Sir Winston Churchill:
“We Shape our Buildings and thereafter our Buildings Shape Us.”

I. Introduction

The University of Hawai‘i at Mānoa (UHM) is a major research university on approximately 300 acres of land and has close to 300 buildings. The expenditures on campus facilities are second only to personnel costs. While the University aspires to be a world-class “Hawaiian Place of Learning” in the Pacific, there is a growing campus-wide concern for the poor state of campus facilities. Importantly, this inadequacy of facilities maintenance and operation is hampering program performance and compromising the University’s capability to reach its institutional goals.

In 2004, the UHM Faculty Senate, responding to these concerns, appointed a facilities committee which recommended that a review of the campus facilities operations be conducted by an external agency. Later that year, the UHM Chancellor responded by appointing an ad hoc committee to address the facility concerns. The charges to the committee were comprehensive and inclusive of all areas for possible improvement.

The campus facilities issues were reviewed by the committee in the context of their relevance to:

1. The rapidly changing needs of the teaching and research functions of the campus;
2. Building sustainability and life-cycle cost considerations; and,
3. Environmental and aesthetic qualities of the campus.

The committee findings are categorized according to the separate, but inter-related task areas of operations, repair and maintenance, planning and design, and capital projects and master planning. These task areas provide and collectively encompass the basis for the overall quality of campus physical environment.

A new organizational structure for the UH Mānoa campus, has been approved by the Board of Regents, but has yet to be fully implemented. This reorganization includes the facilities administration. The committee examined the range of facility issues under the existing organizational structure. The Association of Higher Education Facilities Officers (APPA) was contracted to conduct an in-depth assessment of the current UHM Office of Facilities and Grounds. The essence of their findings and recommendations are incorporated in the committee report.
II. Operations, Repairs and Maintenance

The operations as well as the repairs and maintenance of the UH Mānoa campus are the responsibility of the existing Office of Facilities and Grounds. Their responsibilities are complex and extensive as is customary for an enterprise of the size and breadth of the Mānoa campus. This requires a wide range of expertise combined with effective coordination and a clear understanding of the mission and business of the University. The quality and speed with which operational, and repair and maintenance services are delivered has a direct impact on the activities of faculty and students for whom the Office of Facilities and Grounds exists. The quality of the campus environment also directly impacts the morale, effectiveness and esprit de corps of the University at all levels.

A user satisfaction survey conducted by the committee revealed that an alarming 51% of the over 1,000 survey respondents considered the overall campus physical environment to be marginal or unsatisfactory. Unfortunately, this quantitative measure fits well with prevailing view of campus inhabitants in general. In contradistinction with other top universities, students and faculty of UH Mānoa seem to take no pride of place in their campus. This circumstance derives from a variety of causes, but there is no doubt that there is a collective experience that UH Mānoa is ineffectively maintained when compared with other comparable campuses.

In recent years, the annual allocation for repairs and maintenance has been approximately $30 million. The Office of Facilities and Grounds has a workforce of over 350. Expenditures for utilities have recently risen from approximately $11 million to $17 million with the likelihood of further large increases. This is the single most critical cost issue of the campus facilities and no effective plan for mitigating the crisis has been instituted.

At the invitation of this committee and with funding from the Chancellor’s Office, the management of the operations, repairs and maintenance of the campus was reviewed by an experienced team of facilities administrators assembled by APPA, the professional organization of educational facilities managers. In a weeklong campus visit, the five-member APPA team reviewed the operations, talked to more than 200 individuals, among who were administrators, facility users, stakeholders or members of the facilities management unit of the campus. The APPA team was incisive in their review and their recommendations were thoughtful and comprehensive.

The APPA review pointed out significant concerns regarding development and management of human resources, strategic planning, mission focus, objectives and purpose of the operation, customer service, and process management. The concerns and recommendations of the APPA review committee are enumerated in seven categories.

- **Leadership** - The most pressing leadership challenge is to set clear direction, define roles and responsibilities, and hold employees accountable. Leadership must coordinate work and information flows, identify, quantify, and prioritize the campus facilities' most critical needs.
- Strategic and Operational Planning - Develop a strategic plan; work to establish strong lines of communication with the campus community; create a succession plan to insure consistency and continuation of leadership.

- Customer Focus - Define service levels and frequencies; define and clearly communicate roles and responsibilities of each individual as the lack of understanding is evident to campus constituency; and, develop a method for customer feedback.

- Information and Analysis - Implement a computerized maintenance management system (CMMS); establish an energy office and develop a rigorous policy mandating energy conservation and energy management.

- Development and Management of Human Resources - Update position descriptions; provide adequate written policies and procedures; formulate safety programs and adopt proactive and aggressive approach to safety consciousness. Must recognize the value and necessity of employee development through ongoing education and training and implement.

- Process Management - Inventory capital equipment; identify equipment in need of repair or replacement and find a systematic method to fund repair and replacement; improve overall timeliness of procurement service delivery.

- Performance Results - To achieve a condition for staff to be motivated, have pride in their work and the department, and in the accomplishment of their duties. It is necessary to create and maintain a high-performance workplace and to promote employee development efforts.

Contained in the conclusion of the report are five challenges considered to be important to the future success of the Office of Facilities and Grounds, and are as follows:

First challenge is a commitment to permanent leadership at the highest levels of the university and campus administration.

Second challenge is to improve management and operations by clearly understand the adequacy, management, and distribution of resources; the physical resources, the financial resources, and the human resources.

Third, the institution, along with a concerted effort by Facilities and Grounds, must be challenged to renew its appreciation of the value of people. Action is needed to institutionalize an investment in the growth of Facilities and Grounds' staff through training, seminars, professional involvement, career ladders, and other means that unlock human potential. The recognition and development of the staff must be given a high priority and must be supported with financial resources as well as a philosophy that supports employee development.

A fourth challenge requires a commitment from Facilities and Grounds and the campus administration, to lead the campus to a campus-wide energy and resource conservation
strategy and program. Facilities and Grounds must face its role and its responsibility to be an active practitioner in furthering the solutions for smart growth and campus sustainability.

The fifth challenge facing Facilities and Grounds is to build and incorporate technology as a partner in the organization. Technology has the potential to increase productivity while at the same time meeting the needs of rising costs and/or decreasing budgets. The introduction of technology must be accompanied with an investment in training so that proper utilization manifests itself with experience.

It is often argued that a lack of funding is the overriding cause of the repair and maintenance problems at UH Mānoa. The APPA report strongly disagreed with this opinion. The team concluded that funding for Mānoa fell within allocations for other comparable campuses. The APPA team recommended that change requires Facilities and Grounds to focus on getting more from the available resources through strengthening organizational leadership and adopt more of a “can-do” positive work culture. The APPA report stated: “In general, there is a need to marshal the organization’s resources, focus their attention, and empower and energize the workforce. The right direction ensures the future success, growth, and the viability of the organization.”

III. Facilities Design and Planning

The design and planning function of a campus ought to be aimed at ensuring that every facility modification decision adds value to the campus, aesthetically and functionally. Design and planning should be continuous activities as the changing of facilities needs for programs are constant. The campus designers and planners need to communicate with and respond to the needs and wishes of the campus community and facility users that they are supposed to serve.

UH Mānoa has a high demand for campus physical design and planning services that ought to utilize the services of trained professionals who currently staff Facilities and Grounds. Projects range from design of campus landscape and signage, modification of classroom configurations, the upgrading of existing building interiors and exteriors, the assessment of facilities needs that are brought about by academic program changes, the design and programming of new facilities, the setting of standards and guidelines for the design and construction of new facilities prior to hiring an architect, and the establishment of campus building standards. The list goes on...

A campus facilities design and planning office ought to be formed and empowered to respond spontaneously, not only to these needs, but also in an interactive mode to gather input from the campus users and work collaboratively with other facility operations on campus. Office personnel would serve as key contributors to the long-range master planning process and ensure that the day-to-day design decisions adhere to the campus master plan.

In the 1960’s, recognizing these needs, UH Mānoa did briefly have an Office of University Architect on campus which no longer exists. Since then, the facilities design and planning responsibilities have been assumed by private architectural firms contracted on an ad hoc basis. It is uniquely among major universities that UH Mānoa does not currently have a design and planning office to direct the ongoing facilities design decisions. The Office of Facilities and
Grounds has a number of architects on staff, but they are not organized to assume facilities design and planning responsibilities.

In 2004, the Vice Chancellor for Administration, Finance and Operations arranged with the School of Architecture to employ a member of its faculty to serve as a temporary campus planner. This arrangement continues and is identified in the new administrative structure of the campus as the office of campus planning. Nevertheless, the current planning office remains outside the decision-making hierarchy and is not yet properly staffed.

The new design and planning operation should be knowledgeable of the emerging trends in higher education and campus facilities design. This includes, but is not limited to state-of-the-art high efficiency/green design of the type represented by the LEED standard. Their work should address the impacts of such issues as evolving demographics of the campus community, changing focus of faculty efforts, and rapidly changing technology and learning methodology. Some of these changes are the following:

- An emphasis on graduate education and degrees will affect buildings and will increase the need for seminar and team-project spaces and offices for graduate assistants. There will also be new requirements associated with the increase in the population of married students, and older part-time students.

- An emphasis on research likewise will require additional specialized facilities (e.g., more collaborative activities, more laboratories, more assistants, etc.)

- Finite budgets require creative approaches directed toward conserving water and energy, and the more efficient use of space (multiple hours, etc.), and lower life-cycle costs of buildings, their mechanical systems and interior design.

- Rapidly evolving, changing, disappearing organizational, teaching and research requirements require flexible space, and also surge space, incubator space, and other least-cost spaces like the current portable buildings.

All of this requires aggressive, creative and collaborative engagement of the campus community to a degree and in a manner that has not been previously practiced.

IV. Master Planning and Capital Projects

The evolutionary transformation of the UH Mānoa campus, including its buildings and campus infrastructure requires a master plan that projects over a 25-year horizon. This extends well beyond the typical 10-year strategic program planning timeframe utilized by most universities. While programmatic and campus design planning span differing time-frames, they are mutually dependent in that the physical campus serves as a framework for academic planning and vice versa. Thomas Jefferson conceived the master plan of the University of Virginia campus well before the actual founding of the university and provided a setting for its programs decades later. The same process holds true for many other well-known campuses today.
The physical campus today must also carefully reflect the values of the community it serves because the design, upkeep and operation of the building and systems define and can indeed limit the nature and vitality of the university. Strong universities are characterized by capabilities to interact and respond to rapid and dynamic change. Campus planning needs to both reflect, encourage and accommodate this dynamism. Static, oligarchic, and exclusionary planning procedures that reject campus community involvement have patently failed and are doomed to fail in the future.

To a great extent, the culture of the design and planning process defines the vibrancy of a university’s culture. Professor and author David Orr of Oberlin College has argued that “buildings and landscape reflect a hidden curriculum that powerfully influences the learning process.” Very little of the Mānoa campus resonates with any coherent aesthetic sensibility, scholarly intention or value set. The bad condition of buildings conveys that the University’s enterprise is not valued by the larger community is serves. This contrasts with the quality with which the campuses of other state universities are designed and maintained. The waste of energy and water by the physical plant of UH Mānoa implies to our students that stewardship of these precious and increasingly expensive resources is unimportant. Moreover, every dollar spent on these resources is a dollar that is not spent on the University’s scholarship and education mission.

UHM Professor of Futures Studies, Jim Dator says, “it is highly likely that, left to our own devices and following past practices, we will unreflexively employ continued economic-growth models as we plan for traditional university campuses and build curriculum around the concepts and needs of yesterday’s students, faculty, administrators, and stakeholders. But we must remember that alternative images of the future that are not dominant now may dominate in the years ahead. While it is helpful to research current student demographics and job market trends, attention and policy discussion must focus on understanding how dramatically different student composition, education needs, and delivery mechanisms may be 20 years hence.” A campus modeled from the past cannot provide for a university of the future. New capital projects, besides accommodating the immediate needs of individual programs, provide building blocks for the future campus. Every decision on where and how to build produces implications for the future of the university beyond the adding of another building to campus inventory.

Until recently, the development of new campus building projects has been the responsibility of the Department of Accounting and General Services (DAGS). UH Mānoa has assumed this responsibility and, along with it, the opportunity to devise an effective planning and implementation process for the successful execution of capital improvement projects. This necessarily includes the establishment of a base-line competence within the campus for delivery and optimization of the building projects, as well as the development of procedures that fully integrate the projects in concert with a total campus strategic planning process.

UHM campus planning has been guided by a Long Range Development Plan (LRDP), required by the City and County of Honolulu for approval of campus buildings that is updated every seven years or so by an external contractor. The LRDP satisfies the regulatory agency requirement, but the planning process is static and is focused on current concerns, short on a long-term future vision. Importantly, the limited scope of the current work does not adequately engage the on-going participation of the campus community, including students, faculty and academic programs.
Beginning with Frear Hall, a new dormitory project, the University has partnered with private developers for new capital projects for the campus. While this could be a very effective approach to increase and improve the inventory of campus buildings, the campus must have a functional master plan, established design standards, campus engagement and an effective process to guide this privatized approach, both of which seem to be absent at this time. Without these, the campus will continue to be at risk for projects that deliver inadequate service, waste electricity and are disconnected from the values or aspirations of the community that they are supposed to serve.

UHM is land-rich and historically cash poor. Good stewardship and astute management of its land as a resource to leverage future campus development holds a promising key to transform the campus. Master Planning and Capital Projects management of the campus need immediate attention. The stakes they hold for the future of the University are too high to be ignored.

At the incremental individual building level, as UHM aspires to be a world-class university, we must build toward a world-class campus. This would require the campus to engage the best professional design talents globally to assist with our new projects and make each capital project an opportunity to give the campus more distinction architecturally. UC Berkeley Architecture Professor Christopher Alexander, who is also a mathematician and campus planner for the University of Oregon in his classic treatise has written, “When you build a thing you cannot merely build that thing in isolation, but must also repair the world around it, and within it, so that the larger world at that one place becomes more coherent and more whole.”

To paraphrase David Orr, we are not limited by potential or by technology; we are limited only by our motivation. The highly inefficient use of electricity by the Mānoa campus is an example of the failure of motivation. Despite years of recognition that more efficient alternatives exist, choices to build or replace mechanical system were routinely and obstinately made to engage the archaic approaches with the result that UH Mānoa now spends more than 50% more for electricity than it did five years ago.

V. Campus Energy Consumption and Building Life-Cycle Costs Concerns

This immediate problem that will likely remain beyond other cyclical phenomena is the escalating cost of energy and facility maintenance costs. These are already beyond available campus budget resources, and without dramatic change in approach and management, will increasingly sap the ability to respond to and build for the future. One important step is for UH to make an institutional commitment to energy conservation and energy efficiency with the eventual commitment to renewable energy and to confirm that commitment by the implementation of the following:

- Hire an energy/resource conservation manager for the campus. The approval of capital projects by this manager must a required step in acceptance of all capital construction and repair projects.
- Establish a campus energy business plan that will identify overall energy goals (short and long range) for the campus and assist facility management to prioritize energy efficiency retrofits.
• Set design and operational standards for energy management systems (EMS). EMS to be incorporated into new projects and large scale retrofits.

• Establish energy performance standards for all new building projects and large-scale retrofit projects (LEED Silver – as recently passed in Act 96 or a higher standard).

Life-Cycle Costs considerations must be mandated to be an integral part of every capital project decision.

VI. Conclusion

UH Mānoa is faced with an overwhelming set of facilities issues. These are of a breadth and depth that they are obstructing the University’s institutional missions of teaching, research and service. The current condition of the campus facilities impedes the performance of students, faculty and staff, compromises the educational environment, and generates a disincentive for attracting and retaining valued students and faculty. Most importantly, the situation lends an overall sense of inferiority in the state’s most prestigious institution of higher education. UH Mānoa does not have a functioning organizational structure that is able to address the complexity of campus facilities issues. There is also no mechanism in place for effective future planning.

The first priority of the campus should be the restructuring of a new campus facilities office to oversee and coordinate all facilities functions of the campus. The functional restructure would include integration with the ongoing master planning process, capital projects, project design and planning, space assignment, repair, maintenance and the overall facility operations. This office should report directly to the Chancellor’s Office. A similar model can be found in university campuses known for their quality physical settings, such as Stanford, UC Berkeley, UCLA, UC San Diego, Cornell University, the University of Virginia, and Carnegie Mellon, among others.

To help guide the work of the facilities office, an advisory committee consisting of faculty and professionals from relevant disciplines (i.e., architecture, engineering, planning, environmental and building sciences, management, economics and others) and key campus users should be established to provide expertise and a broad perspective of campus facilities issues. This advisory committee should be highly interactive with the leadership of the facilities office providing timely input and helping to prioritizing the efforts of the entire facilities office operation.

On the upside, in the current situation in dire need of immediate improvement, it is not difficult to show dramatic improvement in a very short time. The existing Office of Facilities and Grounds could take immediate and direct action to improve comfort and reduce energy use in several campus buildings. This committee strongly encourages such a course of action. Savings could be redirected toward in the University’s mission and reinvested toward further improvements in efficiency. There are many examples among state and private universities where leadership in this area has produced large, rapid and long-term benefits. Immediate benefit can be shown through smaller uncomplicated projects. Success will build upon success. Morale of the campus will be elevated. UH Mānoa should be the leader, and its campus the model, for stewardship and the responsible use of natural and fiscal resources. The campus will
be an example for the rest of the state and thereby fulfilling its larger institutional service mission by serving itself well.

UH Mānoa campus planning must not only consider a changing society and the context for higher education, but also the unique situation for the future of a university on a small island in the middle of the vast Pacific Ocean. In this setting, the UHM campus could benefit greatly by effectively utilizing distant networking technologies. UHM also has the advantage of being an urban university but unlike the others, it has one of the most admired natural settings on the planet. The UH Mānoa campus should be more befitting of its setting. With a strong will and determination under an enlightened campus leadership, there is no reason that the University of Hawai‘i at Mānoa cannot be known for its attractive and energy efficient campus as well as be recognized for the strength of its academic and research programs.

As the campus reaches its centennial milestone, we also approach a unique opportunity for campus rebirth. Electronic information, emerging cultural identities, the end of cheap oil and global climate change are transformative influences for this century. We must collectively evolve beyond the operational paradigms of our first 100 years and adopt a holistic strategy to pursue excellence and exemplify sustainability in our teaching, research, community service and our campus operations.

This committee constructively offers these recommendations to the University of Hawai‘i administration in support of these goals for the next century.

Respectfully submitted by the Ad Hoc Committee on Facilities Management

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