifics that are new in protective covering.

So much is changing, sometimes by the month, that even the most seasoned roofing contractors must work to stay current.

Because they are doing this by welcoming manufacturer visits, attending seminars and reading trade magazines, roofing contractors can function as information resources whenever roofing issues arise.

They know they are not designers, but do have the hands-on current view of their vital specialty.

The following is a list of problems most often seen which threaten the smooth execution of Hawaii roofing contracts.

- A specification is based on outdated manufacturer information so there is no real match on installation. Sometimes the product specified is no longer being made.
- Plans and specs don't match. Job specifications were written


*A modified bitumen roofing system was chosen for the 12,000-square-foot reroofing of Kakaako Business Center.*

for another job and copied for the current project. This can produce many costly change orders and surprises and destroy a swiftly moving time line.

- A so-called "state-of-the-art" material or method may not work well in Hawaii — especially over time. When in doubt, check it out.

Professional roofing contractors should be service, not just sales, oriented. They should demand manufacturer representatives drop in regularly, especially when new or modified products are being introduced.

If all who are involved in property development "look before we leap" into construction, perhaps projects can be produced in which roofing does not become an expensive major issue after the fact. **HA**

*Annette Vierra is administrative partner and chief estimator for Grace Pacific Roofing.*

*The Bank of Hawaii Kapahulu branch sports a new mineral surface capsheet roofing system installed over 6,000 square feet of factory tapered insulation.*

# Causes and Cures for Leaky Roofs in Hawaii

*by Robert C. Hockaday*

If you were involved with selecting, buying or applying commercial roofs before 1970, you had it made — at least in Hawaii.

The only proven roofing materials available were hot asphalt, rag felts, mineral felts from half a dozen producers, plus a little cutback asphalt emulsion, glassfab, perlite and fiberglass insulation boards.

Given those basic materials, there was a limited number of combinations one could specify. Asphalt four-ply and five-ply built-up roofs would last 15 or more years, depending on the wetness of the location and absence of ponding water.

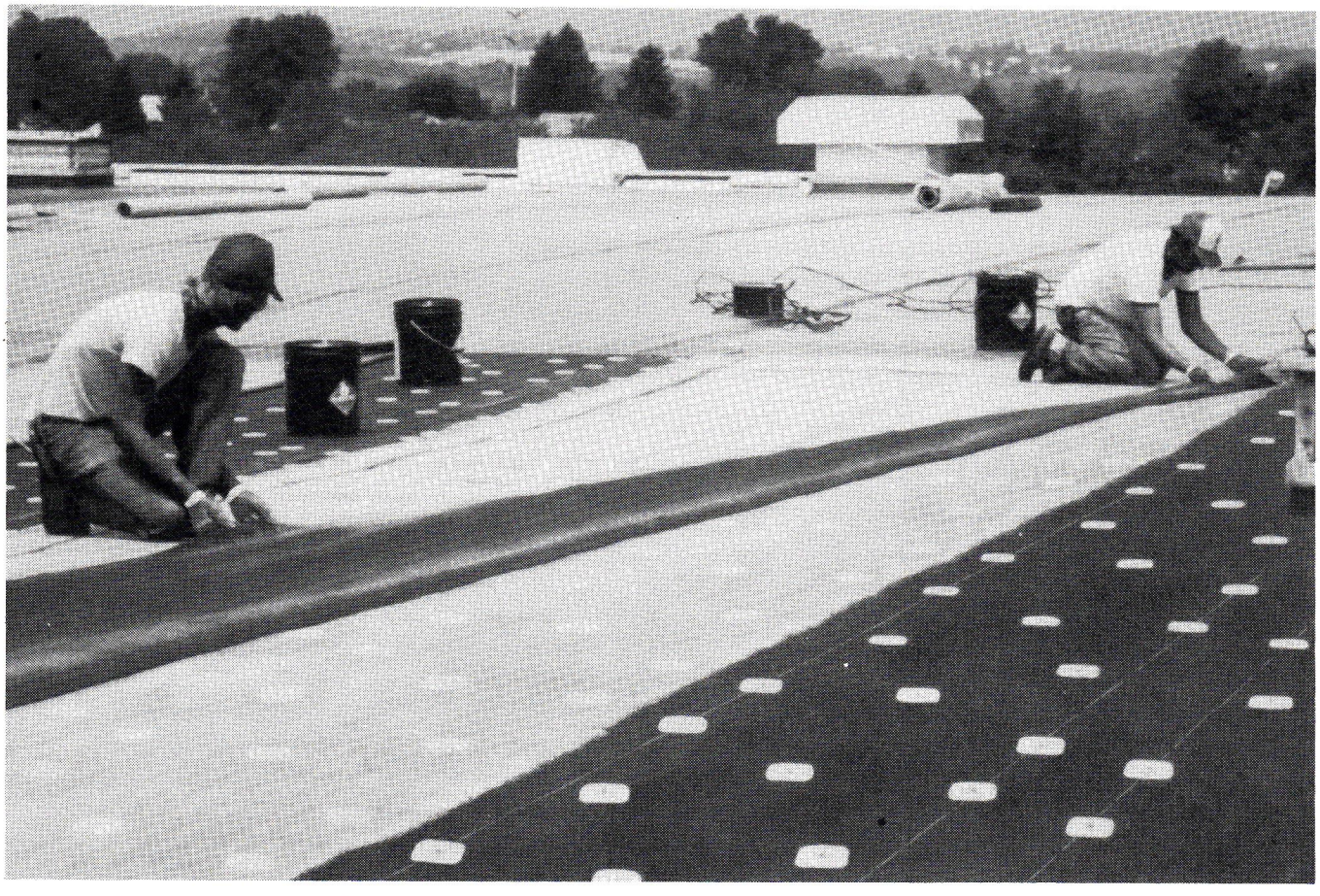
Then came trouble. When OPEC nations increased the price of crude oil, roofing bitumen quality suffered, and the useful life expectancy of built-up roofing began to slide downward.

At about the same time, an array of new materials came out of American and European laboratories. Where there had been perhaps a dozen options concerning roof systems, now there were hundreds.

The following, from a report prepared by one of the older single-ply manufacturers, lists some common causes of leaky asphalt roofs — the most popular in Hawaii.

- **Natural deterioration due to exposure to the elements**

Some products withstand wind,



*Recovery board may be attached over old asphalt roofing to provide a sound base for single-ply rubber membrane.*

rain and sun longer primarily due to entrapment of oil between plies. Binder plies alone offer little or no waterproofing properties.

Built-up assemblies lose waterproofing asphalt primarily with heat. This process is accelerated in the presence of water. Ultraviolet radiation degrades asphalt chemically through photo-oxidation and *the exposed surface becomes water soluble.*

Water soon saturates the binder felt plies and the whole assembly delaminates.

- **Cracking due to expansion**

Years ago roof insulation thickness rarely exceeded 1 inch of fiberglass, 1½ inches of perlite or 1½ inches of fiberboard. Aside from annual maintenance of flashings, little cracking occurred from expansion and contraction. Thermal shock — movements of built-up plies and base insulation — was relatively small.

Today, with higher insulating values, it is common to have building interiors fully air conditioned, so the bottom of the insulation may be 75 degrees Fahrenheit while the surface of the roof may be 150 degrees. This stresses the membrane and leads to cracking.

- **Oil coagulation and maze cracking**

"Alligatoring" is the common term for bumps of dried oil that come out of asphalt roofing due to heat, water and ultraviolet rays. Protective coatings may provide two or three years additional life after this problem appears.

- **Blistering by trapped water vapor**

Since a built-up assembly is practically vapor-proof, the tropical sun can cause steam inside the assembly. Extreme heat starts organic decomposition inside the roof.

Water usually enters around poorly flashed areas and protrusions, but sometimes enters through blisters punctured by careless workmen.

- **Wearing out due to erosion**

"Burnout" and subsequent washing away of the top coating is common in Hawaii. Recoating and reflashing should be considered about every five years.

- **Cracking from stepping on blisters**

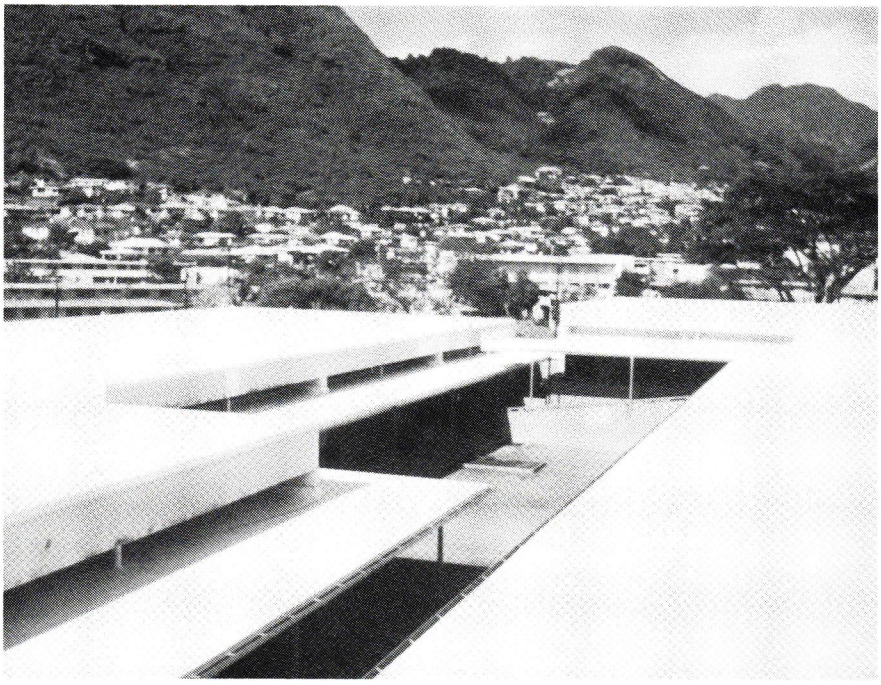
More damage can be done to a roof by an untrained inspector than by any natural causes. Trying to push down wrinkles and blisters is a worthless endeavor. Most leaks don't start there.

- **Application problems causing premature roof failure**

Overheating the bitumen can reduce roof life expectancy by 75 percent. Bad drainage can cause wet plies which are impossible to patch readily. Not enough or too

much asphalt is used. Felts are poorly made and don't meet ASTM standards.

Now let's take a look at some of the other types of commercial low slope roofing.



*The roof of Palolo Elementary School included extensive use of single-ply membrane because tear-off was not required and there were ponding conditions.*



**Corrugated galvanized steel**

Failure frequently means rusting through in a few spots rather than all over when leaves are allowed to accumulate or gutters become clogged and water backs up onto the roof.

Failure also may occur when fasteners are not equipped with gasket heads or are of a different kind of metal and the hole around each has enlarged and begins to admit water.

When side laps are not caulked, or a non-elastomeric sealant was used, wind-driven rain can get through the roof assembly.

**Urethane-coated concrete**

Typically, urethane is the elastomeric coating used on parking decks exposed to weather. It also is used on lanais and recreation roof decks.

Early failure may stem from application over poorly prepared substrate, improper mixing of components or inadequate curing time between coats.

Later problems often result from delamination due to heavy traffic, particularly in auto turning areas, early wear-through due to lack of protective granules or epoxy spatter coat, or substrate cracks too wide for the coating to bridge.

Problems associated with low slope roofs in Hawaii, and possible solutions, deserve some mention.

Coatings and sealants are useful for curing leaky roofs but must be used with intelligence. The right products should be used and application should be "by the book."

Surfaces to be sealed or coated need to be clean. Take off old, loose materials. *The smoother the better.* It takes less material to recoat and the mil thickness will be more uniform.

Wash and dry before you apply. Most coatings and sealants stick better to dust-free, oil-free, water-free surfaces.

Use backing material in deep joints. Sealants cost a lot more

than foam or paper fillers, and thick sections don't stretch nearly as far. *Tool the joints.* If you don't, it's a leak waiting to happen.

Elastomeric coatings — elastic polymers — are satisfactory materials and do a good job *when not oversold.* Keep in mind they have limited stretchability, particularly after being in the tropical sun and off/on rain for a few years.

Perhaps the first question to ask when considering a coating or sealant is: "Is it compatible; will it stick to the roofing surface?" Asphalt, metal and concrete — all common roof surfaces — each have appropriate coatings that work best with them. *There is no single coating that fits every situation.*

The Hawaii Department of Accounting and General Services put out a directive regarding reroofing in October 1987 to consultants doing work for public works projects. They are on the right track.

- On roofs with good drainage, use any BUR or single ply.
- On roofs with marginal slope to drain, use modified BUR or single ply.
- On roofs with inadequate slope to drain, build up to eliminate ponding and use hot, cold or modified BUR, or single ply.
- On roofs with inadequate slope and no build up, use only *single ply.*
- During the school year: On roofs with 1 inch per foot slope, use cold BUR. On roofs with ½ inch per foot slope, use modified bitumen. On roofs with less than ½ inch slope or ponding, *use only single ply.*

Single-ply roofing is the fastest growing part of the market.

While EPDM (ethylene propylene diene monomer) rubber is the most frequently used single-ply roofing, that doesn't mean other products

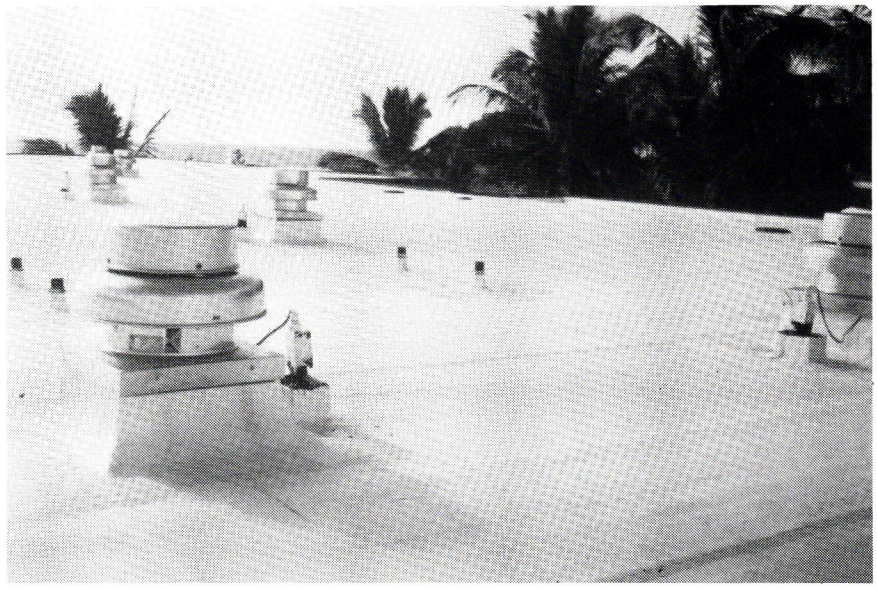
don't have considerable merit.

When comparing important product features, however, EPDM seems to come out on the more important ones, such as proven longevity and technology, and production capabilities.

The field includes:

**Modified asphalts**

Sheets of paper, plastic, fabric or foil are combined with rubberized asphalt to make a single ply, actually a factory assembled built-up membrane.



*Nearly 100,000 square feet of mechanically-attached EPDM was used on the Kahala Beach Condominiums roof.*

They are either adhered onto the deck with asphalt adhesive or "torched" to soften the asphalt so it will adhere to the deck.

They are chemically cheaper to produce and generally last five to 13 years. Tropical longevity remains to be seen.

**Plasticized plastic sheeting**

Polyvinylchloride (PVC) is in this group, and there are several brands doing fairly well in Northern climates. These are a step up from modified bitumens because they often have UV inhibitors built in.

However, the oil or plasticizer is subject to breakdown in sunlight. This type of roofing has not been widely successful in Europe because the early offerings suffered from brittleness with age, cracking and shrinking.

**Other plastic sheeting**

PIB, ECB, CPE and other "alphabet" formulations are relatively new, especially in the tropics. While much is claimed in laboratories, there isn't sufficient long-term experience to offer any promises past 10 years.

**Hypalon rubber roofing**

Hypalon is Dupont's trade name for CSPE synthetic rubber. Roofing rolls and coatings have excellent weathering resistance and resist attack from many common chemicals. But Hypalon is fairly expensive, so the sheets tend to be quite thin.

**EPDM rubber roofing**

Roofing jobs done with EPDM membrane more than 25 years ago have been checked out.

Sample cuts from these oldest roofs, including some in the Panama Canal Zone, showed only small drops in flexibility and compressive strength and no reduction in thickness or weight. These corroborated accelerated weathering tests done in laboratories.

The installed price of EPDM roofing sometimes comes close to standard built-up roofing,

particularly on high-rise buildings or odd shaped roofs. The low weight and simplicity of installation tools provide another substantial advantage.

With more than 150 brands of single-ply roofing available, how can one choose the right one?

| | EPDM Carlisle | EPDM Others | Hypalon & others | PVC & others | Modified bitumen |
|---|---|---|---|---|---|
| Longevity (actual in tropics) | 25+ years | 10 to 25 years | 10 to 20 years | 10 to 20 years | 5 to 13 years |
| Price/Foot (easy job) | $3 range | $3.25 range | $3.50 range | $3.50 range | $2.25 range |
| Price/Foot (hard job) | $5 range | $5.25 range | $5.50 range | $5.50 range | $4 range |
| Weight/Foot | 0.4 lb. | 0.4 lb. | 0.3 lb. | 0.3 lb. | 1.3 lb. |
| Availability (local inventory) | Large | Small | Moderate | Small | Very Large |
| Warranty (labor & material) | 5/10/20 years | 5/10/20 years | 5/10 years | 5/10 years | 5/10 years |
| Slope Design (required) | 0″ | 0″ to ⅛″ | 0″ to ¼″ | ⅛″ to ¼″ | ¼″ to ½″ |
| Experience (in the tropics) | Extensive | Limited | Limited | Very Limited | Very Limited |
| Applicators (experienced) | 12 | 15 | 15 | 4 | 40 |

Remember, the best "cure" for a leaky roof is to install one that's not going to leak in the first place. Unfortunately, no one system will do it all.

Perhaps the simple comparison chart to the left will put things in perspective. (Carlisle SynTec Systems is shown separately because it has enjoyed more than 10 percent of the U.S. market.)

Most roofs fail from bad installation, not bad selection.

When all due care has been exercised in choosing the "right" roof system, and the specifying and detailing are done to perfection, one fact still remains: *The skill and integrity of the roofer is the most important factor in getting a leak-free roof.* **HA**

*Robert C. Hockaday is owner of Manufacturers Agency Pacific, sales representatives for roofing and waterproofing products. He is a Fellow of The Construction Specifications Institute.*

# Bell Advances to Associate at Group 70

**Walter R. "Walt" Bell** was recently named an associate with Group 70 Limited.

Currently specializing in technical aspects of design, Bell has more than 40 years experience in architecture in Seattle, Washington, D.C., San Francisco and Honolulu.

He joined Group 70 in September 1988. Previously, he was an associate with Architects Hawaii.

A graduate of the University of Washington, where he received his bachelor's degree in architecture, Bell came to Honolulu in 1976.

He is past president of the Honolulu chapter of the Construction Specifications Institute and guest lecturer at the University of Hawaii school of architecture.

A registered architect in Hawaii and Washington, Bell also is a Certified Construction Specifier.

*Walter R. "Walt" Bell*

# TRB Assists With Award-Winning Design

The Hawaii Judicial System Master Plan has been selected for a 1989 AIA award of excellence in the Architecture for Justice category.

TRB Hawaii Limited, headed by Cliff Terry, assisted with the portion of the study which evaluated existing judicial facilities.

The award is a nationwide first for excellence of a judicial system master plan rather than for design of a courthouse or other justice system-related facility.

The objective of the plan was to provide a strategic response to the state's long-term judicial facilities needs. The four-volume statewide master plan projects those requirements through the year 2005.

TRB Hawaii was part of the team of consultants which assessed future space needs, evaluated existing facilities and developed an implementation plan for renovating or closing obsolete facilities and constructing new ones.

Space standards and design guidelines were generated to ensure future court operations will be effective and efficient.

# Design Constraints

*(continued from page 13)*

during periods of minimal scientific activity.

The facility is designed to withstand extreme climatic variations including winds up to 130 mph and temperatures as low as minus 65 degrees Fahrenheit.

### Interior Program

The mechanical systems are designed with safety and health in mind. They provide a healthy and constant interior climate with backup equipment in the event of failure.

When the building is occupied, it can be used 24 hours a day, seven days a week with ventilation designed for 10 air changes per hour.

The air exchange system is designed to eliminate air pollution crossover so studies requiring pure air intake will not be jeopardized by contaminated air outflow.

The primary heating system consists of two low pressure steam boilers fueled by arctic grade diesel.

Low pressure steam is used to heat outside air to offset the building's skin load and to provide needed humidification and hot water for domestic use. A steam/water exchanger heats a water and glycol mix for terminal heating coils which control individual zone temperatures.

In the event of failure of both independent boilers, electric space heaters located in the perimeter and crawl space serve as backup.

Flexible design of the interior space allows for variation in function and use. Demountable partitions, supplemented by modular furnishings, provide optimal flexibility in office groupings.

As the emphases of certain scientific experiments shift, the space can be rearranged to accommodate subsequent changes in equipment and personnel.

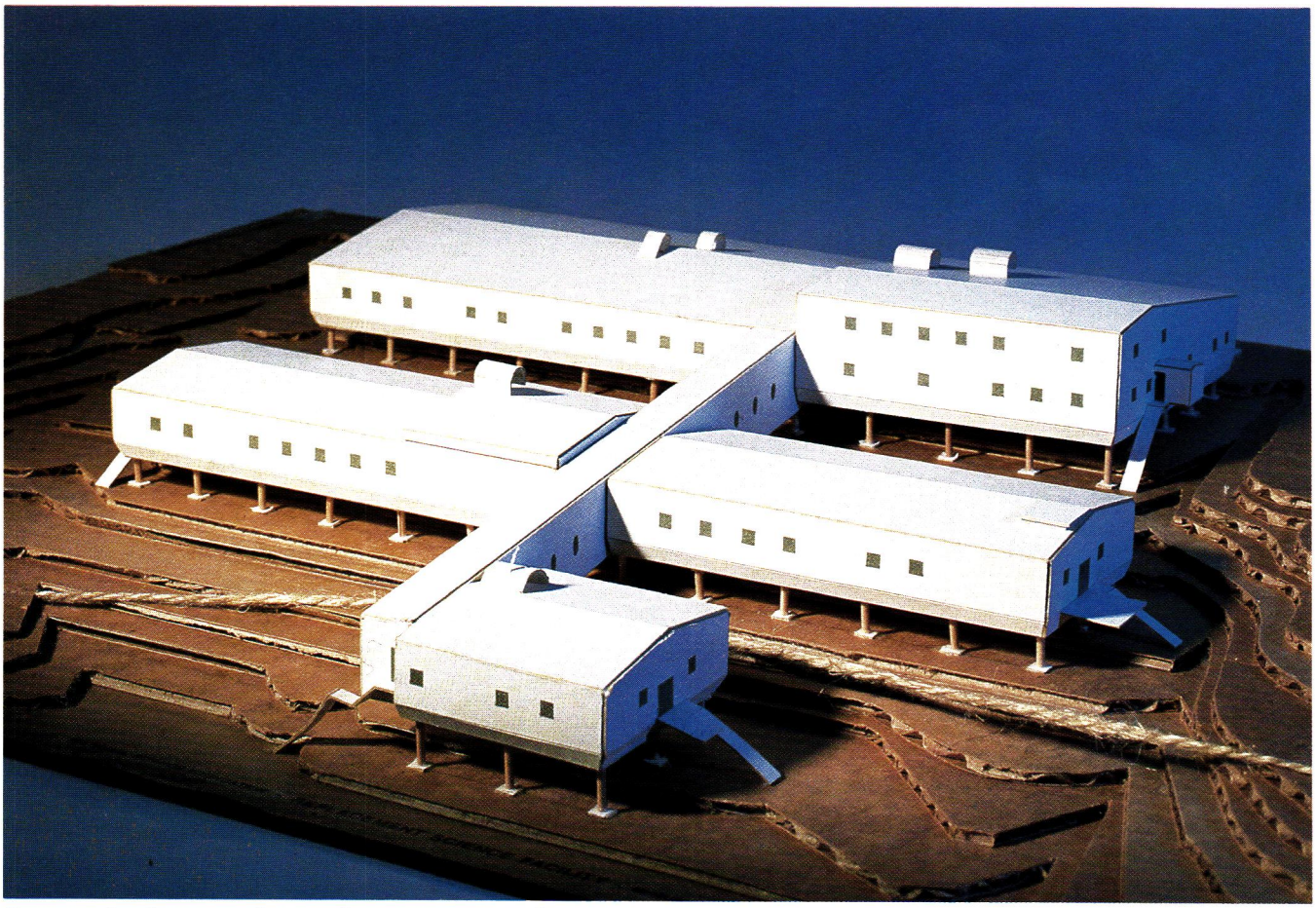
The planned use of very sensitive electronic microscopes and other delicate instrumentation was an integral part of program planning and led to careful consideration of acoustic and vibrational concerns.

### Summary

The facility provides scientific laboratories and offices for highly sensitive, multidisciplinary scientific research.

When completed, the building will be a permanent and prominent structure at McMurdo Station, providing laboratory space for international polar researchers. **HA**

*Peggy L. Stern is director of marketing for The CJS Group Architects Limited.*



*Because the diversity of scientific experiments to be performed at McMurdo Research Station will range from atmospheric analysis to geophysical research, labs had to be physically isolated in separate wings.* Photo by David Franzen

# City Financial Tower Opening Marks a First and a Last

The June 8 grand opening of City Financial Tower celebrated one of the last architectural efforts of the late Minoru Yamasaki, best known for designing the World Trade Center.

Following Yamasaki's death in 1986, his design concept for the building was implemented and completed by William Ku, current president of Minoru Yamasaki Associates and chief designer since 1960. The structure is the first office building by the firm in Honolulu and its third project to be completed in Hawaii.

In keeping with Yamasaki's work and philosophy to create "a structure that is in harmony with both man and his environment," the tower was designed to blend with the character of Merchant Street, Honolulu's oldest street.

The 24-story office tower features slender column units and windows which emphasize the verticality of the building and make it a focal point in the city skyline.

The facade of the main entrance is set back from neighboring low-rise elevations and rises from a travertine base to reach full height at a structural glass corner apex. An arcade and plaza emphasize the corner entrance to the banking hall and provide open space in the densely developed downtown area.

Use of travertine marble panels for the exterior, and *capao bonito* red granite floors and walls in the lobby reflect the unique quality of the design.

Another design feature is the structural glass front of the main lobby. An element that has been used on a number of Yamasaki buildings in recent years, the glass exterior wall serves a functional and aesthetic purpose.

The design concept is to eliminate vertical framing elements, sealing the glass together with structural glass caulking and steel gaskets. Glass fins projecting from the interior surface stabilize the structure.

The lobby's 25-foot high structural glass wall is unusual in Hawaii and is one of the highest ever to be constructed, according to Ku.

*The design concept of City Financial Tower, one of the last architectural efforts of the late Minoru Yamasaki, is to eliminate vertical framing elements. Glass is sealed with glass caulking and steel gaskets.*

# Media Five Elects Board

Media Five Limited recently elected the following as members of its board of directors: **Melvyn Y.K. Choy,** AIA, RAIA, chairman; **Michael James Leineweber,** AIA, vice chairman; **Evan D. Cruthers,** AIA, president and chief executive officer; **Peter Caderas,** chief operating officer; **Bon-Hui Uy,** executive vice president; and **Terry Lynne Hee,** vice president.

The board also appointed **Ann N. Matsunami,** AIA, **Lorrie C. Dalton** and **Kunio Hayashi** as vice presidents of the firm.

# Chapman Desai Sakata Changes Name

The award-winning, multidisciplinary firm of Chapman Desai Sakata is now doing business as CDS International.

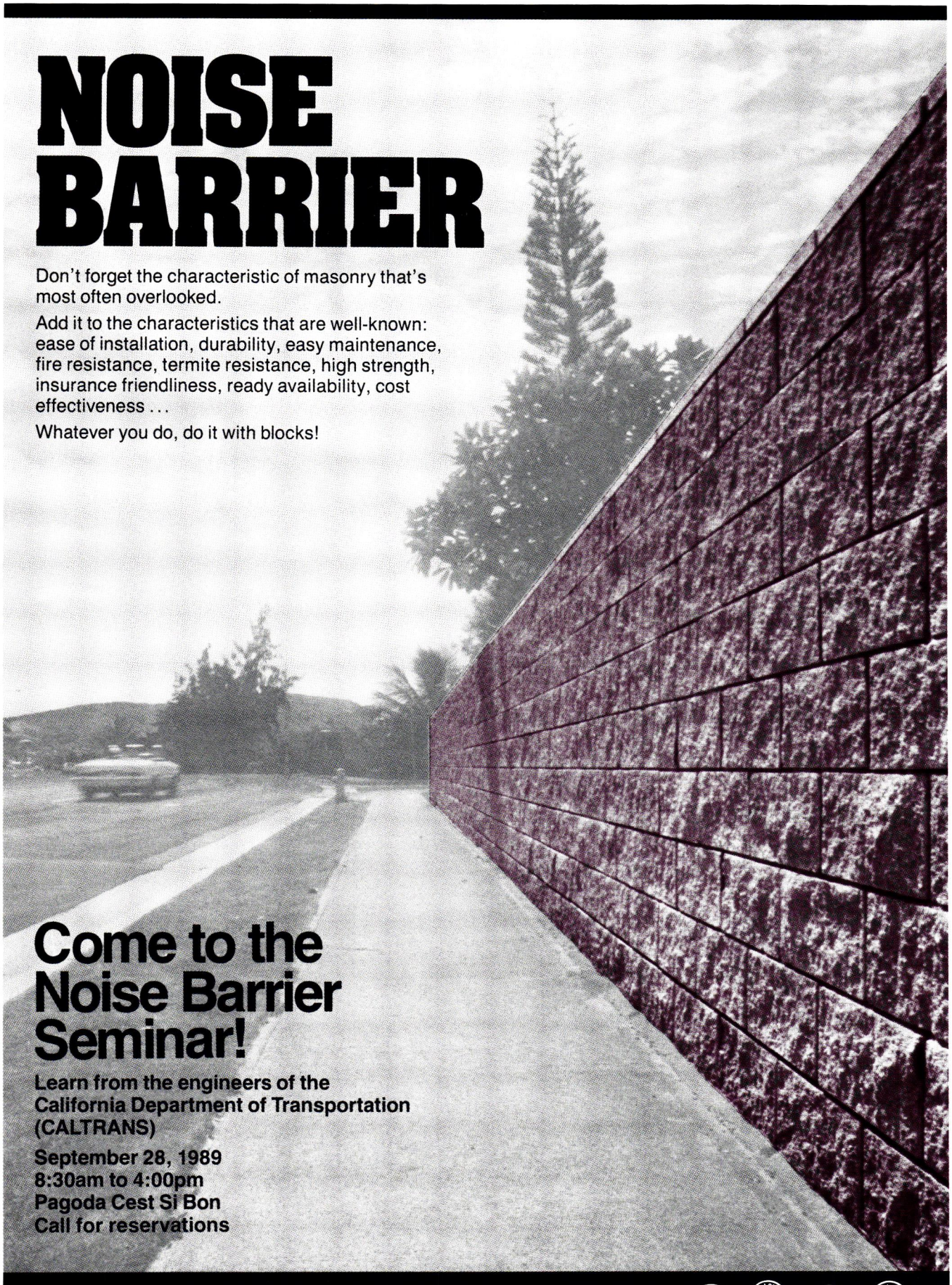
The new name was selected to reflect the company's growth and expansion into the international architectural and design market.

Founded in Honolulu 31 years ago by Donald D. Chapman, the firm has three directors: Chapman, director of marketing; Pravin Desai, director of design; and Carol S. Sakata, director of production and operations.

Officers of CDS International are Chapman, chairman and chief executive officer; Desai, president and treasurer; Sakata, executive vice president and secretary; Kenneth Whitcomb, vice president; and Glenn K. Miura, vice president.

CDS International currently has a staff of 42 full-time employees.

Based in downtown Honolulu, the firm serves a number of corporate and private clients in Hawaii, Japan, Australia, Korea, the Philippines, Singapore and China.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# Group 70 Names Two Vice Presidents

**Roy H. Nihei** and **Ralph E. Portmore** have been named vice presidents of Group 70 Limited.

Nihei, vice president in charge of contract documents, is project manager for the $20-million Tosei Office Building.

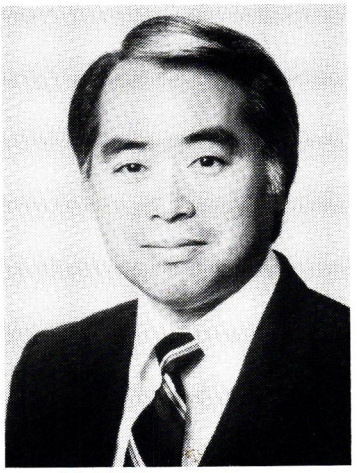
He also is currently overseeing major renovations to the Keauhou Beach and Kona Lagoon hotels.

Nihei has a bachelor of fine arts degree from the University of Hawaii. He joined Group 70 as a designer in 1974 and was named an associate in 1977.

He has served as director and officer in various capacities with the Construction Specifications Institute for several years.

Portmore, vice president in charge of planning, has managed several major assignments including community master planning and mixed-use projects in Kakaako, Ewa and Laie on Oahu and in South Kohala on the Big Island.

He joined the firm in 1985 and has more than 20 years experience in urban and regional planning with public and private agencies. Portmore holds a bachelor's in civil engineering from Rutgers University and a master's in urban planning from Columbia University.



*Roy H. Nihei*

*Ralph E. Portmore*

# Cool Top

Save Energy. Prevent Water Infiltration and Costly Roof Maintenance with a Single Ply White Reflective Roof by Cooley.

There is no other roofing product with such energy efficiency and chemical/fire resistance. Put a Cool Top on Your Building.

Cooley Roofing Systems INCORPORATED

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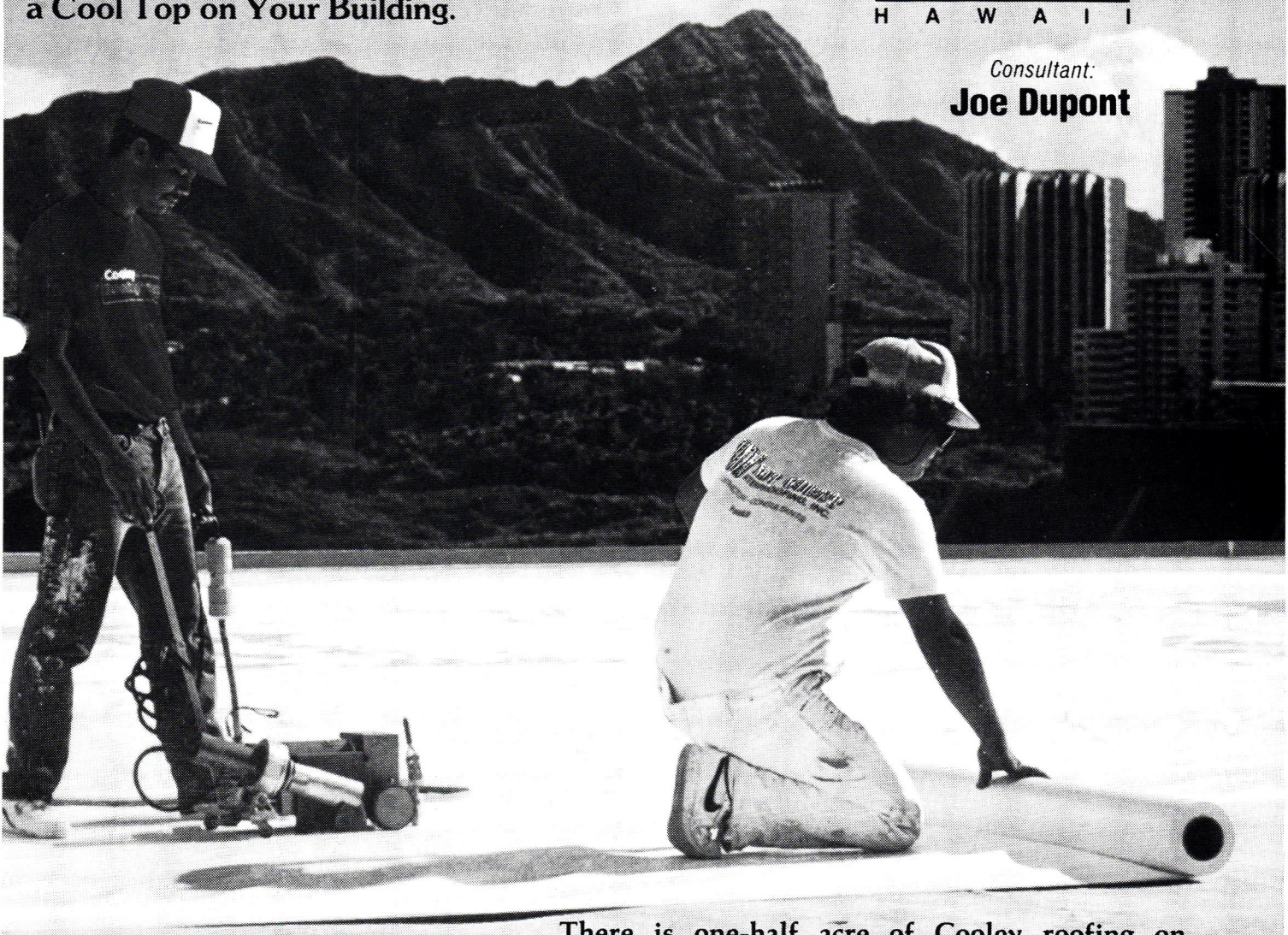
Consultant:
**Joe Dupont**



There is one-half acre of Cooley roofing on Hawaiian Electric Company's Kamoku Sub Station. Who would know more about saving energy than HECO?

**PHONE 945-8815**

**Mark Alexander**
Sales Representative
**Amfac/Roofing**

**Cool Top is made from Tyrin® brand CPE manufactured by Dow Chemical USA.**

# JORGENSEN METAL ROOFING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