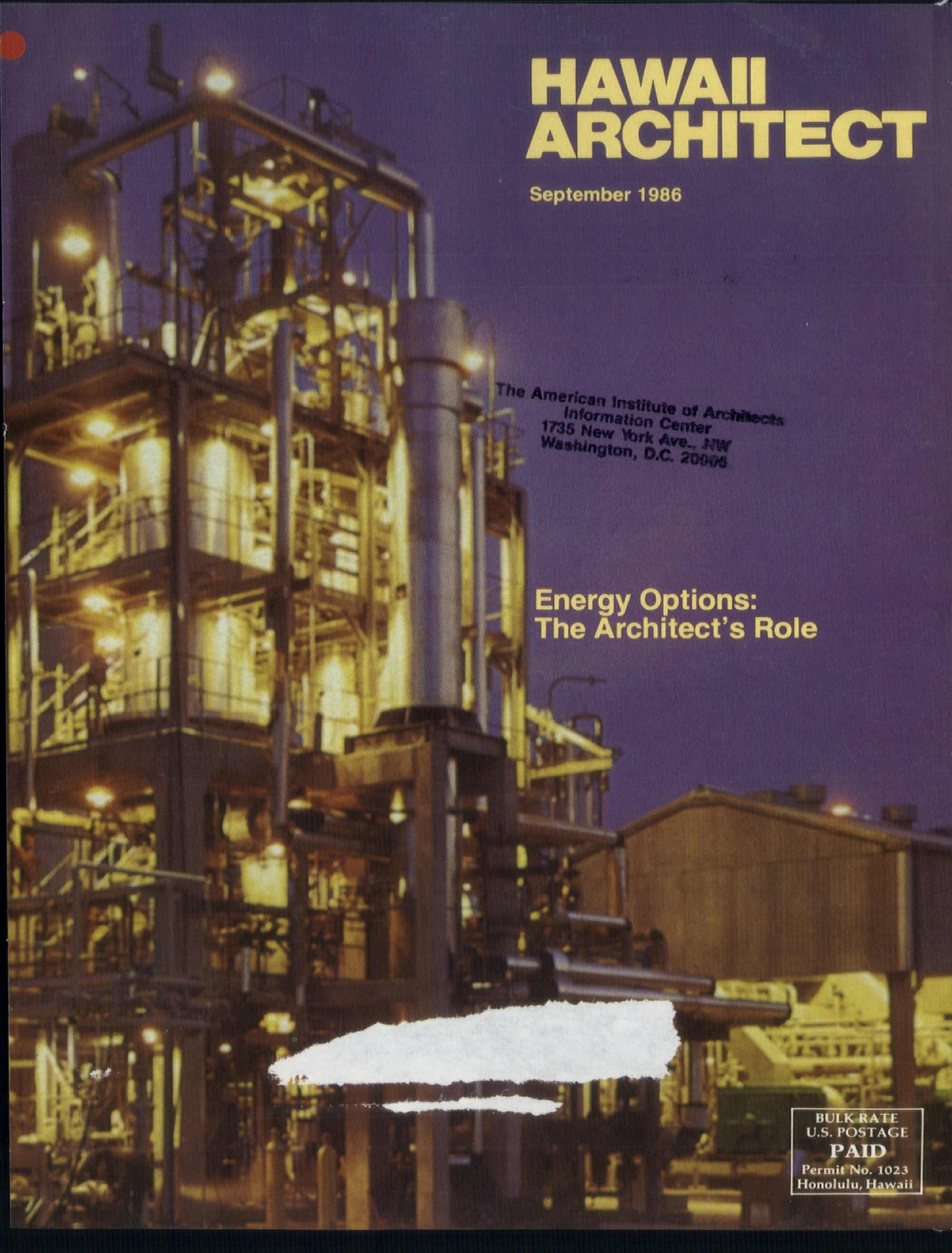
HAWAII ARCHITECT

September 1986



Energy Options: The Architect's Role

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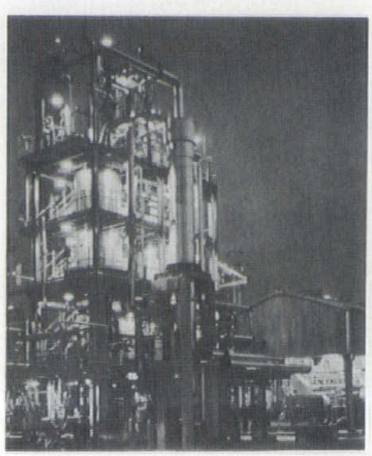
FEATURES

DEPARTMENTS



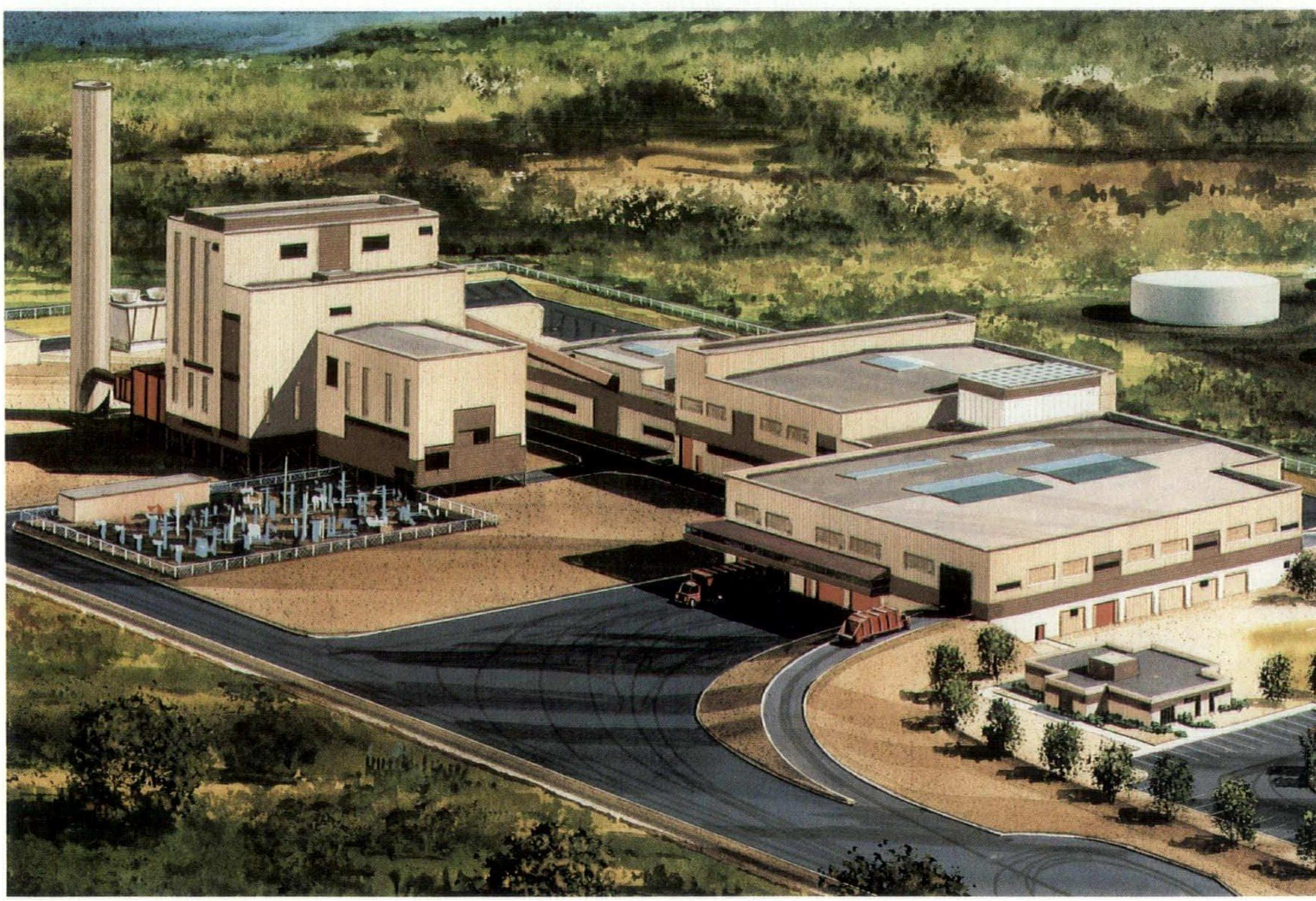
Cover: *Traditional sources of energy are becoming less significant as increasing emphasis is placed on the development of alternate sources. Energy-efficient building design is being encouraged in order to reduce energy consumption. Combustion Engineering, Inc. photo.*

H-POWER: HONOLULU RESOURCE RECOVERY

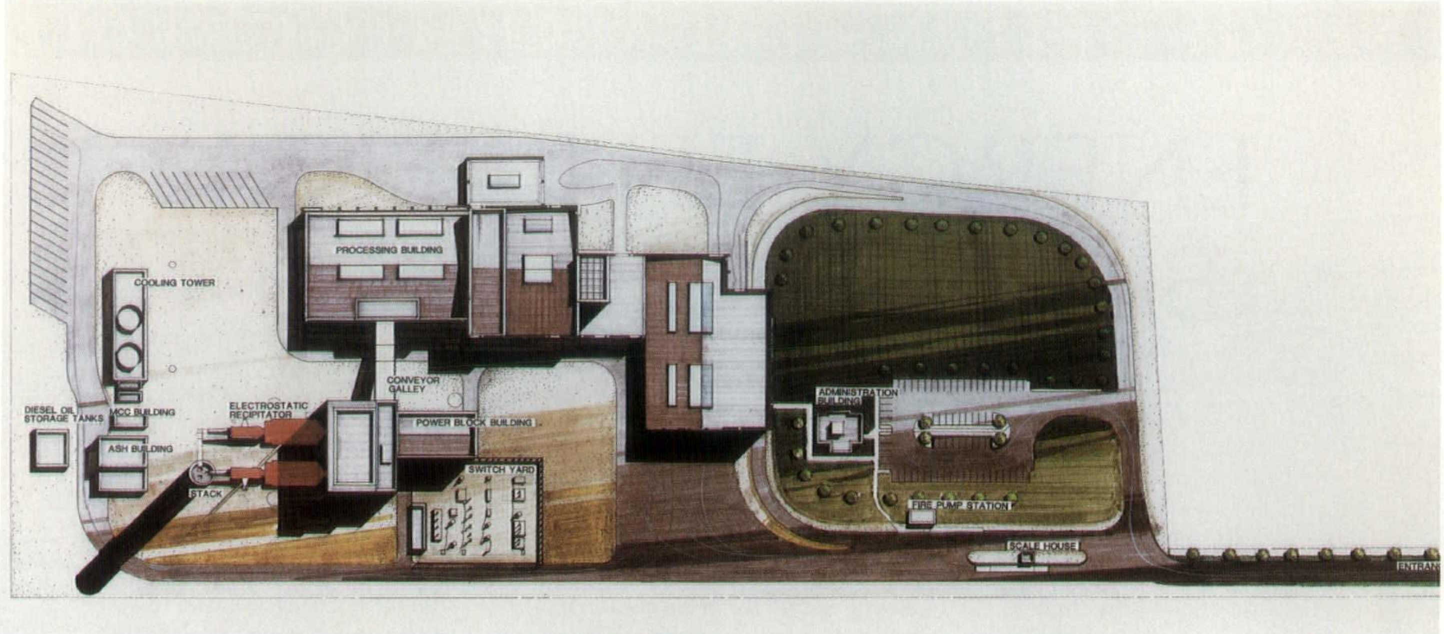
by Kenneth Bavaro, AIA and Kenneth Rappolt, PE

Energy recovery from municipal solid waste serves a dual purpose: it provides an alternative source of energy and a method of waste disposal.

An 1,800-tons-per-day Honolulu Resource Recovery Plant will convert municipal and commerical wastes of the City and County of Honolulu into energy. The facility will process acceptable wastes into Refuse-Derived Fuel (RDF), after the removal of noncombustibles and salvageable ferrous metal. Burning RDF produces energy in the form of electricity which will be used by the plant, as required,



H-Power will convert Honolulu's waste into energy at a site in Campbell Industrial Park. All waste handling, storage and processing will be concealed within enclosed structures.



and sold to Hawaiian Electric Company. Financing of this $200 million facility was accomplished by the City and County of Honolulu through Municipal General Obligation Bonds. Ground breaking took place in December 1985.

Located on the western side of Oahu, in Campbell Industrial Park, the seven structures comprising the plant will be scattered over 24.5 acres of land acquired by the city from the Estate of James Campbell. All landscaping and building design considerations will adhere to Campbell Industrial Park standards.

Most notable about the overall design is that all waste handling, storage and processing will be concealed within enclosed structures, rendering a clean and uncluttered complex. Boilers and turbo generator equipment will be housed in one building, while waste will be received and processed in another. Both buildings are architecturally similar to present a unified appearance. The entire site will be graded and landscaped. Security protection will be provided by fences, gates and illumination.

One Campbell Indusrial Park standard called for flat-roofed buildings. To accommodate this requirement, CE Maguire designed parapets with built-in gutters on most of the structures, which resulted in the desired appearance.

Apart from such obvious features as the cooling tower, stack and receiving platforms, the function of each building cannot be discerned from the outside. Within, the functions are well-defined.

The solid waste processing area will consist of three segments: processing; maintenance, control and employee facilities; and receiving and storage. The building

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ENERGY-EFFICIENT BUILDING DESIGN

by Takeshi Yoshihara, Energy Program Administrator
Department of Planning and Economic Development
State of Hawaii

The recent collapse of world oil prices following three years of decline has led many to wonder what happened to the energy crisis. Crude oil, which sold for $26 per barrel as recently as last December, fell to below $10 by July. Oil supplies have become plentiful and OPEC is in disarray. Under these circumstances, does it make any sense to be concerned about energy?

The answer is a resounding yes! Accepting present conditions as normal ignores the realities of the international oil market and the painful lessens learned just a few years ago. Consider these points: U.S. proven oil reserves have declined steadily since 1970 and now equal less than nine years of supply at current production rates, and the nation will likely be importing over half of its oil supply by the year 2000, just 14 years away. With 70 percent of proven free world reserves controlled by OPEC nations, Hawaii's fate will once again become dangerously dependent upon politically motivated actions by unfriendly countries. Petroleum is not only a diminishing source of energy controlled by a few nations, but it is also the most expensive fuel presently available.

Energy is of serious concern to Hawaii because the state relies upon oil for 90 percent of its energy supply, twice the national average. As a result, Hawaii's energy costs are among the highest in the country.

One of the most important elements of the state's strategy to solve its energy problem is energy conservation, more accurately described as increasing the efficiency with which energy is used. Energy conservation can reduce Hawaii's dependence upon imported oil, increase its economic competitiveness, and provide more time for the state to develop alternate energy sources to displace oil. Energy conservation can provide other economic and environmental benefits. Oil consumption in the state would be at least 20 percent more today without the excellent energy conservation achievements attained throughout the economy during the past decade.

Architects have a vital contribution to make in increasing the energy efficiency of Hawaii's buildings whose life expectancy in all probability will transcend the petroleum problem period. The potential is great: residential and commercial buildings in the U.S. account for about 36 percent of the nation's total energy demand.

During several decades prior to the energy shocks of the 1970s, energy efficiency was largely neglected in the design and construction of new buildings. It has been estimated that office buildings constructed in New York City between 1960 and 1965 used twice as much energy per square foot as those built between 1945 and 1950. Why the difference?

Whereas older buildings were designed to make use of natural light and natural ventilation through open windows, later buildings consisted of sealed envelopes requiring mechanical and electrical systems to provide virtually all the lighting, heating and cooling required. The typical tall, glass-faced buildings of the latter period consumed energy at an annual rate of 150,000 to 250,000 BTUs per square foot.

Since the mid-1970s, energy efficiency has no longer been overlooked in building design, for obvious reasons. It is not unusual to see buildings now designed to consume only 20 percent of the energy they might have used if designed before the energy crisis. For example, the General Services Administration established a target of 55,000 BTUs per square foot per year for the design of new federal office buildings. Architects and engineers have responded to the challenge with creativity and ingenuity by designing new buildings which meet this criterion without compromising the comfort or convenience of the occupants.

As promising as it is to incorporate energy-saving concepts in new buildings, a larger challenge to architects and engineers is to achieve energy savings in existing buildings. This is important because, unlike automobiles, the lives of buildings are many decades long, and new buildings increase the total stock by less than 5 percent annually. Thus, a small increase in the energy efficiency of existing buildings can have a large overall impact on the amount of energy saved. A recent survey of 311 commercial buildings throughout the country which had been retrofitted to conserve energy showed an average of 27 percent savings in energy consumption. Potential savings are much greater.

Is there a role for government in accomplishing the enormous task of improving the energy efficiency of new and existing buildings? Yes. Government can help remove existing market barriers which hinder economically justified improvements in energy efficiency. There are additional reasons for government involvement: energy prices do not reflect the true energy costs to society; information on the best methods of energy use is not widely available; capital for investment in conservation equipment is expensive and scarce; inertia exists among building owners and energy users; and institutional and regulatory constraints inhibit energy conservation.

Energy conservation can result in other benefits of national importance, such as reduced dependence on foreign supplies, improved balance-of-payments, and enhanced economic and environmental conditions, all of which are usually not accounted for in private sector decision making.

The State of Hawaii's involvement in energy conservation began in the 1970s with several initiatives. One was the establishment of an energy consumption monitoring network among state agencies. Another was an energy audit of major state office buildings. In 1977 the Department of Planning and Economic Development (DPED) received its first federal energy conservation program grant. The state's energy conservation program has been administered by the DPED through the state Energy Office which in 1981 was reorganized as the DPED Energy Division.

The state's energy conservation program for buildings has been focused on activities such as the establishment of building design standards appropriate for Hawaii; the administration of a federal cost-shared energy conservation retrofit program for schools and hospitals; and the promotion of energy-efficient building performance. This has involved working in close collaboration with representatives of nearly all organizations involved in the design, construction and management of buildings throughout the state.

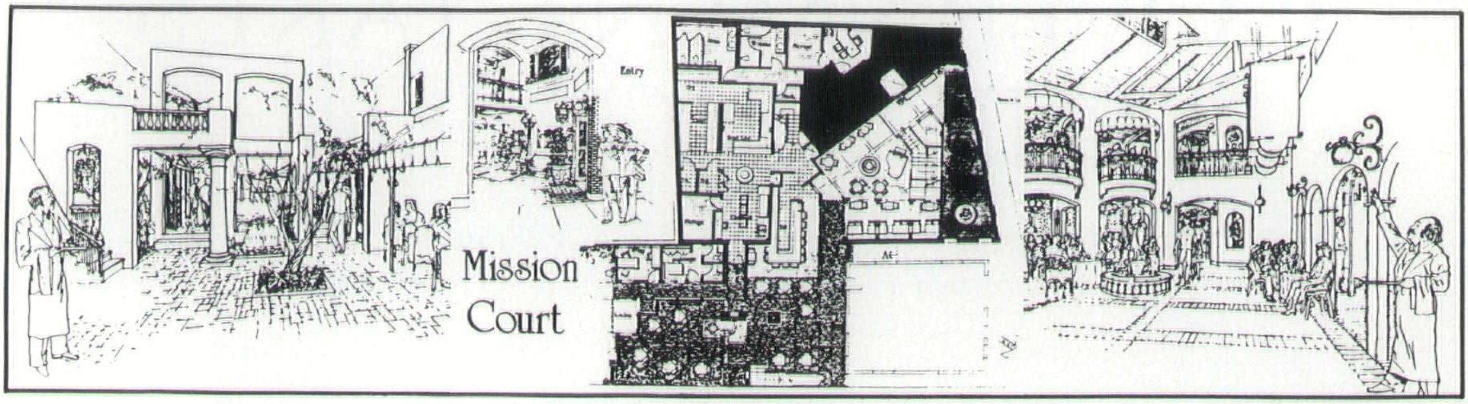
Improving the energy efficiency of Hawaii's buildings will continue to be an important part of the state's energy program. A subject of current interest is the concept of third-party financing to provide

(continued)

the capital required for the installation of energy efficiency improvements to state and private buildings. This approach involves funding such improvements to a facility by a party other than the owner or the installer, under an agreement in which the provider of the capital receives a share of the energy savings actually achieved. Earlier this year the State Legislature approved the use of third-party financing for state facilities, and DPED is now demonstrating this concept with several state projects.

Another subject of current interest is the concept of whole-building energy performance. While past design practice has emphasized building components, equipment, subsystems and materials, there has been a growing awareness of a need to understand the energy performance of buildings taken as a whole. This need is supported by observations of a consistent discrepancy between the design and actual performance of buildings as presently designed. The state intends to support efforts to understand how the various elements and subsystems of a building interact with each other under local conditions, to encourage the development of more appropriate energy efficiency standards for the Islands.

Energy conservation will continue to be of importance to our nation and state for many years, despite the impressive progress already achieved since the initial energy crisis 13 years ago. The architectural profession can be justly proud of its contribution to increased energy efficiency of buildings. However, much remains to be accomplished if Hawaii's goals for energy conservation are to be realized. The state will continue to work with the profession in supporting new concepts and technologies, policies and programs, to encourage cost effective ways to improve the energy efficiency of Island buildings. **HA**



1986 STUDENT AWARDS PROGRAM

by Wes Deguchi, AIA

At this month's General Membership Meeting, the Hawaii Society/AIA will proudly recognize the winners of this year's Student Awards Program. The primary goal of this program is to promote a better relationship between the architectural students at the University of Hawaii and the professional community. Many of you HS/AIA members participated as jurors in the selection of the award winners. It is through your help, together with the cooperation of Dean Elmer Botsai and the rest of the UH faculty, that the program has been successful for another year.

Awards are given in two categories. The first is the Design Achievement Award. Outstanding projects are selected from the various design studios at the end of the spring semester. This year there were 10 different studio sections. A total of eight Design Awards were issued. In addition, 10 Honorable Mention Awards were given to projects that the jurors felt deserved recognition. The studio projects ranged in scale from the interior design of a restaurant to the architectural complexity of a city convention center.

A second category of the awards program is the Academic Achievement Award. Students are selected for this award by the UH faculty. They are chosen for their outstanding personal character and also for having the best cumulative grade point average in their respective class levels.

A word of appreciation to the HS/AIA members who volunteered their time to serve as jurors in the selection of the Design Achievement Awards: Lloyd Arakaki, George Berean, Sid Char, Wayson Chong, Dennis Daniel, Pravin Desai, Franklin Gray, Rob Hale, Duane Hamada, Paul Ma, Lorrin Matsunaga, Kurt Mitchell, Joyce Noe, Sheryl Seaman, Pat Shimazu, Cliff Terry, Byron Tsuruda and Gordon Tyau. Their interest and active participation led to the success of this program. The students immediately benefit from this interaction and ultimately we, as a profession, stand to gain much more.

Awards will be presented at this month's General Membership Meeting on Thursday, Sept. 18, 1985. This social event can also be called The Students Awards Banquet. As part of the program, the award-winning projects will be on display. Also, a special presentation will be given by those students who traveled abroad this past summer. It promises to be a festive occasion. Join us and meet some of our future architects. **HA**

GOVERNMENT TAKES THE LONG VIEW

by Howard C. Wiig, Energy Analyst, Energy Division
Department of Planning and Economic Development
State of Hawaii

With America's political pendulum firmly (if temporarily) lodged in the *laissez-faire* corner, it seems almost heresy to remind design professionals that government is, and will continue to be, largely responsible for the trend toward increasingly energy-efficient buildings, both existing and in the idea stage.

Many Hawaii architects have direct experience with the retrofit programs for existing buildings being carried out by the Department of Planning and Economic Development (DPED) working closely with the Department of Accounting and General Services (DAGS). These include the Institutional Conservation Program, aimed at schools and hospitals, the Hawaii Energy Efficiency Investment Program, which "leverages" state funds by bringing in third-party financiers to carry out energy retrofits in private and public buildings, and the state Energy Management and Conservation Program, which reduces energy consumption in state facilities.

Less well known is DPED's mandate to assist the counties to ensure that Hawaii's future buildings will be as energy efficient as architectural knowledge and technology permit. Section C (2) (b) of the state Energy Plan decrees that the DPED shall "continue to modify building design requirements in county building codes to achieve greater energy efficiency and flexibility in design," and shall "educate and promote passive design among urban boards and professional groups who influence building design and landscaping."

In 1978, DPED introduced and passed legislation which led to the establishment of what is now Article Eight of the Uniform Building Code of the City and County of Honolulu. Hawaii and Kauai counties soon enacted similar codes, which are based on the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) energy guidelines. These standards will be made more stringent after state, county, and private sector design professionals have reviewed ASHRAE's 90-85 chapter on energy, and decide which provisions to incorporate into an updated code. But we are all acutely aware that engineering provisions alone do not guarantee energy-efficient buildings. This is why topics of urban design, landscaping and passive design are covered in the state Energy Plan.

Renaissance Cities

The state's urban planners are incorporating energy conservation into Oahu's future population centers. One of the exciting things about the design of the Kakaako District, for instance, is the realization that Renaissance city planners had the right idea when they placed shops and commercial activities at each building's street level and living quarters on the upper levels. Sixteenth century planners permitted a continuous diversity of activities in each city quarter, so that virtually all needs were within walking distance. Such will be the case in Kakaako, with the destinations of downtown, Ala Moana and Waikiki a quick and easy bus ride away. Kakaako residents will probably consume about a tenth as much gasoline as their suburban counterparts.

In a similar vein, DPED's Land Use Commission is promoting the Ewa Beach area as a second city, to include visitor resort areas, residential neighborhoods and commercial areas. These, combined with Campbell Industrial Park, Makakilo and the Waianae Coast towns, are designed to form a self-sufficient area which will obviate the need for gas-guzzling commutes between Leeward Oahu and Honolulu.

Trees Are Cool

Anyone who has hopped barefoot from sizzling asphalt to the cool grass under a tree will readily agree that the temperature difference between the two micro-environments is at least 40°F. Properly placed trees and shrubs not only provide buildings with shade, they produce an air conditioning effect due to the continuous process of transpiration, which involves the release of moisture from trees' leaves. Greenery around a building significantly reduces its air conditioning load.

New-found knowledge in this area has caused many landscape architects to focus on shielding buildings from the sun's heat between noon and 3:00 p.m., and arranging the proper mix of high-canopy trees with high-density shrubs to funnel trade winds in and out of low-rise buildings without air conditioning.

The ultimate value of energy-conscious landscaping can be seen in certain lushly shaded Waikiki watering holes where visitors gladly purchase expensive mai-tais in exchange for relaxing in a South Sea paradise. While on the mainland luxury comes at great energy expense, in Hawaii luxury comes from Mother Nature, carefully arranged.

Modem Meets Moorish

Finally, the state is fully cognizant of the powerful tool of computer-assisted design, or CAD, in achieving optimum energy efficiency in passive building design. CAD enables the architect to test an infinite number of building orientations and configurations in relation to the sun's patterns in the exact location of the building. He can thus optimize daylighting and minimize solar gain. CAD enables the architect to model and test all available envelope and roofing materials and colors to minimize both initial cost and heat gain, and even test the efficacy of a Monkeypod tree in the building's southwest corner.

Ironically, the electronic media are producing a 16th century message—architects are rediscovering the passive design genius of the Moors and Navahos whose patient observations of their harsh climates enabled them to construct homes that were cool by day and warm by night.

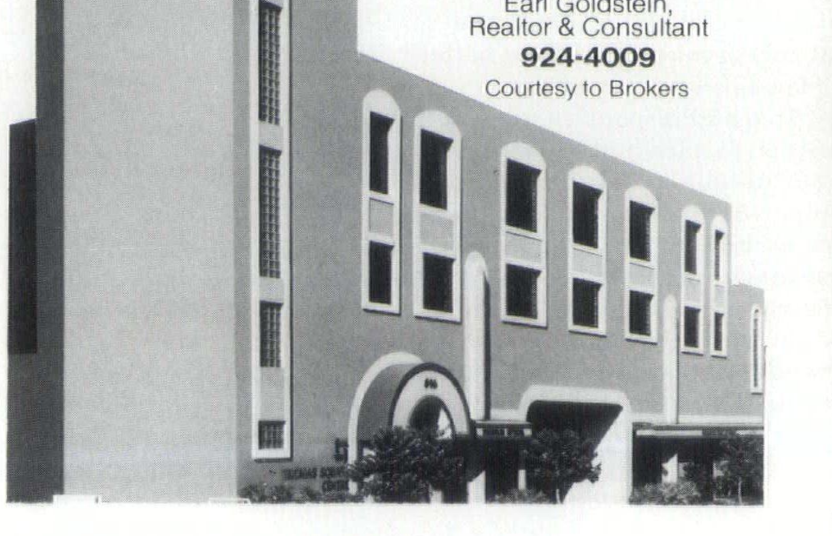
The recently completed HMSA and Intellect buildings and the Kaiser building under construction provide examples of excellent passive design. The DPED is working with both architects and engineers to separately propose the best siting/envelope and HVAC/lighting designs for Hawaii. These professionals will draw heavily from the experience of such states as California and Florida, from research facilities such as Lawrence Berkeley Labs and Oak Ridge and from a local advisory committee. DPED's goal is to create an extremely tight energy code acceptable to code officials and design professionals.

Government Takes the Long View

Why is the state so interested in placing residences close to work places, cooling buildings with trees, and having architects change their modus operandi to optimize passive design? Ultimately, it's pure economics. Even in this year of depressed oil prices, Hawaii will send some $1 billion overseas in exchange for oil landed on our shores. Much of that oil fuels obsolete air conditioners and overlit environments. It makes sense to spend a dollar today on passive architecture in order to save $100 in energy costs over the 30- to 40-year life of a building.

In this way, Hawaii may be saving as much as $100 million a year by the year 2000. If $100 million a year seems an extravagant estimate, consider that some buildings still consume as many as 500,000 BTU's per square foot per year, while whole building energy target officials are talking about buildings that consume less than one-tenth that amount. Certain new buildings are proving that these targets are achievable.

In the face of *laissez-faire* economics that cannot see beyond today's $15 a barrel oil prices, government must take the long view in remembering gas lines and blackouts and oil kingdom revolutions. Government realizes that a dollar spent today on a passive design architect can reduce Hawaii's energy bill by as much as $100 over the next 30 to 40 years. **HA**



DESIGN STRATEGIES FOR ENERGY CONSERVATION

by William L. Beaton, AIA
Energy Design Consultant, TRB/Hawaii, Ltd.

"Potentially, it (the energy crisis) can create a new design vocabulary and is far more revolutionary than anything that has happened since the Renaissance. By infusing the design process with energy consciousness, architects will pay more attention to bulk and mass and shape, to fenestration, orientation and daylighting—all those things we should do intuitively, but have been ignoring . . . it really has the potential for changing the whole character of the built environment, for changing entire cityscapes." (by former national AIA President Randal Vosbeck - 1981)

Several years ago I wrote an article in this journal entitled "A Path To Our Future" in which I suggested that a future Hawaiian architecture might evolve out of a commitment to create energy-efficient buildings. It was hoped that this architecture would better fit Hawaii's needs by being sensitive and responsive to our lifestyle, to each building site and to our unique climate. An added bonus would be the potential to save each client substantial amounts of money by reducing construction and operational costs and, in the long run, to reduce our dependence on imported oil. Although that dream has not totally come true, I believe there has been some progress as evidenced by several projects designed over the last few years by a variety of local architects.

Why Care?

Even though the "energy crunch" has lessened, the fact remains that Hawaii is still heavily dependent on oil and will remain so for many years to come. Even more important is the price of electricity and the cost of operating buildings in Hawaii, both still very high if compared to mainland states.

There are many military projects where the design criteria dictated that energy conservation design features be employed. A substantial number of recent projects have demonstrated the best in efficient mechanical, electrical and lighting systems, while ignoring the potential of the architectural features.

Even though great strides have been made in the manufacture of such energy-efficient systems, architectural design remains the primary force which sets the energy performance of buildings. The demand for cooling and the use of lighting fixtures are determined by the layout and orientation of a building, by its envelope, fenestration, shading and other design elements. Mechanical, electrical and lighting systems are designed *in response* to this demand.

The goal is to find a balance in the decision-making process, where energy is considered as an important design issue and is analyzed and evaluated with equal importance to the other major design concerns.

Design Strategies

In Hawaii we want to minimize our need for air conditioning and artificial lighting. Although Hawaii's climate is seemingly "gentle," it can be very extreme in regard to its effects on a building's heat load and the resulting requirements placed on the air conditioning system. Therefore, the major goals of energy-efficient design in Hawaii are to reduce both exterior and interior heatgains through wise design of both the exterior envelope and the interior design without sacrificing comfort, quality, functional efficiency or cost-effectiveness.

The following list describes the most significant energy-conscious design strategies available to a designer. The strategies which are most applicable or will have the greatest potential impact on the energy performance of a building will be determined by the type of building, its program and functional requirements, its location and its budget.

The major design strategies are:

- Proper orientation/configuration
- Exterior solar control
- Daylighting
- Natural ventilation
- Proper landscaping
- Proper building material selection
- Thermal zoning
- Integrated interior design
- Selection of efficient equipment (including HVAC & lighting)
- Use of energy management control systems (EMCS)
- Educating the building occupants

1. **PROPER ORIENTATION:** The orientation of a building is critically important due to its strong influence on the design of effective (and economical) solar control and daylighting systems, and its impact on the performance of naturally ventilated buildings. Long faces of a building should face directly north and south, if at all possible.

2. **BUILDING CONFIGURATION:** Configuration, like orientation, is one of the two most important design decisions related to energy-efficient design, due to its strong influence on many of the other design strategies listed. In addition, configuration influences the skin-to-volume ratio, which describes the amount of external surface area exposed to heatgain. In general, it is desirable to maximize north and south facing surfaces while minimizing those facing east and west. It should be noted that it is possible to determine the relative performance of optional building configurations and orientations by means of computerized architectural energy analysis during the schematic design phase.

3. **EXTERNAL SOLAR CONTROL:** External solar control generally refers to shading systems and can take many forms, including horizontal or vertical louvers (which can include fixed or operable systems), extended roof

Message From the President

Tort Reform Bill: An Excellent Beginning

The special session of the legislature ended with passage of a much needed, meaningful tort reform bill subsequently signed into law by the governor. The bill is a good one. It's an excellent beginning.

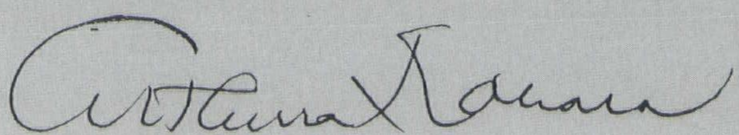
Prior to the opening of the special session, I asked AIA members to write their senators and representatives in support of tort reform. The response was impressive. Because of member's collective efforts, I was able to place a huge stack of letters on the desk of each of six legislators who were the prime movers of the tort reform bill. My thanks to each of you who sent letters, and my especial thanks to those who sent me copies of your letters.

Our almost around-the-clock efforts proved worthwhile.

During the coming months and years, however, we must continually and carefully evaluate the tort reform bill to determine what, if any, amendments are necessary to strengthen it. Only our objective appraisal can withstand the pressures which are sure to come from special interest groups bent on amending the bill to death.

Again, I thank each of you for your support. The bill may not be all we needed or wanted; nevertheless, it's a good foundation upon which we can build for the future.

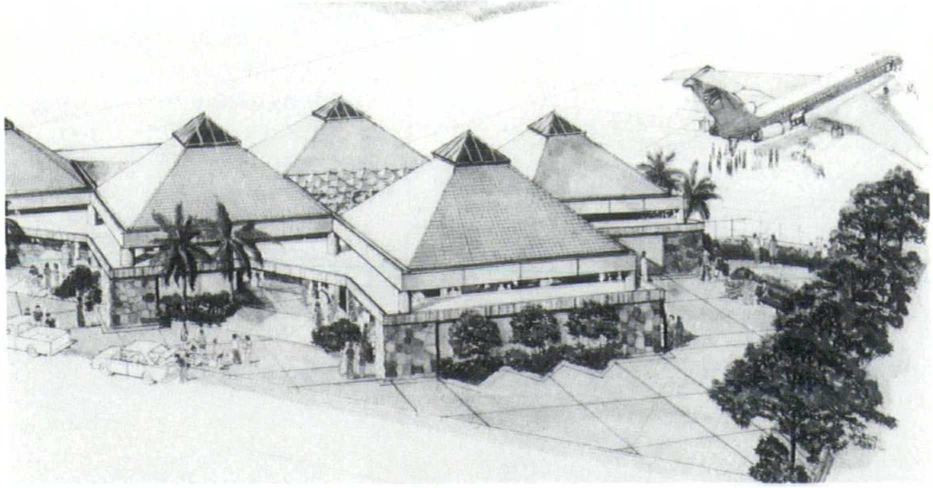
I would appreciate it if each AIA member would send a thank you letter to each of your legislators who supported passage of the tort reform bill.



Arthur A. Kohara, AIA
President, Hawaii Society/AIA

overhangs, awnings (both fixed or operable), and many other such devices. New glazing materials, such as reflective glass and films, can be placed in this category as well. The primary purpose of external solar control is to keep the radiant heat of the sun out of the building by preventing it from penetrating the glazing. It should be noted that interior blinds, drapes, or other such interior systems do *not* accomplish this goal because the heat has already entered the building by the time it reaches the interior control system.

External shading is the most effective way of reducing a building's air conditioning load. Well-designed shading systems, used in combination with clear glass, are substantially more effective than even the best reflective glass and have the added benefit of allowing the use of daylighting in the building.



A new air terminal for the State of Pohnpei presented the opportunity for classic subtropical design to Honolulu's Alfred A. Yee Division of Leo A. Daly. Building modules are oriented to a northeast/southwest axis to draw through available breezes. Broad light shelves protect perimeters from driven rain while providing reflected light deep into terminal modules through the use of open clerestories.

4. **DAYLIGHTING:** Daylighting is the controlled use of the sun's natural light inside buildings. The primary goal in a well-designed daylit building is to provide enough illumination from the sun to replace or reduce the use of artificial lighting.

Daylighting does not preclude the need for solar control, in fact the two must be designed in harmony with each other. A properly designed daylighting/shading system will utilize the "luminance" from the sky to provide light inside the building, while at the same time prohibiting the sun's direct rays (radiant heat) from penetrating the glazing.

5. **NATURAL VENTILATION:** We all know that natural ventilation cooling of buildings is very appropriate in Hawaii for many building types. If properly designed, a naturally ventilated building can provide comfortable climatic conditions throughout a major portion of the year.

There are, however, many serious considerations that must be addressed by the designer during the early design phases if the building is to be successful as a naturally cooled building. Natural ventilation does not simply involve locating an opening on each side of a room.

The most notable recent examples of naturally ventilated buildings have been those designed for the Army, Navy and Marine

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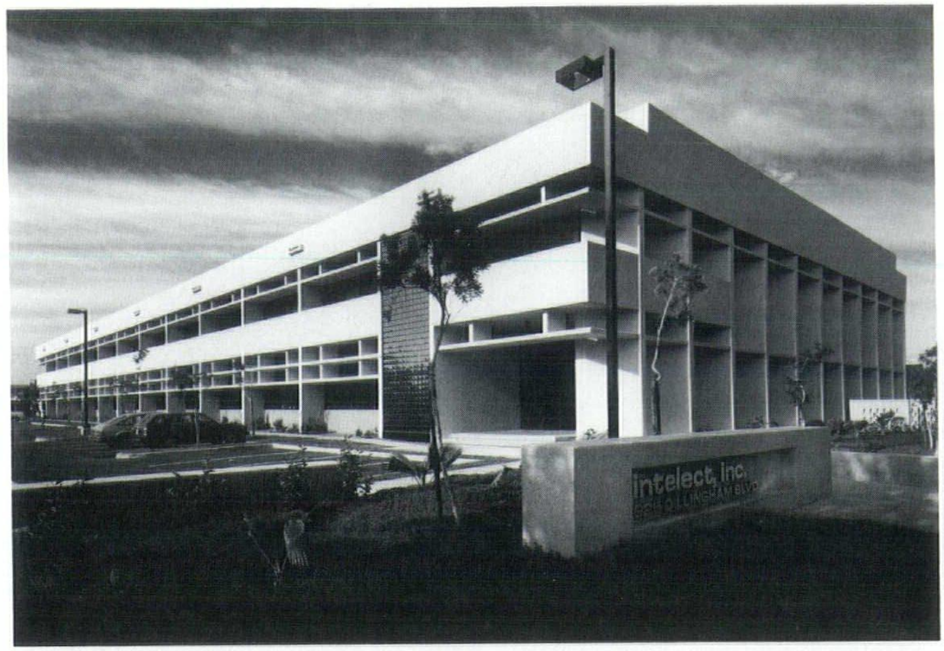
Corps, primarily because the Department of Defense now requires that it be utilized in the design of most housing projects.

6. **PROPER LANDSCAPING:** Landscaping can play a major role in energy conservation, as well as adding much-needed visual relief on otherwise undesirable sites. It can provide desirable shading on a building facade, particularly on the east and west elevations when the sun is quite low. Landscaping can also reduce heatgain through a roof by addition of a roof garden, or in a parking lot by shading the black asphalt surfaces. This can be especially important if the parking lot is located on the windward side of a building, since the air temperatures immediately above an asphalt surface can reach 120-150 degrees F.

7. **PROPER BUILDING MATERIAL SELECTION:** The architect's selection of building materials and systems will dramatically affect a building's energy performance. Since the primary goal is to reduce the amount of heat that penetrates the envelope, the materials selected should be capable of reducing both conductive and radiant heatflow.



Fins on the Intelect Building shade windows from direct sun while bouncing reflected light onto high, reflective ceilings on the interior. The perimeter of the building is lit by photocell controlled fluorescent fixtures. As the interior receives light, the fixtures dim to decrease heat buildup and reduce air conditioning costs. Anderson Associates designed the building with energy design consultant, TRB/Hawaii, Ltd. Photo by Augie Salbosa.

Two materials that have the greatest effect on energy use in Hawaii's buildings are glazing and insulation.

A. *Glazing* is one of the most important building material selections that an architect makes. It not only has the greatest effect on energy performance, but also impacts the building's aesthetics, its interior environment and long-term maintenance costs. In addition, the glazing system will affect whether a building can be naturally ventilated.

B. *Insulation* of one form or another is desirable in most buildings in Hawaii in roofs and walls heavily exposed to solar radiation. The type, location and amount of insulation needs to be determined by the designer. A computer energy analysis becomes very useful for making such decisions.

Implementation

The ultimate success of design strategies is directly related to how

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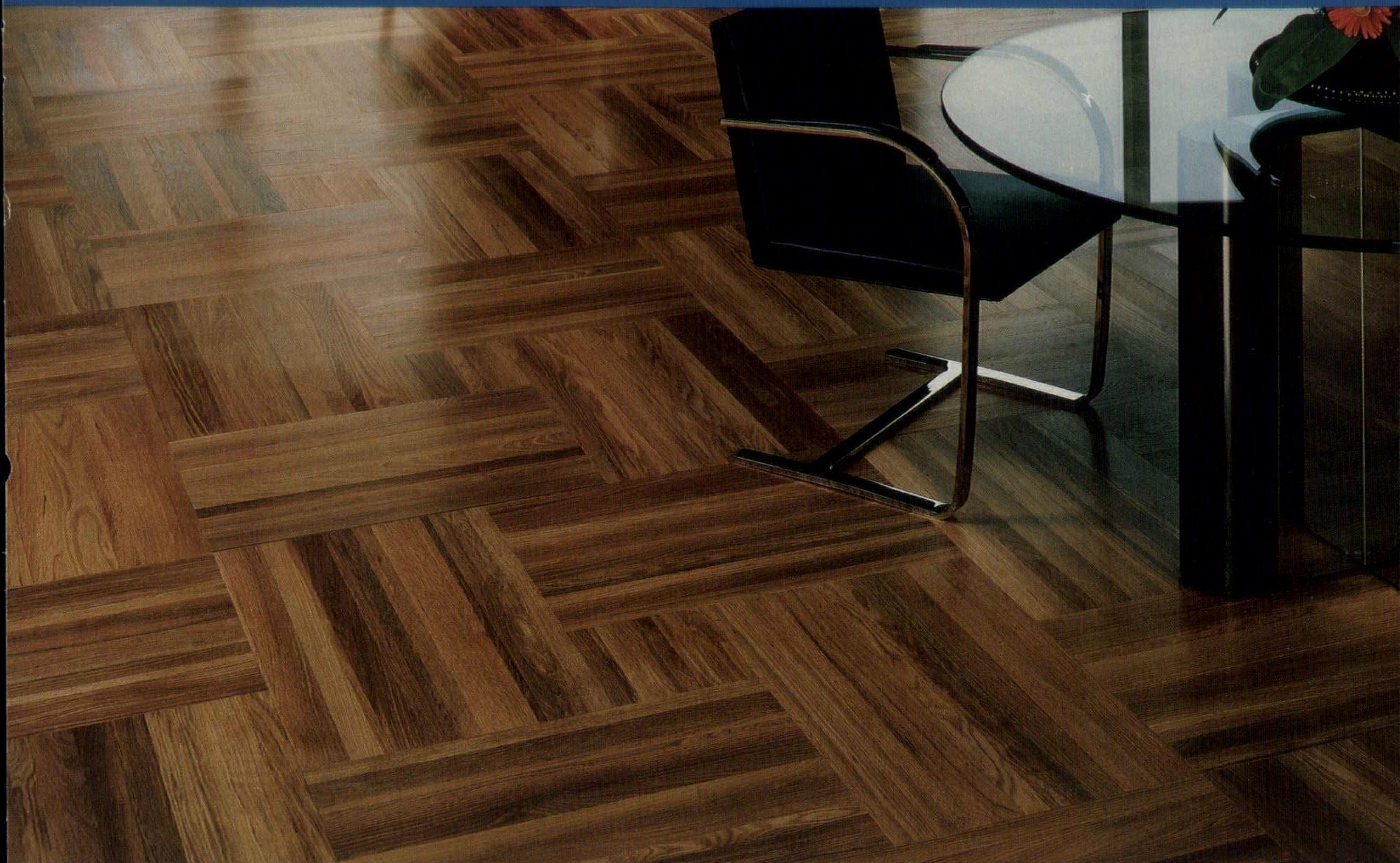

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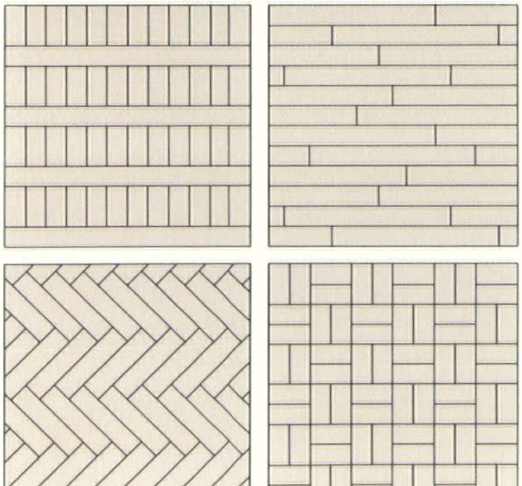

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And Pattern-Plus is made tough enough to take it—even in high-traffic commercial installations. Acrylic and stain are forced under pressure all the way through the oak to make it harder than hardwood. It resists stains, spills, scarring. Color won't wear away.

Tongues and grooves are engineered and precisely machined to lock together, give you a smooth, even floor every time.

Pattern-Plus. Designed for designers. Engineered for the future.

For more information on Pattern-Plus, call your Hartco distributor or write Hartco, Inc., P.O. Box 1001, Oneida, TN 37841-1001.

Hartco® The Quality Wood Flooring

Pattern-Plus® creates one-of-a-kind floors. And it's harder than hardwood.

Pattern-Plus is a client's and designer's dream come true. Hardwood flooring in modular, factory-finished units that can be combined in an endless variety of patterns. From herringbone to basketweave to parquet to parallel planks to whatever design you can imagine. Large-scaled patterns or small-scaled patterns. Simple or intricate. All one color or a mix of colors. A range of design possibilities that will excite any client.

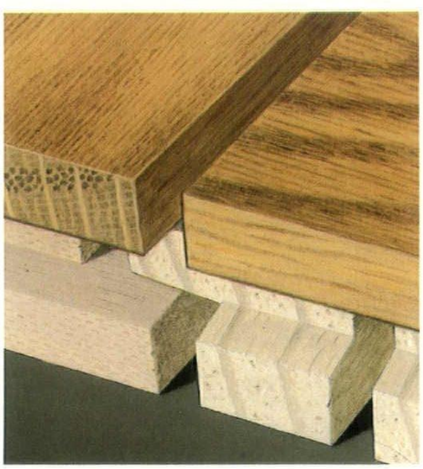
But there's a lot more to Pattern-Plus than its enormous design appeal. There is also its outstanding durability—a durability that makes Pattern-Plus a good choice for everything from residences to high-traffic commercial areas.

In a sophisticated, state-of-the-art factory process, Pattern-Plus is impregnated with tough acrylic and stain. The acrylic and the stain are forced under extreme pressure all the way through the oak wear layer of each Pattern-Plus unit. The result is a surface that is actually harder than hardwood, with finish and color that won't wear away.

You know you can depend on Hartco quality.

The same engineering skill and high production standards that have made Hartco Number One in parquet give Pattern-Plus quality you can count on.

Precisely machined tongues and grooves lock together firmly. The backs of Pattern-Plus units are slatted for flexibility to compensate for any slight imperfections in subflooring. And this careful engineering makes it easier for installers to achieve a smooth, even floor surface every time.



Tongues and grooves of Pattern-Plus are precisely machined to lock together for a smooth, even surface. Tapered shape allows adjustment to compensate for imperfect subfloors.

The Pattern-Plus system.

All Pattern-Plus units are 4½" wide, ⅜" thick. There are four lengths available: 9", 18", 27" and 36". Colors are shown below.

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Hartco Pattern-Plus should be installed only with Hartco Adhesive 55, which has been specially formulated by Hartco to perform best with Pattern-Plus. Apply with a square-notched ⅛" x ⅛" x ⅛" trowel.

Pattern-Plus moldings.

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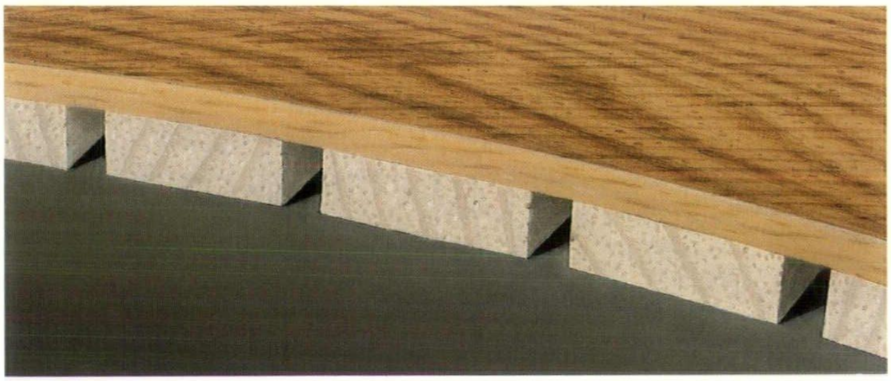


Slatted construction allows Pattern-Plus units flexibility to conform to slight irregularities in subfloors.

36" 27" 18" 9"

Curry

Ginger

Nutmeg

Item No. 92121

SAVING ENERGY MAKES CENTS

by Mark A. Hertel
Pacific Resources, Inc.

We are in the eye of the energy storm! Reason seems to prevail now and all is calm. Will we become complacent and return to the days of energy indulgence?

Despite declining utility prices, they are still high and could easily go up, and probably will in a year or two and sooner if politics flare up in any key oil-producing area. Thus, keeping an eye on the energy diet of buildings is still important. Conservation is one big reason energy demand is down and continuing the drive will pay off now and even more in the future. There are new trends in residential equipment for water heating, air conditioning and kitchen appliances, the major energy consumers.

Water Heating

Solar water heaters still rate as the most efficient means of heating water. Their economics have been blurred by the uncertainty over federal and state tax credits, but the fact remains that utility bills are reduced up to 50 percent. Although paybacks may take 4-5 years now instead of 2-3 years with full tax credits, solar heaters are still a good investment.

Heat pump water heaters are preferred for government agencies

(continued)

that have no tax credits and limited funds. New designs in heat pumps make installation simple and economical, either on existing tanks or as new units.

Gas water heaters are being improved every year. More insulation and flue baffling reduce standby losses while new combustion chambers have pushed efficiencies up from 70 to over 85 percent. Research on 90 plus condensing units continues. The appeal of high recovery rates still makes gas heaters popular.

Electric water heaters remain popular primarily because of their low cost. However, even well-insulated tanks and improved element design still cannot significantly reduce the operating cost of this traditional energy sponge. One new product, the instantaneous heater, eliminates standby losses and, more important in Hawaii, saves valuable floor space.

Air Conditioning

The trade winds provide comfort for the vast majority of homes in Hawaii. But there is no denying that dust and noise blow in with them and a long stint of Kona weather prompts thoughts of fans and window air conditioners. The latter can bring instant physical comfort but may result in fiscal shock when the electric bill arrives. That is, unless some care is taken during purchase. Paying attention to the Energy Efficiency Ratio (EER) can soften the blow of keeping cool. New units with rotary compressors have EER's over 9 with the added benefit of quiet operation.

Perhaps the most exciting development in air conditioning is the multi-zone system. Long used in Japan, a single compressor, located outside, sends refrigerant to condensing units located in the rooms to be cooled (or heated in the case of heat pumps). This wrings moisture out of the air in the room instead of at the central unit, providing better dehumidification. By placing units in the day and night rooms, the load can be greatly reduced by operating them only during occupancy. Instead of a 3-5 ton central unit, a multi-zone system need only be 1.5-3 tons and may cost only $50 a month to operate. They are even quieter than window units and, since there is only one compressor, the current draw is still lower. Think of multi-zone as going on and off with the lights. With a central system, all the lights in the house go on and stay on!

Kitchen Appliances

The appliance industry is undergoing a period of tremendous change—mergers, failures, plant improvements and robotics. The requirement for energy consumption labeling has led to energy consciousness, an outgrowth of the previous "crisis." A wise consumer, or specifier, will pay attention to these labels when selecting refrigerators, ranges and dishwashers.

Refrigerators today have improved insulation, humidity control and more small doors to reduce air exchange. Ranges have more insulation, too, solid burner hobs for improved contact and cleanability plus faster cleaning cycles or continuous cleaning surfaces that do not require high heat cycles. Dishwashers have booster water heaters so that the household temperature can run lower on less energy, use less water and have economy drying cycles. The small premium paid for energy-efficient models can result in lower utility bills that quickly recover that cost and continue over the often longer life of a well-designed appliance.

Multiple Unit Buildings

Making people accountable for their own actions has long been an effective behavior modifier. Studies consistently prove that individual utility bills are the most effective way to reduce energy consumption in housing projects and high rises. Submetering systems costs have come down with the use of sophisticated electronics and the pay back and long-term benefits are more attractive.

Room controllers in hotels, offices and condos are also now very economical and effective. Motion or infrared sensors with logic turn off lights, fans or air conditioning when the room is unoccupied. A refresh cycle keeps the room comfortable for re-entry. Once back in the room, people have control of lights and thermostats. Used in combination with more efficient air conditioners, energy savings can be dramatic—as much as 50 percent in recent field tests.

The next step in major energy savings is cogeneration, the on-site production of power and heat. Any facility that can use heat for hot water, processs heat, air conditioning or pool heating may want to consider such a system. Creative financing arrangements can result in immediate reductions at little or no risk. In addition to the financial rewards, efficient utilization of precious fossil fuel is important in Hawaii where over 90 percent of our energy comes from oil.

These are just a few of the recent developments in energy use. Building design is also important in controlling and reducing cooling and lighting loads. Meeting lower loads efficiently is important because saving energy still means saving money. And what client won't thank you for that! **HA**

Mark A. Hertel is Operations Coordinator for PRI Energy Systems' Energy Products Division. He received his Bachelors in Mechanical Engineering from the University of New Hampshire and Masters in Ocean Engineering and Business Administration from the University of Hawaii. He is a member of ASHRAE and president of the Hawaii Solar Energy Association.

STRAUB KANEOHE FAMILY HEALTH CENTER AT WINDWARD MALL

Media Five Limited

The exterior access is a garden entry plaza with a trellis extending beyond the building wall. An understated but identifiable entry from the parking area, it provides relief in a sea of asphalt. Photos by Augie Salbosa.

The challenge for Media Five was to integrate a neighborhood clinic into a major shopping center. Straub needed facilities for internal medicine, pediatrics and obstetrics-gynecology, with ongoing operations before, after, and during mall hours. Windward Mall, an interior-access shopping center, required a continuity of storefronts to maintain the shoppers' interest throughout the mall. The design had to complement, rather than dominate J.C. Penney, the clinic's neighbor.

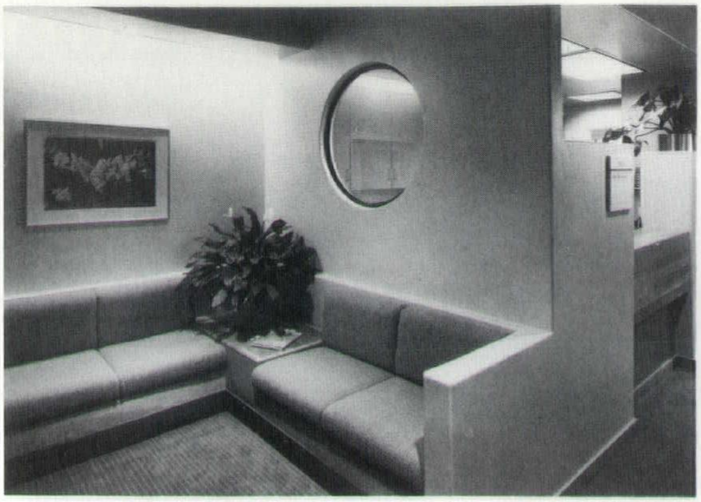
Straub's 7,827-square-foot clinic was designed to create a pleasant, homelike interior feeling, with soft, rounded forms, low partitions, banquettes, indirect lighting, soft colors in grey and mauve, accent walls in refreshing peach and accent trims in blue. Patients are led to the centrally located reception area by light sconces and a subtle use of color and design.

The exterior entry is a sunny garden plaza with a flowered trellis. Understated, but clearly identifiable from all points in the parking area, it provides relief in a sea of asphalt, a complement to the neighboring J.C. Penney store, and an attractive visual feature from the clinic. The mall entry is designed with two display cases that create an illusion of a traditional retail storefront. Color and materials were used to define the substance of the clinic, and define the image of Straub as a progressive, professional clinic.

Inviting and distinctive, both entries incorporate seating areas into the design. Patients who prefer to wait outside at either access, or shop while they wait, are given beepers to call them for their appointment.

Project
Straub Kaneohe Family Health Center

Architect
Media Five Limited




Soft, rounded forms, low partitions, banquettes and indirect lighting create a comfortable, restful, soothing ambiance.

Client
Straub Clinic & Hospital, Inc.

Contractor
Allied Builders System

Structural Engineer
Shigemura, Yamamoto, Lau & Associates, Inc.

Mechanical Engineer
Kenneth Thom Associates, Ltd.

Electrical Engineer
Douglas V. MacMahon, Ltd.

Landscape Architect
Media Five Limited

Civil Engineer
Sam O. Hirota, Inc.

Principal-in-Charge
Melvyn Y.K. Choy, AIA, RAIA

Project Manager
Ann N. Matsunami, AIA

Project Designer
Dennis S. Osato, AIA

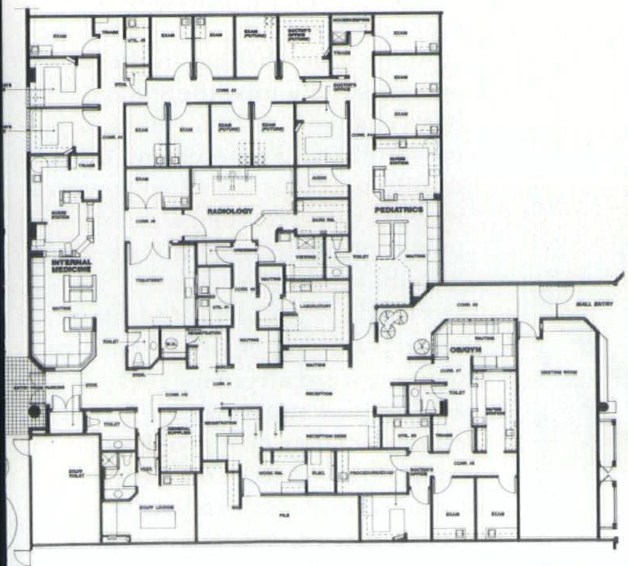
Job Captain
Dean H. Kitamura

Furnishings, Fixtures and Equipment Coordinator
Lauren C. Bosel, ASID

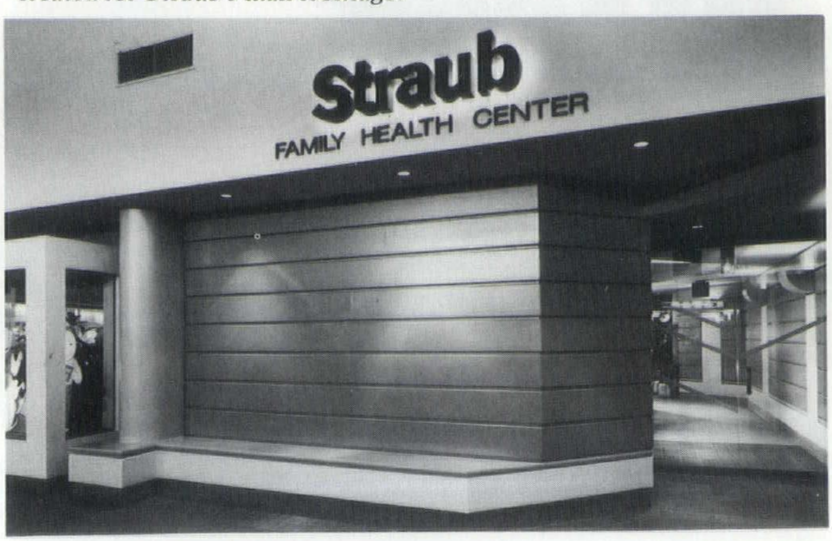
Project Developer
Nathan Mau, Straub Clinic & Hospital, Inc.

Operations Coordinator
Helen Aldred, Straub Clinic & Hospital, Inc.

In keeping with its location in a shopping center, a retail feeling was created for Straub's mall frontage.



FLOOR PLAN



ALTERNATE ENERGY: A Facilities Design Challenge

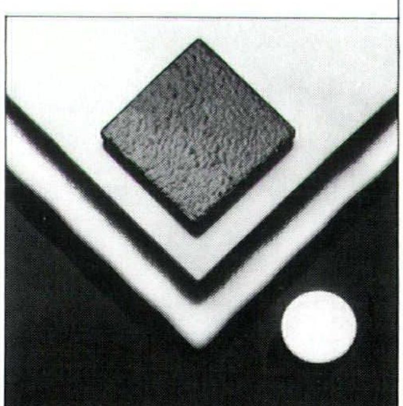
by Ralph A. Patterson
Thermal Power Company

The series of oil and energy crises in the mid- and late 70s has made profound changes in the way our country and the world looks at energy supply. Most American automobiles have gone from V-8 engines to smaller, more efficient 4-cylinder engines; a number of our building design theories have been changed drastically in view of the needs for conservation; there has been some controversy over the use of new fuel technologies (particularly nuclear-fueled power plants); and there have been some intensive efforts to develop alternate sources of energy to fuel our modern society.

The energy situation has not stabilized, as witnessed by the dramatic drop in oil prices in 1986, and we can look forward to at least several more years of concern for energy supply and prices as political and economic forces continue to move up and down. Nevertheless, there has been what seems to be a fundamental change, if not yet widespread, in our energy supply mix, particularly with electrical, and sometimes thermal, power plants.

We can look forward to a period of the building of decentralized, smaller power plants, which may use different fuels, or may use traditional fuels in different ways. Some of these employ alternate fuel technologies such as geothermal, woodchips, municipal waste recovery and, in the future, perhaps even ocean energy. There are new ways of using traditional fuels such as cogeneration, where a fuel (perhaps gas or oil) is burned in the regular way to produce either electricity or heat and the by-products of heat are either used directly or for the production of more electricity.

Along with changes in the energy supply mix, there have been changes in the location of power plants. When oil and other traditional fuels were inexpensive, it made sense to build massive power plants in industrial areas, distributing the resultant electricity throughout the city or countryside as required. With the move toward alternate energies and cogeneration, we will see more plants, smaller plants, in less centralized areas of our cities and even in residential and rural areas. Economies of scale are not quite so important as they once were, although they remain an important



factor in any future use of nuclear power plants. The newer plants need to be closer to their sources of fuel supply and can be located closer to the user, such as in smaller industrial parks, or even residential areas.

Decentralization, and the adoption of new technologies, brings forward a real need for the design and architectural community to consider a greater number of elements when power plants and their associated facilities are being designed. These elements include environmental considerations: power plants closer to centers of population must meet more stringent environmental regulations if they are not to be nuisances or, even worse, health hazards, in the communities where they are located.

Associated with environmental impacts on smaller communities, the appearance of power plants becomes important. Smaller power plants can blend visually with their surroundings. In some cases, they may be camouflaged or disguised to look like something they are not. In others, modern industrial design techniques have made them attractive additions to cityscapes. There is more work to be done in this area, presenting a challenge to the industrial designer and architect.

It is not envisioned that every small community or retail area will have its own power plant. But the trend will continue over the years as large-scale central power plants in many areas are de-emphasized and new fuels and technologies are used on an increasingly wider scale.

Another factor which decentralized, locally sited power plants must deal with is noise. Certain technologies produce noise which is objectionable in or near retail or business areas. Fortunately, a great deal of research and development in controlling or masking noise from industrial activities has been conducted over the past few decades. Techniques are available to reduce or eliminate objectionable noise from industrial processes, which would include smaller and more efficient power plants.

A fourth element in the design challenge is the need to site power plants with easy access to their fuel supply. When fuel storage or handling equipment was not a major consideration in the design, other than for operational requirements of the plant itself, fewer restrictions were placed on the designer. Now, when pipelines for geothermal steam, storage of woodchips or municipal refuse and even storage for supplies of natural gas or oil for cogeneration plants are required, the industrial designer must take into account these additional elements of plant design and location.

In the special case of municipal

(continued)

refuse plants such as Honolulu's H-Power, the fuel supply is part of a larger system of trash and garbage collection. The production of energy is only a valuable by-product of the entire system of efficient collection and disposal of the many tons of municipal waste produced by a city such as Honolulu every day of the year.

There are no easy answers to the challenges imposed by the changes taking place in energy, particularly in Hawaii, where it appears that energy growth will be strong. Our public utilities and industries have stated that they want to move away from an over-dependence on oil imported into the state for electrical power. If our energy supplies are to keep up with growing needs over the next few decades, the challenges to the industrial designer and architect need to be addressed now.

These challenges include the need to visually "hide" new types of energy production facilities where possible. An example would be the location of a woodchip or geothermal plant in a rural area. In many parts of the country it is possible to design an energy plant to look like the typical rural architecture, like a barn or other farm production facility. In Hawaii, however, there is no typical rural architectural style, with the possible exception of scattered sugar mills.

New energy production facilities must be good neighbors. The community "fit" of a decentralized energy production plant is more critical than it has been in the past where more isolated plants have been the norm.

Coupled with the need to blend in energy production facilities is the need to size facilities to accommodate later changes in environmental controls or even the substitution of other fuels. The designer must allow for a certain amount of expansion at each site for local growth of electrical power.

A further problem may be a need for new ideas in power transmission facilities. With decentralized plants, the need for high voltage distribution systems can be reduced somewhat. However, the need to locate substations and other distribution facilities in business and residential areas produces new problems. New technologies for transmission of energy, when they become economically feasible, need to be accommodated.

In summary, the changes brought about in world and national energy supply and economics have presented the industrial design and architectural communities with challenges which need to be addressed if our future energy needs are to be met in an acceptable manner. The design community has always been noted for its innovative approach to a number of problems. This is just the latest in a series of technological challenges which should be met head-on for the benefit of the entire community. HA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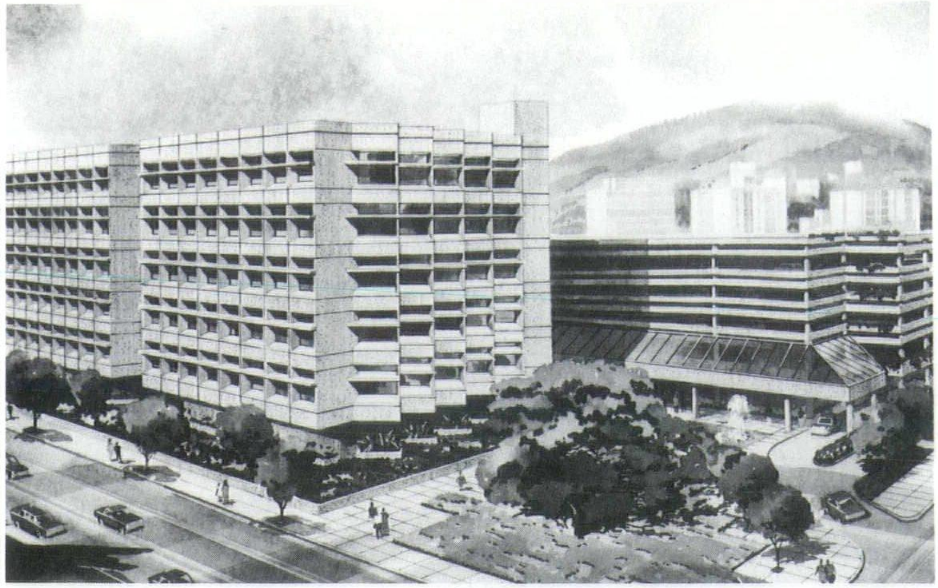
Design Strategies

(continued from page 16)

well they are integrated into the design, which is affected by several conditions.

1. *The designers' skill and understanding* are required in the application of these strategies.
2. *The owner's or developer's interest and/or commitment* to energy efficiency, which is frequently influenced by whether or not they pay their own utility bills, is necessary. If this commitment is not made in the very beginning of the project, there is little chance that the final building will be an energy-efficient one. The commitment must be both philosophical and financial.
3. *Teamwork* is required between the owner/developer, the architect and the rest of the design team *from the earliest stages of the design process.* Many of the most critical decisions which influence energy performance are made during the programming and schematic design stages of the project and require a total team effort to identify and develop the best possible alternatives for energy conservation.



Architects Hawaii designed effective exterior shading with daylight shelves on the perimeter of Kaiser Permanente's new Honolulu Clinic. Skylights provide light to interior spaces. Efficient air conditioning and lighting systems augment natural light and ventilation.

4. *Codes or criteria exist which mandate energy conservation,* such as Article 8 of our local building code or the criteria established by the DOD. The results of such

(continued on page 28)

Design Strategies

(continued from page 26)

mandates are not noticeable as demonstrated by the recent energy-efficient military projects and by projects seen in such states as California that have imposed very strict codes. The ultimate question is whether Hawaii should impose codes that establish more strict prescriptive and performance criteria, or whether we should establish energy performance guidelines that are recommended *and* encouraged with built-in incentives to developers and designers. TRB/Hawaii, along with Fred Kohloss, has recently been contracted to develop Whole Building Energy Targets (WBETS) for the state, and we will be soliciting input on this question from all segments of the building industry.

Buildings constructed today will be with us for decades to come and will be required to operate under ever-increasing electricity costs. The goal of energy conservation is not just to reduce our dependence on oil, but to reduce the overall demand for energy, so that our resources may be used to maintain and improve the quality of life for all in Hawaii. It means an increased level of efficiency by utilizing *all* of our resources wisely.

Building design can play a major role in this effort without sacrificing comfort, quality or aesthetics, and usually without affecting the economics of construction. Most important, it can lead to some very exciting, innovative and diverse Architecture (with a capital "A") that is appropriate to Hawaii, and that is sensitive to people's needs. It will require commitment, teamwork, knowledge and some bold new efforts on the part of the State of Hawaii, the City and County of Honolulu, developers and the design professionals of Hawaii. HA

H-Power

(continued from page 5)

will be a pre-engineered metal structure with prefinished metal siding and roofing. Primary shredder and baghouse areas will be enclosed, reinforced concrete chambers extending to the roof and equipped with explosion venting.

Maintenance, control and employee facilities will be quite complete. Maintenance facilities will include an electrical service area, control room, laboratory and a maintenance shop. For employees, locker and shower rooms, a first-aid area and a cafeteria will be provided.

The receiving and storage area will also be housed in a pre-engineered building, with the addition of 20-foot-high concrete push walls surrounding the storage area which assist in loading waste into bucket loaders.

The power generation section of the complex consists of boilers with electrostatic precipitators, a stack, and the turbo generator. Efforts were made to use compatible materials in these buildings to complement the architectural character of the site. The boiler enclosure will be covered by a steel frame attached to the "boiler steel." Pre-engineered metal siding with acoustical control will match the processing facility. The turbine area, with a control room for the power plant and distribution system, will be of the same construction as the boiler structure.

Ancillary facilities will include a scale house and an administration building. A scale house, containing equipment to control the weighing in and out of waste materials and residue, will be constructed of pre-engineered metal siding, again to match the processing building. The administration building will house facility management, a visitor reception area and an office for city management personnel. This building will have a steel frame, with siding and parapets of the same characteristics as the processing building, harmonizing with the whole.

Most of the building structures will be equipped with wet-type sprinkler fire protection systems, but special provisions are planned for certain areas. The shredder area, for example, will have a deluge system, and the processing area will have wall-mounted hose reels with portable dry chemical fire extinguishers. Fire hose racks will be provided for boiler areas.

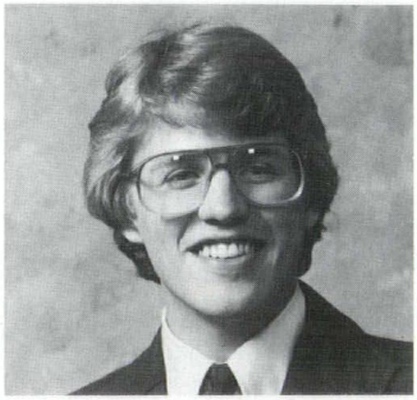
The Honolulu Resource Recovery Plant will incorporate the latest technology in energy recovery from municipal solid waste. **HA**

Architect: CE Maguire, Inc.
Civil/Structural Engineers: CE Maguire, Inc. SSFM Engineers, Inc.
Mechanical/Electrical Engineers: CE Maguire, Inc. Thermal Engineering Corp. Harold H. Miura, Inc.
Owner: City & County of Honolulu
Prime Contractor: Honolulu Resource Recovery Venture (A Partnership of Amfac, Inc. and Combustion Engineering Inc.)
Construction Contractor: Dillingham Construction

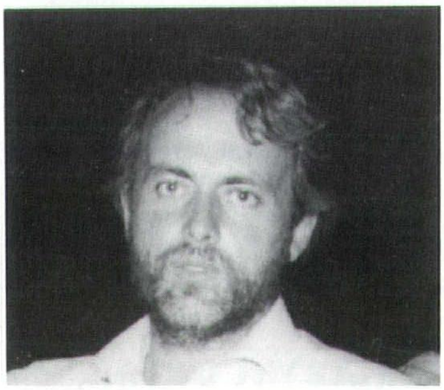
CAROL KLEPPIN, a professional affiliate at Trans Oceanic Architectural Design, received a BBA from Eastern Washington State University.

CORK E. BYE, AIA, is with Wimberly, Whisenand, Allison, Tong & Goo Architects. He has a B.S. in Architecture from Cal Poly, San Luis Obispo.

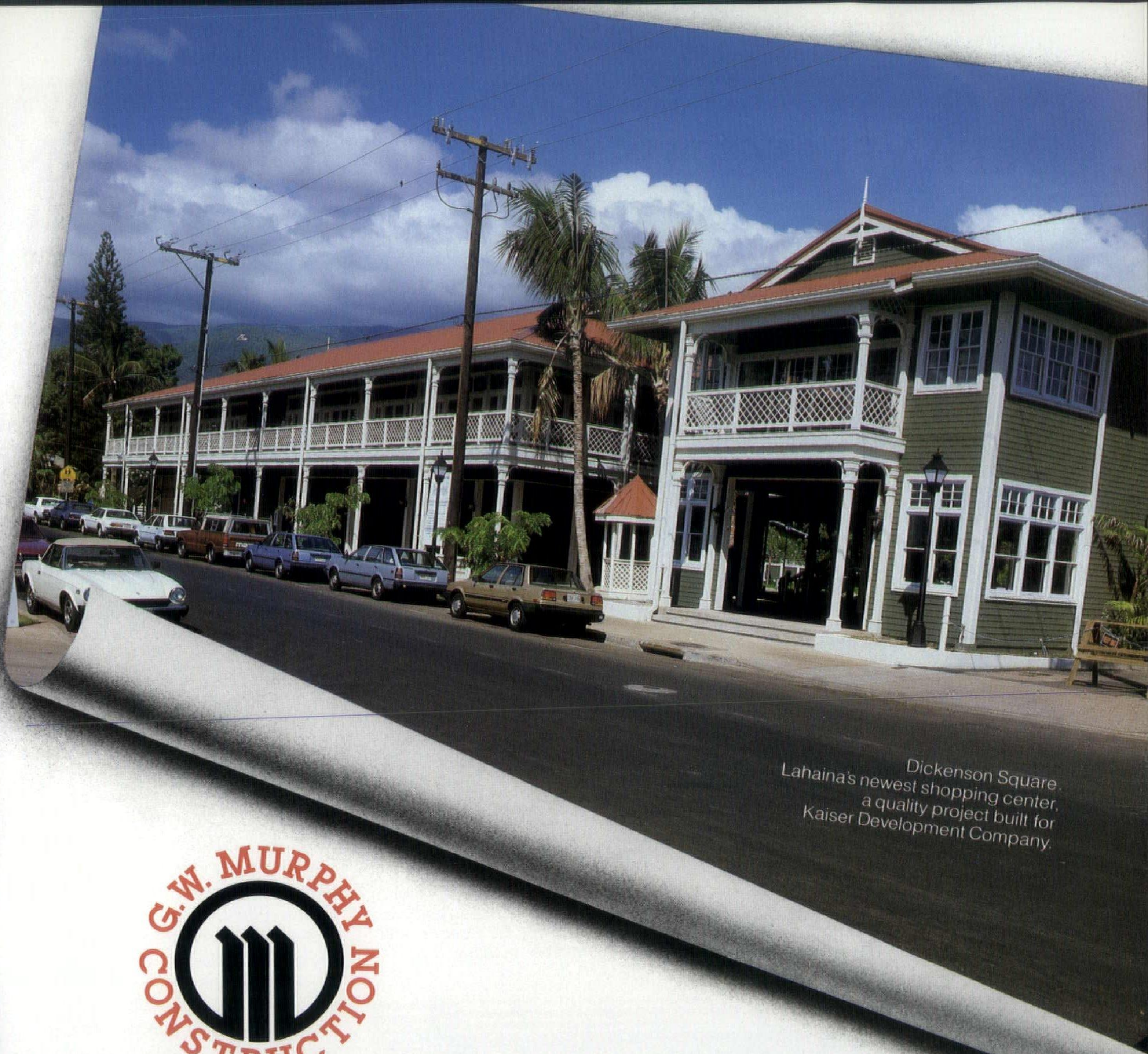
ERIC GUIMARAES CRISPIN, Associate Member, is assistant systems manager for CADD at Group 70 Architects. He received his Bachelor of Architecture from Faculdade de Arquitetura e Urbanismo de Santos, Universidade de Santos, in Sao Paulo, Brasil. He is a member of the Institudo Dos Arquitetos Do Brasil/Sao Paulo (IAB/SP).



MAX M. GUENTHER, Associate Member, is employed by Group 70 Architects. He received a Bachelor of Architecture (cum laude) from Kansas State University.



JOHN S. THIERSCH, Associate Member, is with Wimberly, Whisenand, Allison, Tong & Goo Architects. His Bachelor of Architecture is from Adelaide University in Australia.



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DELAYED FOCUS ON INTERIOR DESIGN

by Sheryl B. Seaman, AIA, Group 70

Several months ago, we at Group 70 formalized our interior design activities and I became partner in charge. After 15 years in architecture, it was an exciting new professional challenge, albeit one I had to lobby for with my partners.

Why? That's a question I am frequently asked. And at first glance, it may seem a strange career turn. After all, at the University of Hawaii years before, only a handful of women were studying architecture and virtually everyone assumed we were interested in interior design. I deeply resented the stereotyping at that time. And I vowed not to be pigeonholed into interior design projects.

Oriental influences provide a luxurious feeling for the master bedroom of a home on Hawaii Loa Ridge (above). Photo by Dana Edmunds. Bright illumination and koa, in traditional and contemporary detail, create an uplifting lobby for First Federal Savings and Loan's main office in their historic headquarters building (below). Photo by David Franzen.

Times change. And so do people, shaped as we are by our experiences. Since then, I've worked on everything from multi-use master-planning of land parcels over 6,000 acres, down to selection of napkin rings for a residential table. And I now know the value of each in life's large and small schemes.

Professionally, I have evolved into a total design advocate. This is due in part to my longtime association with a full-service architectural firm. At Group 70 we have been producing interiors for our clients all along, as a quiet adjunct to master-planning and building design. And in the few instances where the client has gone some other route for interior work, we have experienced a loss of control . . . and a dilution of the design concept. I perceive the work we do inside a structure as a three-dimensional spatial completion of the entire project.

Let's face it, standing on a street corner with time on our hands, we can all appreciate great architecture. But that is not where people live and work. How many hours a week do you stand on a street corner absorbing the elements? Most people do not typically relate to anything above eight feet. How many can clearly describe the finish trims or canopies that grace any downtown building's thirtieth floor?

(continued)

The day-to-day work experience is a function of the office interior. And when we go home at day's end, it is the *indoor* experience that remains the focus. Kathleen Saito and Barbara Hirai, both architects by training and associates with Group 70, agree that interior design allows them to practice their art at a level which most enhances people's day-to-day lives.

To me, interior design is the purest expression of the client's inner self, and it's an exciting professional quest to get in touch with that self...and then functionally and artistically translate it to reality. In restaurant and resort design, this quest can transport one through time and space to another land, to a fantasy life, to whatever you wish. In the work place, it can uplift the daily commercial experience, making one emotionally willing to be there five or six days a week. This is not something to be left to chance!

Interior design can be tricky. To do it right, I believe you must get to know your client well, sometimes right down to unstated desires and hidden agendas. In residential design, the viewpoints may be highly conflicting desires of the husband and the wife. In creating an office environment for several dozen people, you must move back and forth between the executive ego and the emotional needs of the staff. Great diplomacy is sometimes required to integrate all the elements—and still stay within budget.

Master-planning, my early professional love, is a slowly evolving process. It may take 20 or 30 years to see results. Working in architectural interiors speeds up the gratification while also implementing the client's ongoing master plan for success. And its impact on life is endless. As an architect in the '80s, I am enjoying the seeming contradiction of an expanding practice in a more focused field. **HA**

ALLIED TEAMWORK:

performs major surgery on a well-known medical clinic

In 1966, when Kaneohe's Kaiser Koolau Medical Clinic was built, it was state-of-the-art. But times changed quickly, and the function of medical facilities changed with them. Twenty years later, the clinic had new goals and needed a new design image as a center for wellness as well as illness. They also needed greater visibility from the road.

Quickly and professionally, Allied complied—with a new high-sloping copper roof to increase street presence, a new multi-purpose seminar room, and a compelling interior atmosphere of warm colors and soft lighting.

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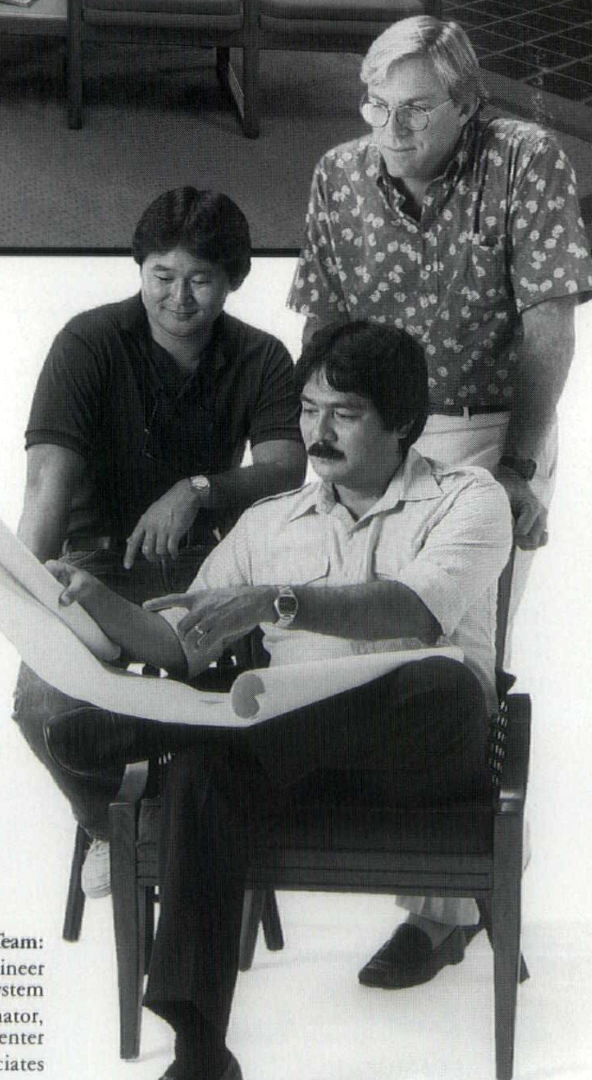


The Team:
Ed Sakai (L), Project Engineer
Allied Builders System
Roy Sesoko, Facilities Project Coordinator,
Kaiser Medical Center
Philip White, Architect, White & Associates

Allied BUILDERS SYSTEM

1717 Akahi Street, Honolulu, Hawaii 96819
Telephone: 847-3763

Teamwork. Our motto. Our method.

NEWS

Parade of Homes Sept. 13-28

The 30th Annual Parade of Homes, with 19 entries on Oahu, two on the Big Island, and one on Maui, gets underway Saturday, Sept. 13, and continues for three weekends through Sunday, Sept. 28. Open houses will be held from 10 a.m. to 5 p.m. each Saturday and Sunday.

The major annual event of Hawaii's building and real estate industries, the Parade of Homes showcases the latest trends and developments in home building, remodeling and interior design. Sponsoring organizations are the Building Industry Association of Hawaii and the Honolulu Board of Realtors.

The 1986 Parade features 13 single-family homes, which include custom, spec, remodeled, and subdivision detached residences, and nine multifamily homes, which include townhouse, apartment-to-condominium conversion, and high-rise residences, ranging in price from $49,500 to $1,250,000.

NEW PRODUCTS

Expanded Line of Ceramic Tile

International Tile Design, Inc. has been awarded the exclusive distributor rights in Hawaii for United Imports, a company that maintains channels of distribution in the U.S. for tile manufacturers located in the Far East.

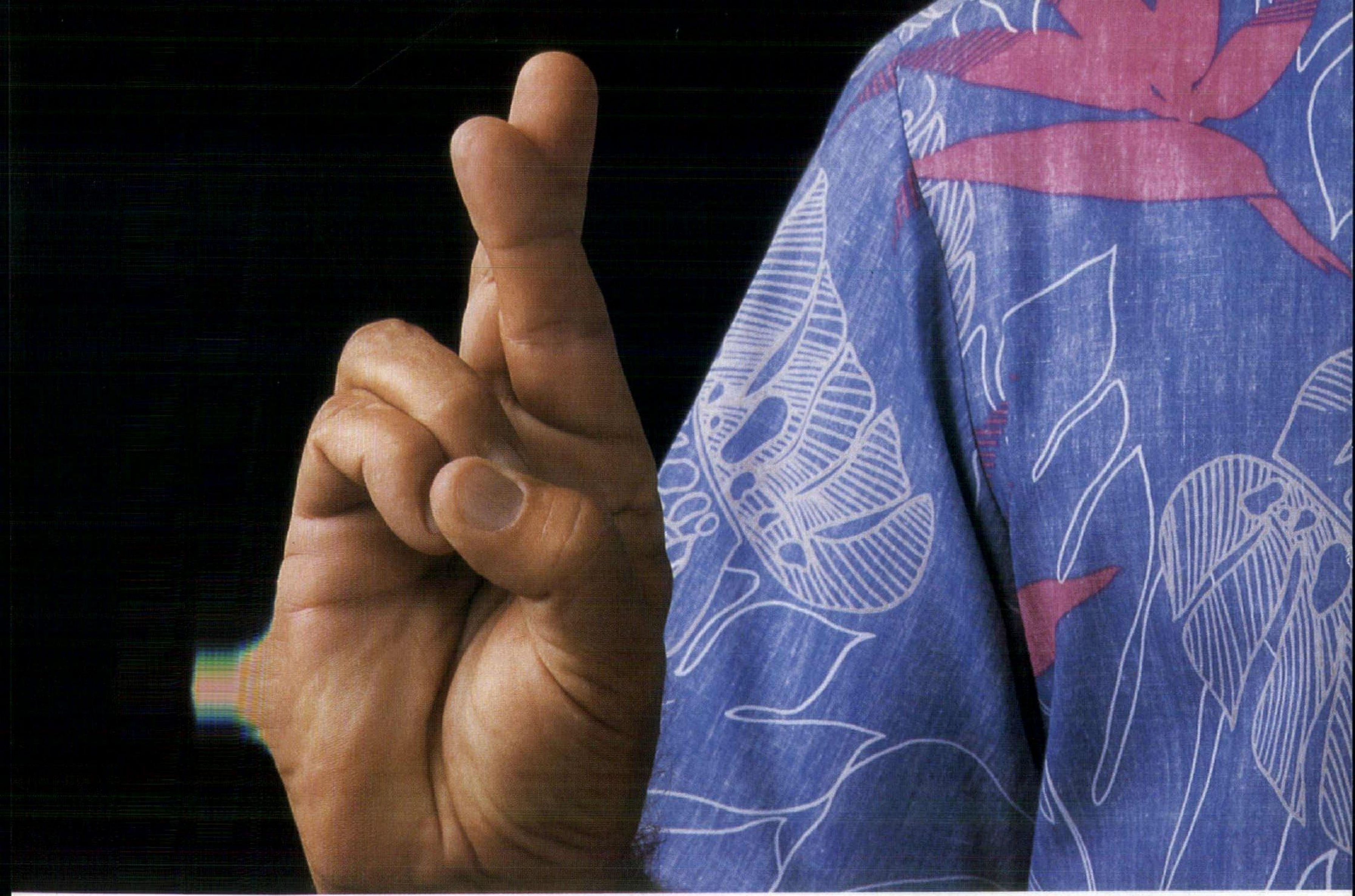
International Tile Design, Inc., recently received a shipment of 30,000 square feet of the newly developed Royal Pacific Series ceramic tile. The Royal Pacific Series is an eight-inch by eight-inch tile designed for both indoor and outdoor environments. The tile is available in six colors. It is the first of many new product lines International Tile Design plans to bring to Hawaii through United Imports.

Environmentally Safe Wood Preservative

Honolulu Wood Treating Co., Ltd. has introduced a new preservative and treatment, Tribucide II®, a clear, environmentally safe product for interior or exterior above-ground treatment.

Tribucide II® is being marketed as the safest, most advanced, and most effective wood treatment available in Hawaii. Tests have proven that the ingredients are effective against fungus, termites and other wood-destroying insects under tropical conditions, and are safe to use in both industrial and home applications. The new wood treatment is colorless, odorless and non-corrosive to carbon steel and stainless steel.

Services Directory



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