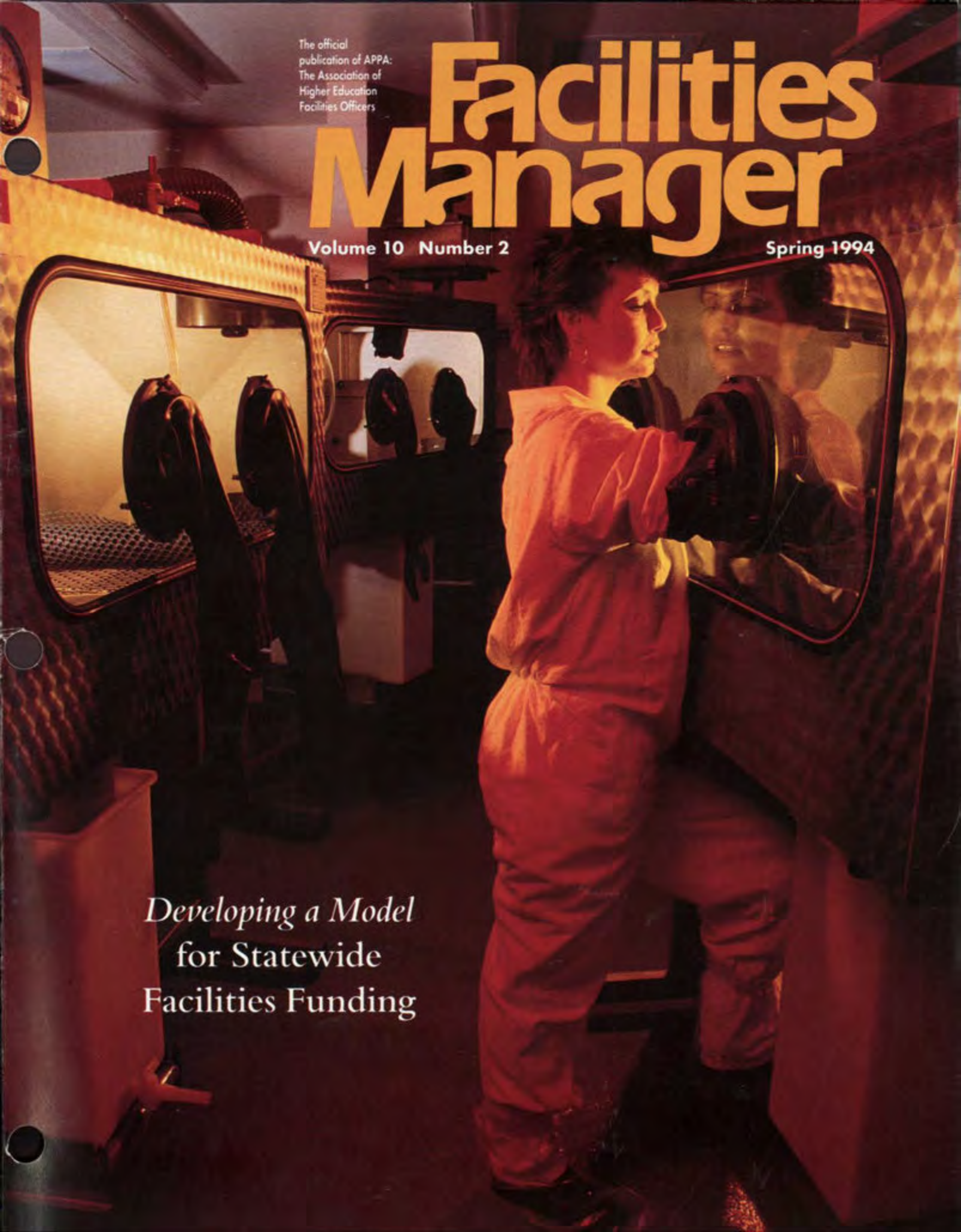
The official publication of APPA: The Association of Higher Education Facilities Officers

Facilities Manager

Volume 10 Number 2 Spring 1994



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Facilities Manager

VOLUME 10 NUMBER 2 SPRING 1994

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by Joan C. Leotta

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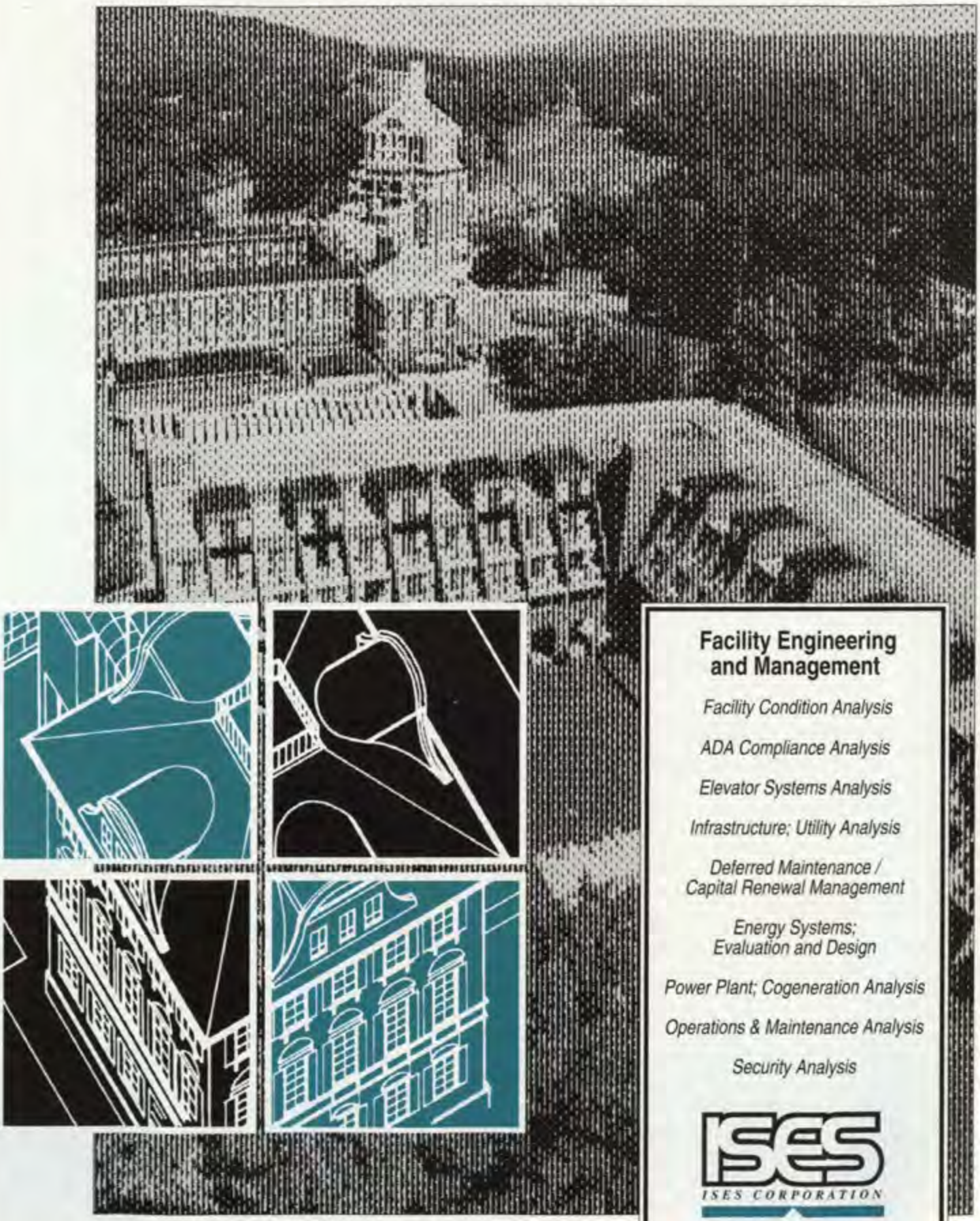

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From The Editor

Steve Glazner

There is a wealth of information in this issue of *Facilities Manager*.

Our cover story focuses on the efforts by the Arkansas Department of Higher Education to develop a model process for garnering increased facilities maintenance funding for its universities. We wish them good luck as they present their proposal to the state legislature next January, and we will be following this story for you as it progresses.

The other features include a comprehensive status report on contract management vs. self-operation within campus facilities, an effort by Barnard College to eliminate improper and unprofessional behavior brought to campus by construction workers and contractors, a look at the importance of integrated pest management, and a fascinating case study in cooperation between a university facilities department and its local school district counterpart.

In this issue, many of you will learn for the first time of Walt Schaw's impending retirement from APPA. Walt's nine years as APPA's chief staff officer has been a time during which we have seen many changes: a dramatic increase in our revenue through dynamic educational programs and valuable publications, staff productivity that is at an all-time high, a visibility and credibility that has grown immeasurably among our association counterparts as well as within the higher education community, the implementation of a long-range plan, and an elected leadership that has grown stronger and more directed in its service to our member institutions.

For your information, we have reprinted part of Walt's memo to the Board of Directors announcing his intention to retire this July. Also in this issue, President Diane Kerby discusses the Board of Directors' plans for the transition to a new executive vice president.

A reminder that our next issue of *Facilities Manager* will focus on customer service and provide a tie-in to the theme of the July annual meeting. Hope to see all of you in San Antonio! ■

APPA News

From the President

by E. Diane Kerby
Director of Facilities Management
Berea College
Berea, Kentucky

Well, my year as APPA President is more than half over, and, to paraphrase Lee Iacoca upon his retirement from the Chrysler corporation, "it's been a heck of a ride."

One of the most significant events during my tenure has been Walt Schaw's decision not to renew his employment contract as APPA's executive vice president. You will read elsewhere in this issue his reasoning behind this decision, but basically, he is retiring to pursue scholarly endeavors—to research and write. I think that while he pursued his doctorate last year, he was bitten by the academic fever. APPA will miss him.

Under Walt's leadership, the Association grew to a strong financial and professional position. Working with members, other higher education association leaders, and the APPA staff, he brought attention to the issues of deferred maintenance and the importance of facilities in higher education, and he furthered the profession of facilities management. He leaves us in good shape, but his pending absence created a challenge for me and the Board of Directors.

The vacancy of the chief staff officer of any association can create disruption at best and chaos in the worst case. The Board minimized the impact of this change by its action at the February midyear meeting. We were able to act swiftly and decisively, and I have detailed the action of the Board meeting below.

First, we decided to reach a consensus, a decision that all Board members could support. This was a departure from the practice of introducing a position, arguing the pros and cons of each position, and taking a majority vote. This direction was important because I wanted all Board members to be comfortable with and support the process and the decision.

APPA President Diane Kerby

We then asked ourselves, "Where does APPA want to be in five years? What issues and challenges face the Association? How should we position ourselves to succeed in light of these?" This involved revisiting APPA's Long-Range Plan and reaffirming the goals and objectives contained therein.

Once this was completed, we asked ourselves what were the qualities desired in a leader to accomplish these objectives. We determined that we needed a chief staff officer with strong association management skills and a demonstrated interest and concern for higher education and facilities issues. We also determined that a person with strong background in training and facilitation was a must.

We then asked ourselves if we had these skills and talents in-house, and we decided that Wayne Leroy met the requirements. As APPA's associate vice president, Wayne has been assisting Walt for the past ten years in running the Association and has acted as director in Walt's absences. He has been responsible for oversight of educational programs, liaison for special projects, finance and budgeting, general administration, and Membership and Professional Affairs committees.

Before coming to APPA, he worked with vocational associations at all levels. He also served as professor and dean of occupational program in Florida before beginning association work. He is a Certified Association Executive and is well respected in the association community. In addition to these qualifications, Wayne's promotion was endorsed by Walt Schaw as well as past and present APPA leaders.

Given this information, the Board decided to offer the position to Wayne Leroy. He accepted and will assume the position in July upon Walt's resignation. This will assure a smooth transition and minimize disruption. Walt and Wayne will use the time between now and then to work out the details of passing the baton. I feel very strongly that the membership is well served by this decision and is fortunate to have this kind of leadership available.

The membership is also fortunate to have such great leadership on the Board. Every Board member participated in good faith and with the best interests of the Association in mind. It was an arduous but rewarding process.

This issue took most of the time at the Board meeting, but highlights of other business include the establishment of an APPA development fund to be used to fuel new initiatives; the Government Relations Task Force will become a standing committee in the coming year as a result of Board action; and reports will be forthcoming to the membership on the Rightsizing, Energy and Utilities Management, and Space Planning and Utilization task forces. The annual budget of $2.61 million was approved, and the Finance Committee predicted a strong financial finish for the current fiscal year.

My time as APPA President has been a privileged service. I have enjoyed the regional meetings and other Association-related travel, but I must

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say that I am most pleased to have participated in this Board meeting. As I mentioned, a great deal of the time was spent dealing with hiring a chief staff officer, and this caused us to be reflective about our association. Everyone worked with diligence to "do the right thing," and we accomplished our goal. Your Board members are of the highest caliber, and the quality of the meeting was inspirational. Opinions, ideas, and impressions were shared openly and honestly, and it was a pleasure to work with them

Wayne Leroy will have the pleasure of working with these folks as he begins his tenure as executive vice president of APPA in July, and that is a great beginning for success. ■

From the Executive Vice President

by Walter A. Schaw, Ph.D.

A Difficult Decision

[Editor's Note: The following is adapted from Walt Schaw's letter of January 7, 1994 to the APPA Board of Directors.]

Over the years I have written a great deal about facilities, associations, and lately, leadership. At no time have the words been more difficult to compose than those that follow. I care too much about APPA and about you for this to be simple or easy.

On July 8, 1994, I will conclude my current three-year contract with APPA. After long deliberation, I have come to the decision not to renew my contract for another term. My nine years as APPA's executive vice president, the most productive and meaningful years of my life, will come to an end.

My reason for leaving has a singular motive: to make another, different contribution to society through research on leadership in American public higher education. Encouraged by the reception to my initial work, I plan to expand my doctoral research findings and develop what I intend as a scholarly book. This focus will continue into the future and is driven by my conclusion that with effective leadership by college presi-

APPA Executive Vice President Walter Schaw

dents, much-needed reform and restructure within higher education can occur. Without effective leadership, it cannot and will not happen. Campus facilities are obviously and directly affected by the existence or absence of leadership at the top.

At this writing, I have no grant or other support, but my beliefs, commitment, and research to date compel me to accept whatever risk is implied by my decision. Let me be quite clear, I am *not* leaving APPA for another job, although several possibilities have been offered without my asking.

Looking Back

The achievements of the past nine years speak for themselves, as do the few failures that occurred. Neither needs enumeration. However, I will leave APPA with great pride in what others have recognized in APPA as perhaps being unique and special.

- Pride in an exceptional succession of elected presidents who, for the most part, have been colleagues and partners, focusing on opportunity and performance as they served APPA's mission.
- Pride in a staff that has often given

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more than I have asked, a staff that complemented my weaknesses as well as my strengths. I have tried to be coach, mentor, guide, advisor, and sometimes leader. Their response has been a personal, albeit private, joy in my life.

- Pride in a special group of experts, within and outside APPA, who share a strong belief in APPA's purposes. Whenever asked, they have served often and well, and almost always without compensation. To name just a few as examples among many others, I think of Bill Middleton and Rex Dillow, Sean Rush and Brenda Albright, with a respect and appreciation beyond expression.
- Pride in APPA's relationship with other associations, unusual if not unique in higher education. Most important of these has been the long-standing relationship of close cooperation and support with the National Association of College and University Business Officers and, most especially, with its president, Caspa Harris.
- Pride in the APPA membership and the profession of facilities management. Only ten years ago, many of our practitioners were busily denying the existence of deferred maintenance. Some denied responsibility when it was acknowledged. While the problems remain, and while economic conditions plus federal regulations present a serious handicap to the restoration of what we call "facilities equilibrium," there is no question that facilities officers have assumed a much more significant role as senior administrators and are much better prepared to execute that role. APPA, since 1985, can claim some contribution to that change.

Conclusion

I try to live my life so that whatever gifts I may have will make a difference not only to my employer, but more importantly, in some small way to the quality of a society where I have enjoyed so much opportunity. As a boy from the steel mills of Northwest Indiana, I have been given so very much. I have a debt to repay.

There has been no time in my life that has been so productive and worthwhile as my nine years with APPA. May God grant that as I pursue a new vision, I may, at its end, come to a similar conclusion.

There is a term in French, "adieu," that means goodbye. Instead, my good friends, I will say "abientot," until we meet again. ■

Report from the Rightsizing Task Force

by Fred Klee, Chair
Director of Physical Facilities
Ursinus College
Collegeville, Pennsylvania

The rightsizing efforts that most institutions are initiating as they face the restructuring process became apparent as the results of the task force's recent survey were tabulated. A survey was sent to all of the institutional representatives in APPA. Three hundred eighty were returned with 210 respondents indicating that they had either flat or decreasing budgets over the last three years. It would seem that for state colleges and universities, cuts were simply handed down by their governmental authorities, and they were told to make adjustments. In some cases these reductions were mandated more than once in a fiscal year.

Almost half reported that other administrative areas also suffered in the reduction process. Not surprisingly, the support for reductions came from the president's and vice presidents' office, with the resistance to the cuts coming from the faculty. There were also some indications that students were supportive in the downsizing effort.

Budget cuts of from 2 to 10 percent were reported by the greatest number of those surveyed. However, 25 percent did report cuts of more than 10 percent. Labor absorbed the greatest reductions with a majority showing up to a 15 percent loss in staff. Almost all of the staff reductions were accomplished by attrition, although several state-supported institutions reported deep layoffs. The areas most affected were custodial, grounds, and an average of a 30 percent loss of painters.

Leaving staff positions unfilled, purchasing fewer supplies, and reducing levels of service were the methods most institutions chose to implement reductions. While reductions are expected to

have a negative long-term impact, more than half said the retrenchment efforts would have only a minor effect on the academic program of the school.

Downsizing is no longer a special situation, but has become the norm for many of us. As the 1970s and 1980s were times of expansion, the 1990s have become a time of reduction and retrenchment. It is possible, based on comments made on the survey, that for some of us the retrenchment process has been a positive move, making operations much more efficient than they were in the past. Those institutions that accept the challenge to rethink and regroup and do things a better way are the ones that will survive into the 21st century.

Klee

Some suggestions that were made in the survey included the following:

- Constantly keep in mind the institutional and departmental mission statements. They will provide the focus for the actions taken.
- Communicate with all of the departments that are serviced. Let them know what services will be reduced or changed and how it will affect them.
- Make sure that reductions are shared equitably by all of the university. In the plant departments make sure that one group isn't slashed and others not affected.
- Communicate within the department. Explain the need for reductions, set realistic goals, and reinforce the remaining staff.
- Investigate new funding sources. Prepare multiyear budgets.
- Develop a strategic plan for the department that can provide financial information to the institution. Look ahead to see where additional reductions can take place, in order to be prepared if further cutbacks have to be made. Provide the data your president needs to assess the future condition of the facilities. Focus services on the student.
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standard preventive maintenance is higher than doing nothing and replacing at the predicted life expectancy.

The future is unsure for those that do not or will not plan for restructuring and retrenchment. This fall, the Pew Foundation held a meeting in St. Louis and invited presidents of colleges and universities in the United States to talk about the problems higher education faces in the coming decade. Four hundred fifty attended the meeting, and another 250 were turned away because of a lack of space. Robert Zemsky, chairman of the Pew Higher Education Roundtable, said, "We are an endangered species. To remain affordable, we need to change the way we do business, and that means changing how and what we teach. We can't just cheat at the margins, we must restructure."

With the reductions of government dollars and reduced numbers of incoming college age students coupled with increasing costs to service student needs, each institution will have to look at alternatives in the funding cycles. As facilities managers we will have to compete for dollars from our institutions. Traditional methods of management may not work. The future may be tenuous, but with vision and leadership higher education will be well served by our efforts.

The committee is preparing a list of specific questions that will be used to guide a discussion with a number of personal contacts made by task force members. Following those contacts the task force will meet and formulate the format for an APPA monograph that should be ready for publication later this year.

Special thanks go the task force members: Ron Flinn, Michigan State University; Pete van der Have, University of Utah; Dean Fredericks, State University of New York/Buffalo; Scott Charmack, California State University/Long Beach; Edward Naretto, Cal Poly State University; and Joe Spoonemore, Washington State University. ■

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New Refrigerant Safety Classification Approved

In January the American Society of Heating, Refrigerating and Air-Conditioning Engineers approved safety classifications for two alternative refrigerants. The association also approved a new residential energy conservation standard and a second draft of a protocol for building automation and control networks.

Two new refrigerant blends designated as R-403 were incorporated into ASHRAE Standard 34-1992 "Number Designation and Safety Classification of Refrigerants." Because of the 1995 CFC production phaseout deadline, ASHRAE has been testifying before code organizations to encourage the adoption of ASHRAE standards that

rate alternative refrigerants. ASHRAE classifications for toxicity and flammability determine a refrigerants's rating and the corresponding safety procedures required in order to assure the safety of building occupants in case of refrigerant leakage. ■

Fulbright Available

The Council for International Exchange of Scholars (CIES) announced the availability of up to three awards for American administrators under the Unites States-United Kingdom Academic Administrators Program. The awards are being offered under the Fulbright program to provide opportunities for college and university administrators to broaden their professional perspectives and enhance cross-cultural skills and insights.

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Administrators from four-year colleges and universities are eligible to participate, but candidates from two-year institutions are not. For more information, contact the Council for International Exchange of Students, 3007 Tilden Street, NW, Suite 5M, Box N-UKAD, Washington, DC 20008-3009, or call Karen Adams at 202-895-5393. ■

Campus Safety Liaison Formed

by Robyn Hansen
University of North Carolina
Asheville, North Carolina

As the liaison between the Campus Safety Association and APPA, it is my goal to assist APPA members by increasing safety, health, and environmental awareness. I hope to accomplish this goal by providing an avenue for exchanging information, making my time and CSA resources available to help you address specific concerns. I have been a member of CSA and APPA for the past six years. At UNCA, I have the joint responsibilities of plant maintenance and safety, which is the main reason I volunteered to serve as the CSA/APPA liaison.

This past fall I contacted each regional APPA president to solicit their ideas for safety topics that would be beneficial to APPA's members. I received several phone calls from APPA members who shared their ideas with me. I will be attending APPA's Annual Meeting and 81st Educational Conference in San Antonio in July and will be presenting a paper on how facility services enhance indoor air quality. In the meantime, please feel free to contact me any time you have a safety related question or concern: University of North Carolina at Asheville, One University Heights, Asheville, NC 28804-3299; 704-251-6564; fax 704-251-6455; e-mail rhansen@unca.edu. ■

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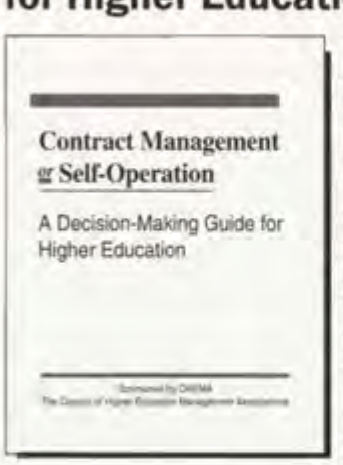
A Decision-Making Guide for Higher Education



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Barbara Hirsch

Budget

Clinton Administration proposes FY95 budget—The administration issued its proposed FY95 budget for Environmental Protection Agency programs the week of February 7. EPA is the big winner in the 1995 budget, with an 8 percent increase, or $500 million more than appropriated in fiscal 1994. This will raise the agency's 1995 spending authority to $7.2 billion. In addition, the EPA would face fewer workforce reductions than other agencies under Clinton's government streamlining plan. An additional appropriation of $458 million would go into the EPA operations budget to be used for more responsive regulation programs, including funding a "multimedia" pilot project to assist individual industries in meeting compliance mandates. EPA would also be allowed to shift 900 contractor jobs into the agency, a net increase of 709 full-time jobs, which would add $37.9 million to its research budget.

Drinking water programs took a $6 million cut in the 1995 budget, but the Clinton administration has separately requested an additional $100 million for state revolving funds, bringing the program up to a total of $700 million in 1995. Priorities of the program in fiscal 1995 will include developing a stronger scientific basis for identifying contaminants that need to be regulated, providing technical assistance and training to small water systems, and expanding enforcement. Other EPA programs scheduled for cutbacks are toxic substances and pesticides.

Barbara Hirsch is APPA's director of government relations.

Unfunded Mandates

Governors Association approves unfunded mandate legislation—The National Governors Association's (NGA) Committee on Natural Resources approved a policy calling for federal funding of environmental mandates. The NGA also said that states should have authority to set priorities for carrying out unfunded federal mandates based upon sound science and risk-reduction principles, including the appropriate use of cost-benefit analysis. Nevada Governor Bob Miller said that the time has come to set realistic priorities among environmental programs so that the most important environmental objectives at the national, state, and local level can be focused on.

Senate Environment and Public Works Chairman Max Baucus (D-MT) told the governors that the Senate will address the issue of unfunded federal mandates by appropriating more money and reforming laws. Baucus expressed concern that adding risk assessment to all environmental regulations would lead to gridlock, but he said that Congress needed to find a balance between environmental protection, reasonableness, and common sense. Baucus promised to reform excessive mandates in Safe Drinking Water and Clean Water reauthorization legislation, and to increase the spending levels for local programs mandated by these laws.

Regulatory News

EPA issues final rule on gasoline standards—The EPA has issued a final rule that requires that gasoline sold in certain areas be reformulated to reduce vehicle emissions of toxic and ozone-forming compounds. See February 16, 1994 *Federal Register*, p. 7716. Section 211(k)(1) of the Clean Air Act, as amended, mandates that reformulated gasoline be sold in the nine largest metropolitan ares with the most severe summertime ozone levels and other ozone nonattainment areas that opt into the program. The same section of the act also has an anti-dumping provision to ensure that refiners do not dump fuel components that are restricted in reformulated gasoline and that cause environmentally harmful emissions into conventional gasoline. Retail sale of reformulated gasoline will begin on January 1, 1995. Provisions for "simple model" certification and the anti-dumping provisions will take effect on the same date. The regulations for the reformulated gasoline program became effective on March 18, 1994.

For further information on the reformulated gasoline regulations, contact Paul Machiele, U.S. EPA (RDSD-12), Regulation Development and Support Division, 2565 Plymouth Road, Ann Arbor, MI 48105; 313-668-4264. For information on the reformulated gasoline and anti-dumping requirements, contact U.S. EPA (6406J), Field Operations and Support Division, 501 3rd Street, Washington, DC 20005; 202-233-9307.

EPA proposes new drinking water regulations—The EPA has issued a proposed rule to require public water systems that serve 10,000 people or more to generate and provide the agency with specific monitoring data and other information characterizing its water systems. See February 10, 1994 *Federal Register*, p. 6332. Systems that use surface water, or ground water under the influence of surface water, and serve between 10,000 and 100,000 people would be required to

- monitor source water at the intake of each plant for giardia and cryptosporidium, fecal coliforms or Escherichia coli, and total coliforms, and
- provide specific engineering data on the removal of disease-causing microorganisms.

Systems serving more than 100,000 people would have additional monitoring requirements.

For further information contact the Safe Drinking Water Hotline at 800-426-4791. For technical information contact Stig Regli or Paul S. Berger, Ph.D., Office of Ground Water and Drinking Water (WH-550D), U.S. EPA, 401 M Street, SW, Washington, DC 20460; 202-260-7379 (Regli) or 202-260-3039 (Berger).

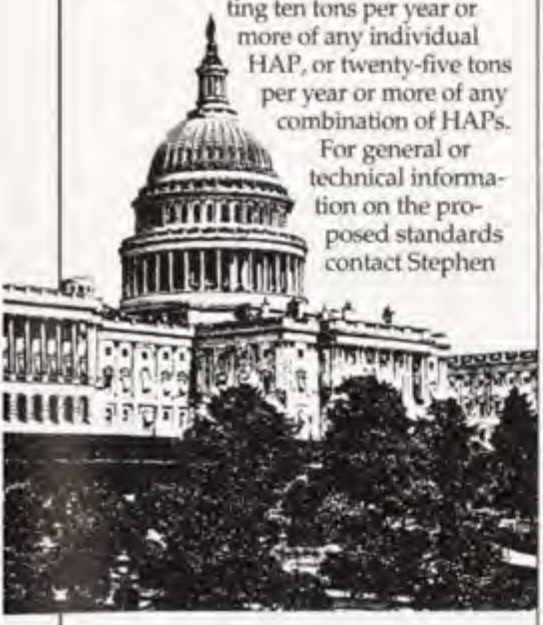
EPA announces final rule on vapor recovery controls in light-duty trucks—On January 24, 1994 the EPA announced a final rule that requires manufacturers to install on-board vapor recovery controls in light-duty trucks weighing between 6,500 and 8,500 pounds, beginning in 2004. Controls will be required on 40 percent of passenger vehicles beginning in the 1998 model year, and in all cars by

2000. The vapor recovery unit is made up of a canister that captures fumes during refueling and directs them back to the gasoline tank. The canisters will add approximately $10 to the price of a car. The EPA says that volatile organic compounds and air toxics will be cut by 300,000 to 400,000 tons per year once the regulation is fully in effect. The rule has not yet been published in the *Federal Register*.

EPA announces proposed rule on national emission standards for hazardous air pollutants—The EPA has proposed standards to limit emissions of hazardous air pollutants (HAPs) from existing and new bulk gasoline terminals and pipeline breakout stations. See February 8, 1994 *Federal Register*, p. 5868. The regulation will effect the following categories:

- pipeline pumping stations,
- pipeline breakout stations,
- bulk gasoline terminals,
- bulk plants, and
- service stations.

The proposed national emission standards for hazardous air pollutants (NESHAP) implement section 112(d) of the Clean Air Act as amended in 1990, which requires the administrator to regulate emissions of HAPs. The proposed standards would apply to major sources, which are defined as emitting ten tons per year or more of any individual HAP, or twenty-five tons per year or more of any combination of HAPs. For general or technical information on the proposed standards contact Stephen Shedd at 919-541-5397, Chemicals and Petroleum Branch, Emission Standards Division (MD-13), U.S. EPA, Research Triangle Park, NC 27711. For general information or information on the economic impact of the proposed standards, contact Scott Mathias at 919-541-5310, Standards Development Branch, Emission Standards Division (MD-13), also at the address above.



OSHA News

OSHA issues final rule on hazard communication—The Occupational Safety and Health Administration (OSHA) issued amendments to its hazard communications regulations. See February 9, 1994 *Federal Register*, p. 6126. Employers are required to establish hazard communication programs that include labeling, safety data sheets, and training programs to ensure employees "right-to-know" about the hazards and identities of the chemicals with which they work. The rule adds and clarifies certain exemptions for labeling and other requirements; modifies and clarifies aspects of the written hazard communications program and labeling requirement; clarifies and slightly modifies the duties of distributors, manufacturers, and importers to provided material safety data sheets (MSDS) to employees; and clarifies certain provisions regarding MSDSs.

This rule became effective March 11, 1994. For further information contact James F. Foster, Office of Information and Consumer Affairs, Occupational Safety and Health Administration, 200 Constitution Avenue, NW, Room N3647, Washington, DC 20210; 202-219-6151. An explanatory pamphlet, OSHA 3084, "Chemical Hazard Communications," is available through OSHA's Publications Office, Room N3101, at the address above; 202-219-4667. OSHA 3111, "Hazard Communications Guidelines for Compliance," a booklet that reprints Appendix E of the Hazardous Communication standard is also available through the OSHA Publications Office.

OSHA issues guidance for worker exposure to lead—OSHA has issued an enforcement guidance document for its recent rule on lead exposure in construction. See May 4, 1993, *Federal Register*, p. 26590. The guidance contains inspection and compliance procedures to be used by OSHA inspectors.

The May 4, 1993 regulation reduces the permitted level of exposure to lead for construction workers. In addition, the regulation includes requirements addressing exposure assessment, methods of compliance, respiratory protection, protective clothing and equipment, hygiene facilities and practices, medical surveillance, medical removal protection, employee information and training, signs, record keeping, and observation of monitoring.

The guidance is called 29CFR 1926.62, Lead Exposure in Construction; Interim Final Rule—Inspection and Compliance Procedures. It is available from the OSHA Publications Office, N3101, 200 Constitution Avenue, NW, Washington, DC 20210. Please send a self-addressed label with your request.

Other materials available from OSHA include: Lead in Construction (OSHA 3142) and the following fact sheets: Worker Protection Programs, Engineering Controls, Housekeeping and Personal Hygiene Practices, Protective Clothing, Respiratory Protection, and Medical Surveillance.

Underground Storage Tanks

Phase-in deadline for underground storage tanks—Owners and operators of underground storage tanks had until December 1993 to meet the EPA's leak detection regulations. Those not in compliance face significant fines. The next phase of the UST regulation, which will be phased-in by in December 1998, deals with requirements for spills and overflow prevention and corrosion protection. Tanks not meeting technical requirements by that date will have to be closed.

For further information call the RCRA hotline at 800-424-9346. Two pamphlets on USTs—"Straight Talk on Tanks" and "Musts for USTs"—are also available. "Straight Talk on Tanks" can be obtained by calling the RCRA hotline; "Musts for USTs" is available from the Superintendent of Documents at 202-783-3238.

APPA offers free online legislative and regulatory news—APPA members, do you have access to Internet or Bitnet? If you do, you can subscribe to the online *APPA Government Relations Update* at no charge! The bulletin comes out every Monday when Congress is in session. To be included on the distribution list, please leave a message directed to my attention on the "Subject" line at appa@bitnic.bitnet or appa@bitnic.educom.edu. In addition, include your name, address, and phone number for our records. ■

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Focus on Management

Setting and Achieving Goals

H. Val Peterson

In the book *Alice's Adventures in Wonderland*, Alice learns a lesson in goal setting. Alice meets a Cheshire Cat at a crossroad and asks, "Would you tell me, please, which way I ought to go from here?" The Cheshire Cat says, "That depends a good deal on where you want to get to." Alice replies, "I don't much care where," to which the cat replies, "Then it doesn't matter which way you go."

Several years ago while driving on the freeway, I noticed three hitchhikers waiting near an on-ramp to receive a ride. Each of them carried a homemade sign that announced his desired destination. One sign read "Los Angeles," while a second sign carried the designation "Boise." However, it was the third sign that not only caught my attention, but caused me to reflect and ponder its message. The third hitchhiker was not trying to reach Los Angeles, California, or Boise, Idaho, but on the cardboard sign it read simply "ANYWHERE."

Here was a person who was content to travel in any direction, according to the whim of the driver who stopped to give him a free ride. What an enormous price to pay for such a ride. No plan. No objective. No goal. The road to "anywhere" is the road to nowhere, and the road to nowhere leads to dreams sacrificed, opportunities squandered, and a life unfulfilled.

Imagine to yourself where you will be ten years from now. Think about what you will be doing and the person you would be if your highest hopes and dreams came true. Think about specific and personal things such as: I want to finish my education and graduate from college; I want to be the best facilities manager in my field; I want to raise my level of spirituality. We need to carefully think about what we really want to do and what we really want to be. Short-range goals need to be set. Short-range goals are merely stepping stones that will lead to the accomplishment of long-range goals.

An old Chinese proverb makes this point well: "A journey of a thousand miles must begin with a single step." There are four recognized steps that may be followed in order to properly set and achieve goals.

1. Decide what needs to be done. Make a list of the things you would like to know, qualities and abilities that you would like to possess, and things that you want to have happen in your life or that you want to accomplish.

2. Decide what to do and when to do it. Write down the goal and how you plan to reach it. Remember, a goal not written down is merely a "wish." Choose some friend, family member, or some other person to whom you will report the progress you make. Set a time to complete your goal and dates along the way to check your progress.

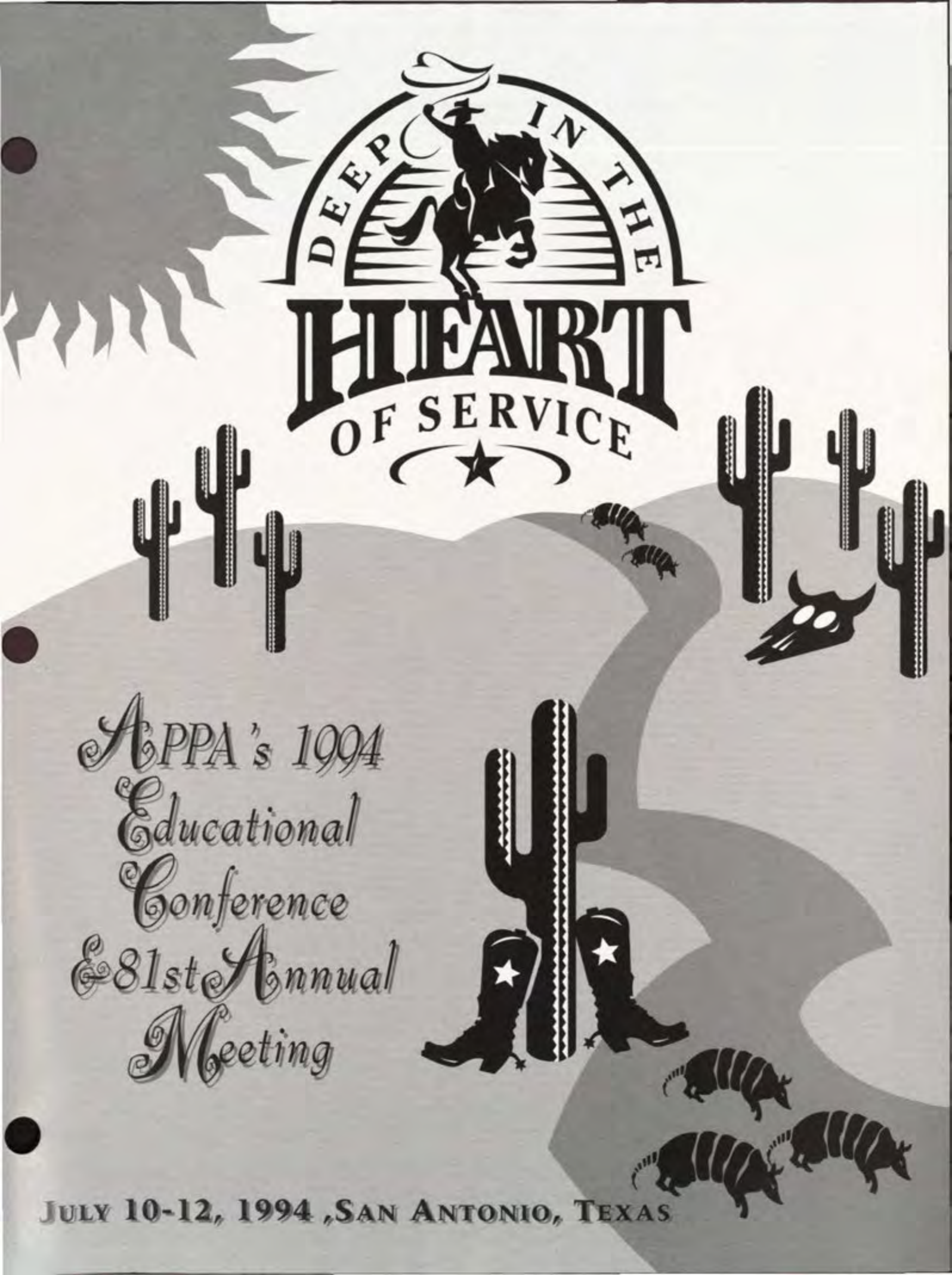
3. Act on your plan. If the goal is something you can do by yourself, do it! If you need help, ask someone to help you complete your goal.

4. Report on your progress and results. Meet with the person to whom you chose to report your progress. Tell him or her what you have done. Some of your goals may be confidential and need not be shared with another person.

After you have completed Step 4, begin the process again by evaluating what needs to be done next.

If you are at a crossroad and don't really know which way to go, sit down and follow the steps previously outlined. You may be surprised at what you can accomplish and what you can be, if you take the time to plan out your destination. ■

Val Peterson is director of facilities management at the Arizona State University in Tempe, Arizona.


DEEP IN THE
HEART
OF SERVICE
APPA's 1994
Educational
Conference
& 81st Annual
Meeting
JULY 10-12, 1994 , SAN ANTONIO, TEXAS

As the world enters a new era of technological development and enhanced resources, one fundamental value continues to be of the highest concern—customer service. The responsibilities of the facilities management organization impact on all areas of the campus—faculty, students, administration, visitors and the community at large.

Facilities operations affect the quality of the educational experience. Thus the mission of facilities management should be to serve the institution in support of its academic mission and goals. This means not only knowing what services need to be provided but how to provide them.

Customer service is an area which requires trained and knowledgable staff as well as an organizational culture which fosters service and excellence. Communication, timeliness, and responsiveness are key words in achieving service excellence.

APPA can provide many resources to assist institutions in delivering this service. The Educational Conference and Annual Meeting is a key learning experience. Not only will the conference examine the issues of leadership and organizational culture, but it will explore cutting edge developments, and foster networking to share ideas and solutions that other facilities organizations have to offer.

Join us in San Antonio to experience a conference for leaders in facilities.

The 1994 Educational Conference features many educational opportunities. The program is divided into several tracks each day so that you may focus on one subject area or divide your time among topics. Tracks: Business Management; Facilities Operations; Facilities Planning, Design, and Construction; and Human Resource Management.

The "Hot Topic" sessions on Sunday focus on timely issues of concern to facilities officers. This year's sessions include:

President's Forum

Presidents of local colleges/universities have been invited to address the role of facilities at their campus and in higher education. As the leader of your facilities organization, carry these ideas back to your campus to share with your president and your own organization.

Environmental & Regulatory Issues

Day-long programming on current regulatory climate. Update on current issues and other concerns by APPA's Director of Government Relations. Other programming includes:

- Facility Services Enhances Indoor Air Quality by Robyn Hansen, UNC/Asheville
- ELF Electromagnetic Fields in the Built Environment by Paul Swanson & J.G. Sims, Facility Engineering Associates
- Alternative & Emerging Medical Waste Treatment Technologies by Lawrence Doucet, Doucet & Mainka

Also special Sunday sessions in Personal Development including a three-hour session on Stress Management and an afternoon session on Leisure-Time Planning.

Educational Sessions on Sunday afternoon, Monday, and Tuesday cover a wide range of topics. There are more than 30 sessions to choose from on wide range of topics from Reengineering Facilities Management, Development of a Training Program for Customer Service, End-use Work Request Network to Designing the Electronic Classroom.

Programming includes sessions for senior facilities officers, associates/assistant facilities managers, architects/planners, as well as managers in grounds, human resources, energy, and environmental issues. The program includes sessions geared toward small campuses as well as several presentations by international members.

A full listing of all the sessions and their content is contained in the Preliminary Program materials which have been mailed to all APPA members.

The conference also features Round Table/Networking Discussions in which fifteen to twenty topics will be presented in small group formats. Attendees are encouraged to provide APPA with their suggestions for topics to be covered.

Another popular educational program are the Exhibitor/Vendor Technical Sessions which are presentations given by corporate representatives that provide a unique perspective of facilities management operations by focusing on products/services and new technology.

In addition to a full program of educational presentations, the meeting offers many opportunities for networking with other facilities professionals, visiting with more than 175 exhibiting companies, and vacationing in San Antonio.

Leadership Issues Workshop

MONDAY, JULY 11

LEADERSHIP FOR THE 90s

Designed for senior facilities officers, the program focuses on leadership issues.

The workshop will be conducted by Thomas J. Champoux, Co-Founder and Vice President of The Effectiveness Institute, Inc. Discover how to create a participative organization that enables you to get more for less from the resources you have.

Keynote Address

SUNDAY, JULY 10

Burt Nanus, professor of management at the University of Southern California's School of Business Administration and director of research at USC's Leadership Institute. He is author of six books, including the recently released, *Visionary Leadership*. Among the others, *The Leader's Edge: The Seven Keys to Leadership in a Turbulent World* and *The Strategies for Taking Charge*.

Vision is the key to leadership and a powerful tool in helping an organization focus on a direction. Hear how to create a new organizational culture in your institution.

Conference At A Glance

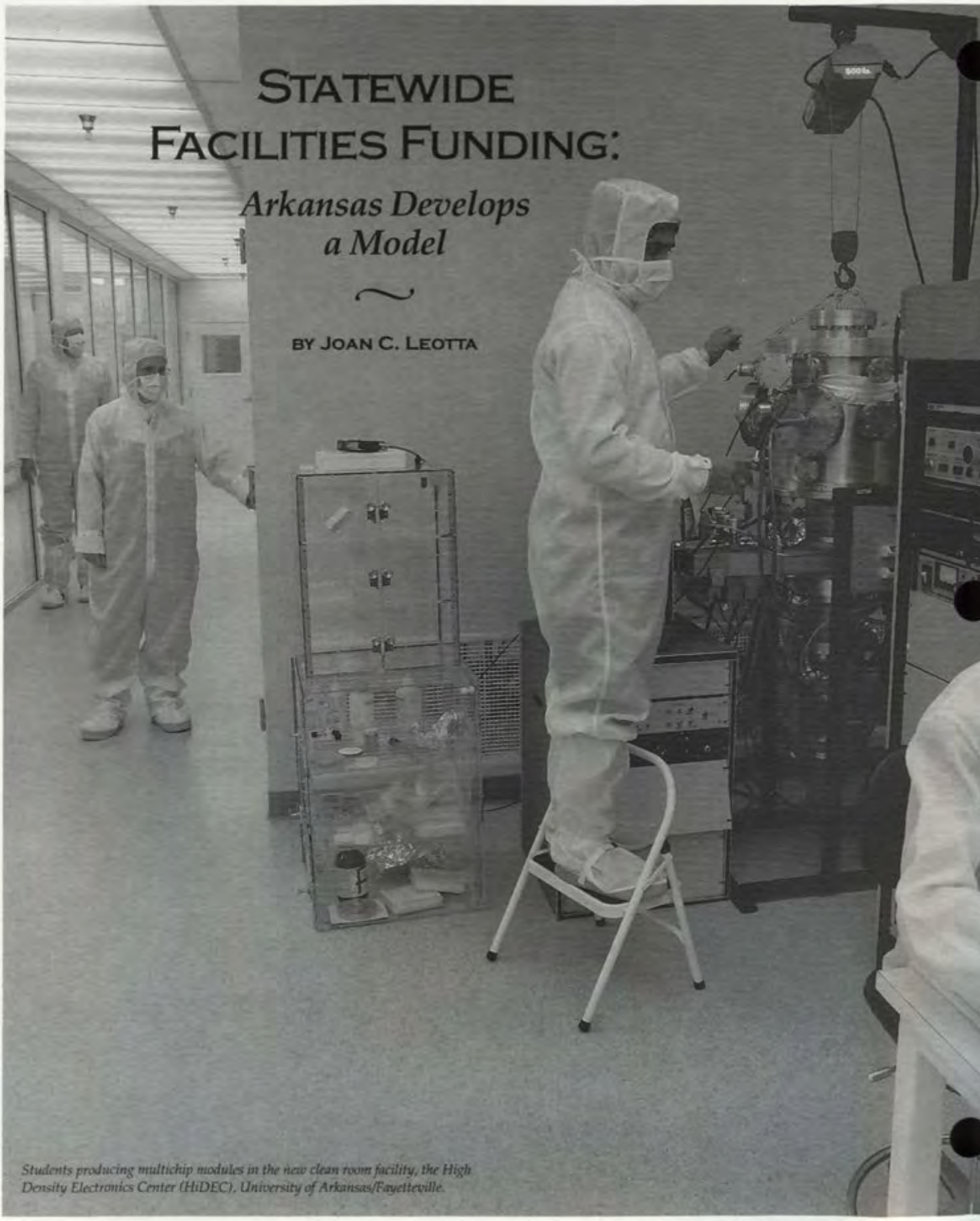
SATURDAY, JULY 9	
Registration Opens	12:00n-5:00p
Campus Tours San Antonio College Trinity University	1:00-5:00pm
Alamodome Tour	1:00-5:00pm
SUNDAY, JULY 10	
Welcome Breakfast	7:30-8:15am
"Hot Topic" Sessions Personal Development Sessions	9:00am-12:0
Lunch	12:00n-1:00p
"Hot Topic" Sessions Educational Sessions	1:00-3:00pm
Keynote Address	3:00-4:00pm
Exhibit Hall Reception	4:00-7:00pm
MONDAY, JULY 11	
President's Breakfast	7:00-8:30am
Leadership Issues Workshop	8:00-5:00pm
Educational Sessions	9:00-12:30pm
Exhibit Hall Open/Lunch	12:00n-3:00p
Exhibitor/Vendor Technical Sessions	3:00-4:00pm
Regional Meetings	4:00-5:30pm
Evening Activity Fiesta Texas	6:00-9:30pm
TUESDAY, JULY 12	
Breakfast	7:00-8:30am
Educational Sessions	9:00am-12:0
Exhibit Hall Open/Lunch	12:00n-3:00p
Round Table Discussions	3:00-5:00pm
Annual Awards Reception & Banquet	6:00-9:30pm

DEEP IN THE HEART OF SERVICE

Statewide Facilities Funding:

Arkansas Develops a Model

BY JOAN C. LEOTTA



Students producing multichip modules in the new clean room facility, the High Density Electronics Center (HiDEC), University of Arkansas/Fayetteville.

Photo by D. House

Consultation on facilities issues with state coordinating boards and agencies has been an important APPA function for several years. Recent work with the Arkansas Department of Higher Education, in cooperation with its state-supported colleges and universities, may have far-reaching effects if a recommendation by the department is adopted by the legislature in the 1995 biennium budget.

That recommendation includes an additional annual state appropriation based on 1.5 percent of facilities replacement value. Policy recognition of this value, although less than the APPA recommended allowance of 2.5 percent for the cost of annual life-cycle deterioration, marks a major development stabilizing facilities conditions.

The proposal to the Arkansas legislature will, in addition, also add an additional allowance for research facilities and seperate funding for deferred maintenance. Some funding for facilities audits is already being released to establish the extent of capital renewal and deferred maintenance needs at state colleges and universities.

While some states have adopted similar formulae to support campus facilities, many have not. For that reason, the process by which the Arkansas proposal developed, and APPA's role as both expert and advocate, can serve as a model process for other states.

Dr. Walter A. Schaw, APPA executive vice president, noted, "Funding for facilities operations has sustained successive reductions in many states during the recent recession. The condition of deferred maintenance has worsened at some states as preventive maintenance has been reduced and funding to reduce backlogs has been required for other purposes. The low priority of the problem in a recent APPA opinion poll may indicate that some facilities officers may have given up on making real progress until better times materialize.

"Our recent experience in Arkansas suggests that proactive, statewide efforts can still produce results in not only funding for backlogs, but also in a comprehensive funding for life-cycle renewal and repair that stabilizes the present condition," said Schaw.

In a prelude to the present proposal, the Arkansas Department of Higher Education had earlier reminded the legislature of the role facilities hold in enhancing an institution's mission. In its 1990 funding proposal, the State of Arkansas recognized the existence of facilities problems and is facing it head on. The philosophy driving higher education facilities in Arkansas has been transformed from a minimalist, "do-the-critical" mentality into a proactive, future-oriented methodology. The results of that forward thinking will be presented as a proposal to the Arkansas legislature in its next session in January 1995.

Arkansas' proposal seeks a change in the way in which money is apportioned among the schools, to account for the greater intensity of use in buildings used for research, and it seeks to include funds for deferred maintenance in the operating budget, a departure from the way in which deferred maintenance is currently handled.

The specific recommendations of the State of Arkansas may or may not be relevant to another system's concerns or process. Even though it is not yet complete, the Arkansas process is worthy of emulation because it has created a new level of statewide recognition of the problems of facilities funding and an opportunity to present solutions to the next session of the state legislature.

"In a university setting," said Schaw, "the largest percentage of the operating budget, about 70 percent, goes to the academic side. Budget cuts are often targeted at the 30 percent balance, of which facilities are about one-third. But buildings, while they should not necessarily dominate budget priorities, do need constant attention for present and future needs as each institution's largest capital investment."

Often, the more limited the total amount of funds available, the more fierce the competition is among departments on the academic side, and the sharper the lines drawn between the academics and the other facets of university life, including building maintenance. But a great university is the the sum of all its parts working together—a team effort. For example, facilities play a role in enhancing other aspects of university life. In its 1990 funding proposal, Arkansas reminded its universities of this interdependency by quoting a study by Halpern Associates and one by the Carnegie Foundation for the Advancement of Teaching. In 1987, the Halpern study, produced for the Society for College and University Planning, showed that 70 percent of planners surveyed said that the state of physical facilities contributed to the ability to recruit good faculty. The 1986 study done by the Carnegie Foundation pointed out that facilities figured in the decision making for choosing a college of 60 percent of incoming freshmen.

According to Schaw, "One of the unique aspects of the Arkansas process is the high degree of cooperation among all of the parties at the university level—with the critical link between the facilities manager and the finance officers to the higher education facilities office, and the whole of the university system cooperating together as they now go to the legislature."

To some degree the high level of cooperation achieved in Arkansas can be said to be the result of a serendipitous alignment of good working relationships within the University of Arkansas/Fayetteville, and between the staff of that university and the staff of the Arkansas Department of Higher Education. But in reality, the strong pattern of working together to resolve problems is more than serendipity. It is the

Joan Leotta is a freelance writer based in Burke, Virginia.

result of a continual cooperative effort on every aspect of operations over a number of years.

The system has built-in calls for working together among universities and among departments in the state before a proposal can be presented. Cooperation began early and continued at every stage. Any party identified to be affected by the process was included in the process of developing the plan. Outside assistance in the form of a request to APPA brought in neutral information as well as data that was not tainted by the perspective of any party with a vested interest in the process. As soon as the problems were identified at the University of Arkansas, they contacted their own department heads for verification and backup information and assistance. The state called in APPA and held meetings with other campuses that might be affected by the proposed changes.

It is this cooperation, combined with a careful, well-documented approach to the problem, that has put Arkansas in the position of facing the state legislature with a proposal that all involved parties in the system have agreed to.

Arkansas Develops Its Proposal

Development of the Arkansas proposal began with research in 1992. The first proposal was approved in fall 1993, and the first presentation made to groups outside of education officials is scheduled for July 1994. The proposal is scheduled to be considered by the legislature in January 1995.

In the spring of 1992, Leo Yanda, facilities administrator at the University of Arkansas/Fayetteville, was reviewing the funding allotment for that campus and comparing it with the funding for other institutions in the state university system.

"I noted," said Yanda, "that while the University of Arkansas appeared to be getting a large share of funds, the share received was not actually proportionate based on identified need. It appeared to me that our research facilities were being underfunded. I began to question the formula that divides the funds among schools."

Yanda reported his findings to the vice chancellor for research needs and began to work with Dr. Merlin J. Augustine, the finance officer for the university, to try to find a way to resolve the problem.

They decided to begin a comparative study of other state universities in similar situations. They wanted to review the experience of land-grant universities with no medical school on the campus, but with research facilities in a similar use pattern to that of the University of Arkansas.

For assistance in this process, Yanda and Augustine contacted Dr. John C. Gardner, coordinator of institutional finance for the Arkansas Department of Higher Education, and began to make inquires at APPA.

"We faxed a lot of our basic data to Dr. Schaw at APPA who provided us with a lot of information on other schools similar to ours. They had comparative data on costs and formulae for funding, charts and graphs, and life-cycle data on buildings," said Gardner. Using this information, the three began to redesign the Arkansas formula.

The Value of a Facilities Audit

Key to the discovery of the initial problem and to the gathering of the data that they sent to APPA was the facility audit program used in the Arkansas higher education system.

Arkansas has been conducting audits of its education and general buildings in higher education facilities since 1984. Critical needs identified in these audits have been addressed, by special fees, loans, or bond issues; in some cases, private donations were used. All parties agree that identification of the need in an organized way has been critical to resolving the problem uncovered.

The importance of audits is underlined by Dr. Brenda N. Albright, deputy executive director of the Tennessee Higher Education Commission. Albright, a pioneer in the use of regular audits, said, "A good audit is essential for future planning. It reveals what needs to be done. It can serve both as a baseline from which the state can rise and as a report card for budget decision makers at every level from the university to the state boards to the legislature and the governor's office."

Albright continued, "The audit is the first step in the process. It supplies the data needed to give foundation to the other steps. The second step is the development of a plan that takes into consideration all recommended factors and still allots funds fairly among the various institutions in the state system, and the third step is presentation of the plan to the decision makers."

Gardner agrees that it was audit information that began the development of the Arkansas proposal. He notes that the information from the most recent audit in Arkansas was entered into computer program developed by the state following the guidelines of APPA's manual audit of the age of structures and their systems. The information gathered provided the needed data to reformulate the apportionment to allow for intensity of use for buildings used in research and to begin to demonstrate to other levels the need for funded depreciation to be included in the operating budget for the state university system. The data revealed that because the Arkansas system did not account for the fact that research facilities receive harder use than other buildings due to the 24-hour-a-day nature of many of the research activities, there was an inequity since more money had to be put into those buildings than facilities receiving a lesser pattern of daily use.

Gardner noted, "We knew from our experience that such changes were needed, but having this hard data allows us to present the need clearly and accurately to those who do not work with these issues every day and who have other priorities besides the university to deal with, such as the state legislators."

One of the issues was a weighted factor for intensity. Yanda, Gardner, and Augustine gathered information from the various University of Arkansas science department chairs. Then they compared that experience with that of other schools, looking especially closely at schools with a similar configuration to that of Arkansas.

It was in the course of this work that the parties involved became convinced that it was time for Arkansas to include some funds in the operating budget for decreasing deferred maintenance. At the present time no deferred maintenance monies are set aside through the operating budget in Arkansas. Only routine maintenance is covered in the operating budget. Outside sources such as loans, bond issues, or donations were used to meet the critical needs identified in the process for the 1991-93 biennium budget.

"Deferred maintenance can be a ticking time bomb," said Augustine, "and yet we need to present it to our legislature in a way that is reasonable. The legislators cannot help us unless we present the problem to them with practical proposals for solution."

Gardner added, "The legislature is a group of business peo-

Physical Plant staff members of the University of Arkansas use the Senior Sandhog to sand blast the names of every student in the graduating class into the campus sidewalk every summer.

ple who must distribute the state's revenue among many priorities. We have to come to a practical figure that is realistic and will enable us to present our situation in the best light for favorable consideration."

Albright confirmed this. "It is important that statewide boards and systems address capital revenue and capital replacement costs for facilities. These facilities represent the major dollar investment in higher education on the campus."

APPA Visits Arkansas

After the initial meetings with Gardner, Yanda, and Augustine, meetings were held on other state university campuses to discuss the need to include a factor for intensity of use in the funding formula. At the same time, all parties remained cognizant of the need to be fair to each campus, including those without research facilities. The State Building Services Department joined in the process as well. In late summer 1993, in order to develop these ideas into an Arkansas plan and account for all elements, the Arkansas Department of Higher Education decided to hold a conference and invite APPA.

Gardner said, "We invited Dr. Schaw from APPA to come down and join us. He had been giving us much advice and information, and we wanted him to speak to our problems directly, with the entire group working on the problem assembled. We wanted his informed, yet outside perspective to help us pull together and come to resolution."

The group included the director and assistant director of the Arkansas Department of Higher Education and the Facilities Management Committee, as well as the group's senior finance officer, Barbara Patterson. On a statewide level, this was the first time that business officers and facilities officers met together. The Arkansas Department of State Building Service and the universities were well represented.

At the meeting on August 10, 1993, Schaw presented general methods of dealing with the problem of funding formulas and spoke directly to the issue of deferred maintenance funding. He posited that even at a high level of funding, a state university system may have a poor record for CRDM (capital renewal/deferred maintenance). He presented models from other states and shared information on the latest ways to handle various aspects of problems of deferred maintenance and the need to account for a greater use of some facilities than others.

Schaw noted, "Despite a high priority by a state and a generous annual appropriation per student, some schools still had serious CRDM problems. Funding formulas based on intensity of use are good, but they must be adjusted for research and other intensive-use facilities. Playing 'catch-up' with building maintenance is only part of the problem. State planners must also consider future needs. Renewal must be constantly in the forefront of all planning processes." Schaw's presentation in Arkansas identified three questions critical to the decision-making process for facilities funding—the amount of space (by square foot and type of use), the age of the space, and the current condition of that space—all areas where the needed data comes from the audit process.

"The sort of cooperation that began the process on the campus at University of Arkansas/Fayetteville permeated this meeting," said Schaw. The truth of his observation is borne out by the fact that only shortly after this meeting, by October 22, 1993, an agreed-upon proposal was developed, presented to, and approved by the Board of the Arkansas Department of Higher Education. Now Arkansas is in the final stage—presentation to the legislature.

Presenting the Proposal

According to Tennessee's Albright, this final stage of the process is actually an ongoing procedure. "Legislators need to be approached on a one-on-one basis," she advised. "Take them on tours of the campus. Seeing is believing. Show them the conditions that you want to have changed—not just the facts and figures, but the buildings themselves. Bring as many people as possible onto your campus. When you do present actual facts and figures, keep it simple."

Arkansas' Gardner agreed. "Legislators are used to making decisions, but they must choose from among a variety of priorities in the state. We need to show them what will make an impression, yes; but overall, we must make sure that our case is credible."

APPA's recommended level of regular funding for deferred maintenance is 2 to 2.5 percent for general use buildings, and 4 percent for research and hospital facilities. That is higher than the 1.5 percent included in the Arkansas proposal, but Arkansas felt 1.5 percent would be a better starting figure for the legislators to deal with. The 1.5 percent figure represents a longer assumed life for the facilities, but fits better within the mindset of the state legislature. If, later on in the course of regular reviews, figures can be found that would make a higher percentage more credible, and as legislators become more involved in making these adjustments in the higher education budget, a higher percentage could be proposed.

Arkansas is now in the process of waiting to present its package to its state legislature. The strengths of its proposal are that it was developed from a strong database, every item can be documented, and there was a strong degree of cooperation involved in the process—among finance, facilities, and academic departments within universities, between the Arkansas Department of Higher Education and individual universities and their personnel, with APPA, and with the Arkansas State Building Services. Said Schaw, "In unity there is strength." As Arkansas carries its proposals for change forward, it will need that strength. ■

The Make-or-Buy Decision:

The Organization of U.S. Campus Plant Operations

by Malcolm Getz, Jon M. Gullette, Diane E. Kilpatrick, & John J. Siegfried

In recent years, growing financial pressure on institutions of higher education has provoked a number of initiatives to cut costs. Among possible strategies is the perennial option either to self-operate auxiliary operations or to contract them out to an ever-growing number of private vendors. While financial exigency should not be the impetus to cost cutting (if cost cuts are possible while preserving the level of service, why are they not also desirable during prosperous financial periods?), the immediate pressure such a situation exerts on institutional management to make some sort of change often leads to a re-evaluation of the make-or-buy decision for auxiliary services.

The contracting of auxiliary services has a long history in the area of facilities, particularly for specialized skills and new construction or renovation. Conceivably, colleges and universities that are now considering changing the way in which they provide other auxiliary services can learn from the experience in plant operations.

An institution's characteristics may affect whether a particular auxiliary or business service is self-operated or contracted, because the cost-effectiveness of self-operation versus contracting may vary systematically as dimensions of the institution change. These characteristics may include size (enrollment), location (urban, suburban, rural), control (public, private), geographic region, and the institution's mission. The latter is reflected by the institution type (e.g., research, doctoral, comprehensive, liberal arts, two-year). How each characteristic affects the probability that an institution will self-operate or contract a service may depend on the particular service. For example, private, high-tuition colleges may be more inclined to self-operate those services with which students come into direct contact, such as dining and bookstores, in order to retain sufficient flexibility to incorporate nuances in service provision into their marketing effort.

By analyzing responses to a survey about the provision of college and university auxiliary services, we can determine what arrangements institutions use to provide specific services and what institutional characteristics, if any, are related to those arrangements. We cannot determine the rationale for the decision to "make or buy." Instead, we simply describe what is actually being done. Of particular interest is the relationship between institutional characteristics and the decision to make or buy various services that are central to plant operations. For example, are larger universities located in rural areas more likely to self-operate than to contract for electrical or for heating and air conditioning services?

Our investigation is based on a sample of 591 colleges and universities that responded to a spring 1991 survey about the organization and administration of their auxiliary services. These 591 respondents constitute slightly more than 25 percent of the approximately 2,200 members of the National Association of College and University Business Officers (NACUBO), each of whom received a request to complete the questionnaire. Of the 591 respondents, 539 were included among 2,045 colleges and universities that formed the basis of a comprehensive study of the cost of higher education (see Part III of Charles Clotfelter, Ronald Ehrenberg, Malcolm Getz, and John Siegfried, *Economic Challenges in Higher Education*, University of Chicago Press, 1991). Data on institutional characteristics are all from that study and were derived similarly for the fifty-two respondents to the NACUBO survey who were not included among the 2,045 institutions in the cost of higher education analysis. All of these data originate from various years of the U.S. Department of Education's Integrated Post-Secondary Educational Data Survey, or from the College Board's annual data tape describing colleges and universities.

The sample of 591 institutions is divided into 320 (54%) publicly controlled and 271 (46%) privately controlled colleges and universities. As private institutions constitute only

The authors are associate provost for information services and technology, associate vice-chancellor for plant operations, budget accounting analyst, and professor of economics, respectively, at Vanderbilt University, Nashville, Tennessee. *This research has been supported by Vanderbilt University. Hao Zhang provided research assistance.*

TABLE 1: Distribution of Sample Institutions by Carnegie Classification

Carnegie Classification	Number of Institutions in Sample	Percentage Distribution: Percentage of Institutions in Sample	Percentage Distribution: Percentage of Institutions in Total*
Research University	54	9.1%	3.8%
Doctoral University	45	7.6	4.0
Comprehensive University	178	30.1	21.7
Liberal Arts I College	49	8.3	5.2
Liberal Arts II College	102	17.3	15.7
Two-Year College	163	27.6	49.8
Total:	591	100.0	100.0

*There were 2,747 two-year and four-year colleges and universities in the U.S. in 1987 according to the Carnegie Foundation for Higher Education. In addition, there were 642 specialized institutions which did not offer undergraduate degrees. The latter are excluded from our sample and from the distribution reported here.

41 percent of all colleges and universities offering undergraduate degrees, our sample modestly overrepresents private institutions. The distribution by type of institution is delineated by Carnegie classification in Table 1.

Clearly, our sample focuses more on four-year than on two-year institutions. Within the four-year colleges and universities, major research universities are most overrepresented. Because our concern is primarily four-year institutions, the underrepresentation of two-year colleges does not hinder our analysis or interpretation of the data. Furthermore, because of the vast number of two-year colleges, our sample includes more of them than any other category except comprehensive universities.

The purpose of this report is to examine the way physical plant services are administered and provided at American colleges and universities. In particular, we identify the administrative area responsible for plant services, the frequency of collective-bargaining agreements covering various facilities' employees, and the propensity to self-operate various plant operations services.

Responsibility for Service

The administrative location of the facilities management department is reported in Table 2. The majority, 86 percent of reporting institutions, indicate that the facilities management department is assigned to the business/financial arm of the organization. Classroom housekeeping and grounds maintenance have reporting lines similar to those of plant operations. The only significant deviation from this pattern of about 85 percent reporting to business/finance, is dormitory housekeeping, for which 24 percent report to student services, and dormitory grounds, for which 7 percent report to student services. This result is somewhat surprising, because the predominant perception among plant administrators seems to be that student services (e.g., housing) has much more direct control of its own plant-related services than is indicated by the survey data. The data suggest that most facilities services are provided by an institution-wide facilities management department that reports to the business/financial division of the institution.

Collective Bargaining

Collective bargaining coverage of rank-and-file plant operations employees is reported in Table 3. Overall, about 28 percent of the institutions reported that their physical plant shops are covered by a collective bargaining agreement. The only exception is housekeeping employees, who tend to be unionized slightly less frequently (24.5%) than other physical plant shops. Public institutions reported collective bargaining agreements three times more frequently than their private counterparts. Sorting the collective bargaining agreements data by region indicates, as expected, that collective bargaining agree-

TABLE 2: Administrative Responsibility for Plant Operations and Related Services: 1991

Service	Frequency and Percentage Distribution: Business/ Finance	Student Services	Other	Number Reporting
Plant	504	3	79	586
Operations	(86.0%)	(0.5%)	(13.5%)	
Classroom	495	4	85	584
Housekeeping	(84.8)	(0.7)	(14.6)	
Dormitory	307	111	51	469*
Housekeeping	(65.4)	(23.7)	(10.9)	
Classroom	499	3	86	588
Grounds	(84.9)	(0.5)	(14.6)	
Dormitory	394	36	63	493*
Grounds	(79.9)	(7.3)	(12.8)	

*76 institutions in our sample of 591, all two-year colleges, do not offer on-campus residence facilities.

Sources of Unions

The greater tendency toward unionization at larger institutions leads us to consider why such a pattern exists. The answer may involve complex issues, including how first-line supervisors interact with front-line employees, the level of wages and fringe benefits, the degree of employee involvement in decision-making, management's concern for employee safety and working conditions, and worker alienation. Of these issues, first-line supervision seems to be most critical.

If the first-line supervisor's behavior toward employees is disrespectful and subjugating, the inevitable result is employee apprehension toward management. Employee distrust and consequent behavior, in turn, exacerbates and reinforces management's lack of respect for employees. The inevitable result is an adversarial relationship that can lead employees to seek, or at least be receptive to, union representation. Unionization under such circumstances can be especially disruptive. Responsible top management should not allow first-line supervision to subjugate employees and then to expect superior performance and quality service in return. It is unwise to expect employees to "check their brains" as they enter the workplace. Employee involvement in the work process (thinking and doing) can lead to total commitment to the services offered by the organization. Involved and engaged employees don't have time, incentive, or need to organize a collective bargaining unit. Larger organizations where top management may be more distant from first-line supervision might consider special efforts to engage front-line employees and their immediate supervisors in rethinking roles and work processes.

Pointers on Contracting

The institution that lets contracts can improve its situation by managing its contracting process carefully. The costs of contracts will be most attractive when several capable firms bid on each contract. Therefore, the institution can improve the terms of its contracts over time if it designs its contract process in such a way as to sustain several contractors. The highest cost circumstance may be when an institution has a long-term, open-ended contract with a single vendor who acts like a monopoly. Managing contracts so as to sustain competition holds prospect of yielding costs that are consistently below self-operation.

To sustain competition among capable vendors, the bids might be let for several smaller jobs, rather than letting a single contract for all the institution's needs in a given category. The length of contracts might be kept relatively short so that a contractor who loses one bid does not have to wait too long for the next contract. Indeed, contracts might be staggered so that not all contracts are renewed on the same date. For example, contracts might be let for eighteen month periods with one third of the contracts rebid every six months. The institution might adopt a policy of not awarding all of its contracts to a single contractor so as to help avoid the monopolization of the business. Finally, the institution might continue to self-operate some portion of the business so as to maintain current information about costs. If bids look surprisingly high in a given cycle, an institution might consider expanding the extent of its self-operation. The threat of more self-operation may discourage vendors from colluding on their bids.

Monitoring performance is also an essential part of contracting out. Although vendors face termination of a contract for non-performance, the extreme nature of termination makes it a poor method for assuring quality performance. Few institutions are willing to incur the legal hassles or to risk possible lapses in service that might result from termination of a contract for cause. Therefore, the threat of termination is seldom a credible device to effect improved performance. Better, then, to provide in the contract for performance bonuses for extra quality and timeliness of work, and financial penalties for poor performance. Agreed measures of performance consistently applied can then lead to sustained improvement in performance.

ments are more common in the East and Midwest. The Pacific region also has frequent unionization of plant operation's employees. Fewer than 15 percent of the institutions in the Central and Mountain states and the Southeast are unionized.

The data suggest that the larger the institution, the greater the chance that a collective bargaining agreement will be in place. Approximately 65 percent of institutions with student enrollment in excess of 20,000 reported collective bargaining agreements covering physical plant employees, while only 8 percent of institutions with enrollment of fewer than 1,000 indicated unionized departments.

It appears that the overall probability that whether an institution's physical plant department has a union organization is influenced by three factors: whether the school is public or private, its enrollment, and the region of the country in which it is located. For example, a public institution with student enrollment above 20,000 and located in the northeast region of the country has a 60 to 65 percent probability that the facilities management department will be covered by a collective

TABLE 3: Rank-and-File Employees' Collective Bargaining Coverage: 1991

Percentage Distribution

Service	Service Covered	Service Not Covered	Total Reporting Coverage
Housekeeping	24.5%	75.5%	547
Grounds	27.1	72.9	576
Plumbing	27.7	72.3	553
Carpentry	27.6	72.4	557
Electrical	27.8	72.2	553
HVAC	27.9	72.1	551

TABLE 4: Distribution of Self-Operated and Contracted College and University Physical Plant Services: 1991

	Percentage Distribution			
	Solely Self-Operated	Solely Contracted	Mixed Self-Op./ Contracted	Number of Reporting Institutions
Classroom Housekeeping	82.4%	11.3%	6.3%	578
Dormitory Housekeeping	82.5	12.5	5.0	456
General Grounds	89.9	4.1	5.9	587
Dormitory Grounds	90.2	5.1	4.7	470
Plumbing	42.0	2.8	55.2	578
Carpentry	47.8	2.6	49.6	578
Electrical	38.2	3.3	58.4	578
Heating & A/C	32.7	4.8	62.5	578

bargaining agreement. In contrast, a private institution in the southeast with fewer than 3,000 students has only about a 15 percent chance of being unionized.

Self-Operation vs. Contracting

The decision to self-operate or contract out facilities services is an important one. Neither strategy is necessarily cost effective in all situations. The advantages of self-operation include the reduction or elimination of some transaction costs, such as identifying, negotiating, writing, monitoring, metering, and enforcing contracts. Self-operation also eliminates the need for purchasing agents and attorney review of contracts. In addition, self-operation permits a degree of flexibility and control that cannot be attained if services are contracted, because contract specifications cannot hope to anticipate all eventual contingencies.

Contracting, on the other hand, allows smaller institutions to enjoy some of the cost advantages that may be offered by potential economies of scale that can be exploited by large vendors and specialization of labor. Specialist vendors are also more likely to be aware of improved production methods discovered and adopted elsewhere. Contracting also frees the management of colleges and universities to focus attention on their central mission, which is neither plumbing repair nor grounds maintenance.

A mixture of self-operation and contracting may be the most efficient way to provide facilities services, particularly those subject to demand fluctuations. An institution might self-operate a basic level of service provision, and contract out the provision of peak demand services and/or services that require specialized skills or equipment. In this way, an institution can ensure against costly interruptions in services while avoiding the cost of extra plant operations workers whose services or skills are needed only occasionally.

The distribution of college and university plant services between self-operation and contracting is reported in Table 4. Most housekeeping and grounds maintenance is completely self-operated. Skilled crafts are exclusively self-operated on 33 to 48 percent of the campuses surveyed. More commonly (one-half to two-thirds of the time), skilled crafts are divided between partial self-operation and some contracting to external vendors. Very few institutions rely exclusively on contrac-

Pointers on Self-Operation

There are essentially three elements of effective self-operation: skill and staffing levels, the values in the work culture, and performance measurement to support continuous improvement.

The foundation of successful facilities management departments in meeting the basic needs of the institution is the number and skill levels of the staff. The need for certain repetitive tasks, such as groundskeeping, routine maintenance, and housekeeping can be accurately projected on an annual basis.

In contrast, the need for skilled trades may be more difficult to forecast. Forecasts should be based on detailed knowledge of the scope of the facilities to be maintained. Capital projects, special events, and departmental work may contribute to occasional peaks in demand for staff. Wise facilities managers will employ full-time staff to meet basic maintenance needs and use overtime and contractors prudently to meet peak demands.

The achievement of the staff will depend critically on the work culture values shared between supervisors and front line employees. An emphasis on customer service, employee involvement, and accountability will enhance productivity. Top leadership's efforts to instill pride in the institution and to build teamwork across the organization should create a responsive and capable service with high morale.

To keep the organization focused on the institution's goals, facilities management departments should seek to measure their own performance on an ongoing basis and to use the results of such measures to sustain improvements. Without performance measurement, facilities management departments can become complacent, outdated, and committed to activities of lesser importance. By seeking customer comment on service, facilities managers can establish goals that are likely to have significant benefit to the institution at large. Given the chance, the physical plant customer will provide ideas and suggestions for areas needing improvement. At first, the comments may be highly critical, even hostile; however, in time, as customers see that their comments affect performance, they are likely to become supporters of the goals of the facilities managers and share in the responsibility for improving the performance of the facilities management department.

TABLE 5: Mix of Self-Operation and Contracting for Institutions Using Both Methods of Service Provision

Plant Service	Number Mixing Self-Operation and Contracting	by Percentage of Work Self-Operated (Institutions with Mixed Operations)					Proportion of Institutions Self-Operating (Mixed Operations Allocated)
		1-10%	11-30%	31-70%	71-90%	91-99%	
Classroom Housekeeping	37	13.5	16.2	29.7	16.2	24.3	86.0%
Dormitory Housekeeping	23	17.4	17.4	21.7	26.1	17.4	85.2
General Grounds	35	17.1	8.6	17.1	34.3	22.9	93.6
Dormitory Grounds	22	13.6	4.5	18.2	36.4	27.3	93.4
Plumbing	319	6.0	5.4	18.5	46.7	23.8	82.7
Carpentry	287	3.1	4.9	18.8	47.4	25.8	85.4
Electrical	338	6.2	6.8	24.0	45.0	18.0	79.5
Heating & A/C	361	8.3	8.6	25.5	46.0	11.6	73.7

tors to provide their plumbing, carpentry, electrical, or heating and air conditioning services.

There appears to be a tendency for lower-skilled work groups (i.e., housekeeping and grounds maintenance) to be self-operated more frequently than the more highly skilled craft work. Under most circumstances, plant administrators who face make-or-buy decisions tend to contract with private vendors for highly technical, skilled craft work—such as heating, ventilating, and air conditioning work—and self-operate the housekeeping and grounds areas. Institutions tend to contract outside for a higher percentage of technically demanding work because there is insufficient demand to keep such highly skilled (and expensive) technicians steadily occupied in productive assignments. For example, most in-house staffs do not have the time or technical expertise to overhaul large centrifugal chillers. The plant administrator who decides to overhaul the chiller using in-house staff may experience a shortage of shop personnel able to respond to an emerging backlog of routine and emergency heating, ventilating, and air conditioning maintenance calls while the overhaul is in progress. If additional staff are acquired to do the overhaul, they may find themselves under-employed when the project is completed.

Those institutions that use a mixture of self-operation and contracting to provide plant operations services are examined more closely in Table 5, which reveals that the mixed operations are primarily self-operated. Of those institutions that mix contracting with self-operation to provide groundskeeping, plumbing, carpentry, electrical, and heating and air conditioning work, over half contract out substantially less than 30 percent of their work. Fewer than one in six institutions that mix contracting with self-operation to provide skilled craft services contract 70 or more percent of their work. Thus, when the mixed self-operation/contracting institutions are allocated on the basis of how much of their service is self-operated and how much is contracted, self-operation predominates. The results of this computation are reported in the last column of Table 5, which tells us, for example, that if all institutions were of equal size, 86 percent of the classroom housekeeping would be conducted by college or university self-operation. Self-operation ranges from a low of 74 percent, for heating and air conditioning work, to a high of 94 percent for general groundskeeping.

The fact that so many institutions mix contracting with self-operation suggests that they take some care with the make-or-buy decision, especially for skilled crafts. Assuming that the majority of institutions are managed capably, the data suggest that a mixture of self-operation and contracting is the most effective and efficient way to provide the more highly skilled and technical plant services.

The survey data suggest that most facilities management departments provide a basic level of maintenance service that is required on-demand by the institution and contract out a large percentage of those services that require specialized skills or equipment. This arrangement does not seem to be the case, however, for housekeeping or grounds maintenance. It appears that most institutions prefer to self-operate these two functions. Many plant administrators may be unwilling to commit the time and effort necessary to write the tight specifications that are essential to manage grounds and housekeeping contracts. Service specification is often easier for more highly skilled crafts. Without a tightly written contract that addresses frequency standards and quality requirements, a plant administrator who contracts grounds maintenance and housekeeping may eventually incur higher costs due to extras not covered by the agreement. The second reason centers around control; most plant administrators prefer to have direct control of the workforce, rather than confront negotiations every time they want to change something.

The most vocal complaints from plant administrators about contracting arise from decisions to contract for grounds maintenance and housekeeping services. Plant administrators are usually more disturbed when the decision to contract either grounds maintenance or housekeeping comes from top administration and is implemented during times of financial difficulty as part of a frantic effort to reduce costs. Perhaps top administration gets more involved in the lower skilled areas such as housekeeping and grounds because the risk of a high-cost mistake is minimal (and perhaps because many individuals presume to understand what is required to sweep a floor or mow a lawn). Most top administrators who have responsibility for plant services are more reluctant to interfere in decisions affecting highly technical areas, such as heating and air conditioning, because the stakes are elevated and they profess less personal familiarity with the function.

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TABLE 6: Percentage of College and University Plant Services that are Self-Operated, by Institutional Enrollment

	Full-Time-Equivalent Enrollment				
Plant Service	0-999	1,000-2,999	3,000-9,999	10,000-19,999	20,000+
Classroom Housekeeping	88.3%	84.2%	83.9%	89.0%	97.6%
Dormitory Housekeeping	88.1	81.8	83.7	87.1	100.0
General Grounds	90.2	94.5	94.7	94.1	98.8
Dormitory Grounds	90.4	94.2	94.1	93.5	100.0
Plumbing	74.0	81.0	89.1	89.4	90.5
Carpentry	80.0	84.8	88.8	90.2	89.8
Electrical	66.7	79.6	86.2	87.7	90.5
Heating & A/C	56.2	72.2	83.8	87.1	91.9

The extent to which the self-operation of plant services varies with the type of institution, region of the country, enrollment size, institutional control, and campus location (urban, suburban, rural) is reported in Tables 6 through 10. In each of these tables, the proportion of plant services that is self-operated at those institutions that mix self-operation and contracting is allocated to self-operation. Thus, the reported percentages reflect that share of the total activity that would be self-operated if each sample institution were the same size.

There is no evidence of any difference between larger and smaller institutions in the propensity to self-operate housekeeping and grounds maintenance services. For the skilled crafts, however, smaller colleges tend to do more contracting. (Enrollment size here is based on an institution's average full-time enrollment, plus one-third part-time enrollment, for academic years 1978-79, 1983-84, 1985-86, and 1987-88.)

Although not apparent from Table 6, there is also a tendency for the mega-universities, those with 20,000 or more full-time-equivalent students, to contract out plumbing, carpentry, and electrical (but not heating and air conditioning) services more frequently. This conclusion is based on a statistical analysis that allows us to evaluate the net relationship between the propensity to self-operate plant services and each of the characteristics delineated in Tables 6 through 10, holding the level of the other characteristics fixed. This statistical technique, called multiple linear regression analysis, allows one to examine the relationship between two factors—for example, the propensity to self-operate and institutional enrollment—in a framework in which all of the other institutional characteristics (e.g., mission, control, region, location) of schools in the sample can be considered to be the same. This method allows one, for example, to determine whether institutional size, public control, rural location, research mission, or location in the Pacific region is the factor that really indicates whether a university is more likely to self-operate its plumbing services.

Table 7 suggests that research universities more commonly self-operate plant services, while two-year colleges more frequently contract them out. It turns out, however, that the only meaningful difference among types of institutions in terms of the self-operation of plant services once other institutional characteristics are held constant with linear regression analysis is, surprisingly, liberal arts specialization. Both Liberal Arts I (more selective) and Liberal Arts II (less selective) colleges tend to self-operate plant services more frequently than other types of institutions of similar size, region, control, and location. Many liberal arts colleges have religious affiliations and may develop a strong tradition of loyalty, which is more forcefully expressed through life-time employment than external contracting. An alternative explanation for the preference of liberal arts colleges toward self-operation is that these institutions tend to market a total package of experiences, extending from dormitories and dining halls to classrooms and intramural fields, combined into "the liberal arts experience." They may find it easier to integrate employees than private vendors into such a culture.

There are no apparent differences in the self-operation/contracting mix of plant services across regions of the country. This conclusion is confirmed by the statistical analysis that holds other characteristics constant. This sug-

TABLE 7: Percentage of College and University Plant Services that are Self-Operated, by Carnegie Classification

	Type of Institution					
Plant Service	Research	Doctoral	Comprehensive	Liberal Arts I	Liberal Arts II	Two-Year
Classroom Housekeeping	90.8%	90.8%	83.7%	91.5%	86.0%	83.9%
Dormitory Housekeeping	86.5	92.2	81.3	91.5	87.8	80.1
General Grounds	96.0	91.4	95.9	91.5	92.3	92.5
Dormitory Grounds	96.5	91.0	95.0	95.2	92.1	88.8
Plumbing	93.7	90.9	85.4	82.1	78.0	76.4
Carpentry	93.1	90.0	87.3	86.3	83.7	80.3
Electrical	93.3	88.2	84.0	78.9	72.7	71.9
Heating & A/C	92.6	87.3	79.3	77.2	62.1	63.4

TABLE 8: Percentage of College and University Plant Services that are Self-Operated, by Region

Plant Service	Region					
	Eastern	Central	Midwest	Southeast	Mountain	Pacific
Classroom Housekeeping	79.3%	87.3%	89.4%	85.1%	92.9%	92.3%
Dormitory Housekeeping	76.8	89.0	91.1	81.9	90.7	93.3
General Grounds	90.0	94.3	97.9	90.9	95.5	100.0
Dormitory Grounds	89.9	94.9	98.4	89.5	95.5	100.0
Plumbing	80.2	87.4	79.0	82.2	82.6	91.8
Carpentry	84.0	89.8	84.8	83.4	85.7	89.0
Electrical	78.9	81.8	75.6	79.4	80.4	86.8
Heating & A/C	70.0	78.6	70.0	73.0	76.2	81.9

gests that climate, collective bargaining, and the rate of growth of the local economy, all of which vary regionally, have little to do with a university's make-or-buy choice.

Public universities are more likely to self-operate each of the plant services. The patterns that are evident from an inspection of Table 9 are reinforced by the statistical analysis, which indicates, especially for housekeeping services and grounds maintenance, a tendency of private universities to contract more frequently. One possible reason for public institutions to be reluctant to contract is the combination of state rules and regulations complicating the contract negotiation process. For example, public institutions may be required to accept the lowest bid regardless of expected service levels. Or, public universities may be subject to state laws concerning contracting.

Out of 319 reporting public institutions, three said they are subject to laws mandating contracting, while five reported that they are prohibited from contracting. None of the 270 reporting private schools is subject to such constraints. Clearly, laws are not the reasons public institutions rely on private vendors less frequently. Many more institutions reported informal pressure to contract. Sixteen percent of public institutions and 4 percent of private college administrators feel informal pressure to contract. This is ironic in view of the tendency of public institutions to self-operate more frequently. It may be just in those circumstances, however, that private vendors are motivated to stir up pressure for schools to contract. Institutions that are already contracting may feel little pressure because they offer no resistance.

Consistent with intuition, colleges located in rural areas appear to be more self-sufficient, relying less heavily on contractors for plant services. This may be a response to necessity or the prospect of a single private vendor being sufficiently isolated to allow the exploitation of local market power. The statistical analysis reveals that this is especially true for housekeeping, plumbing, and electrical services, once other institutional characteristics are held constant.

In general, the statistical evidence suggests that plant services are more likely to be self-operated by public universities that have enrollment between 1,000 and 20,000 full-time-equivalent (FTE) students located in rural areas (which would include many flagship state universities), and by liberal arts colleges located in rural areas with enrollment between 1,000 and 3,000 FTE students. Liberal arts colleges are almost all private, and few enroll more than 3,000 students. They seem inclined to self-operate their plant services in spite of a general tendency of privately controlled institutions to contract more frequently.

TABLE 9: Percentage of College and University Plant Services that are Self-Operated, by Institutional Control

Plant Service	Control	
	Public	Private
Classroom Housekeeping	89.3%	82.2%
Dormitory Housekeeping	87.5	83.4
General Grounds	96.4	90.4
Dormitory Grounds	96.6	90.8
Plumbing	86.0	78.7
Carpentry	86.9	83.6
Electrical	83.2	75.1
Heating & A/C	78.7	67.7

Conclusion

As the rate of increase in tuition and cost continues to draw national attention, plant administrators will be forced to examine alternative and creative ways to hold down costs. The question being asked on many campuses today is: What are the alternatives and how is the decision made to self-operate or contract plant-related services? One way to help slow the ever-increasing cost of providing plant-related services is for administrators to take a much closer and more informed look at the trade-off between self-operation and contracting for services. ■

TABLE 10: Percentage of College and University Plant Services that are Self-Operated, by Campus Location

Plant Service	Location		
	Urban	Suburban	Rural
Classroom Housekeeping	82.7%	82.3%	92.9%
Dormitory Housekeeping	84.8	79.1	92.4
General Grounds	94.4	92.3	94.7
Dormitory Grounds	95.0	90.6	95.6
Plumbing	81.3	81.2	85.5
Carpentry	84.4	84.8	86.9
Electrical	76.9	79.2	81.8
Heating & A/C	76.2	73.1	72.6

FORMALIZING PROFESSIONAL CONDUCT

for Construction Contractors and Workers

by Sigmund G. Ginsburg

Illustration by Sarah Sloane

In reviewing the standard bidding documents for a recent six-figure alteration project, we were reminded to make sure that we inserted our "construction mores clause." The clause came into being because of our experience approximately seven years ago when building a multi-million-dollar, 400-bed student residence hall. This article seeks to describe the situation and the actions that college and university officials can take to meet the issues raised by the mores and attitudes of the construction industry's contractors and workers.

The difficulties in a $20 million residence hall project in New York City—under a tight budget and time deadline and within a complex and cumbersome bureaucracy—involve issues and problems an experienced vice president and his or her project manager and director of facilities can, for the most part, anticipate and deal with, hopefully successfully. What we did not anticipate then, and I believe the problems would be much more sensitive today, is student reaction to what I call "construction mores." Granted, Barnard College is an all-women's institution, but the problem would probably also exist at a coeducational institution, and with heightened awareness of sexual harassment and employment opportunities for women, the reactions are likely to be even greater today than seven years ago.

The construction mores issues are twofold. Our students reacted strongly, and with good reason, to the following.

1. Very few women are employed in the various building trades crafts (which are relatively high paying on an hourly rate basis), and very few are even employed in the lower-skilled and lower-paid (yet still well paid as compared with many blue and white collar jobs) positions of helper, laborer, or apprentice. Although progress was made in the 1970s and 1980s in employing minorities in construction, less progress was made in regard to the employment of women. And even though the number of women in such work had increased by the late 1980s, women are still seriously underrepresented in the construction workforce. Given that situation, there were times when none of the workers on our job were women, and that figure has only been as high as 4 to 5 percent.

2. It is well known that construction workers have made various comments about women as they are doing their work or during lunch and other breaks. The workers' comments and actions, whistles and sounds, words, stares, motions, etc., are often depicted in cartoons, films, and TV shows. What may seem to some to be a case of workers just "acting the way they usually act," many women and men view as uncouth, harassing, offensive, etc.

When the concern of our students was joined by some of our faculty and staff, I and my staff had to spend an unplanned for and rather significant amount of time discussing the issue with those concerned and with the construction project manager and contractors in an attempt to make headway on both fronts.

Employment of Women

It was indeed difficult to get our irate students to accept the idea that Barnard College, with perhaps one sizable construction job (small by New York standards) every ten or twenty years, did not have significant leverage over the construction industry—contractors, unions, or workers in regard to the employment of women. They expected us as an educational institution and as a women's institution to take a stand on this matter and to make things happen. As a result, I had meetings with our construction project manager who, in turn, had meetings with various contractors and subcontractors to impress upon them our concern and request that more women work on our job. This issue, of course, involves union cooperation, hiring practices, and training in the industry and availability of and searching for qualified or qualifiable workers.

Sig Ginsburg is vice president for finance and administration at Barnard College and lecturer in management systems in the Graduate School of Business Administration at Fordham University, both in New York City.

I would like to say that Barnard changed the industry and union attitudes, but we were too small a player to do that. If we hoped to meet our critically important time and dollar requirements, we could not shut down the job, as some students suggested, until more women were put to work. Further, seven years ago in the New York area there were many more construction projects underway or planned, and thus more opportunities for employment, than there have been in the last two or three years or appear likely in the near future. Now, with work being scarce, it will be even harder to bring about change.

But what we did do was keep talking about our concerns and asking for figures on employment of women (as well as minorities) in each job category, by day and by week. We kept up the pressure sufficiently so that, in general, we doubled or tripled the number and percentage of women working, but that statement is somewhat misleading because often it was two to five women working versus zero, one, or two. There was a similar construction job underway near our site, and because of our efforts, we did see a greater number and percentage of women working. But in reality, these large percentage differences meant only very small differences in numbers.

What we learned was that we had to keep hammering away on the issue and show we really meant it. We also learned that we had to show interest and concern even before work begins, i.e., in the bidding process, and monitor what goes on after work begins.

The Construction Worker "Macho" Image

As noted earlier, various comments and actions by construction workers were very disturbing to our community and should be equally disturbing at any college or university, or for that matter, anywhere. Prior to work being started, at a meeting with all contractors, we emphasized the nature of our campus and our concerns.

Once work began and the administration learned of the attitudes and actions at work, a special meeting was held with the construction project manager. All contractors were notified orally and in writing that such activities would not be tolerated and that they would be expected to remove from our job or to fire anyone engaging in inappropriate behavior. We required workers to prominently display their I.D. cards (many sought to hide them), and we appealed to our students and staff to report incidents and individuals to us. We made clear to the contractors that we were very serious about the matter and, frankly, we were hoping to fire someone as soon as possible to send a signal to all workers. As it turned out, there was a considerable decline in the objectionable behavior, and no one was dismissed.

Seven years ago both men and women may not have been as sensitive and understanding as they are today (and we still have a long, long way to go) about sexual harassment. It took frequent reminders for us to convince people we were serious about what workers described as "kidding" and that "women expect it of us." Of course, not all construction workers engage in this type of behavior, but we felt it necessary to be clear about our strong concern and opposition. (There was a lighter side to this serious issue; some construction workers insisted they were being sexually harassed!)

Actions That Can Be Taken To Formalize Behavior

We learned some lessons that can be of value to all institutions.

1. Include language in contract documents to indicate the concerns discussed. The language might be:

The Owner is given the right to require the Contractor to remove immediately any employee or agent employed at the site whom the Owner deems incompetent or a hindrance to the proper progress of the work, or who engages in any conduct inconsistent with the operations and activities of the Owner, its employees, students, or guests, or of members of the public on Owner's premises, and such person shall not again be employed in the Work without the consent of the Owner.

The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated fairly during employment, without regard to their race, color, religion, sex, age, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all applicants will receive consideration for employment without regard to race, color, religion, sex, age, or national origin; or that it is an "Equal Opportunity Employer."

2. The construction manager or general contractor and subcontractors should be informed by top administration orally and in writing that any type of sexual harassment or offensive behavior will not be tolerated and that quick and decisive action must be taken by them in the event of such behavior. Prior to a bid being accepted, the contractors and subcontractors must be informed about the institution's concerns and expectations and that they are obligated to take prompt action including dismissal of the individual.

3. Encourage members of the college community to report offensive behavior.

4. Take immediate action once allegations are made and follow up on results.

5. Indicate that a good faith and serious effort has been made to have as many women as possible working on the job and in the various crafts and that employment of women should be monitored by the construction manager or general contractor with frequent reports to management. The same kinds of notification indicated in No. 2 should be applied to employment of women.

6. If employment results seem poor, maintain interest and pressure. If progress is being made or the results are good, compliment those involved.

One institution alone cannot hope to turn around construction industry mores, but every college or university can be serious and insistent, and in a small way can bring about progress. If all colleges and universities took similar action through contract language when involved in construction work—with word and action firmly emphasized to the construction industry for the need to watch and indeed change their attitudes and actions—significant progress could indeed be made. The volume of our industry's work and the role model we would set for all other industries in their construction efforts could set a standard for more professional and equitable behavior on our college campuses. ■

INTE

MANA

by Arthur J. Slater, BCE

Illustration by Sarah Sloane

The federal General Services Administration (GSA) has mandated integrated pest management (IPM) since 1988. Having started in the buildings of the National Capital region, including the White House and the Old Executive Office Building, the GSA is expanding these IPM requirements to include the more than 7,000 buildings it manages around the country. Legislation is being introduced in Congress, state legislatures, and even local jurisdictions (after a recent Supreme Court decision) requiring the adoption of IPM and greater controls on the use of pesticides in public schools including colleges and universities.

G R A T E D P E S T G E M E N T for Facilities

I believe that IPM programs will soon be required in all facilities regulated by, or receiving funding from, federal agencies. USDA requirements (in its *Guide for Laboratory Animal Care*) for record keeping of pesticide applications and assurance that neither pesticides nor pests have affected research results, and similar requirements that are currently required for all federally-funded research, could easily be modified to require IPM programs.

However, IPM is little known and rather poorly understood. The term is redundant, because good pest management is integrated, but the term has become entrenched in law and society, and we are stuck with it. Why should campus administrators be interested in IPM among the bureaucratic juggernaut of compliance laws that are acting as a barriers to achieving their departmental mission? What is IPM? What are its advantages and disadvantages, and what *is* a pest manager? This article will discuss these topics.

IMPORTANCE OF IPM

The public's (students, staff, academics, and campus visitors) concerns about health and environmental risks associated with chemicals are increasing. As the public becomes more aware of the risks pesticides may pose, its interest increases in seeking the use of effective alternative pest control measures. School administrators and others who have pest control decision-making responsibilities for school buildings and grounds should become aware of the pest management options available to them. It is in their best interest to provide a campus environment that supports the basic missions of teaching and research by reducing exposure to potentially harmful chemicals.

The use of traditional pest control measures with clean-out applications of pesticides has resulted in a number of scientific papers on the effects of pesticide exposure to a number of types of research, not to mention experiments that failed and were not reported. Papers reporting the effects of pesticides applied for pest control in laboratories on studies in immunology, pharmacology, and endocrinology come to mind. This information is not readily available to facilities managers, although there were papers published by the New York Academy of Science as early as the mid-1960s that documented effects of pesticide exposure in laboratory experiments. Less well known are potential adverse effects of pesticide exposure to the conservation of collections in museums and libraries.

Virtually all types of indoor pests have evolved resistance to some types of pesticides. This includes flies, cockroaches, fleas, ants, and rodents. To date the World Health Organization has reported more than 600 species that have developed pesticide resistance worldwide.

Traditional pest control methods inefficiently use both staff and materials. In 1973, when I was first hired to "modernize the pest control" at the University of California at Berkeley I evaluated the staffing needs if the existing program were expanded to all campus facilities needing service. A staff of nine would have been required. The campus has grown by 50 percent, and my pest management staff of three serves all of the campus effectively. When pesticide usage was reviewed in

Arthur Slater is environmental health and safety specialist responsible for vector control services and pesticide safety at the University of California at Berkeley.

five universities across the country, the amount of pesticides applied was reduced by 90 percent without the use of any alternatives (pers. comm. M. Rust). The university reported a 90, 94, and 99 percent reduction in the volume of pesticide sprays used in UCB food service, housing, and laboratory facilities between 1973 and 1979 (published in *Urban Pest Management*, National Academy of Sciences, 1980).

DEFINITION OF IPM

GSA's updated Specification No. BM-5-1 is a nine-page document that provides details on GSA requirements for service, paperwork, procedures, personnel, quality control, etc. Many of the requirements are different and more complex than traditional pest control programs. The following are some highlights.

Staffing. Personnel working on GSA contracts must be certified. The specifications state, "Uncertified individuals working under the supervision of a Certified Applicator will not be permitted to provide service under the terms of this contract."

Pest Control Plan. The contracting company must submit a written pest control plan before commencing service. The plan must include

1. the proposed methods of control, including brand names of equipment and chemicals, sample product labels, materials safety data sheets (MSDSs), etc.;
2. service schedules;
3. recommendations for operational and structural changes for each building; and
4. licenses and certifications. The company cannot deviate without prior approval.

Record Keeping. The pest control company must maintain a pest control logbook or file for each site or building specified in the contract. The logbook or file must contain at least

1. the complete pest control plan,
2. copies of GSA Form 3638, Pest Control Work and Inspection Report (or equivalent) to be filled out at each service visit, and
3. the contractor's service reports documenting pesticide applications. These records shall be kept on government property and maintained at each visit by the contractor.

Insect Control. GSA specifications require that the "contractor shall use non-pesticide methods of control whenever possible."

In addition, GSA states, "Portable vacuums rather than pesticide sprays shall be used for initial cleanouts of cockroach infestations, for swarming (winged) ants and termites, and for control of spiders in webs wherever appropriate." A vacuum is also useful for incidental insect (including wasp) control.

"Trapping devices rather than pesticide sprays shall be used for indoor fly control wherever appropriate."

Pesticide applications "shall employ the least hazardous material, the most precise application technique, and minimum quantity of pesticide necessary to achieve control."

The pest control contractor must "minimize the use of liquid spray applications wherever possible....The government will consider bait formulations to be the standard for typical office space. Containerized and other types of bait formulations rather than sprays shall be used for cockroach and ant control wherever appropriate." When liquids, aerosols, or dusts need to be used they should be applied with a crack and crevice device so that "the stream of pesticide is never visible. Treatment of exposed surfaces requires prior approval, and no such applications can be made when tenant personnel are present."

Rodent Control. The GSA requires that "as a general rule, rodent control inside occupied buildings shall be accomplished with trapping devices only" and "all such devices shall be concealed out of the general view and in protected areas....Traps, sanitation, and exclusion techniques should be emphasized for rodent control."

Quality Control Program. GSA requires pest control contractors to "establish a complete quality control program to assure the requirements of the contract are provided as specified." The quality control program must be written and submitted before service begins. Requirements for the program include an inspection system for all services under the contract, checklists, approval of QC personnel, a system for identifying and correcting deficiencies, and record keeping.

These GSA specifications represent a significant change in the way government (and other) pest control contracts are solicited and administered. Many government buildings that are not managed by the GSA will also adopt GSA's IPM specifications. The Department of Defense will be publishing similar IPM specifications soon.

KEY FACTORS IN AN IPM PROGRAM

The GSA specifications are presented as a limited example; the specifications reflect the GSA's concentration on office facilities. They include some excellent and creative approaches, but the specifications are a bit difficult for a facilities manager to use without an understanding of what constitutes a pest management program and why. Using my twenty-one years in developing and managing the pest management program for the University of California at Berkeley (and advising on the creation of programs for other facilities), I propose the following as key factors in pest management.

1. Pest identification.

Understanding pest biology, ecological requirements, and behavior is the key to developing effective approaches. It is important to understand if the organism is a pest that needs to be controlled or just lost. Identifications can be based on specimens, droppings, scent markings, egg cases, shed skins, damage, food. Accurate identification is the first step and often a critical requirement for the proper and legal use of a pesticide. Misidentifications are a major source of control failures.

2. A long-term view.

Solutions should emphasize prevention. Traditional pest control and bounty programs do not eliminate the source of the problem. Emphasis should be placed on building repairs and modifications (eliminating bird roosts and nesting niches), modifications of operations (such as storage, location, and frequency of waste disposal).

Consequences for noncompliance. Good kitchen sanitation is a key to good pest control in commercial kitchens. At Berkeley the food service managers use the pest management program reports to monitor the effectiveness of their kitchen

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porters and rate them accordingly. The pest manager provides standards for architects and reviews blueprints for new buildings and renovations. The questions basic to all pest management solutions are, who, what, how, when, where, and why did the problem occur? What are the costs and to whom? What are the benefits, and what is the most effective long-term solution?

3. Sound ecological and behavioral basis for the decisions.

There is an ecological concept called limiting factors. Limiting factors are access to food, water, and a place to live under favorable conditions. If any one of these factors is missing, the organism (pest species in this case) cannot continue to survive or invade.

Examples of the use of limiting factors are

1. cleaning animal cages three times a week rather than twice to eliminate Drosophila repleta problems. No other treatment was required;
2. applying boric acid powder into the walls and voids in student housing, which greatly reduced the amount of harborage for cockroaches, prevented them from traveling from apartment to apartment, and provided a built-in cockroach trap. Built-in controls provided a long-term reduction in cockroach complaints.
3. Caulking cracks in commercial kitchens thereby reducing the hiding spaces for cockroaches;
4. emphasizing kitchen sanitation to stress cockroaches and rodents and makes them easier to control;
5. using exclusion measures for birds and rodents and other small mammals (squirrels, skunks, opossums, etc.);
6. storing foods and furs in cool facilities; under 60°F, many stored food pests continue to live but do not breed or feed and gradually starve to death;
7. eliminating the larval breeding site is always the preferred solution for fly (fruit fly, filth fly, and mosquito) control, if possible.

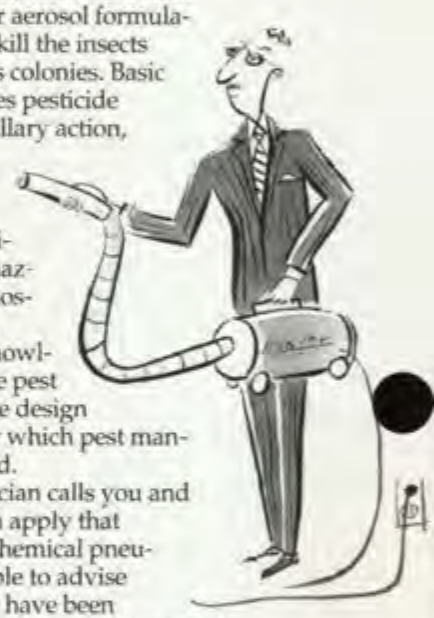
Another factor is attraction. Why was the pest attracted to the area? Outside lighting and pollen laden flowers in nearby landscaping are often sources of stored-product and museum pests. When natural food is scarce, yellowjackets and honeybees may be attracted to people wearing perfumes and flower-colored clothing. White, gray, brown, and blue do not attract food foraging wasps and honeybees. Yellowjackets attack black and dark blue clothing much more readily than white, gray, and tan. Red objects will attract hummingbirds into a building. When wall mounted red fire bells were painted white, hummingbirds were no longer attracted into and trapped inside one of our buildings. The information can be very complex or rather simple. The best solutions are simple in implementation, but based on a complex knowledge of the problem.

4. Appropriate selection of controls.

This includes safety, effectiveness, and proper use. The major control for Argentine ants on the Berkeley campus is the placement of ant stakes containing an arsenical bait around the outside perimeter of buildings. It is a very effective treatment, but we do not use it around married student apartments, or in child care play yards because of the potential exposure to children. We are studying experimental baits and application techniques that do not pose any safety problems. Fly paper used outside on a porch will trap flies and capture hummingbirds that try to feed on the flies. Rodent traps are good ways to capture mice and rats, but they must be emptied or flies and later stored-products pests will breed in the carcasses. This can be a disaster in a museum. There are many more examples.

5. Knowledge of pesticide product.

Rodent baits can be food for cockroaches and stored-products pests. Rodent baits should never be used in museums or libraries. Some wettable powder formulations are safe to apply in an insect colony room, where the same active ingredient in a spray or aerosol formulation would contaminate and kill the insects being reared in the museum's colonies. Basic information to review includes pesticide volatility, movement (by capillary action, evaporation, and redeposition), breakdown products, synergy with other chemicals (some pharmaceuticals can greatly increase the hazards of exposure to organophosphate pesticides). In research facilities this can be critical knowledge, because like it or not the pest manager is a participant in the design of experiments in facilities for which pest management services are provided.



When an employee's physician calls you and asks, "What pesticide did you apply that caused my client to contract chemical pneumonia?," you had better be able to advise him that his patient could not have been exposed, as we were able to do several years ago. In the above instance, only a small amount of the pesticide had been applied outside the building, it had a negligible vapor pressure, and there was no possibility for exposure to the patient. Chemically sensitive persons qualify under the Americans with Disabilities Act. Knowledge of the characteristics and potential hazards of control measures is important today, but will become critical tomorrow when the impact of the ADA affects the workplace.

6. Records.

Records are important to meet legal requirements for training, but here I am only referring to records of pest occurrence and treatments. This is the only way to determine long-term trends (development of resistance to cockroaches and rodents), determine seasonality of control measures and workloads, assess and evaluate sources of seasonal pests (ants moving into buildings from plants when sources of natural food disappear), and evaluate why pests occur in one location and not another. In Berkeley, pigeons migrate from off-campus sites to two buildings, then from there to others, then others, and lastly to Memorial Stadium. Most pigeons are controlled on the first buildings. Occasionally a few reach beyond, but in the five years since we first analyzed our records and saw the immigration pat-

tern, none have reached the stadium. This knowledge has greatly reduced the time, effort, and amount of material applied to pigeon control.

In times of rapid change, programs change or die. In pest management as in any business practice, records are essential to understanding what is happening and what can and must be done. Program efficiencies developed from records are also a good way to reduce the impact of new regulations. What is not used does not have to be recorded and reported.

7. Learn to love change.

If you are set in your ways and want the solution, pest management is not a good career choice. Pest species change, the pests change their behavior and sometimes become resistant, many of the pest species (rats, raccoons, feral cats) are intelligent and can learn, the control measures change (new more complex materials that require more knowledge to use effectively, and old materials are dropped from the market), there is a continual flood of new information (about pests, about products), and always there are more and more regulations. A good defense against the increasing regulations is to avoid the need for them. If a rat is excluded from a building and no bait is used, no record of a pesticide application has to be made. If the program is efficient and pests are prevented, like a good HMO program, then records of their occurrence and controls do not have to be maintained. Stay ahead of the game. Prevention! Prevention! Prevention!

8. Knowledge of laws and regulations.

Pest management programs are delegated the administration's responsibility for meeting laws and regulations for providing controls for removing pests from the workplace, for vermin control in commercial housing and food preparation facilities, and for assuring safe and effective pest control in laboratory (including laboratory animal) facilities. The best programs also include elements of pesticide safety, research experience, and compliance with other relevant health and safety regulations (e.g., commercial food service sanitation). Non-pest management employees should be absent when pesticide aerosols, sprays, and fogs are applied.

9. Interpersonal and political skills.

Pest problems are people problems. The pests don't care. Liking people, understanding their concerns and needs, being positive and considerate, getting them to cooperate (clear the food from their desk, or store it in a pest-proof container), being able to convey technical information about the pest problem (the old "I'm a professional" snow job won't work any more; instead, the clients become angry and worse), getting the custodians and other sanitation staff to cooperate and not try to solve pest problems without you (you lose the record; they are probably not certified, are not applying the pesticides safely, and may even be endangering themselves, coworkers, and even sensitive research). If people notify you it saves inspection time and makes better use of your time as a trained pest management employee. Political skills involve being able to work effectively in an environment where dedicated, hard working, and well-intentioned people are pro-animal rights, anti-pesticide, fearful of pests, fearful of diseases (e.g., Hantan virus), and where people greet you as the "mouse man," or the "cockroach lady."

10. Placement of the program.

In 1973, the pest management program at UCB was consolidated (except for landscape maintainence) in the Office of Environmental Health and Safety. It was the campus vector control program and was managed by health and safety professionals. Isolation from the decision makers and day-to-day operations of facilities maintenance severly reduced the effectiveness of the program. This problem was eliminated five years ago when the pest management program was transferred to facilities management. The campus and the program have benefited greatly from this change.

11. Funding—pest control vs. pest management.

Traditional pest control budgets are easy to understand in time and materials. Employees perform certain predescribed tasks on scheduled dates at each location. Little if any decision making or responsibility is required for what was basically a menial task—applying pesticides. For many years this approach was effective. Then pests became resistant. Regulations and pesticides became more complex. More training, knowledge, and upgrading through continuing education were required to perform effectively. Life had changed forever. To adapt to this rapidly changing system requires more flexibility in funding. Like insurance, each client pays a set fee, and for this fee they receive all the pest management service required within the contract specifications. The rate and the hours almost never match, sometimes more, sometimes less. The programs are periodically evaluated and rates are adjusted based on their history. This provides adequate revenues for the program and flexibility to respond to problems created by organisms that never make appointments by time or location.

12. Staffing.

All members of the UCB program are classified in environmental health and safety classifications. These are professional classifications that reflect the level of responsibility and decision making that are required to perform their services. All have at least some college training.

THE PEST MANAGER IN SUMMARY

Pest managers are generalists. They must be able to understand how to assess what is critical in a pest problem, what is not, and where and how to find information to fill the gaps in their knowledge. A global view is necessary to understand that knowledge of the pest, environmental circumstances, and human factors (regulatory, legal, social, and cultural) must be included in the formulation of solutions.

Pest managers are professionals. Most have advanced college degrees and have initial training as entomologists. They have expanded their knowledge of vertebrate pests, their knowledge of people and how to work with them, their knowledge of pest control materials, and their ability to develop precise solutions to complex problems. Their decisions should be rigorously supported. The facts used in support of their decisions must be sound and documented, because more and more they are likely to be involved in legal conflicts. In such conflicts they must be able to understand and be in compliance with good professional practices. They practice applied ecology in complex, changing human systems. ■

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Pueblo's Facilities Support Partnership:

A University and a School District Manage Change

by Ed Smith

During the fall of 1990, educational leaders in Pueblo, Colorado conceived the notion of a formal alliance between a major regional university and an urban public school district, aimed at enhancing education in a multicultural community of 100,000 people. What evolved was a bold, innovative concept designed to strengthen the quality of educational opportunities available to students in the local school district. The concept is far reaching, resembling a corporate merger in some ways, and anticipates cost savings by consolidating some noninstructional functions of the two organizations. The merger of physical plant management is the first major step in realizing this business consolidation and results in a unique facilities support partnership.

Through the eyes of the alliance's first joint director, this article will discuss the evolution of Pueblo's alliance, including the development of a consolidated support infrastructure and the reality of early experiences in the facilities venture. While the intent is informational in nature, the concept applies universally and offers food-for-thought for any educational community faced with ongoing budget challenges or a desire to change.

An Innovative Philosophy

The partnership between the University of Southern Colorado (USC) and Pueblo School District No. 60 was consummated in January 1991. Pueblo is a low-to-middle-income community located in southern Colorado, with deep-rooted cultural ties and strong traditional values. Because of its innovative nature, the alliance created increasing community interest. As the concept evolved, interest grew across the state and even in national education circles.

The partnership was conceived out of a positive environment and a realization that the status quo was increasingly unacceptable. Both institutions recognized they had compatible, not competitive, missions. They were both strong enough to operate from positions of strength in the relationship. They shared an awareness that gains for both could be achieved through cooperation; in other words, each school felt, "There is something in it for me."

They also sensed a need for change through the public's growing disenchantment with the educational process, desire to be involved, and belief that education, especially public school systems, had become overly bureaucratic. This became painfully clear during the fall of 1992 when Colorado voters sent a resounding message to all educators. In one swift motion, they defeated a proposal for increased funding for public education, eliminated lottery fund support for capital construction at state institutions of higher learning, and froze state budgets, except for growth adjustments, without voter approval.

Pueblo's formal alliance agreement was signed and put into effect in July 1991. The initial partnership will continue for seven years, although it can be terminated by either party through formal written notice. In general, the alliance advances along four tracks.

The first track involves critical strategic planning. University, school district, and community leaders regularly interact to refine and solidify program direction. Goals such as a 90 percent high school graduation rate by 1995 and parent/guardian support contracts, designed to emphasize the parents' role in children's academics, remain highly visible.

A second track includes linkages, formal relationships that the university and school district share to motivate students, promote leadership, and create efficiencies when sensible to do so. Examples of actual current linkages include:

- High school senior to college sophomore program
- Pueblo faculty exchange
- Center for Teaching and Learning
- Pueblo Classics athletics, and
- Business services management

The facilities management initiative lies in the business services linkage. Ultimately, linkages can develop into more formal partnerships where creative initiatives develop or, in the case of business ventures, actual economies-of-scale take place. The creation of a single executive director to oversee facilities management, with both parties sharing the salary, is a pure partnership at work.

The third track includes a superintendent of public schools who also is a vice president at the university. This commenced in April 1992. Simply put, the purpose is to enhance communications and shared decision-making.

Ed Smith is executive director of facilities management for the alliance between the University of Southern Colorado and School District No. 60 in Pueblo, Colorado. This article is adapted from his presentation at the St. Louis annual meeting in July 1993.

The ultimate alliance goal is to create a collaborative educational process from kindergarten through college. To assist in developing a K through 16 format, a fourth track—achieving national recognition—was developed. A national advisory board was created to help with this goal. The board consists of fourteen nationally acclaimed educators and leaders, including Terrel H. Bell, former U.S. Secretary of Education; Al Shanker, president of the American Federation of Teachers; and Frank Newman, president of the Education Commission of the States. Members represent the leading edge of educational reform. The purpose of the board is twofold. First, it offers experience and guidance to help make the alliance work more effectively. And second, it helps make the Pueblo learning process widely available nationally to those who want to know more about it. Board members come to Pueblo annually to evaluate alliance progress, offer recommendations, and promote growth.

Framework for a Consolidated Approach

I started my position as the first joint manager in January 1992 and quickly found that the university and school district represented vastly different worlds. The decision-making process exemplifies this best.

Leadership of an institution of higher education is vested in a few key decision-makers. Even within a state system, decisions concerning funding, staffing, resource distribution, or policy are made by this key group of people, often in privacy without any fanfare. As long as the governing body is satisfied with the style and results of its leadership, there are few contentious issues.

Leadership of a public school district is 180 degrees from that. I thought I had experienced the workings of a bureaucracy in my previous positions in the federal government. In reality, I hadn't come close. Every aspect of public school decision-making is purposely public in nature and, consequently, often controversial.

Managing workforces in these two vastly different cultures represented a major challenge, especially since both were also brand new to me. The facilities organizations themselves were contrasting worlds.

The USC physical plant department underwent a significant downsizing during a university restructuring several years ago. Within three years, the department had lost nearly 20 percent of its force and operated in the lean-and-mean mode. Almost the entire focus was on maintaining the existing facility. Minor improvements were contracted out. A department of forty-two personnel, operating within the system of Colorado state employees, contrasted greatly from the school district maintenance and custodial force.

The larger and more flexible district workforce totaled roughly 200 people, most of whom were represented by one of seven bargaining units within the school district. This force accomplished approximately 12,000 work orders in thirty-four schools over the course of a school year. It had quite a bit of flexibility since there were sufficient skilled trades people to do even large rehabilitation projects. The district also contracted major maintenance projects, such as roof repairs and asphalt work, each summer. On the average, district schools are forty years old, whereas most university buildings were constructed during the 1960s and 1970s.

One major similarity existed. Both maintenance forces were almost entirely reactive in nature. Neither had generated much of a recurring maintenance program. When things broke they received attention. I attribute some of that philosophy to my predecessors in each organization. Neither operation had been managed by a professional facilities manager. The previous university physical plant director had an accounting background and was apparently selected to handle the budget. The previous three directors at the school district were career school administrators. Their background was education, not support.

My job responsibilities included maintenance, custodial operations, and shipping and receiving for both organizations, as well as the entire school bus operation at the school district.

Molding a Single Facilities Director

I experienced a number of personal challenges in the beginning. There had not been a single director before me, nor was there anyone in the alliance performing a job for both organizations. I had two bosses, both of whom were also new to me. And, I had come to a new community, one that was steeped in tradition that took time to get used to and understand.

I had a predictable first question: "How do you want me to perform this job?" The question was met with deafening silence. Since the facilities position was to be a model to build on for other potential alliance consolidations, we agreed the best approach would be to use my intuition and to take it one day at a time and grow.

Coming from a more rigid military background, I had made up my mind not to be too structured in the new job. That lasted for only one week. I simply would not survive if I didn't structure things somewhat.

I had two offices, one at the university and one at the school district. They were only about four miles apart. Therefore, it was logistically feasible to split my days, if I preferred. I decided to spend half-days at each location on Mondays and Fridays, all day Tuesdays and Thursdays at the school district and Wednesdays at the university. This worked fairly well. A key was maintaining continuity. More recently, I have adjusted the schedule to allow a 50-50 mix of my time, and I try to get to both offices on a daily basis. Getting secretaries to understand when I'm here and when I'm there is critical.

I realized early on that I could easily work 100 hours a week since I was literally doing at least two jobs. But because the job was also to be a model on which to build, I knew no one would want a position that required 100 hours of work a week. I set a goal to try to create a 50-hour-a-week job. In doing so, I quickly realized that I could not be in two places at the same time, no matter how hard I tried. I had to find a way to cover all the bases.

The first step was identifying points of responsibility at both locations. You won't be surprised that these turned out to be the two maintenance directors. Empowering subordinate managers became my key to survival. Especially in the school district, this was most welcome. I quickly sensed the managers would welcome additional responsibility, and I gave them as much as I could. The university presented another challenge. Because the physical plant director's position had been vacant for nine months, the managers had already taken on all of the workload. My presence actually helped them as I assumed all of the responsibilities I could.

Next, I needed to establish a focus, or role, as executive director. How would I apply my energy? I viewed this as a personal thing, based on individual strengths and weaknesses.

First and foremost, I viewed myself as an alliance employee. In my mind, my primary role was strategic vision. I would devote the majority of my time to alliance issues. However, I knew that the level of support from both physical plant oper-

ations could not suffer. That is what we were there for, and both organizations were doing a good job. I could only be as successful as my organizations' abilities to get their job done. Thus, I targeted a 40 percent level of effort on alliance issues and 30 percent on each of the two support operations.

Three factors helped shape my initial focus. I thought it imperative to create a customer-oriented work ethic, and the best way was to establish a proactive maintenance philosophy. I did this by creating maintenance teams that visited the facilities on a recurring, scheduled basis. In doing so, I sent a message to my customers that I would worry about maintaining their buildings. We would try to fix things before they broke.

Another factor was an inherent pressure I sensed to produce something tangible for the alliance. There had been much local discussion about Pueblo's alliance, but with few tangible results to show for it. Many people commented that they had heard a lot about it, but couldn't relate to visible actions. As the first joint manager, I wanted to achieve some tangible results.

A third factor was employee apprehension. I described the climate previously. Quite simply, it can be summed up by stating that change is threatening. The university had experienced considerable change during the years immediately prior to my arrival. It was clear that many employees were apprehensive about the sign of the times. Would more jobs be lost?

The school district's support organization had resources and flexibility. But that changed when I arrived. One result of the alliance was a proposed major restructuring of the district, with the task of redirecting $3.5 million from the administrative and support infrastructure into instructional areas. A formal report proposed fifty-two recommendations to get the job done, a number of which suggested reductions in each of my areas. All of a sudden, district employees were vulnerable.

If these circumstances didn't create enough instability, the November election did. Voters defeated every amendment that would have more adequately funded public schools.

And, yes, the uncertainty of a new boss, one who had a perceived focus on consolidation, added to the apprehension within both organizations. Each group tended to view the situation negatively and only from its own perspective. Most threatening was the belief by university employees that the school district would swallow up their operation.

It is fair to say that all employees felt threatened by the changes they saw coming. Nonetheless, I felt that change was one of the key responsibilities I took on as an alliance manager.

Early Goals and Direction

As a result of these impressions, my early goals became clear:

- Create a proactive maintenance organization;
- Rekindle employee morale; and
- Initiate visible alliance-oriented activities.

Some thoughts surfaced as I planned my initial actions. With employee apprehension so high, I knew it was important to "stop the bleeding," as the saying goes. After much thought, I decided to use my background and experience in the field. A plan aimed at a proactive, recurring maintenance philosophy was the best thing I could do for both organizations.

Even facing some downsizing, there was enough organizational flexibility in the school district to create a small maintenance-only team. We sent a four-person team through each school building for a day and told them to do whatever needed to be done. This effort became popular with principals and generated positive feedback.

With only a minimal force at the university, the same approach was not possible. I presented a briefing to the president, defining a program that would be most helpful at USC. We discussed the skills and types of people who could generate a viable maintenance effort for campus buildings and grounds. As a result, he was better able to support a sensible approach to keeping the facilities operating over time.

These rather simple acts helped establish my credibility with the leadership and build a new sense of confidence. The maintenance team concept has now grown into a full-fledged program, including eight different cycles of visits to the schools. The school principals most appreciated the idea that they don't need to call us to see us. We're there regularly, even without a call.

I measure success at the university by the fact that we've been able to replace every departed employee for the past year and even add a few. It now appears that the President's Council is more receptive than ever to expanding our workforce, with a maintenance philosophy in mind.

Having achieved a measure of stability, my next goal was to help the alliance move forward. There were many challenges!

District employees felt there was enough work in the thirty-four school buildings to keep them busy. They had little inclination or desire to go to the university, especially since they earned about 10 percent less than USC employees for similar work. On the other hand, university employees believed that if district workers set foot in a USC building, their own jobs would be in jeopardy.

The distinct differences in cultures and decision-making processes also presented a challenge. The simple fact that an idea had merit certainly didn't guarantee its acceptance. Even the best idea could be consumed in the politics of my world. Employees who chose to fight the process could do so simply through inaction, lots of questions, or union involvement.

Unions were a major factor that had to be addressed. Both locals looked to Denver and their state organizations for guidance. Neither had even so much as communicated with the other, nor were they inclined to do so. In many ways, both unions perceived the alliance as a management concocted threat.

Moving Ahead

I rapidly found that an effective communications network was essential to my survival. I needed an opportunity to bounce ideas off my bosses—all four of them—and receive feedback. If not, it would be too easy to spin my wheels and spend all my time getting nowhere quickly.

The result was monthly meetings with the two business services managers for whom I directly work. In this forum I surface ideas, concepts, and problems. Through these meetings, grassroots ideas are translated into initiatives, strategies are devised, and hopefully, problems are solved.

Even more important is the executive oversight committee that was established. This group comprises the five senior executives, including the university president and superintendent of schools. We sit down twice a year, and I develop the agenda and facilitate the meetings. It's an ideal opportunity, not only to review things we're doing in our partnership, but also to focus on other linkages and the alliance as a whole. Discussions and feedback from these sessions enable me to maintain the crucial strategic sense of vision that must accompany my job. For me, it minimizes one major risk of my position: the possibility of being out of touch with both organizations.

Two local boards are also integral to my life. The Pueblo School District No. 60 Board of Education is a five-member group of elected officials who have ultimate approval authority for all school policies and procedures. It meets twice a month. Because of the sensitive nature of public school administration, this board represents a necessary final step in approving alliance initiatives. Since meetings are open to the public, alliance activities receive a fair amount of public scrutiny and corresponding press coverage.

A corollary local executive board oversees alliance activities. While initiatives are primarily brought to this board for informational purposes, support is essential for me to move forward on plans that affect both workforces.

It is fair to say that by the time we do something, everyone in a decision-making capacity, whether they be in the university or school district line of authority, is aware of it.

I mentioned that the issue of unions needed to be addressed. With the elaborate oversight process that I just described, no single factor is more integral to success than employee buy-in. For a large number of our people, that includes the unions.

After roughly three months on the job, I met individually with local and state representatives of both employee organizations to personally explain my goals, my initial thoughts on the job, and to emphasize my intent to create an environment where both sides could gain. I solicited their input and support, and proposed that we sit down frequently as a team to discuss mutual interests and concerns. We met together three times over the ensuing six months and have now begun to communicate more openly . Nevertheless, the union representing school district employees has challenged the alliance concept through its grievance process. This challenge has now reached the highest level and will be heard by a mediator. Nonbinding arbitration will follow. Since the alliance is a formal intergovernmental agreement, I feel confident about the results. But the challenge as always is to have all parties harmoniously moving forward with the concept.

While it would be unfair to characterize our efforts to date as completely successful, significant communications have resulted. The issues are real: differing pay and benefits packages; economizing workforces; and, in the employees' minds, literal survival. Both unions now acknowledge that I am integral to the future and, more and more, employees are becoming receptive to the process.

In looking back, I view the initial years not only as a period of creating processes and establishing the infrastructure to move forward, but also as a time of generating initiatives and economies. If you accept that, then we were quite successful!

Some Early Achievements

Tangible alliance-oriented initiatives remained a primary early goal. The first effort was a simple one. We put both physical plant operations on the same work hours. More than anything else, this helped me personally maintain continuity. But it also represented a symbolic gesture of consolidation.

I looked to do anything and everything that would help. Even seemingly small gestures were important. The university often needs chairs and tables for numerous student activities and other events. Traditionally, this meant renting them from commercial sources. But the district warehouse has hundreds of chairs stored that are primarily used for graduation activities. It was easy to arrange loaning them to USC. Conversely, it was as easy for the university to provide auditorium and meeting space for district meetings and in-service training needs. Small gestures, yes, but they created a sense of fostered cooperation.

One big challenge was created by the potential one-sided nature of the partnership. The school district operation, being much larger and more capable than the university, had much more to give than it could receive. If the relationship becomes too one-sided, the notion of takeover will surface and be extremely counterproductive to our efforts.

Therefore, it was important for me to identify a situation where the university could offer some tangible initiative. For example, USC possessed a highly knowledgeable and capable safety officer. In my mind, the school district had not given safety its due, covering this important responsibility with only a part-time employee. It provided just the opportunity I was looking for.

At the initial executive oversight meeting in April 1992, I offered a concept paper that proposed creating a joint safety office. This aligned perfectly to the district's restructuring plan. The proposal included the USC safety officer as the supervisor and two safety technicians provided by District 60. With the concurrence of the Board of Education, the joint office opened on January 1, 1993. We hired the two technicians last spring, and the operation is quickly moving ahead.

A concept that really made sense was the idea of contracting a unique service from one organization to the other. This created little controversy since the option was going downtown to a private company. We have developed formal agreements in two areas, vehicle maintenance and glass replacement; the university had neither capability. It made sense for the district to offer its services and, in a budget-tightening period, receive some additional income.

The vehicle program has worked well. Maintaining both general and special purpose equipment, the district transportation department has realized more than $10,000 in revenue to date, and university vehicles are out of service for shorter periods of time. And while the magnitude of glazing support is less, a necessary service is provided that saves money.

We are now in the process of finalizing a concept to use specialized district custodial floor buffing teams at the university on a monthly basis, and we are exploring the possibility of a single locksmith operation, compared to the separate shops that currently exist.

Contracting agreements require careful thought. Work must be scheduled to ensure no degradation of effort for the providing organization. I had to assure the Board of Education that district buses would always take precedence in the vehicle maintenance scheduling process. Rate structures are also important; charges need to be fair and consistent. We considered salary structures across the trades, the mechanics, and the custodians, and we established a single fee. It is cumbersome to charge three different rates on a given job. If possible, rates should be used that can apply regardless of whether the university or the school district is offering the service. Consistency in this respect adds to the stability of the partnership.

We also are working to enhance communications between the staffs, as well as creating employee interfaces whenever possible. I proposed an employee exchange program so workers and supervisors could learn more about each other. We had the warehouse supervisor from the university spend half-days over a six-week period with her counterpart at the school district. This provided two benefits—more exposure to warehousing techniques and an opportunity for help in a pinch. To improve custodial operations at the university, we asked a district work leader to spend some time at USC and

offer ideas on producing a better service. Both organizations have made all of their training or in-service opportunities available to each other. Not only is this cost conscious, it makes good sense. Interfacing the classified employees is a sensitive matter that needs to remain a priority item.

The Issue Of Combined Workforces

Clearly, the most controversial aspect of the partnership is the idea of mixing the two physical plant workforces. This subject makes everyone—employees, managers, and the unions—uneasy. If I listened to all the reasons why it is impossible to do, I'd go hide in a sand bank. But if you can get past all the emotion associated with the issue and view it objectively—for instance, from a taxpayer's perspective—then yes, it does make sense in a number of ways.

The concept of recurring maintenance teams and heavy-duty custodial teams is a prime area to consider. Theoretically, teams that perform repetitive services on a scheduled basis need not be duplicated. One can view the alliance as a large entity, much as we do the school district, and schedule a single team through all the facilities. Team composition is the touchy area. Is it a single team of one organization's employees, or a joint team with members from both organizations? Either is more economically feasible than two separate teams.

There is little doubt in my mind that much of my time will be devoted to this controversial area. While the persistent threat of state budget reductions visibly threatens both workforces, and working together makes sense to lots of people, the simple act of doing it requires buy-in to change and accommodation. In any situation, the buy-in is the hard part.

One Manager's Vision

I am frequently asked, "Where is all this going? What organizational structure do you envision for the facilities partnership?" As I started the job some two years ago, I enthusiastically arrived at thoughts and ideas concerning potential consolidations, improvements, and efficiencies. Some we jumped right into. However, my early enthusiasm was somewhat tempered by the realities of the vast cultural differences between the two organizations that I work for and the threatening nature that occurs when change takes place. It became clear that progress would be measured step by step, over a reasonable period of time.

Based on my early experience, I have given considerable thought to the organizational issue and conceptualized an operation that I believe can work in spite of the challenges. It encompasses my basic focus in the job: be proactive with respect to maintenance; be sensitive to employee well-being; and continue to march forward.

A consolidated facilities operation could function like this! Both the university and school district would retain separate integral workforces to perform daily operations and maintenance and respond to urgent needs. These relatively small groups would be developed around utility distribution, building operation, and daily grounds and custodial needs. A third workforce could be structured to respond to unique needs—one-time construction, larger maintenance or rehabilitation projects, and seasonal or cyclical programs. Since these activities lend themselves to advance scheduling, this third group could effectively support both university and school district needs. Some skills might be duplicated. As an example, you might need one or two carpenters in each integral force, and three or four additional carpenters in the joint force. In contrast, all painters might be in the joint force. Since you only need a single support infrastructure, it need not be duplicated. Therefore, most of the management staff would be part of the joint operation.

There are many challenges in such a concept. First and foremost, there are all the personnel issues. How do you handle the differences in salary structure and benefit packages? How do you create a harmonious working atmosphere while still nurturing employee buy-in? How do you share resources to everyone's satisfaction? Are total quality management philosophies compatible with a business strategy? If the facilities partnership is to move forward, these issues need to be addressed.

Another challenge is the inequity of the physical plant organizations. If my proposal were adopted today, most, if not all, of the joint force would be school district employees. The entire existing university workforce would probably be consumed in its integral force. As the structure unfolds, some organizational changes might be required. I propose that any changes occur only through attrition, assuring no adverse action for any employee. There are benefits. The plus for a lean university workforce, which is always trying to do more with less, is simply help. The district workforce benefits from additional workload with its inherent job security.

Is it reasonable that the university would procure all services, above and beyond its current capability, from the joint workforce? The cost would undoubtedly be more economical as compared to commercially procured services, and the district would realize additional revenue.

From a big-picture viewpoint, it appears to be a positive concept. But the question remains, "Is this a win-win situation?" The answer lies in the eyes of the beholder, but I reiterate that this is a concept that can work. It is important that employees understand the entire plan and are provided the motivation to actively participate. Therefore, the onus is on management to aggressively address all the challenges as the concept unfolds.

Conclusion

This article has offered a brief perspective of Pueblo's innovative approach to the unending challenge of providing higher quality education with ever-diminishing resources. The alliance concept is hardly radical; rather, it offers a novel, far-reaching collaboration between a major regional university and a diversified public school district.

The facilities management partnership is one key element, leading the way toward a streamlined support infrastructure and subsequent cost savings. However, it also evokes an element of change for two workforces that have been accustomed to a relatively stable environment for a number of years. The threatening nature of this change makes managing the partnership a keen leadership challenge.

While considerable progress has been made, it is far too early to know what ultimately may be achieved through the partnership. Realizing that progress is often a methodical, step-by-step process, fraught with ups and downs, is extremely important. However, patience seems a small price to pay for success, and Pueblo's bold venture certainly offers food for thought for educational communities faced with similar challenges.

The Pueblo partnership might just provide the impetus to positively change the face of education for the foreseeable future. It certainly bears watching by facilities managers faced with the unending challenge of doing more with less. ■

APPA

Answers

International Experience Exchange Ready to Update

Maxine Mauldin

The time has come to begin updating APPA's International Experience Exchange Database. Currently, nearly 900 institutions are on the system; with the survey update, we hope to increase that number substantially.

Maxine Mauldin in APPA's information services manager.

Suggestions, changes, and additions have been reviewed by the Information Services Committee and returned to APPA, where staff has rearranged the original six-page survey to accept all new revisions.

When this modification was finished, we reprogrammed the data for export into diskette format. We plan to repeat the great success we had when we offered the 1991-92 Comparative Costs and Staffing survey on diskette.

Our first survey mailing has just gone out to those institutions that have completed the survey in the past and are already in the database. The diskette format will allow members to review and update their original survey responses submitted to APPA during the last revision, as well as to complete the new questions. A reference manual with instructions will be included with each disk to assure accuracy and efficiency. Once receiving the disk back, the APPA staff can upload and automatically revise the institution's data in a matter of minutes. And because your institution will enter the data yourself, there is little or no opportunity for errors to be made.

To those institutions that are not currently on the Experience Exchange Database, we will mail a diskette that includes just the new revised survey on it. Also, hard copies of the revised survey will be made available to those institutions that do not have access to a computer system or whose systems are incompatible with DOS. The survey mailout to institutions not yet on the Experience Exchange Database will be completed this spring. Our goal is to have 100 percent participation. The reason for mailing separate surveys at different dates is to ensure that staff is not overwhelmed with hundreds of disks at any one time.

The new Experience Exchange survey contains a wide variety of new information. Many of the sections have been expanded, due to the overwhelming request from our members, to include more information pertaining to many of the subjects within that section.

For instance, the grounds maintenance portion of Section III: Physical Plant Responsibilities, is one of the many areas that have been expanded. As you will see in the new updated survey, grounds maintenance covers many topics such as exterior and interior landscaping, pest control, snow removal, tree and turf maintenance, etc. New sections were also added, such as Section II: Organizational Structure, which includes selection options such as flextime scheduling, four-day work week, strategic planning, TQM programs, and much more.

We are excited about enhancing and improving our member service by updating the International Experience Exchange Database. We urge you to revise and complete the survey diskette and return it promptly to APPA. Thank you for your cooperation. ■

APPA's Information Services can now provide you with information from the CFC Database. This information is used to track available CFC products that could be used in emergency situations by other member institutions upon request. As of now we have received 200 responses, which show a stock of more than 500,000 pounds of refrigerants on hand. For more information, contact Maxine Mauldin at 703-684-4338.

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City Polytechnic of Hong Kong

Arthur T. Leung

The City Polytechnic of Hong Kong was created in the early 1980s as the result of a study requested by the Hong Kong Government on the demand of graduates in the run-up of 1997. It is a relatively new tertiary education institution by world standards, but when compared with the locals, it is the fourth oldest among the seven institutions that offer first and higher degrees.

The academic structure and the location of the permanent campus were first agreed upon and set up by a committee that took up the initial planning of the polytechnic in November 1982. After one year of intensive preparation work, the polytechnic was formally established in January 1984. Since then, it has undergone rapid expansion. The first intake of 1,230 students were admitted in October 1984 to twelve courses in full-time and part-time evening modes offered by six departments.

In October 1993, the polytechnic offered seventy-two courses and a variety of research degree programs, and its student population had grown to approximately 14,300. It is planned that by 1994-95 the polytechnic will achieve a total population of 15,118 students (11,325 full-time equivalent), with progressively more emphasis being given to degree and higher level work in line with the government's proposals for the expansion of tertiary education.

The polytechnic receives most funds from the government through the University and Polytechnic Grant Committee. To give an idea of the size of the operation the expenditure for 1992-93 was approximately HK$865 million (US$111m).

Courses Offered

The first bachelor's degree courses were introduced in 1986-87. This was followed by the introduction of a master of philosophy degree in 1988-89. The year 1990-91 witnessed the first registration of students in Ph.D. programs. The polytechnic now offers a full range of awards including doctoral studies, master's degree, postgraduate diploma, postgraduate certificate, bachelor's degree, higher diploma, and diploma. The courses offered are in four different modes: full-time, part-time evening, part-time day and evening, and sandwich.

The polytechnic is committed to providing higher education for professional practice. It anticipates community needs and responds to the effects of social and technological change. The polytechnic offers educational programs in a wide range of disciplines relating to business, humanities, law, social science, and applied science and technology. Other than the existing academic departments the polytechnic is also committed to forging links with industry and has a Centre of Environmental Technology for Industry, Institute for Research and Consultancy, Material Testing Centre, and other research centers.

Initial Campus

The development of City Polytechnic went through an unusual stage. Before the first enrollment of students, a high-rise office building located in the central part of the Kowloon Peninsula was bought via a bank loan as its initial campus in January 1984. Alteration work to the twenty-three-story building was carried out in three phases in line with the student growth. The first phase was successfully completed in September in time for the first academic year. The building had a total gross floor area of 26,500 square meters, was fully air conditioned, and had six elevators and eight escalators. It was very much an urban campus, with the four lowest floors used as a shopping mall that generated an income of about HK$12 million (US$1.5m) per year.

Arthur Leung is estates officer at the City Polytechnic of Hong Kong in Kowloon, Hong Kong.

Permanent Campus

While the polytechnic was operating from its initial campus, design work for the permanent campus started in 1986 and in September 1988, the polytechnic saw the completion of phase 1A. Some staff members and students were moved into the partially completed 23,000 square meter campus in the following month. When phase 1B was completed in September 1989, the entire operation was moved in stages. The total student population at the time was 3,450 FTE.

Hong Kong Island in the background. The buildings in the foreground are Senior Staff Quarters.

The construction work of phases 1A and 1B commenced in May 1987. The total building area was about 113,000 square meters. People would have expected the activities of the polytechnic to be housed in separate buildings with surrounding grounds, but given the fact that Hong Kong's land premium is high, the campus buildings had to be constructed on a tight site. There are seven buildings in total, but because of the site constraint, they are linked with bridges in a mega-structure constructed of reinforced concrete. This structure houses academic staff offices, classrooms, language laboratories, video laboratories, library, computer center, computer-aided design center, science and engineering laboratories, etc. Other facilities included are an internal mall, which serves all lecture theaters, student and staff amenities, and a sports complex with an outdoor Olympic-size swimming pool and an indoor sports hall. There are also four low-rise administrative buildings with a Chinese garden and water features. Outdoor space is limited on campus, but it includes three tennis courts, a multipurpose court, and a hill with a jogging trail.

To meet the final student target of 13,500 FTE, construction of phase 2 campus building commenced in February 1991. It was completed progressively from August 1992 onward. This gave an addition of 48,000 square meters of floor area. The new accommodation provided expansion of the library, lecture theaters, staff offices, sports facilities, and student and staff amenities. In addition, sophisticated teaching and research facilities for science and technology subjects were also made available.

Climate

The climate in Hong Kong is subtropical. It ranges from 10°C to 18°C in winter with a relative humidity of around 70 to 80 percent. In the summer, the temperature reaches 30°C with a high relative humidity of 95 percent. If one is not used to the heat, the weather is quite unbearable. Typhoons, or tropical cyclones, are expected in the summer and the period sometimes extends into October. They bring strong winds, more than 100 km per hour, and heavy rainfall, 100 mm of rain in two hours, in short duration.

Because the campus buildings sit in two valleys and in order to avoid flooding, there was a conscious decision at the design stage that the buildings be built on ground higher than the lowest surrounding roads. This was complicated by a building height restriction due to the airport nearby. Although every effort had been made to avoid having basements, some water tanks,

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sumps, and pump rooms are inevitably placed underground. In summer, special attention has to be paid to the pumping and surface water disposal systems.

Because of the weather, the campus buildings are fully and centrally air conditioned. The primary energy source is electricity, which is supplied from a power company. The air in each room is cooled by chilled water supplied from sixteen air-cooled chillers with a total of 5,000 RT situated on the roof. A perimeter electrical heating system is also installed. It will come on in a cold spell when outside temperature drops below 10°C.

Academic Building

Estates Office

The estates office has the responsibility for campus development, operation, maintenance of physical plant and building fabric, and a number of other estate management related services. It has five main sections, namely building development, building maintenance, building services (operations and maintenance), building services (projects and minor works), and administration and general. In addition to the maintenance of the campus buildings, the office also maintain about 250 staff quarters, 110 of which are self-built on the campus, whereas the rest are leased from the local property market.

The office consists of multidisciplined professionals. There are approximately twenty senior staff with qualifications such as architecture, civil engineering, building services engineering, building surveying, quantity surveying, administration, etc. The support staff of about fifty people includes technical assistants, supervisors, inspectors, clerks, typists, and secretaries. There are also electricians, mechanics, plumbers, carpenters, plasterers, blacksmiths, gardeners, painters, etc. The total labor force is about 100.

The timing to publish an article on City Polytechnic in 1994 is extremely appropriate. It will mark the tenth anniversary of the polytechnic's establishment, and it will also commemorate the upgrading in status from a polytechnic to "City University of Hong Kong" later this year. ■

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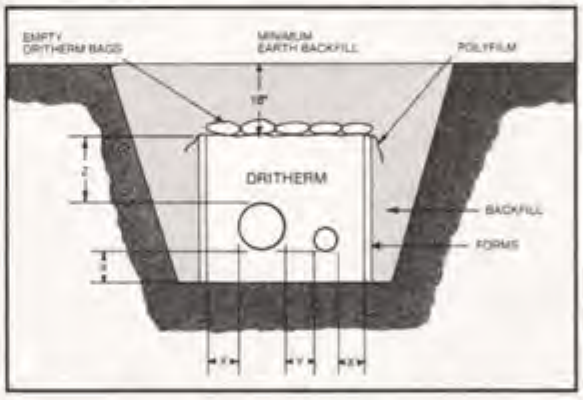

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Database Update

Howard Millman

Computers That Listen: Finally, Low-Cost Speech Recognition Products That Work

Bob Lee, a program manager at IBM's Speech Recognition group, switched on the microphone and started dictating to his desktop computer. "Please tell Mr. Wright that two o'clock is too soon for the two of us to catch the right flight at the airport...." As Lee spoke, his words flashed onto the screen with 100 percent accuracy. Within seconds after completing the memo, it was ready for final corrections. Lee, still using plain English voice commands, requested the computer to add a few words, cut and paste some phrases, and finally to read the memo back to him.

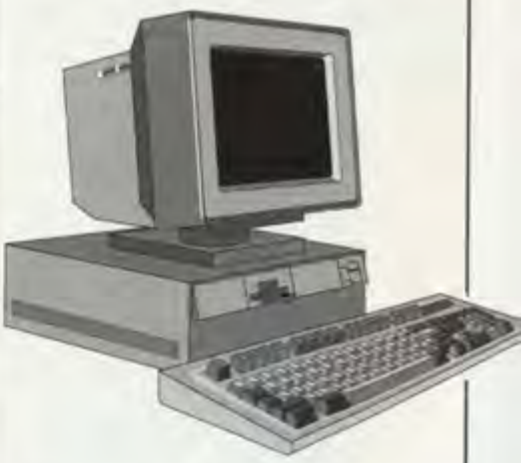
Turning to where I'd been sitting, he said, "It's taken twenty years and countless millions of research dollars to reach this point." But I was not in my seat. I was searching the room for a hidden stenographer with a remote keyboard.

The two complementary products that make this technology possible, IBM's Personal Dictation System (PDS) software plus a Digital Signal Processing expansion card, retail for less than $1,000 combined. Available now, the software runs on standalone (non-networked) 486 computers equipped with eight or more Mbytes of RAM and OS/2. A Windows version will ship in mid-1994. PDS ships with a 30,000-word basic vocabulary. Users can add new words or purchase profession-specific modules. At present, only modules for medicine and journalism are available, but look for dozens more in the near future as independent developers start releasing vertical market vocabulary modules.

IBM had to juggle some priorities to achieve a balance between performance, price, and ease of use. Aside from the purchase price, users need to invest about two hours training the software to recognize their voice. While the Personal Dictation System accepts words at normal speech rates (70 to 90 words per minute) it requires speakers to articulate and briefly pause between each word. The resulting staccato speech sounds like someone talking to, well, a computer.

Lee explains that because the software's accuracy improves over time the system "grows more accustomed to you, so its understanding and tolerance continues to increase." Listening to Lee describe the learning process, it starts sounding like a cross between a marriage and a spell checker.

If - speaking - like - this - bothers - you, another IBM product serves speakers who prefer to just walk up to a computer and order it around. IBM's



Continuous Speech System (CCS), a $315 product, will recognize anyone's voice without prior training and allows

Howard Millman is a systems integrator with twenty-five years of experience in facilities management. His firm, Data Systems Services, is based in Croton, New York.

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users to speak in a continuous, natural stream.

During the course of the demo, I asked if the system can translate words in text into a foreign language? Within seconds after I spoke several common phrases in English, the computer translated and displayed the Chinese, Japanese, and Egyptian versions.

However, like its relative the Personal Dictation System, the CCS required price/performance tradeoffs that limited its active vocabulary to 1,000 words *at one time, in any one module*. As an example, you can switch between modules customized for finance, another for personnel, and many others, each providing its own 1,000-word vocabulary. The CCS runs on OS/2-equipped 486 machines and RS/6000 RISC boxes. Running on a RISC server, CCS will support up to eight concurrent users. It does not require the DSP card.

Other speech recognition products from IBM include the Continuous Speech Series for Windows, an application development toolkit. Offering an active vocabulary of 1,000 words, IBM primarily pitches the product to producers of multimedia education and entertainment titles plus professionals such as stock brokers and doctors. Compton's New Media said they will license Continuous Speech for inclusion in future versions of their Interactive Encyclopedia and Sporting News Pro Football Guide.

IBM, along with its speech recognition technology partners, Kurzweil Applied Intelligence and Dragon Systems, are moving speech recognition out of the realm of science fiction and into science fact. These alliances should provide IBM with ready-to-market products. The agreement with Dragon will result in distribution rights for one mid-range and one low-cost system. VoiceType 2, a DOS-based 7,000-word vocabulary system, costs $2,195. Voice Control for Windows, an entry-level $129 software-only application, offers sixty-four one-word commands to control popular Windows applications and functions.

According to IBM's Marketing Development Manager Elton Sherwin, they encourage independent developers to build speech-enabled applications using these technologies. He readily admits that IBM prefers to simply provide the core technology and ongoing research and development. Asked to reveal some pending plans, Sherwin said that within two years, consumers will see speech enabled applications on interactive, cable TV systems. He added that in 1994, IBM will introduce "speech/pen hybrid" notebooks that combine speech recognition with pen-based computing. But the real question is when will we achieve the Holy Grail of speaker independent, continuous speech? "I say that's about two years away," he predicted.

After waiting two decades for a machine that understands me, what's two more years? For further information about IBM's speech recognition products call 1-800-TALK-2ME. ■

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The Bookshelf

ADA

Americans with Disabilities Act: Facilities Compliance Workbook, by Evan Terry Associates. New York: John Wiley & Sons, 1992. 500 pp., $150, looseleaf binder.

Since the Americans with Disabilities Act (ADA) became law in 1990, Evan Terry Associates have issued four versions of its *ADA Facilities Compliance Workbook*.

The *Facilities Compliance Workbook* has six sections and an appendix in a three-ring binder. Unfortunately, there is no index or bibliography, and the page numbering system is somewhat unusual. For example, the Survey Tools chapter (there are no chapter numbers) gets a one-line entry in the table of contents, yet it comprises more than half the workbook. This chapter also has a different page numbering system from all the other chapters.

Once you have figured out how to use the workbook, you will encounter a truly massive amount of information. The chapters are ADA History, What is ADA?, Issues of Title II and Title III, Accessibility Guidelines, Compliance Strategies for ADA, and Survey Tools, which is the heart of the book. The appendix offers advice on attitudinal issues and lists inappropriate words to be avoided.

The Americans with Disabilities Act is a bold attempt to remove discrimination on the basis of disability and bring Americans with disabilities into mainstream American life. To assist in this aim, facilities managers must construct new facilities and modify their existing facilities so they are readily accessible to and usable by people with disabilities. Architectural and communication barriers need to be looked at and the following list from the workbook provides some idea of the extent of the work involved for facilities managers:

- Lowering shelves, rearranging tables, chairs, vending machines, display racks and other furniture
- Lowering telephones, providing text and volume control telephones
- Adding raised letters or braille markings on elevator control buttons
- Installing flashing alarm lights
- Installing grab bars in toilet stalls
- Insulating lavatory hot water pipes to prevent burns
- Removing high-pile, low-density carpeting

For those responsible for implementing changes, the Survey Tools chapter helps to determine the extent of modification necessary.

Although not specifically written for the university environment, the book contains a wealth of information for the higher education facilities manager. The section on toilets, for instance, contains twenty-nine pages! This book complements APPA's book in this area, *Removing the Barriers: Accessibility Guidelines and Specifications* by Stephen Cotler.

Most facilities managers welcome the opportunity to make their campuses accessible to staff and students with disabilities so they can participate in and enrich the life of the campus community. The *Americans with Disabilities Act: Facilities Compliance Workbook* shows how we can improve our campuses to achieve this aim. The workbook should also help to quantify the cost of this work and help to convince university budget authorities of the need to allocate additional funding. My only fear is that having identified the work necessary to comply with the Americans with Disabilities Act, facilities managers will be asked to pay for this work from their own diminishing budgets.

This book is available from John Wiley & Sons, Inc., 605 Third Avenue, New York, NY 10158-0012.

—**David Mayocchi**
Administration Manager
Office of Facilities Management
Griffith University
Brisbane, Australia

Keeping Staff Committed

Why This Horse Won't Drink: How to Win and Keep Employee Commitment, by Ken Matejka. New York: American Management Association, 1991. 206 pp. $22.95, hardcover.

This book is extremely informative regarding the management of people and is presented in an interesting, easy-to-read manner. Each of the sixteen chapters provides insight into some element of human performance. Exercises are included at the end of each chapter in order to assist the reader in evaluating his or her own behavior or response to various employees and supervisors.

I enjoyed the way this book helped me focus on my own style of management, and the author provides the reader with a better understanding of the needs, desires, and motives of employees. Matejka is quick to point out that many people in American organizations are working hard, but not necessarily at the right things. He also makes a strong case that typical employees are fairly easy to manage, and in fact are actually capable of managing themselves.

From this the author then develops three basic premises upon which the book is written.

Premise 1: Almost all employee behavior is purposeful and designed to bring employees the most pleasure and/or least pain due to a) their perception of the options available to them, b) their perception of the potential consequences for each action, and c) their expectations regarding the behavior of others, especially of their immediate supervisors.

Premise 2: The solutions to most organizational problems are readily apparent to almost everyone involved, but little is done because "a continuation of the problem is actually preferable to the alternative."

Premise 3: Ownership and vision build commitment. "When I own it, I take care of it; the business is a reflection of me."

In the first section of the book, Matejka states that many of us are "shooting ourselves in the foot." He explains how we often compensate for past performances instead of using compensation as an incentive for future performance or actions. The author believes that many executives, managers, and employees are holding on dearly to their old favorite methods of management, even when these behaviors are counterproductive to superior corporate performance. Matejka defines, in an interesting way, a number of corporate diseases such as elephantiasis, short-term-itis, amnesia, dyslexia, rigor mortis, cannibalism, and cultural blindness. He also defines management diseases such as management by mind reading, macho management, praise deprivation, nearsightedness, fad management, and MBA syndrome. Finally, he describes employee diseases of money-nucleosis, suebonic plague, social security, ego-addiction, and staff actualization. In addition, Matejka then gives his readers ideas on how these destructive trends can be reversed.

The second part of the book deals with how to increase the effort of employees by understanding and properly administering rewards and disciplines. He gives ideas about how to choose suitable and fair rewards, when to reward, and how much to praise. The book gives further instruction on how to set up a behavioral trust and change program, and how and when to use punishment.

Matejka tries to demonstrate that work should be a win-win situation, not a win-lose situation. We can get what we want by helping our subordinates get what they need. This can happen when we understand the "horse's point of view." Also, in regards to praise, the author points out that deception is a trap that is all too easy to fall into, and it is best to communicate the truth. He encourages us to either overdo or underdo our praise. Finally, he explains how trust comes to the manager who cares about the task and the people. This can happen only

when there is a straightforward agreement between the boss and the subordinates and an understanding between each party about what the other needs.

The third section explores ways to work with those people who fall between the cracks. This category includes the difficult or baffling boss, a difficult employee, or turned-off people. Our first step in this process is to know our own personal strengths, weaknesses, blind spots, and biases. Another important step is to decide how much responsibility you have to each of your problem employees.

Matejka helps explain some of the different types of difficult employees and what their needs are (i.e., recognition, power, security, retribution, challenge, and comfort) and offers possible solutions to working with each type. This section of the book also provides insight into how to lead or manage groups by understanding the balance between power and participation and indicates how noninvolvement brings a feeling of powerlessness.

In the final section of the book, Matejka challenges us with ways to gain commitment and increase organizational performance from poor employees, along with instructions on how to celebrate the successes. The author gives ideas about how to work at participation and delegation, as well as how to allow employees to feel ownership in major decisions and planning done by an organization. He believes that employees will be willing to pledge their commitment only when they see something exciting enough to warrant their enthusiasm. This means creating a worthy organizational vision, which is different than what the author sees in most organizations. Too often organizations are actually underachieving, because they are either directionally impaired, or they have a direction but "keep it a secret from the troops," because management believes that the "troops" don't need to know.

And finally, in the last chapter, the author encourages management to stop and celebrate a hard fought victory and gives many reasons why this is in the best interest of the organization. The fact that most managers are working with fewer resources, for less cost, with greater efficiency, and in less time, makes our climate stressful and increases the need to celebrate what is actually being accomplished.

I would encourage all my colleagues who are interested in improving their management styles and understanding their employees better to take the time to read this book.

Why This Horse Won't Drink is available from AMACOM, American Management Association, 135 West 50th Street, New York, NY 10020.

—**Clayton E. Shelter**
Director of Physical Plant
Goshen College
Goshen, Indiana

Team Building

Empowered Teams: Creating Self-Directed Work Groups That Improve Quality, Productivity, and Participation, by Richard S. Wellins, William C. Byham, & Jeanne M. Wilson. San Francisco: Jossey-Bass Publishers, 1991. 258 pp. $29.95, hardcover.

The three authors of *Empowered Teams* have seized on contemporary interest in team approaches to work to produce a very good book on the subject. *Empowered Teams* deals specifically with self-directed teams, small groups of people empowered to manage themselves and the work they do on a day-to-day basis. These teams differ from other types of teams in that they are formal, permanent units who work with a minimum of direct supervision. Though less than 5 percent of U.S. companies have experimented seriously with self-directed teams over the last five years, some of those who have report productivity gains of 30 to

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50 percent. Improved quality is the primary reason cited for the move to self-directed teams. The success of empowered teams in the manufacturing area over the last five years has created interest in the approach in other work areas.

Although the authors are strong advocates for the self-directed team approach, they recognize that teams do not always produce winning results. Throughout the book they highlight what can go wrong in the move toward self-directed teams. They also highlight the fact that productivity gains reported by organizations using self-directed teams have been achieved in a context of broad change. Most of these organizations have reorganized work flow, significantly increased training, bought in new technologies, and implemented new production or quality processes. For this reason, it is difficult to separate the extent to which self-managed teams have been responsible for the changes, rather than these other important sociotechnical workplace changes.

Written as a blueprint for successful team implementation in the workplace, *Empowered Teams* is organized into three parts: How Teams Work, Preparing For Teams, and Building Strong Teams. A short annotated bibliography provides additional references for those wanting to learn more about teams. The authors believe that lack of effective training is the number-one barrier to successful team implementation. Team members need technical skills, team skills, and problem solving skills, and problems in any one of these areas will drastically reduce the effectiveness of the team. The book also includes a good discussion on leadership in the self-managed team and the shift away from control and toward coaching.

The authors cite an interesting case of the team approach at the San Diego Zoo where a team designed a new exhibit. Rather than having different departments take care of the cleaning, maintenance, plants, reptiles, etc., team members are cross trained and undertake all these responsibilities from within the team. No doubt some universities will consider this approach for some of their buildings and it will be interesting to see how well self-managed teams work in these new settings.

I recommend *Empowered Teams* to anyone who wants to learn more about self-managed teams. The book is well written and easy to read without being simplistic. It would be of particular interest to people interested in human resource management and organizational change.

This book is available from Jossey-Bass Publishers, 350 Sansome Street, San Francisco, California 94104.

—David Mayocchi
Administration Manager
Office of Facilities Management
Griffith University
Brisbane, Australia

Coming Events

APPA Events

Contact the APPA Educational Programs Department at 703-684-1446.

Jul. 10-13—**1994 Educational Conference & 81st Annual Meeting.** San Antonio, TX.

Aug. 21-26—**Institute for Facilities Management.** Denver, CO.

Regional Meetings

Sep. 24-27—**Rocky Mountain.** Boulder, Colorado. Contact: Paul Tabolt, University of Colorado/Boulder, 303-492-7120.

Sep. 29-Oct. 1—**Australasian.** Adelaide, South Australia. Contact: Angus Moir, Flinders University of South Australia, 61 8 201 2383

Oct. 8-12—**Southeastern.** Louisville, Kentucky. Contact: Michael Besspiata, Southern Baptist Theological Seminary, 502-897-4103.

Oct. 9-12—**Midwest.** West Lafayette, Indiana. Contact: Donald Hufford, Purdue University, 317-494-1423.

Oct. 16-19—**Central.** Kansas City, Missouri. Contact: Mike Reuck, William Jewel College, 816-781-7700 ext. 5507.

Oct. 22-26—**Pacific Coast.** Lake Tahoe, Nevada. Contact: Nick Cimino, Truckee Meadows Community College 702-673-7100.

Oct. 23-26—**Eastern.** Pittsburgh, Pennsylvania. Contact: Fedor Salva, Washington and Jefferson University, 412-223-6086.

Other Events

May 9-10—**Fundamentals of Energy Management. Louisville, KY.** Contact: AEE Energy Seminars, P.O. Box 1026, Lilburn, GA 30226; 404-925-9633.

May 16-18—**Professional Cleaners School. Racine, WI.** Contact: Von Schrader Company, 1600 Junction Ave., Racine, WI 53403.

May 16-18—**Inspecting Buildings for ACM. Houston, TX.** Contact: Center for Environmental Research and Training, P.O. Box 19201, Arlington, TX; 800-817-CERT (2378).

May 19-20—**Managing Asbestos in Buildings. Houston, TX.** Contact: Center for Environmental Research and Training, P.O. Box 19201, Arlington, TX; 800-817-CERT (2378).

May 24-26—**Transportation Management Conference. Bronx, NY** Contact: Shmuel Yahalom, Graduate Program, SUNY Maritime College, Ft. Schuyler, Bronx, NY 10465; 718-409-7285.

Jun. 7-8—**Fundamentals of Demand-Side Management. Philadelphia, PA.** Contact: Association of Energy Engineers, 4025 Pleasantdale Road, Suite 420, Atlanta, GA 30340-4264; 404-447-6415.

Jun. 12-17—**CACUBO Management Institute.** Milwaukee, WI. Contact: Elaine Watson, DePaul University, 312-362-8458.

Jun. 18-22—**85th Annual Conference of International District Heating and Cooling Association. Seattle, WA.** Contact: IDHCA, 1101 Connecticut Avenue, NW, Suite 700, Washington, DC 20036-4303.

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(Check as many as you would like)

__Complete® Floor Finish

__Support Services

__Other Floor Care Systems/Cleaners

Please complete the following:

Name: _____

Title: _____

Facility: _____

Address: _____

City: _____ State: ____ Zip: _____

Phone: ( ) _____

Number of Students: _____

Approximate square footage you maintain:

_____ Sq. Ft.

Who manufactures the floor care products that you buy the most often:

_____

Do you purchase maintenance chemicals off Bid? ____ **YES** ____ **NO**

If YES, date bid is let _____

Are you responsible for specifying maintenance chemicals? ___ **YES** ___ **NO**

If NO, who is? _____

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Not only does SC Johnson Wax provide innovative products like Complete®, one of the longest-lasting, best-selling floor finishes in the industry, we provide unparalleled technical advice as well. We've found ways to help educational facilities all over the country save time, money and labor.

So if you're looking for a better solution to your floor care challenges, take a lesson from Purdue. Let SC Johnson show you how we can make your job easier. Write or call us at 1-800-503-SCJP to find out why some of the world's brightest floors depend on SC Johnson Wax.

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THE LEFT ONE IS THE RIGHT ONE.

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For more information on how premium-efficiency motors can make a difference to your profit picture, call 800-CDA-DATA. Or write the Copper Development Association Inc., 260 Madison Avenue, New York, NY 10016.

* Figure based on 95.0% premium-efficiency and 91.5% standard-efficiency motors working 6,000 hours per year for 10 years at an electricity cost of $0.07 per kWh.

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Assistant to Director - Office of Information Systems

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