Hawaii Pacific Architecture

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Marshalling in On retailing...

"When we were first coming to Hawaii, we heard that interior improvements would cost double, take twice as long and the quality would be half of what we were used to..."

That's the way Marshalls' Project Manager Robert Lambert remembers it a few years ago. But the Boston based mega-retailer was in for a big surprise when Allied Builders System was hired to construct its Pearl City store.

"We thought it might be a nightmare, instead the work went like a dream," Lambert says. Several Marshalls' stores here later, with Allied Builders as negotiated contractor, Lambert's superlatives remain glowing: "Great quality, cost-efficient workmanship, excellent communications, thorough and caring crews. We've either opened early or right on schedule."

Architect Daniel Uesugi,AIA, agrees, adding: "Allied's people cut to the work. The team spirit is tremendous. And when they say they're finished, they are finished. The punch list is nearly negligible."

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CONTENTS

BRINGING THE OUTSIDE IN

SPECIAL FEATURE

WINDOWS AND SKYLIGHTS

DEPARTMENTS

IN THIS ISSUE ...

Hawaii Pacific Architecture focuses on bringing the outside in. Ted Garduque, AIA, discusses integrating indoor and outdoor spaces in restaurants, hotels and clubs, while Jason Umemoto talks about how indoor environments are changed when landscaping is invited inside. Work by William Kerry Hill, one of the Kenneth F. Brown Asia Pacific Culture and Architecture Design Awards winners, is featured and the winners of the Hawaii Chapter of the American Society of Landscape Architects Design Excellence Awards are highlighted. This month's cover is of the Beaufort, a luxury hotel in Singapore, designed by Kerry Hill Architects. The Hawaiian Tapa used on the cover and throughout the magazine is courtesy of Bishop Museum.

24 Kerry Hill Architects

26 ASLA Design Awards

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Integrating indoor, outdoor spaces

Restaurants, Hotels, Clubs

by Ted Garduque, AIA

In Hawaii, the mild climatic environment provides many opportunities for residents and visitors to enjoy outdoor activities and nature. Certainly, Hawaii's tropical climate is conducive to the merging of indoor and outdoor spaces in homes and public and private buildings.

The advantages of incorporating nature in these designs are numerous. One advantage is the physical and emotional well-being of inhabitants of the structures. A connection to nature, even in a passive way, presents a remembrance of the land in which we live. Harmony and tranquillity is a frequent result of integrated indoor-outdoor spaces.

Visitors to Hawaii have great expectations of the island environment. They expect and should have as many occasions to experience paradise in every venue of their visit. This especially applies to designs for restaurant and hospitality facilities. Exposure to the forces of nature such as the cooling trade winds,

The arbor of the Outrigger Canoe Club in Waikiki, designed by Vladimir Ossipoff and Associates and Wimberly Whisenhand Allison & Tong, provides a relaxing atmosphere in which to dine. Photo courtesy of Augie Salbosa

warming sun, healing ocean, soft rain and fragrances from tropical blossoms all are part of the reason to visit and live in Hawaii.

In restaurants, most people prefer a seat with a view. And, the closer that view is integrated with nature or the outside, the more desirable the seat becomes. In the hospitality or club (leisure) business, this same line of thought applies to selection of hotel guest rooms or meeting rooms. In fact, the more desirable the view or environment, the more marketable the space becomes. Thus, good design and desirable environments make good economic sense.

Successful indoor-outdoor spaces create more than a merging of spaces, but identify and celebrate *where* the space is, giving the design a sense of *place.* A well-designed space incorporates more than a good view; it acknowledges the outdoors or nature in context of place. Sensitivity and response to place become apparent by drawing upon and recognizing unique features from the immediate environment such as the mountains, shoreline, tropical forest, an urban location or an ethnic neighborhood. This type of design approach does a great deal to describe life in Hawaii, hopefully creating a medium for public cultural and historical education.

If one is able to blend a cultural or historical reference into the design, the resulting space becomes even more meaningful and special for the user. This insightful use of space is what separates an outstanding solution from competent but ordinary architecture.

Designs that blur the edges between indoor and outdoor areas tend to be successful because hard edges and full enclosures disappear, leaving a sense of informality and easy transition to nature. In other words, integrated indoor-outdoor spaces seek to embrace nature and the outside rather than repel by enclosure.

This is a rather courageous belief and state of mind. To design an open-flowing space means a lifestyle and business choice that a client must adopt. Open spaces often mean tolerating the elements of weather. The choice of *living with and within nature* means enduring changes in humidity, temperature, possible breach of security, vociferous birds and traffic noise. Therefore, for the client, not all solutions are suitable for a full and open design.

The lush plantings at the Outrigger Canoe Club entrance create the image of a tropical oasis.
Photo courtesy of Augie Salbosa

Openness of design also means finding passive ways of cooling, since mechanical cooling of large open spaces can be wasteful and/or expensive. Air flow from the trade winds and Kona winds becomes an important design consideration. The solution to this problem is wind protection; too much wind can destroy a nice evening out on the lanai or blow out candles that grace a table.

Daylight is an important asset to design. There is nothing more soothing or comfortable than interior spaces which are lit naturally. Not only is it healthier for interior plant materials, but the use of daylight can reduce the need for artificial light, therefore lowering energy costs. Balanced daylight can overcome glare. Since glare is caused by the differential between a dominant light source and a contrasting darker environment, it helps to introduce natural light to equalize the difference.

Daylight can be directed, bounced or diffused to soften deep spaces, particularly back walls. A small aperture in the roof or wall which allows daylight in is all that is needed to overcome problems of darkness and glare, while preventing solar heat gain.

As in incorporating the design of passive air cooling, natural lighting has repercussions. Fabrics, textiles, artwork and other light-sensitive materials need to be protected against the ultraviolet rays and other harm-

ful spectrums of light. The designer might solve this problem by using more inert materials near severe light exposure. Stone, clay, terra cotta and concrete, for example, are inert and do not deteriorate rapidly in the presence of light.

Another consideration is orientation to the sun to mitigate heat gain and glare. Ironically, on most of the Hawaiian Islands where there is significant commercial development, the primary views face *makai* or toward the ocean, usually in a southerly and western direction. For the designer, this means studying sun angles in relation to views and table layout. Direct sunlight and glare compete with the desire for view. Architectural modifiers such as awnings, louvers, window treatments, mylar films and tinted glass have been traditional solutions to protect doors, windows and other openings.

The Pacific Club in Honolulu, designed by Vladimir Ossipoff and Associates, Merrill, Sims and Roerig and Harry W. Seckel, incorporates trees and other plantings throughout, offering comfortable indoor and outdoor dining areas. Photo by Augie Salbosa

Currently, variations of sun cloth materials are available to designers. This fabric-like mesh allows view, but also can reduce as much as 50 percent or more of the sun's glare and reflection. Yet other mediums offer liquid-crystal technology in the glazing, a chemical-electrical mechanism which reduces incoming light.

While few would disagree that designing a restaurant which incorporates nature is a noble idea for Hawaii, a whole host of technological, building and health code issues need to be considered. Some considerations include:

- Selection of materials and finishes which are durable enough to withstand the elements, including salt air. Any material placed near a structure's exterior must be able to withstand exposure to water. On horizontal surfaces, this means consideration for a safe coefficient of friction. Plants may have automatic irrigation which can spray onto finishes and furnishings.
- Similarly, furnishings and interior features, including artwork, should be selected on the basis of exterior exposure. Some clients even consider heavyweight flatware and table settings to counteract sudden gusts of wind. A1so, some clients prefer furnishings which can be "hosed" off at the end of the day, particularly in locations of high salt or dust content.
- Electrical and mechanical fixtures, particularly lighting fixtures, should be rated for exterior exposure. Carefully select light fixtures, even if you think the fixtures are in an interior zone. Wind-blown moisture can affect the fixtures. Salt has a devastating affect on metal fixtures, including aluminum housing. Air-conditioning diffusers used in conjunction with open designs "sweat" or produce condensation which may drip on customers, or a walkway area, making it slippery.
- Carefully review the health code and the interpretation of enclosure protection of food service, food service equipment and openness to the kitchen from the standpoint of vermin, bird and insect protection.
- Consider the need for security and discuss with the client possible solutions. If the client prefers a truly open design without the use of moveable doors, windows or screens, motion detectors, video surveillance or security guards may be security alternatives.
- Consider generous roofs and eaves for rain protection as much as for sun protection. To a restaurateur, every seat is a source of income. If a seat is out of commission due to inclement weather, the economic margin is affected. For this occasion, try to design an open but flexible protected space which can he sheltered from the wind and rain.

There are many restaurant, club and hotel projects in Hawaii that integrate indoor and outdoor spaces successfully. Encouragingly, many

The Pacific Club integrates indoor and outdoor spaces, creating a relaxed atmosphere for conversation. Photo by Augie Salbosa

new projects are beginning to demonstrate the attributes of incorporating nature. The following projects are distinctive and have demonstrated a timeless appeal.

The Outrigger Canoe Club, 1963, designed by Vladimir Ossipoff and Associates and Wimberly Whisenhand Allison & Tong is a notable project. The intelligent use of durable and natural materials have withstood the test of time. The structure appears to have aged gracefully. The sensitive use of daylight along garden window walls and walkways, the anticipation of a rewarding view as you transition through the entry and arrival spaces make this place a premier example of embracing nature. The superb orientation of the structure to the ocean is appropriate and meaningful for this organization.

Yet another example is the original main building at the Halekulani Hotel, 1931, originally designed by C.W. Dickey and restored in 1983 by Killingsworth, Stricker and Lindgren. This classic design is indicative of the spirit of Old Hawaii, yet interprets the new use in a contemporary way. The spaces are gracious and inviting, creating a sense of *'E Komo Mai* (welcome). There also is reference to the adjacent open spaces, courtyards and the ocean. The skillful integration of interior materials, artwork and furnishings present a refined but informal setting.

The Pacific Club, 1961, designed by Vladimir Ossipoff and Associates, Merrill, Sims and Roerig and Harry W. Seckel, is an outstanding example of a building in an urban environment which achieves a sense of separation from the city and traffic. While the outer perimeter of the club repels the harsher realities of life, the internal environment is quite open and tranquil. At times, it is difficult to distinguish if one is inside or outside. The simplicity of ceiling planes, elegant and slender proportions of some rooms and the adjacency to the courtyard spaces are comforting. Almost all public rooms have access to natural daylight and the outdoors.

Many hotels have realized the benefits of bringing the outdoors in, especially at the porte-cochere and entry. The immediate sense of nature is part of the expectation upon arrival of guests. Projects such as the Four Seasons, Wailea, Maui and the Mauna Kea Beach Resort on the Big Island are examples of a conscious decision to open the main public spaces and corridors to the exterior. The journey to your room becomes a pleasant if not memorable adventure.

The blending of indoor-outdoor spaces in buildings is one distinguishing hallmark of architecture relevant to the Hawaiian Islands. Buildings which open up to nature offer many benefits including the potential for cleaner air quality. However, a most compelling reason to encourage integrated indoor-outdoor design is the unspoken sensory connection to the land or place where we live.

↔ *Ted Garduque, AIA, principal and founder of Garduque Architects, is currently a director for the AIA Hawaii State Council and a past president of the AIA Honolulu Chapter. A designer of many project types, large and small, Garduque's preferred projects are hospitality- and leisure-related.*

Top, the plantings around the patio dining area of the Royal Hawaiian Shopping Center provide a pleasant environment in which to dine. Bottom, natural light enters the Hyatt Regency Waikiki atrium, adding to the outdoor feeling of the area.

Photos by Jason Umemoto

Plants improve aesthetics, air quality

Inviting the Landscape Inside

by Jason Umemoto

The more we learn about human needs and desires, the more we begin to understand that people do not wish to be completely separated from their natural surroundings. In Hawaii, our relation to the natural world is inherent and to deny that bond is to lose the essence of participating in the island environment.

By designing interior landscaped areas, people can enjoy a small reminder of nature. It can be utilized to help portray a theme or coordinate an interior architectural style with the exterior design. However, it is frequently the designed landscape that is used to help us relate the natural world to the realm of the built environment. The design process often climaxes in situations where the program includes the successful integration of interior/exterior transitions.

Probably the most compelling reason to bring the landscape inside the building is one

of aesthetics. From residential to commercial to resort projects, interior landscaped spaces have not only proven to be very successful, but have become heavily marketed features. The Mirage Hotel and Casino in Las Vegas, designed by Lifescapes Inc. of Newport Beach, Calif., has become a landmark in the entertainment and gaming industry. It boasts a magnificent tropical rain forest atrium, which anchors its casino and lobby area.

The atrium occupies more than 1,700 square feet of floor space and has live and artificial plant material, artificial rock work, waterfalls, a misting system and dramatic lighting effects to create a surreal tropical rain forest environment. Integrated into the design of the atrium space is the ability to draw heat and smoke away from the casino floor. Thus, while the atrium is a large tourist attraction and a major theme element, it maintains a function as a filtering system for the casino's air circulation system.

The Royal Hawaiian Shopping Center atrium, designed by Belt Collins Hawaii, like many malls across the country, strives to aesthetically improve the mall environment by incorporating trees, palms and lush plant material. This was done to recreate the main street setting and provide a pleasant environment in which to shop or dine.

The Hyatt Regency Hotel in Waikiki, also designed by Belt Collins Hawaii, uses planting areas with tropical foliage and palms to create a colorfully lush environment. The planting areas serve to visually arrest the guests' views down a long axis of the common area.

There are many aspects to consider when designing an interior planting scheme. Two of the most significant factors in creating a successful landscape are proper acclimatization and adequate lighting. Plants that are installed in interior settings will go through a period of shock without an acclimatization program.

The interior environments that plants enter often are subjected to air conditioning, a dramatic drop in the humidity level and lower light levels. Many plants will drop leaves or wilt during this period before becoming comfortable with the new surroundings. This stress period can be avoided by setting up similar conditions for the plant to acclimatize prior to installation. Plants can then be installed with no stress period and with proper maintenance continue to look healthy for months.

Trees, palms and lush plant material are incorporated into the Royal Hawaiian Shopping Center atrium, designed by Belt Collins Hawaii.

The best interior planting condition is where the planting area receives filtered natural sunlight through glass or screen material. In artificial light situations, it is vital to ensure that proper lighting levels will be available for plant material to maintain healthy appearances. Even though plant material can be rotated, the number of rotations can be significantly minimized with proper light levels which generally lead to significant economic savings.

Most foliage plants require approximately 100 to 200 footcandles of light for 16 hours a day to remain healthy and from approximately 200 to 400 footcandles for growth to initiate. Lighting levels that are lower than the maintenance requirement will cause plants to suffer in various ways from losing leaf color or dropping leaves to eventual death. From a design standpoint, lighting levels in the maintenance, not growth level are generally more desirable.

As a comparison, office conference rooms usually have a light level of 30 footcandles,

merchandise areas in retail stores tend to be 50 to 100 footcandles and merchandise displays are usually 150 to 300 footcandles. A sunny day can register between 7,500 and 10,000 footcandles. Noticeably, interior planting areas clearly have lower lighting levels than exterior environments, but require somewhat brighter lighting conditions than what is normally found in interior spaces. Because of this, it is critical that lighting design be coordinated between the landscape architect, architect and electrical engineer to ensure that the best intents of an interior landscaped area are not diminished by overlooking the needs of the plants.

Sometimes, especially in retrofit or renovation projects, low artificial lighting levels are all that is available. Rather than turning to the expensive option of frequent rotations or foregoing the idea of interior planting altogether due to maintenance costs, there are several options to consider.

Preserved plant material and silk plant material have recently become very accessible for even very small-scale projects. The high-end silk plant manufacturers have been producing high-quality products that generally get double takes from people even if they realize the material is artificial. The clear advantage of silk material to the designer is the ease of specifying colors and types of materials. The material can be shipped anywhere in the world and is easy to store if necessary.

Preserved plant material attempts to combine the best of both worlds. Like silks, it is immune to irrigation needs and is easily specified for heights and sizes that can be tailor-made for any interior space. The material does not grow, so the optimum landscape appearance can be enjoyed from opening day. This material also can be shipped anywhere in the world. The main difference is that preserved material was actually once living. The palm fronds that you see are real palm fronds and only the discerning eye will be able to tell the difference. Many resorts, hotels and shopping malls have been substituting preserved plant material for their real material as it dies or succumbs to disease.

One misconception with the use of silk or preserved plant material is that it is easier and cheaper to maintain than live plants. The maintenance cost of tending to live and artificial material is generally the same and should not be used as a reason to use live or artificial material. Where live material requires a crew to water, remove dead materials, spray or check for pests and diseases and rotate material, the maintenance crew for the artificial material must dust the plant material and periodically exchange plants that have dulled due to sun and light exposure.

The lush foliage in the Hyatt Regency Waikiki atrium, designed by Belt Collins Hawaii, creates a tropical environment for guests to enjoy.

At many interior installations, a mix of live and artificial plant material is used. This arrangement helps bring more realism to the artificial plants. A common ratio for this mixture is 75 percent live material to 25 percent artificial material.

One aspect of live plants that artificial material can never replace is the ability to recycle and clean the air. While it is well-known that plants recycle carbon dioxide and release oxygen, it has been proven scientifically that plants purify the air.

Studies by William Wolverton, Ph.D., for NASA have shown that many tropical foliage plants absorb certain toxic chemicals that are commonly found in homes and workplaces. Formaldehyde, benzene, and trichloroethylene are three of the common chemicals emitted by everyday items such as: paint, plastics, detergents, carpeting, furniture, household cleaners, foam insulation and synthetic fibers but are readily absorbed by plants.

Wolverton's laboratory studies showed test plants removed more than 85 percent of indoor air pollutants within a normal day. The research in this area continues, but it appears that there are many additional valuable qualities of plants, which can be marketed for the inclusion of plant material within interior spaces.

One of our design goals should be to attempt to allow the end user to participate and enjoy spaces in a greater awareness of sense of place. If this is to be attained, Hawaii, like so many other places, cannot detach its character from the landscape and environment in which it exist.

↔ *Jason Umemoto, a licensed landscape architect, is currently employed at Belt Collins Hawaii. While employed in California, Umemoto was involved with the design and project management of atriums in various locations including Louisiana, Mississippi, Nevada and Thailand.*

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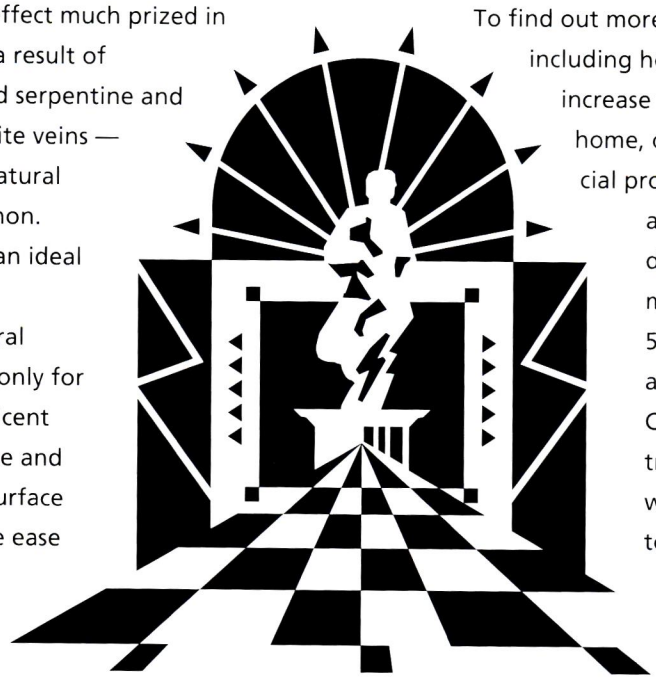
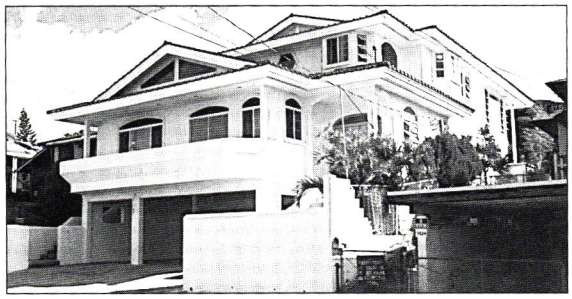
Other stones that yield attractive surfaces when polished also are classified under the general term of marble. This includes onyx and travertine, for example, which are formed from marine deposits in fresh water such as rivers, lakes and hot springs. Outstanding examples of the creative use of marble and related stones exist throughout Hawaii, from treasured edifices dating back to the islands' early architectural history to contemporary structures.



To find out more about marble, including how it may help increase the value of your home, office or commercial project, contact your architect or interior designer. You also may phone 591-8466 to receive a listing of Union Ceramic Tile Contractors in Hawaii who will be able to assist you.



Super houses push the limits of the building envelope.

Coping With the High Cost of Housing

by Nick Huddleston, AIA

Coming soon to a house lot near you..."Super houses" are a growing phenomenon in Hawaii. Landowners have discovered that you can build as much living space on a single-family residential lot as you can in many apartment districts.

Custom and a desire to fit in with the neighborhood used to produce single-family homes in the 1,500- to 2,000-square-foot range. Not any more. Real family income has dropped, home prices have skyrocketed and hard-pressed home owners are starting to cash in on the residential floor area bonus. Super houses are the result.

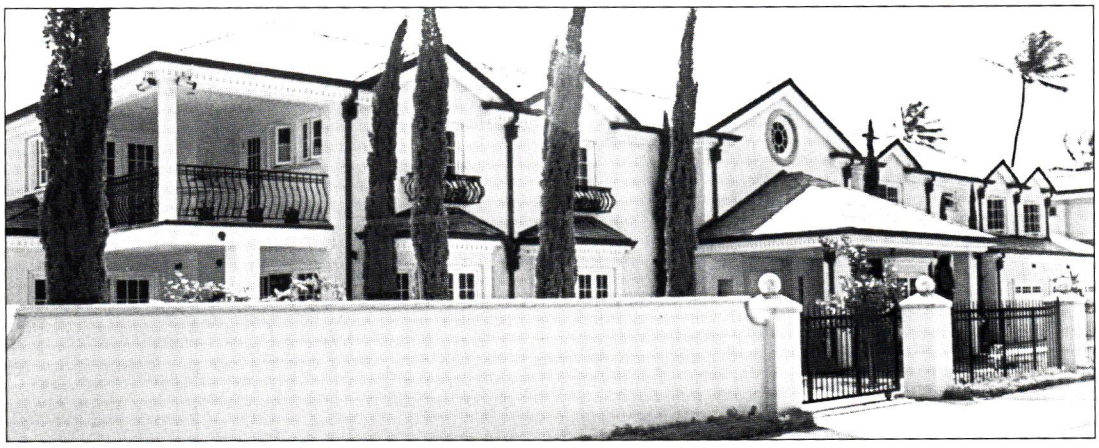
Some very large homes are built to flaunt the owner's wealth. But, many serve the housing needs of extended families and large groups with limited means. These new bulky structures rapidly and irrevocably change the character of neighborhoods, causing community outrage and suspicions that the builders, architects and owners involved are "cheating" and breaking the rules.

It's not a simple problem. Ask typical home owners how they feel about tighter limits on what they can do with their land and the answer is loud and clear. Ask them how they would feel about having a medium- to high-density apartment development on either side of their single-family home and the answer changes.

The issue is coping, finding new ways to deal with the changing pressures and conditions of the times. What are architects and government doing to help? Architects are fond of exploring alternative technologies, prefabricated building systems and energy-efficient designs. Some good work has been done in these areas ranging from Jim Pearson's energy house of 20 years ago to the "sustainable housing" movements of today.

Professional builders are constantly on the lookout for ways to improve efficiency and cut costs in producing marketable housing. They are quite knowledgeable about alternative technologies, but less then enthusiastic about straying too far from the successful formulas of the past.

Neighborhoods where the super house phenomenon is well-developed and serving a useful social need are good candidates for "upzoning."
Photos by Nick Huddleston



What about government? By the time this article is published the Department of Land Utilization may have taken steps to close the density loophole in the residential zoning ordinance. However, it is unlikely that DLU will concur-

rently liberalize the floor area ratio permitted on land zoned for apartment use, or rezone selected residential areas to apartment classifications to meet the growing need for affordable living units.

There is a rule on the books that *"ohana"* housing must be occupied by a family member, and a recent regulation requires *ohana* units to be attached to or within the primary structure. Outlawing the construction of wet bars in single-family residences has been discussed because these can easily be turned into second kitchens.

The median-income family in Hawaii can better afford an apartment or a condominium than a single-family home, and with shrinking family sizes these smaller accommodations may meet family needs. Most people have to make do with existing housing and many are finding that they must join forces with friends and relatives to be able to afford any housing at all.

On the positive side, architects are becoming more involved with issues of urban design and community-based planning. The AIA Hawaii State Council has adopted housing and urban design guidelines that recognize the need for smaller homes, alternative transportation options, a mixture of services, work places and residential building types and smaller outlays for automobile-related infrastructure.

DLU and the Building Department of the City and County of Honolulu, under the direction of Mayor Jeremy Harris, have begun to streamline and rationalize building permit processes and ordinances. Also the departments that regulate construction in Honolulu are becoming more aware and more concerned about the impact of their regulations on the shape of development. A particular case in point is the current concern about the super house phenomenon.

Should super houses be allowed? Maybe yes, maybe no. Single-family residential neighborhoods should be

developed at lower densities than apartment districts. Reductions in the density allowed in single-family residential areas should, probably, be accompanied by increases in density in some apartment areas and by a selective rezoning of some single-family neighborhoods for apartment use.

Single-family neighborhoods located along major transit routes or where the super house phenomenon is well-developed and serving a useful social need are good candidates for "upzoning." Neighborhoods that have been stable for many years can be quickly transformed by significant changes in housing scale and protection of existing patterns of development may be appropriate.

Architects can provide valuable service by redesigning existing housing and neighborhoods to better serve the changing needs of residents, with a greater diversity of housing and transit options.

Government agencies need to expand their analysis of the consequences of regulations and put more effort into helping people cope with the high cost of housing and less into trying to frustrate the attempts of working people to survive in a housing market that has outstripped their means.

We need to get rid of nonsensical and unenforceable regulations such as the requirements that *ohana* housing must be attached to the main house and occupied by family members. We should give serious consideration to legalizing accessory apartments in single-family neighborhoods, either as small, free-standing structures or as units within the home.

We cannot really control the diversity of individuals living in a residence, and it is difficult to control the interior configuration of homes. We can, however, protect the character of existing neighborhoods if we control building volume and if we act appropriately and quickly.

↔ *Nick Huddleston, AIA, is a Honolulu architect in independent practice.*

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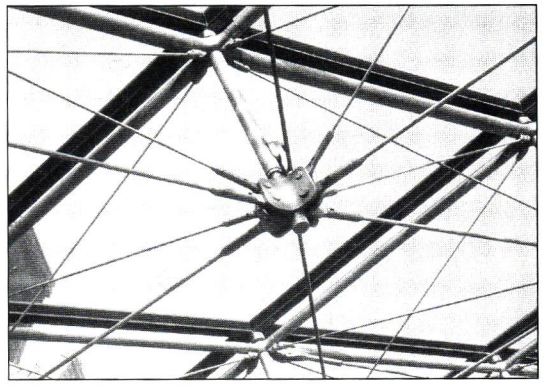
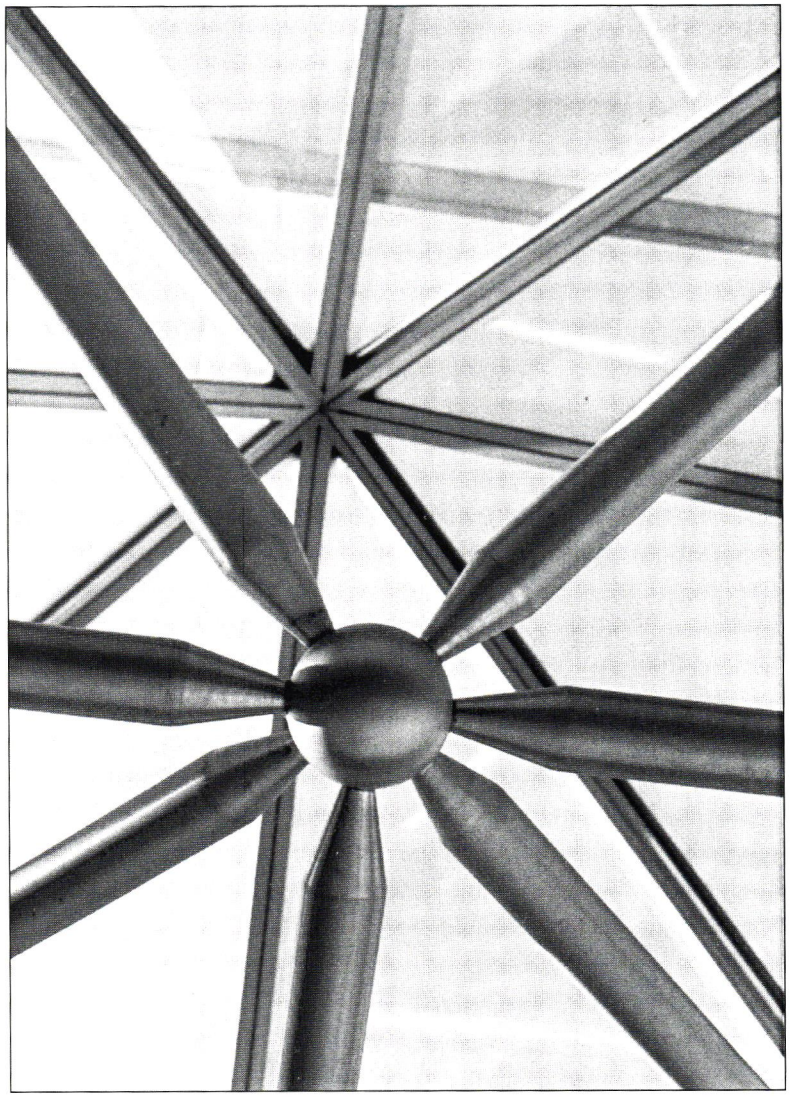
Space Frames and Skylights

by Andrew C. Yanoviak, AIA



Right, an interior view of the nodal hub and glazing system at the *Louvre* museum in Paris. Details of this space frame and skylight, designed by I.M. Pei, FAIA, below, can be seen at the John F. Kennedy Memorial Library in Boston.



All five "Masters of Modern Architecture"—Gropius, Le Corbusier, Mies van der Rohe, Aalto and Frank Lloyd Wright—had distinct philosophical and stylistic differences but they all agreed on one significant underlying architectural design principle. The "interpenetration of interior and exterior spaces"—the fundamental inherent desire to "bring the outdoors in."

Technological advances in building materials such as reinforced and prestressed concrete with steel rods and cables, rolled steel shapes with longer structural spans over cast and wrought iron and large mullionless commercial storefront glass and glazing systems, as well as resilient building seals and sealants facilitated the combined structural-functional-aesthetic and philosophical movement toward "flowing indoor-outdoor" spaces. Of course, there were simultaneous developments in long span factory and warehouse industrial "windowless" architecture which also served as timely sources of design inspiration.

Other relevant historical precedents included "leaping and soaring" bridges and arches engineered for vehicular traffic such as railroad trestles and terminals. However, Londonian landscape architect Joseph Paxton pointed building architecture in a new direction in 1851 with the creation of his prefabricated, demountable, recyclable Crystal Palace shopping arcade with interior trees and landscaping. Paxton is often cited by architects and engineers as the fundamental conceptual originator of space frames and skylights in modern architecture.

In 1889 engineer Alexandre Gustave Eiffel

created the thousand-foot-high space frame tower in Paris named in his honor, which utilized the latticed Phoenix space columns and space beams in a triangulated truss-like fashion. It continues to be a major worldwide tourist attraction. Eiffel also created the vertical space frame structure that laterally braces the famed Statue of Liberty on Ellis Island outside New York City. Both incorporate lanterned sky lights at the pinnacles.

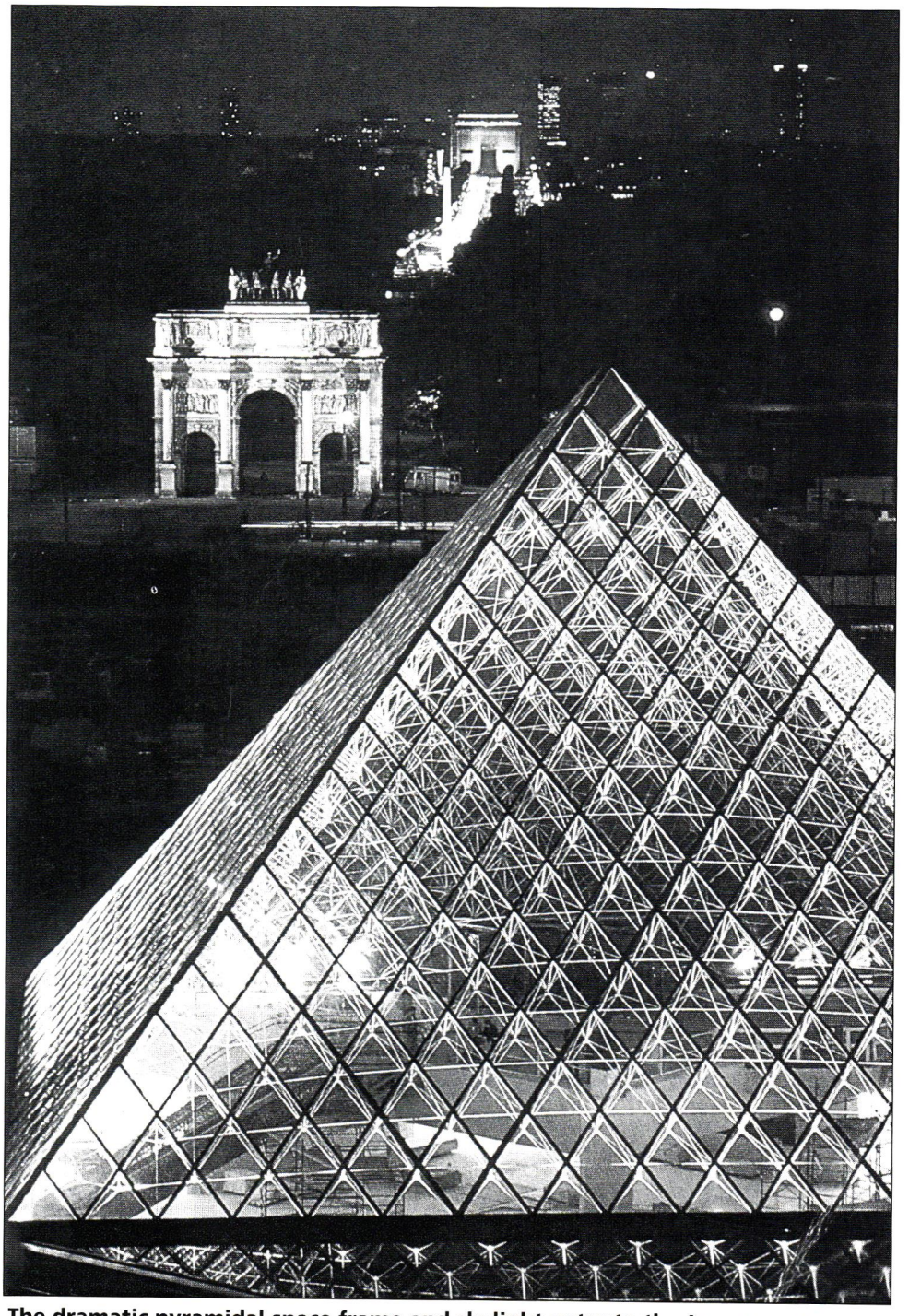
Many contemporary space frame designers credit Alexander Graham Bell, the Canadian inventor of the telephone, with the invention of the "octahedral-tetrahedral" ("octet") "space frame and skylight" geometry employed widely throughout modern architecture. In the early 20th century, Bell designed and constructed experimental soaring "octet" kites as well as vertical and horizontal "octet space frame" towers and windbreaks.

Modern Master Architect Mies van der Rohe is credited with the famous dictum "Less is more" in architectural design, from which the now commonly used "Doing more with less" in these frugal economic times has been derived. However, it was AIA Gold Medalist R. Buckminster Fuller, AIA, (after whom the discovery of the new periodic element "Carbon 60—buckminsterfullerene"—nicknamed "bucky ball" was posthumously named), who really put "Less is more" into practice.

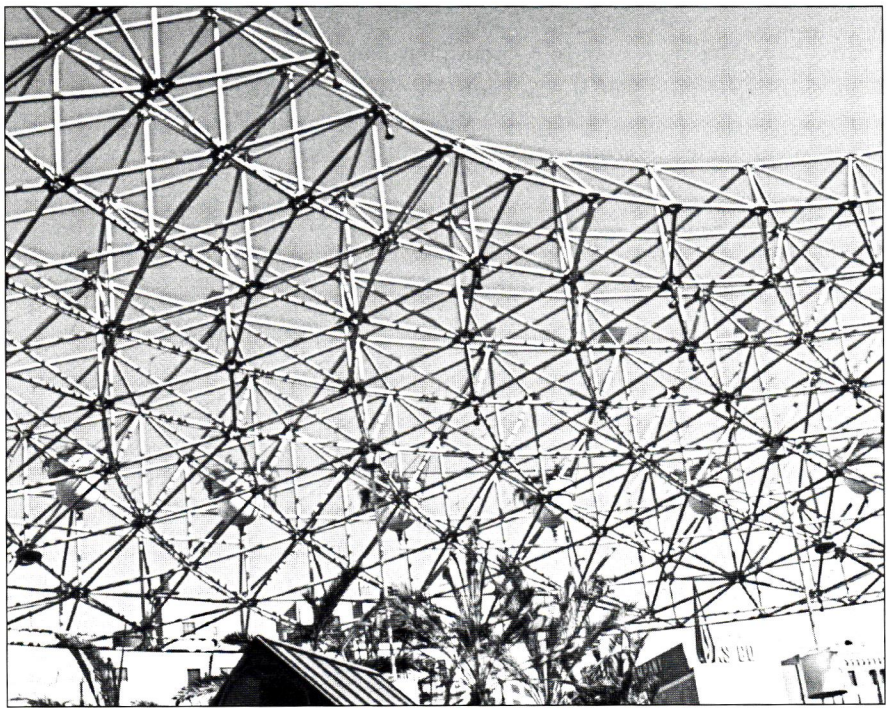
After Fuller was granted his "octet truss space frame" patent in 1961, he wrote, "When I invented and developed my first clear-span, all-weather geodesic dome, the two largest domes in the world were both in Rome and were each 150 feet in diameter. They are St. Peter's built around 1500 A.D., and the Pantheon built around 1 A.D. Each weighs approximately 30 thousand tons.

"In contrast, my first 150-foot-diameter geodesic all-weather dome installed in 1957 in Honolulu at the Hilton Hawaiian Village weighs only 30 tons—1/1000 the weight of its masonry counterpart. An earthquake would tumble both the Roman 150-footers, but would leave the geodesic unharmed." One of the best kept secrets in recent hurricanes Andrew in Florida and Iniki in Hawaii was the splendid performance of geodesic domes.

It is now rather common for space frames and skylights to be used as pedestrian sky-



The dramatic pyramidal space frame and skylight entry to the *Louvre* was designed by the American Institute of Architects gold medalist I.M. Pei, FAIA.



These nodeless hubs and tubular steel struts form the curvilinear grid of the toroidal space frame at the Metro Civic Plaza in Los Angeles. The space frame was designed by Peter Pearce, AIA.

walk connectors between high-rise towers in urban centers and international airports, with long column-free spans hovering over vehicular traffic. Space frames and skylights also are used in interior landscaped prominent hotel and office tower lobbies, shopping center atriums and libraries to name a few.

There are many geometrical configurations available in creating space frames and skylights on the basis of square, rectangular, triangular and even curvilinear grids. Each geometrical grid has its own structural strength and movement characteristics which affect architectural design details to guard against water infiltration problems. Several of the forms, functions and spaces possible are very exciting for the future of architecture.

Heretofore, it was necessary to develop separate structural and architectural design systems for a framework of glazed skylights which encapsulated the supporting space frame structure. However, architect Peter Pearce, AIA, of Synestrueries has developed an integrated system on the basis of his patented "nodeless" hubs where the tubular struts are connected to each other. More design research work needs to be done in these areas, especially in the aftermath of the recent Northridge earthquake with its unusually high gravitational forces and the impacts the quake had on welded steel connections.

During the last quarter of this century, major breakthroughs have been made in the advancement of space frames and skylights. Works by Ieoh Ming Pei, FAIA, Philip Johnson, FAIA, and Peter Pearce, AIA, have inspired contemporary architects to "bring the outdoors in" on an unprecedented international scale—even in climatologically temperate environments where the winters are quite long.

•• *Andrew C. Yanoviak, AIA, chairs the AIA Honolulu Professional Practice Committee and serves on the Codes and Environment committees and the national AIA Building Performance and Regulations Committee. He has written several articles on geometry in architecture for Hawaii Pacific Architecture and Hawaii Architect.*

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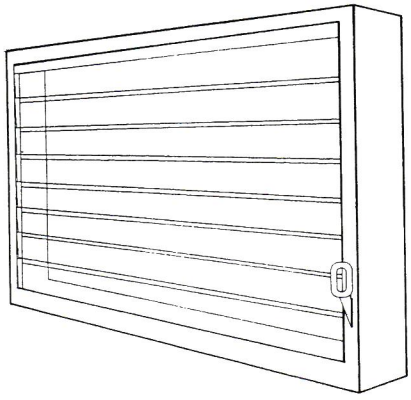

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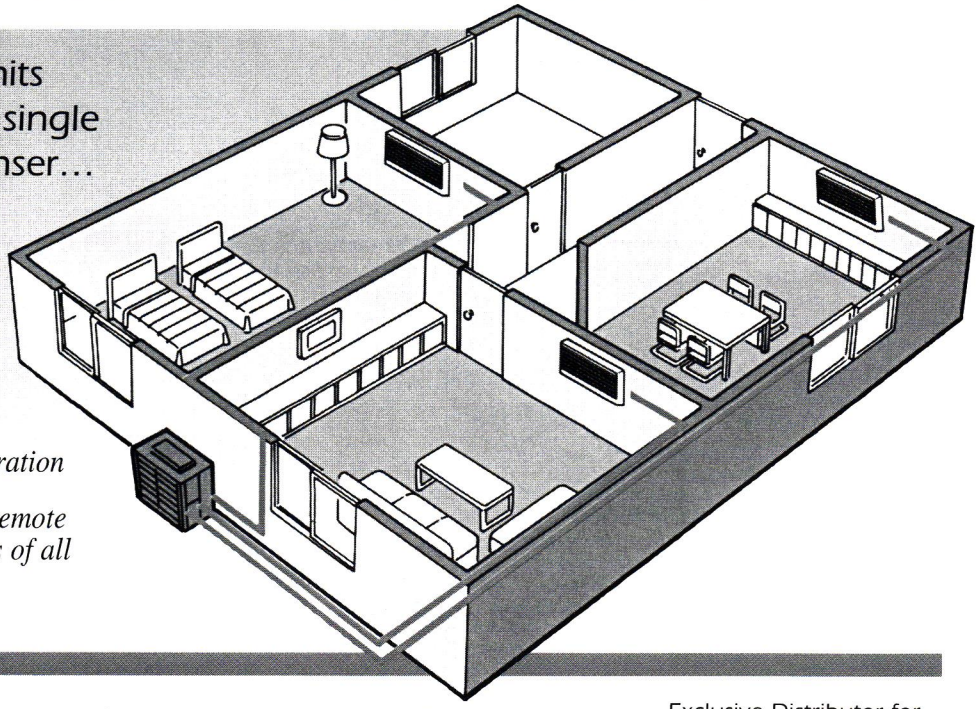

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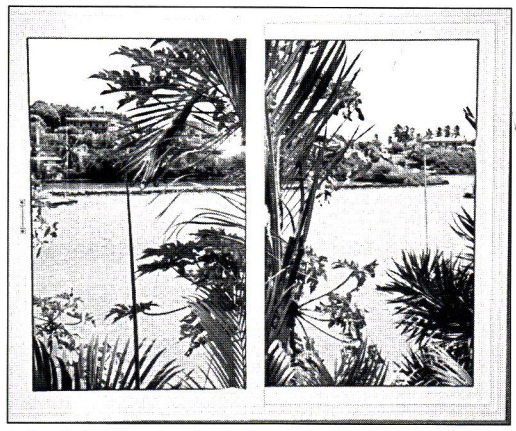


Vinyl-framed windows last a long time and always look freshly painted.

Suiting the consumer's needs

The Window Dilemma

by Kurt Winner

There are many issues to be considered when choosing replacement windows or windows for a newly constructed project. Initially, one must decide whether wood, aluminum or vinyl-framed windows are desired. A frame color must then be chosen, followed by consideration of window styles, i.e., sliders, casements, awnings, jalousies, bays, bow, arch types, single-hung, etc.

Since all these styles are available in wood, aluminum and vinyl, a consumer must decide what best suits his/her needs. In Hawaii, a material that won't corrode, rust, get eaten by termites, swell, stick and won't need painting or maintenance would be the preferred choice.

Rigid Vinyl, polyvinyl chloride, a frame material that is relatively new in Hawaii meets these requirements. PVC will last for many decades, always look freshly painted and offer fewer problems in wet salty environments.

Casement windows can catch the air moving parallel to the outside wall and direct its movement inside a structure.

Once the type of window has been determined, the style must be chosen. Should vinyl-framed jalousies be used where old aluminum jalousies are? Would awnings, casements or sliders be better? The criteria to be considered include the following:

- Appearance, both inside and outside.
- Ventilation requirements.
- Safety and security.
- Ease of operation.
- Cost.
- Reliability.
- Maintenance.

Jalousies are by far the most popular window in Hawaii, because the windows allow almost 100 percent ventilation. However, aluminum jalousies are not very attractive, tend to leak more air and water and are easily broken through. Sliders are the lowest cost alternative, but ventilation is reduced by half although the windows are more secure than jalousies when closed. Interestingly, casements will do a better job of catching and moving the air than either jalousies or awnings because only the casement can catch the air moving parallel to the outside wall and direct its movement to the inside of a structure.

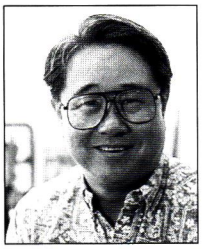
Oriented properly, a 50 percent increase in ventilation is not unusual to experience when casements are chosen. Single-hung and double-hung windows offer 50 percent ventilation like a slider, but contain metal counterbalance springs and assorted metal mechanisms that are very sensitive to salt corrosion. These may be "what's new" in windows but could cause maintenance headaches, particularly near the ocean.

In replacement work, it is important to purchase windows that are made to fit the old openings exactly, if for no other reason than cost and appearance. It is more difficult and expensive to fit a stock size window in an existing opening than a custom-built window.

↔ *Kurt Winner, president of Coastal Windows Inc., holds several window patents. He has designed PVC windows which are used in the United States and abroad. Winner is a member of the Society of Plastics Engineers and a former member of the Society of Plastics Industries.*

Market Place

A Lawyer's Perspective



Confronting an Indemnity Provision

by Michael D. Tom, J.D.

This month's column deals with additional complications for indemnities within the construction industry.

The Hawaii Legislature passed a law that prohibits a provision claiming to indemnify someone for that person's "sole negligence or willful misconduct" in a contract for the "construction, alteration, repair or maintenance of a building."

The law has been interpreted to not prohibit a promise to indemnify someone against liability resulting from the promisor's negligence. However, a promise to indemnify someone against liability resulting solely from the promisee's negligence or willful misconduct is void and against public policy.

There has not been a large number of cases construing this law. Most of the cases deal with claims by subcontractors against general contractors that the indemnity provisions in their subcontracts were void because the provisions were against public policy.

There have been no reported appellate cases dealing with design professionals. Although the legislative history of the law suggests that the Legislature had the subcontractor-general contractor relationship in mind when they passed the law, there is nothing to suggest that the law would not apply to an indemnity provision forced upon a design professional where the design professional has agreed to indemnify an owner for the owner's sole negligence.

So what do you do when confronted with a request for an indemnity provision? First, consider whether the project is one in which you really wish to be involved. If so, consult someone who can advise you about the consequences of the proposed indemnity. Second, attempt to eliminate or modify any indemnity provision in your agreements. Lastly, check on your insurance coverage.

Michael D. Tom, J.D., is a partner in the law firm Tom & Petrus. Educated as a civil and structural engineer, his practice focuses on the construction industry.

News Briefs

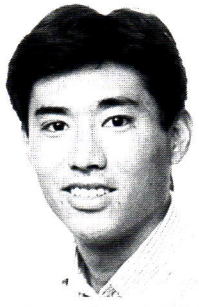
Evening Palace Tours

Iolani Palace will be open for evening tours Dec. 27-29 and 30 to commemorate the birthday of Queen Kapiolani. Fifteen-minute guided tours of the first floor of the Palace will begin every 10 minutes from 6 to 8:30 p.m.

Reservations can be made by calling 522-0832 beginning Dec. 11. Reservations are a must for these popular tours, as there is no charge for attendance and admission is limited.

Grant Murakami Receives Certification

Grant Murakami, a planner with PBR Hawaii, successfully completed the American Institute of Certified Planners' exam and has become a member of the American Institute of Certified Planners.



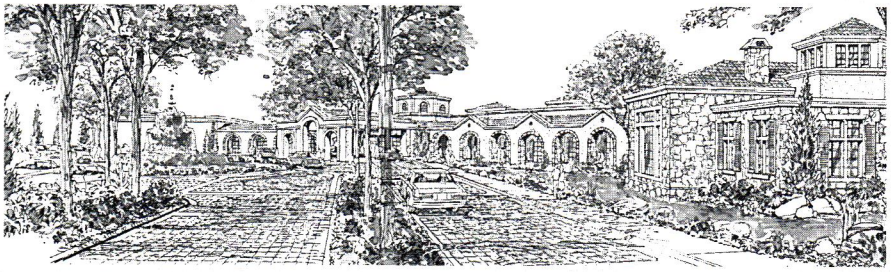
Grant Murakami

With a master's degree in urban planning from the University of Washington and as a member of the American Planning Association, the Hawaii Kai resident has been involved in a wide variety of resort/residential master planning, site planning, urban design and land use entitlement processing design projects in South Korea, China, Malaysia, Guam, Indonesia and Hawaii.

New Regency Casino Under Construction

Construction is under way on the Regency Casino, Thessaloniki, Greece, designed by Wimberly Allison Tong & Goo with associate architect Pandelis Massouridis AA Dip of Athens.

The project is the first phase of a state-of-the-art casino and hotel/conference complex under development by Hyatt International and Regency Casinos.



Main entry of the Regency Casino, Thessaloniki, Greece

On 75,000 square meters of vacant land near the airport in Thessaloniki (250 kilometers north of Athens), the 10,000-square-meter complex will feature two casinos—a large American-style casino and a smaller European-style casino with 15 high-roller tables and its own private entrance, dining room and bar.

Thessaloniki is the main port and business center for northern Greece and the northern Balkan States.

Fletcher Pacific Named Contractor of the Year

For the second year in a row, Fletcher Pacific Guam received the "Overall Contractor of the Year Award" as part of an annual competition sponsored by construction industry members in Micronesia. Fletcher Pacific Guam is a subsidiary of Fletcher Pacific Construction in Hawaii.

The criteria for the award are based on quality of work, community support and work with government agencies.

Fletcher Pacific Guam also won the "Project of the Year" award, a new category in the competition, for its Duty Free Shops Galleria. The project, designed by Kajioka Okada Yamachi Architects Inc. (Hawaii), created a major shopping destination for the Tumon Bay tourist district. Finished in October last year, Fletcher completed the project in 15 months, from ground breaking to opening.

TRB Awarded Energy-Related Projects

TRB/Architects was recently awarded energy-related projects by island governments in the western Pacific.

The firm is working with the Energy Office of the Republic of Palau on an energy demonstration project at the Palau Community College campus. The project involves studying the school's existing library building to determine ways to reduce energy consumption, modeling the building with a computer energy simulation program, installing energy-conserving products and materials and testing the results against the computer model.

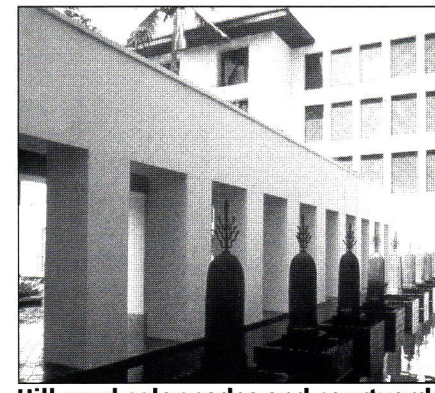
The Republic of Palau is located southwest of Guam and east of the Philippines. Energy conservation is particularly important in Palau since the Republic is dependent on imported petroleum for 100 percent of its power generation requirements.

TRB also is a member of a consulting team which is writing energy codes for American Samoa and Guam. Leaders of both islands are concerned about their complete dependence on imported oil for their energy supplies, and are looking to their energy codes as a method of reducing the consumption of electricity in buildings. The American Samoa/Guam code will be adapted from the Hawaii Model Energy Code, which TRB is assisting in formulating.

Works focus on 'placemaking'

Kerry Hill Architects

by Amye H. Turner



Hill used colonnades and courtyards in the Sukhothai in Bangkok to separate and connect buildings, while providing a way to fragment the mass of the structure.

Photo by Vincent Lim

According to William Kerry Hill, "architecture is a performing art and must be experienced, so perhaps one architect's work is best explained by another." Hill, of Kerry Hill Architects, Singapore, one of five recipients of the first Kenneth F. Brown Asia Pacific Culture and Architecture Design Awards, is a participant of the University of Hawaii School of Architecture 1995-96 lecture series honoring the Award winners.

The Kenneth F. Brown Asia Pacific Culture and Architecture Design Awards Program, held in March of this year in conjunction with the East-West Encounter Symposium, produced five winners whose works are outstanding examples of contemporary, regionally sensitive architecture which help create an appropriate sense of place for the particular locales in which the works are located. Associate Professor Leighton Liu, Design Awards chairman, noted that the primary criterion for judging had to do with how well an architectural work fits and contributes to the physical, historical and cultural context of its location, reflecting the social, religious, political, economic, technical and aesthetic ideals of particular cultures and locales.

Amanusa is inspired by traditional Balinese architecture and is built entirely with local materials and technology. This private bath provides a tranquil place for guests to relax. Photo by Jug Brown

In a Nov. 1 public lecture Hill stated that the majority of his firm's work is hotel projects. He noted that hotels, particularly resort hotels, are a complex amalgam of building types, which include both public and private realms.

When discussing how culture shapes a project, Hill explained that terms such as tradition and modernity must be reviewed and defined. He noted that the manner in which different designers address these issues is varied. "One method is the recreation of past models, another is the nostalgic replication of tradition that relies on the applique of fine art and craft to dress what are essentially modern frames—this approach usually results in a pastiche of tradition," Hill said. To expand on this point, Hill quoted his friend Tan Hock Beng, "The regeneration of forms or literal variants of past models, no matter how well they are crafted, can only stagnate the operational idea of tradition and at worst debase both itself and its past. In that sense it fails to address the concerns of contempo-

rary architecture, therefore distorting both time and place."

Hill explained that his firm attempts historical references to past building traditions through suggestion and association rather than replication, and through the reinterpretation of indigenous building forms rather than mimicry. He noted that by abstracting cultural motifs and icons he and his associates hope to connect with the cultural continuity of a place within the framework of their own contemporary architectural language. "I believe that spirit of place is a more appropriate way to engage with history than through the regurgitation of built form," Hill said.

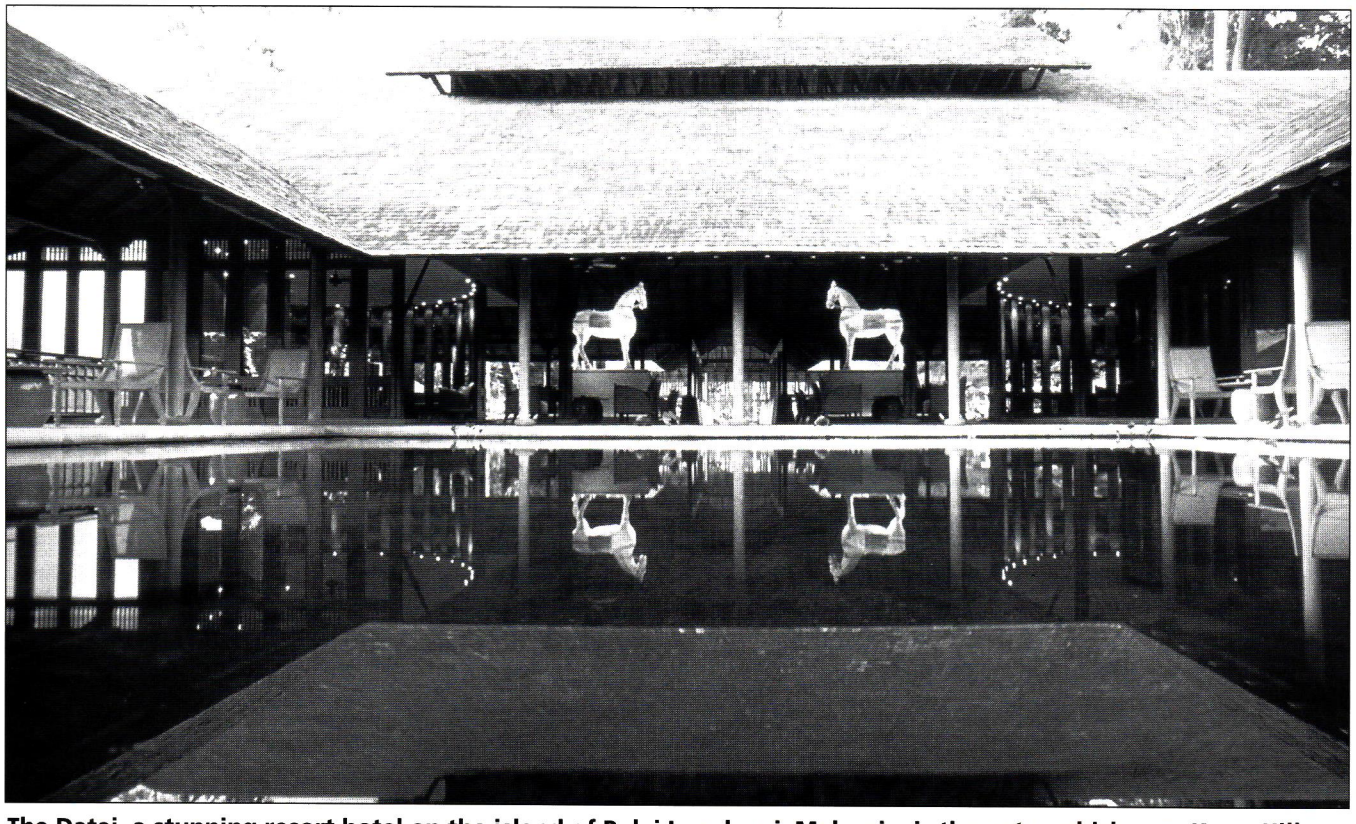
Hill noted that Southeast Asia has no common social or cultural framework and no singular architectural style. Some countries have shared building traditions that suggest common origins but these are manifested in diverse ways. He added that because of this, his firm's buildings are site specific.

Hill said that along with cultural and sense of place issues, climate helps determine the physical parameters of a building. He explained that an area's climate is the mainspring for much of a building's form. "Pitched roofs with wide overhanging eaves, water-filled courtyards, colonnades (loggias) and concern for shade and cross-ventilation all are manifestations of this given factor of climate," Hill said.

In most of the buildings Hill's firm designs, the roof becomes the dominant element within the architectural composition because it addresses and responds to climate concerns. In Hill's designs often the roof is the building. Hill said the courtyards and colonnades that connect these buildings also are a direct response to climate. He noted that his firm's planning concepts emphasize space over form, allowing outdoor rooms to assume greater architectural importance; both courtyards and colonnades separate and connect the buildings and provide a way to fragment the mass of the structure.

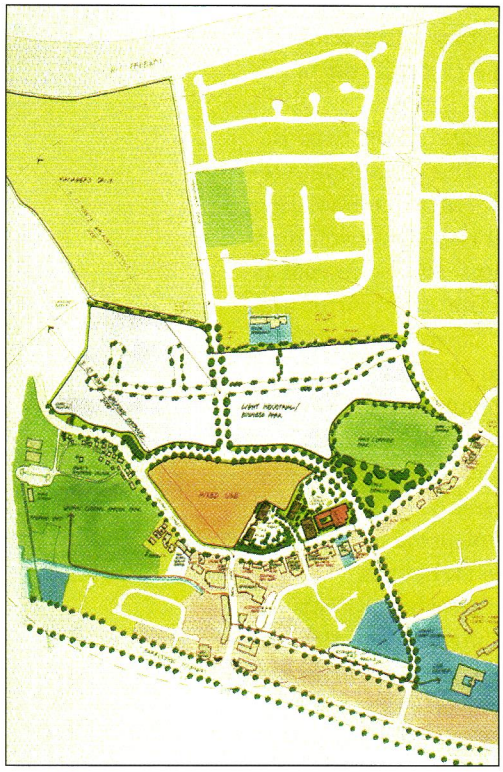
When possible Hill's firm chooses natural cross-ventilation rather than air conditioning. This has become an important "generator of form" in Hill's architecture. The firm also tries to keep building designs one-room deep to facilitate air movement.

"Our architecture is a direct response to site, climate and the desire to make cultural connections...it's about 'placemaking.' While we transport ideas from one project to another and from one region to another, I would like to think each of our buildings has its own special sense of place.



The Datai, a stunning resort hotel on the island of Pulai Langkawi, Malaysia, is the entry which won Kerry Hill recognition in the Kenneth F. Brown Asia Pacific Culture and Architecture Design Architecture Design Awards Program.

Photo by Albert Lim



The development of commercial/ industrial mixed uses and light industrial uses for the area around and above the mill site are proposed in the Waipahu 2000 Update Plan. Plan by PBR Hawaii

These stately royal palms, which lead to the Aloha Tower, signify the importance of this historic landmark. Photo by Dana Anne Yee

ASLA announces 1995 winners

Design Excellence Awards Program

The Hawaii Chapter of the American Society of Landscape Architects recently announced the winners of its 1995 Design Excellence Awards. The Awards are a way to encourage and recognize design excellence in landscape architecture. Each entry, submitted by members of ASLA's Hawaii Chapter, was considered individually, not in competition with others.

All entries were judged for quality of design, functionalism, contextual relationship, environmental responsibility and overall relevance to the profession, public and environment. Jurors included: Dona L. Hanaike, Department of Land and Natural Resources; Carolyn Heinrich, The Outdoor Circle; Lorrin Matsunaga, AIA, Urban Works Inc.; Michael T. Miyabara, ASLA, Miyabara Associates; David Y. Tamura, ASLA, David Y. Tamura Associates Inc.; and Raymond Yeh, FAIA, University of Hawaii School of Architecture.

Winning entries, which received an "Award of Excellence," were the Aloha Tower Marketplace, Lanikuhonua Hawaiian Cultural Institute, Waipahu 2000 Update, Kehalani, Fort Street Mall, Waikiki Aquarium and a Puu Panini Residence. An overall "Honor Award" was presented to the Lodge at Koele.

The Lodge at Koele, a resort on Lanai, employed landscape architects from Walters, Kimura, Motoda Inc. One of the landscape architects' main goals was to keep as many of the existing trees intact as possible.

The architects restored the empty, overgrown reservoir, patched and restored cut stone walls and constructed gazebos. The company also designed or selected special exterior features such as gardens, a bowling green, croquet courts, an orchid house, arched gateway and a Japanese fence.

PBR Hawaii was the architectural firm for the Lanikuhonua Hawaiian Cultural Institute, located on Oahu. The landscape architects prepared a four-phased master plan for the 11-acre coastal site. The plan included an education program, feasibility analysis, phas-

This gazebo at the Lodge at Koele offers a tranquil spot for guests to relax and view the reservoir.
Photo by Dana Anne Yee

Expansive lawn areas and mature plantings of coconut palms at the Lanikuhonua Hawaiian Cultural Institute provide an excellent outdoor environment for entertaining.
Photo courtesy of PBR Hawaii

Flowering trees and coconut palms are interspersed throughout the Fort Street Mall to create a feel of old Hawaii.
Photo courtesy of PBR Hawaii

The master plan of Kehalani offers open space and a park system to provide residents with a wide range of recreational opportunities.

Plan by PBR Hawaii

ing and cost structuring. The first two phases were completed in 1988 and 1990. The parking area improvements phase is currently being completed.

The landscape architects' goals were to have a cultural institute for teaching ancient arts and crafts, an entertainment area and an interpretive center for Hawaiian culture.

Randal Fujimoto, landscape architect for a Puu Panini Residence on Oahu, was responsible for all hardscape and softscape elements. He assisted the owner in the selection and placement of art pieces in the gardens.

Fujimoto's goals were to have a landscape composed of a variety of garden experiences, ensure the gardens could be enjoyed throughout the year, have a micro-environment to mitigate the hot summer days and create an accessible environment for the disabled.

Walters, Kimura, Motoda Inc., landscape architects for the Aloha Tower Marketplace, had to maximize the landscaped areas of the complex. They designed a pedestrian entry from Nimitz Highway, maximized the planting of coconut palms, helped choose water features, paving and kiosk disposition,

Coastal, native Hawaiian plants thrive in the salty environment of the Waikiki Aquarium.

Photo by Kevin Fisher

The pool and water feature in the garden area can be viewed from the living room of this Puu Panini residence.

Photo by Augie Salbosa

saved or relocated trees, relocated boulders to the garden courtyards, and devised a planting design for courtyard planters.

The landscape architects used many native plant materials. Walters, Kimura, Motoda Inc. also designed the irrigation systems for minimal water use with no irrigation discharge to city sewers.

Lester Inouye and Associates was the landscape architectural firm for the renovation of the Waikiki Aquarium. Renovation highlights include the "Edge of the Reef Exhibit," which displays animals in their natural habitats, the "Mahi Mahi Aquaculture Exhibit" and the "Monk Seal Habitat."

Other special features as part of the renovation project include a Coastal Native Plant Community Garden, one of the largest native plant gardens on Oahu; an entry plaza; Ethno-Botanic Garden; a display of native plants; and the Gathering Place by the Sea, which includes an outdoor stage, lighting and sound systems and open lawn seating.

Kehalani is a 550-acre master planed community on Maui. PBR Hawaii, Kehalani's landscape architectural firm, was responsible for environmental analysis/resource assessment and served as project master planner.

PBR Hawaii personnel worked on community planning and urban design plan preparation, including facilitating the land use approval process. They also prepared the community design guidelines and landscape master plan.

For the Fort Street Mall, landscape architects from PBR Hawaii were responsible for all hardscape design, details and material selection and worked in close consultation with the City and County of Honolulu.

PBR Hawaii first eliminated the existing concrete trellises, light fixtures, concrete walls and railings. Metal railings were installed for a lighter look. Period light fixtures, sign poles, drinking fountains and benches were installed to give the appearance of Honolulu many years ago. The architects used coconut palms as a theme tree and Hong Kong Orchid and Fiddlewood trees for shade and color.

Waipahu 2000 Update is a community master plan intended for economic development, job generation, preservation of Waipahu's heritage and improvement of community ties. The planners and landscape architects, from PBR Hawaii, developed a community-based planning process to gain input and consensus on the long-range plan for Waipahu.

PBR Hawaii personnel helped the Waipahu 2000 Update Committee develop objectives, a description of Waipahu's existing condition, vision for the future, land use plan and a list of major proposals.

Held every five years, the next ASLA Design Excellence Awards Program will be held in the year 2000.

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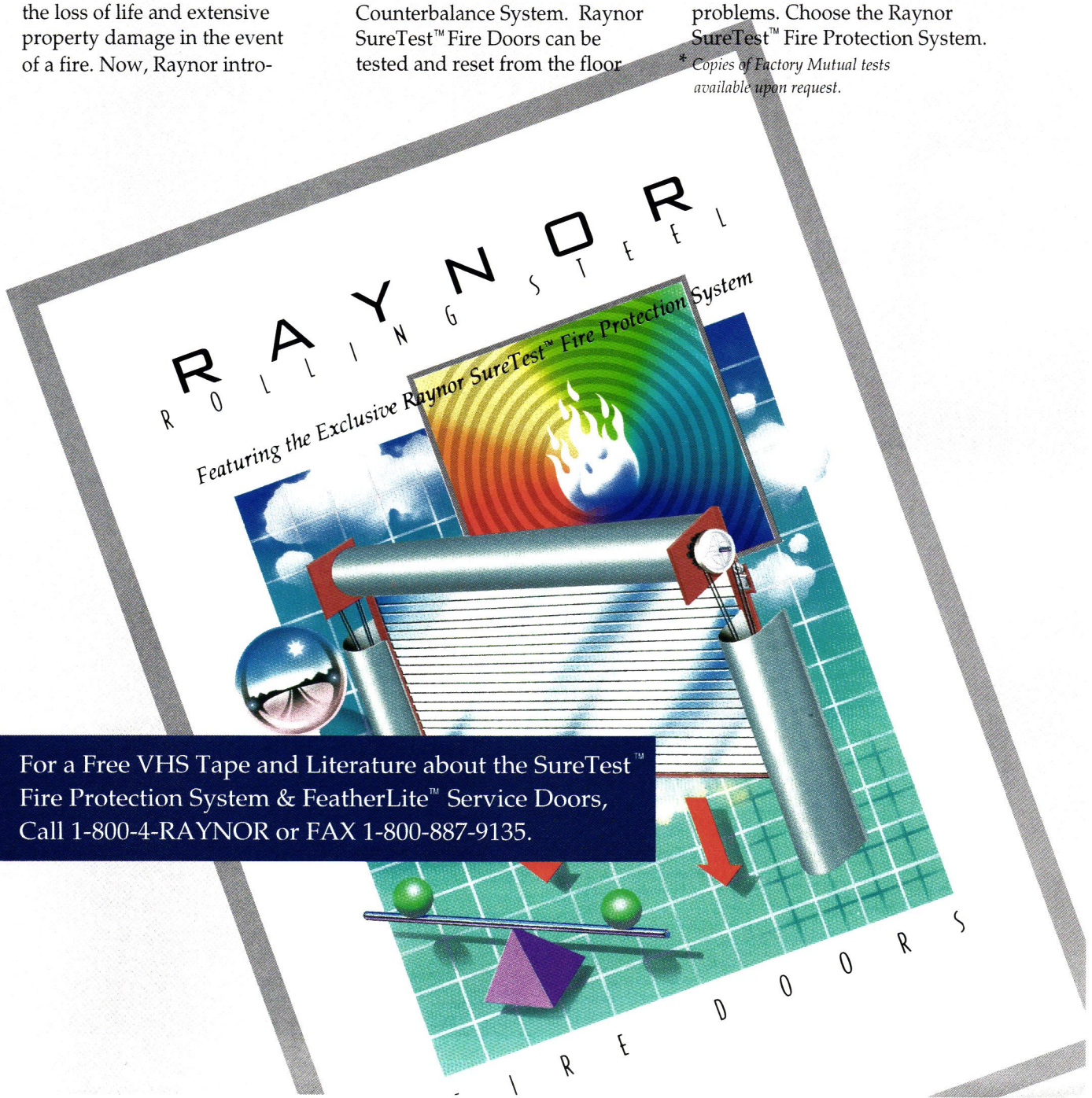

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