

*The official publication
of the Association
of Physical Plant
Administrators of
Universities and Colleges*

Facilities Manager

Volume 7 Number 2

Spring 1991



CAMPUS ACCESSIBILITY: A Summary of ADA

Also in this issue

- **Stewardship of
Seminary Facilities**
- **Performance
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Management**

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Accessible Building

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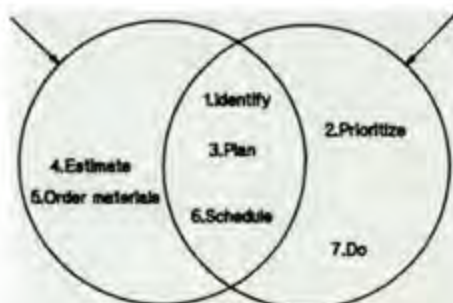


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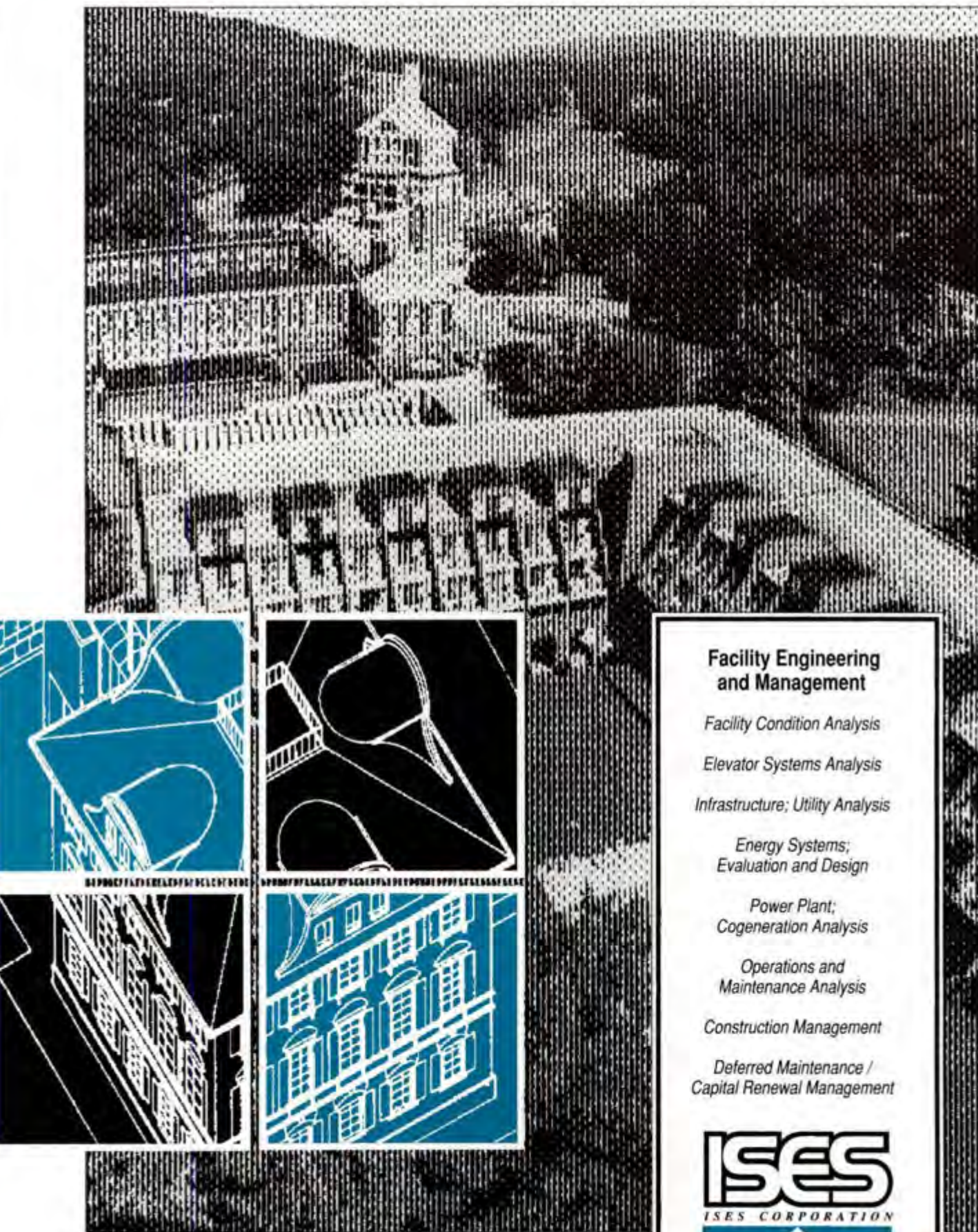
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Trends Found In Membership Titles

by Walter A. Schaw
APPA Executive Vice President

With the 1991 APPA Membership Directory just released, it is possible to repeat an analysis of APPA's membership by job title. The first such analysis was done eighteen months ago and reported to the Membership Committee and APPA Board of Directors. In the summary to follow, it is most significant to see that one in five of APPA's regular members are now defined as "senior administrators." The rate of change to higher titles has been almost as great in the past eighteen months as in the five years (1984-1989) covered in the last study!

Some of the changes, like most of the presidents in membership coming from religious seminaries, have a project relationship. Most changes, however, are the result of the promotion of facilities officers and a growing interest in APPA by business officers. Both are, in my opinion, in large part from a new recognition of facilities as a critical capital asset at our institutions. It is hard evidence of perfor-

mance against the mission being proposed for our association. It also suggests that we are evolving into opportunities to influence and affect future change as well as executing our responsibilities as stewards of this asset.

Note: Our current membership includes 1,544 institutions. Many, but not all, of the titles analyzed are institutional representatives (all of the president are!). Some business officers in small colleges are the institutional representative because they may be the true facilities officer. A small but growing number of larger schools have enlisted executive vice presidents, vice presidents of finance, and others as APPA members, inviting them to know more about facilities by exposure. That's also a high compliment to the quality of what we do. For the sake of simplicity, certain titles are not named but counted in the appropriate designation. Vice chancel-

lors, for example, are listed as vice presidents. This count also includes deans of administration, a common title in community colleges and now showing up frequently in the directory.

Thumb through the directory on your own; you'll see the actual names and schools in which change is occurring at both the lower end of membership, encouraged by the two-tier option, and that at the upper end, a natural evolution occurring without any particular emphasis in recruitment.

The chart on this page provides a summary of the 1991 APPA Membership Directory.

Updated NCES Facilities Manual Due This Year

The revised and updated *Higher Education Facilities Inventory and Classification Manual* has recently undergone a field review and is now awaiting publication by the National Center for Education Statistics. This manual, last published in 1974, provides the definitions and structure used for the collection and reporting of data on college and university facilities.

When published, the manual will be distributed to all U.S. institutions of higher education. No federal survey based on the manual is planned at this time, according to Charles Lenth, director of the State Higher Education Executive Officers/NCES Communication Network. The revised manual is a collaborative product of a working group of facilities planners and managers and related organizations, including APPA.

For more information, contact Lenth at SHEEO, 707 Seventeenth Street, Suite 2700, Denver, CO 80202-3427; 303/299-3687.

Staff News

Michelle DuBose was hired as administrative staff assistant September 24, 1990. Before coming to APPA, she worked for Edward Blank Associates, a marketing firm, as a client service specialist. She has six credit hours left to complete her bachelor's degree in office administration.

Mary Watson has been working for APPA as receptionist/staff assistant since August 20, 1990. Prior to working for APPA, she worked as file room supervisor for Fairfax County Public Schools.

MEMBERSHIP ANALYSIS Selected Job Titles

	1984	1989	1991
A. Institutional Members	1,208	1,448	1,544
B. Senior Management			
Presidents	-0-	-0-	24
Vice Presidents	19	66	70
Business Officers	24	55	58
	43	121	152
% Institutions	4%	8%	10%
C. Senior Plant Administration			
Vice President/Facilities	8	13	25
Assoc. VP/Facilities	6	26	49
Asst. VP/Facilities	22	52	72
	36	91	146
% Institutions	3%	6%	9%
D. Plant Administration			
Dir. of Physical Plant	816	706	682
Dir. of Facilities	86	266	284
Dir. of Plant Ops.	-0-	-0-	76
Dir. of Bldg. & Grounds	95	60	55
Dir. of Phys. Resources	-0-	-0-	36
Other Directors	163	185	141
Managers, Supervisors	-0-	-0-	18
	1,160	1,217	1,292
Total Regular Members	2,425	3,018	3,544
Total Members	2,646	3,421	3,957

Source: 1991 APPA Membership Directory

APPA Publishes Facilities Finance Book

APPA recently published *Facilities Stewardship in the 1990s*, the proceedings of the highly successful Institute for Facilities Finance in Higher Education, which was presented November 1990. This book represents the collected presentations of the institute faculty members, drawn from higher education, business, and financial institutions.

The publication is 202 pages and includes eighteen chapters on such topics as facilities as a capital asset, state issues in capital management, financial options and funding sources, campus planning, real estate management, case studies, utilities paybacks, and much more.

APPA is also offering a one-hour video, *New Concepts*, featuring excerpts from Sean C. Rush's presentation on managing facilities as capital assets. Rush is partner and director of Coopers & Lybrand, a higher education consulting firm.

Copies of the book cost \$25 for APPA members and \$35 for all others. The VHS video costs \$55 for APPA members and \$95 for others. Add \$8 for shipping and handling (for the total order). To order, send your check or institutional purchase order to APPA Publications, Department FF, Box 753, Waldorf, MD 20604.

NSF Grants Money

APPA was among a number of higher education associations who worked in coalition to gain the NSF federal appropriation for \$25 million in fiscal 1990-91. APPA's efforts included research data on capital renewal/deferred maintenance needs and the cost impact of compliance with federal regulations affecting facilities, as well as a number of APPA members who served on the NSF awards committee. Among the joint

groups was the Higher Education Colloquium on Science Facilities chaired by U.S. Senator Terry Stanford.

Walter Schaw, APPA Executive Vice President, commented, "We appreciate that \$25 million is not a significant amount against many billions of dollars in facilities needs, but it is typical that such grants stimulate matching funds from state and other sources that will multiply their total value. We're pleased to have been part of last year's successful effort and plan to work for an NSF appropriation for research facilities again this year." Schaw noted that a letter by APPA to President Bush had been cited by Senator Stanford as "highly effective."

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Correction

Val Peterson's phone number at Arizona State University listed in the request for privatization information was listed incorrectly. His number is 602/965-5245. Please call him at this number with any information on how you are dealing with privatization.

• • •

Has your institution or department received special recognition, or have you undertaken new or innovative projects? If so, please send them to us for possible inclusion in the newsletter. Send all items to Stephanie Gretchen, APPA, 1446 Duke Street, Alexandria, VA 22314-3492; 703/684-1446, fax 703/549-2772.

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Of APPA's annual membership dues, \$30 pays for the subscription to *Facilities Manager* and *APPA Newsletter*. Additional annual subscriptions for both periodicals cost \$40 (\$50 for non U.S. addresses). For information on rates and deadlines for display and classified advertising, telephone 703/684-1446.

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"ACHIEVING FACILITIES EQUILIBRIUM" APPA 78th ANNUAL MEETING JULY 21-24, 1991 ORLANDO, FLORIDA



Join your colleagues for APPA's 78th Annual Meeting in Orlando, Florida from July 21-24. Enjoy the many attractions that Orlando has to offer and plan to bring your family for a vacation. This year's meeting offers four-days of educational presentations, social activities and exhibits in the relaxed Florida setting.

Highlights include two dynamic keynote presentations. Monday's Opening Keynote Address will be given by Henry G. Cisneros, former mayor of San Antonio. Invited to speak as the Closing Keynote Address is Dr. Rita Bornstein, President of Rollins College. The Annual Awards Banquet features the awards presentations for the Meritorious Service Award, President's Award and the Awards for Excellence winners.

Kick off the meeting with the Opening Ceremony & Brunch in the exhibit hall on Sunday morning. Enjoy a beach party atmosphere and the opportunity to visit more than 160 companies who will be displaying their products and services. The rest of Sunday afternoon is open to enjoy the many attractions of Orlando.

This year's meeting features over 50 educational sessions on a wide range of subject areas. The Critical Issues in Higher Education series will be continued as well as the Focus Sessions. There will also be several Experience Exchange Sessions and Exhibitor/Vendor Technical Sessions to round out the educational offerings.

A host of social activities will let you experience the highlights of Orlando including a special event at Sea World and at Universal Studios. When planning your trip to Orlando you will want to arrive on Friday or Saturday. There are many attractions in the Orlando area—Walt Disney's Magic Kingdom, Epcot Center, Disney/MGM Studios, Sea World, Universal Studios and much more—so plan a few extra days for plenty of free sightseeing time.

The Preliminary Program has been mailed to all APPA members with complete details on the meeting and registration/hotel information. Next month, the APPA Newsletter will feature the sights of Orlando, special events, the spouse/guest program and post-convention trip.

Meeting and Hotel Facilities

APPA will be using Marriott's Orlando World Center to host this meeting. The exhibit hall, educational sessions and meals will take place at the Marriott. APPA has reserved a block of sleeping rooms at a special convention rate for APPA members. Details are included in the Preliminary Program.

Educational Program Highlights

CRITICAL ISSUES IN HIGHER EDUCATION

Series of educational sessions that focus on topics of vital interest and timeliness to facilities managers.

Environmental Issues

This two-hour session focuses on regulatory/legislative issues and hazardous waste management. Several speakers will present papers on varying aspects concerning environmental issues. A question and answer session will follow. *Moderator:* APPA Director of Governmental Relations

Regulatory/Legislative Update

Review recent regulations and receive an update on pending legislation in such areas as the Clean Air Act, hazardous waste disposal, CFC's, and much more. *Speaker:* Sheldon Steinbach, General Counsel, American Council on Education

Hazardous Waste Minimization within Physical Plant Operations

Explore how colleges/universities can reduce utilization of regulated substances. Examine the considerations in establishing a hazardous waste minimization program. Review source reduction techniques, learn how to conduct a feasibility study, and implement waste minimization methods and technologies. *Speaker:* William Theodore Panos, Hazardous Waste Program Advisor, The California State University

Update of Alternative and Emerging Biomedical Waste Treatment and Incineration Technologies

Focus on the latest developments in disposal technology for treating and disposing of biomedical waste. Discuss the advantages and disadvantages of these new methods,

comparative costs, socio-political implications, and other regulatory considerations. *Speaker:* Lawrence G. Doucet, Principal Partner, Doucet & Mainka

Environmental Issues for Small Colleges

This two-hour session will explore two critical areas in environmental management at a small campus. *Moderator:* To Be Announced

Cost Effectiveness in Managing Health and Safety Issues at Smaller Institutions

Managing regulatory issues begins with information—simple databases can assist in collecting and storing information; consolidating resources can minimize compliance costs; and training can create awareness. Examples of successful management programs in hazardous materials, asbestos, underground storage tanks, and personnel safety will be discussed. *Speaker:* Ralph O. Allen, Director of Environmental Health & Safety, University of Virginia

Hazardous Materials Management for Small Colleges

A plan for managing hazardous materials requires many steps. Review the steps necessary to implement such a program including personnel coordination, receiving and storage of materials, transportation and disposal, contingency planning, and facility renovation and design. *Speaker:* Patrick J. Apel, Director of Physical Plant, Maryville College

A Business Approach to Facilities Management in the 90's

As economic pressures continue to affect higher education, colleges and universities must turn to business principles to stay competitive for personnel and monetary resources. Effective management of these resources is key to maintaining excellence in our higher education environment. These three presentations focus on areas of these resources—our labor supply, the productivity of the workforce, and controlling costs. *Moderator:* William D. Middleton, University of Virginia

Workforce 2000

A look at the changing trends in the workforce according to a study from the U.S. Department of Labor. This session will focus on what the workforce in the next century will look like.

The composition of our labor force and emerging technologies will require new policy initiatives and training if we are to retain a competitive workforce. How do these changes influence the service industries such as education? *Speaker:* Clint Davidson, Associate Vice Chancellor for Human Resources, Vanderbilt University

Measuring Maintenance Productivity Through Work Sampling

The measurement of productivity of maintenance activities in complement with a comprehensive work order systems can be used to pinpoint productivity weaknesses. Discuss work sampling theory and how to apply this technique to maintenance activities. Examine how the results of this study can be used to identify productivity weaknesses and how to follow up to determine effectiveness of implemented improvements. *Speaker:* John D. Houck, Director, Engineering and Maintenance, The Ohio State University

Cutting Custodial Costs

A five year program of improved management techniques and cleaning procedures has resulted in a steadily decreased custodial cost. Discover the steps taken to affect such change. Examine the use of material and equipment and control of labor costs. *Speaker:* James L. Brewer, Executive Housekeeper, The University of Texas/Arlington

FOCUS SESSIONS

These sessions are designed to provide an in-depth look at one subject area. Several presentations will be given on various aspects of the topic to provide attendees with an overview of the issue.

MIS—Managing Information Systems

Moderator: Doug Christensen, Brigham Young University

Development of an Effective Facility Information System

Examine how one university established an integrated, networked Facility Information System to track all facility information including space inventory, CAD drawings of architecture and utilities, materials and construction standards and facility condition audits. FIS furnishes plans, data and consulting services to support facility planning needs on campus. *Speaker:* J. Mark Smith, The University of Texas M.D. Anderson Cancer Center

Beyond Equilibrium: The Development & Implementation of an Electronic Work Order System

Learn how to plan, develop, test and implement an electronic work order system. Practical advice on development and testing as well as insights on how to market the system to campus customers. Review key features of the systems and its benefits including reduction of clerical workloads and improved service. *Speakers:* Ronald R. Maassen and Jeffrey R. Leverenz, Waukesha County Technical College

Human Resource Management

Moderator: E. Lander Medlin, University of Maryland/College Park

Idea Action Groups—A Quick Start

Busy facilities managers need a quick and easy way to tap the ideas and enthusiasm of the people in their organization. Idea action groups are a good way of getting individuals involved. This results in not only tangible improvements but also renewed enthusiasm and commitment. This presentation describes an eight step approach to implementing idea action groups. *Speaker:* David R. Collette, Mount Holyoke College

Quality Circles: Bringing Management & Employee Relationships Into Balance

Quality circles are a good management technique for solving job-related problems. Employee participation increases job satisfaction, improves relationships with management and ultimately results in better service to the campus. This presentation focuses on creating and implementing quality circles in the maintenance organization. Review how to get employees involved and evaluate the success of the program. *Speaker:* Paul F. Tabolt, University of California/Berkeley

EXPERIENCE EXCHANGE SESSIONS

Panels of experienced facilities professionals will share their knowledge on trends and developments in key topic areas. The experience exchange sessions are designed for audience participation and attendees are encouraged to ask questions of the panel.

- Community College Management
- Energy Issues
- Maximizing the Service Mission
- Research & Health Science Facilities Management
- Sick Buildings
- Small College Management
- Training Issues

EXHIBITOR/VENDOR TECHNICAL SESSIONS

These presentations by vendors focus on new products, new technology or shared knowledge of their industry. Six to eight sessions will be offered.

EDUCATION SESSIONS

Technical presentations cover a variety of topics on plant operations and management issues. The presentations are grouped by track to give you an idea of the focus of the session.

General Administration

Changing Our Client's Perceptions

by Duane E. Day, University of Texas Health Science Center/Houston

Facilities Renewal Through Management Renewal

by Richard Damon and Robert B. Parker, Santa Clara University

A New Direction in Service Excellence

Dean H. Fredericks, State University of New York/Buffalo

Reorganization of the Physical Plant to Maximize the Service Mission

by Kenneth A. Hall, University of Idaho

Human Resource Management

Cultural Diversity and How It Will Impact on the Workplace by Year 2000

by Bernice L. Wright, University of Illinois/Chicago

How to Conduct a Successful Executive Search

by William A. Daigneau and J. Rayford Whitley, University of Rochester

Leadership Realities for the 90's

by George B. Wright, The George B. Wright Company

Business Management

Value for Money—The Elusive Search for Equilibrium in Facility Design and Construction

by Brian Bowen, Hanscomb Associates, Inc.

Design/Build Method for Higher Education Facilities

by Jean Whittenberg, John Galuardi, Jason Mayhew, and James King—University of Maryland/College Park

Designing for Maintainability

by Elsa V. Pena, Agnes Scott College

A Parking System: A Model for Successful Planning

by Susan A. Kirkpatrick, The University of Michigan

The Renovation of Garni Hall—A Capitol Renewal Success Story

by Charles W. Jenkins, St. Mary's University

Restoration and Waterproofing of Concrete Structures

by Christopher W. Przywara, THP Limited Consulting Engineers

Work Management and Control

The Control of Custodial Costs

by James L. Brewer, The University of Texas/Arlington

Measuring Maintenance Productivity Through Work Sampling

by John D. Houck, The Ohio State University



Facilities Planning, Design and Construction

Coping with the Changing Student Housing of the 1990's

by Frank Schmidt and Jim Purcell, The University of Alabama

Physical Plant Operations

Building & Infrastructure Evaluation Program

by Robert Allen, Northern Arizona University, Jerry C. Black, University of Arizona and Fred A. Giles, Northern Arizona University

Electromagnetic Fields - What Can You Say?

by Thomas W. Richards, SFT, Inc.

Energy & Environment: New Challenges & Opportunities

by Mohammad H. Qayoumi, San Jose State University

An Institutional Response to Hurricanes

Dr. Alfred Sangster, College of Arts Science & Technology (Jamaica)

The Magic of Zip and Zap in Grounds Maintenance

by Raymond Dale, University of Houston

Optimizing Elevator Services

by George R. Strakosch, Elevator World, Inc.

Successful Energy Management Without an International Oil Crisis

by Thomas A. Feiza, Milwaukee Area Technical College, MATC

We're From the Federal Government and We Are Here to Help!

by Berger Nelson, University of Nevada, Reno

Highlights

Saturday, July 20

All Day
5:30 - 7:00pm

Enjoy The Attractions of Orlando (On Your Own)
Welcome to Orlando Reception

Sunday, July 21

8:00 - 11:00am
10:00am - 2:00pm
2:00 - on
Evening

Conference Workshop
Opening Ceremony & Brunch in the Exhibit Hall
Enjoy the Attractions of Orlando (On Your Own)
Exhibitor Hospitality Suites

Monday, July 22

7:15 - 8:45am
9:00 - 10:00am
10:15 - 11:15am
11:30am - 12:30pm
12:30 - 3:00pm
2:30 - 5:30pm
3:00 - 4:00pm
Evening

Breakfast & Opening Keynote Address
Educational Sessions
Educational Sessions
Experience Exchange Sessions
Exhibit Hall Open
Campus Tours
Exhibitor/Vendor Technical Sessions
A Night at Sea World (optional activity)
Universal Studios After Dark (optional activity)
Exhibitor Hospitality Suites

Tuesday, July 23

7:15 - 8:45am
9:00 - 10:00am
10:15 - 11:15am
11:30am - 12:30pm
12:30 - 3:00pm
3:15 - 5:15pm
4:30 - 5:30pm
6:00 - 9:00pm
Evening

President's Breakfast
Educational Sessions
Educational Sessions
Educational Sessions
Exhibit Hall Open
Critical Issues in Higher Education
Military Reception
Annual Awards Reception & Banquet
Exhibitor Hospitality Suites

Wednesday, July 24

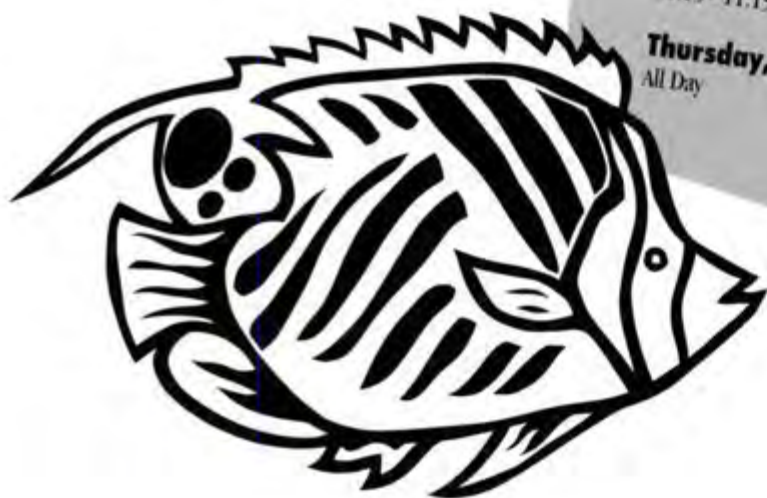
7:15 - 8:45am
9:00 - 11:15am
9:00 - 10:00am
10:15 - 11:15am

Breakfast & Closing Keynote Speaker
Focus Sessions
Educational Sessions
Educational Sessions

Thursday, July 25

All Day

Post Convention Tour—Kennedy Space Center



Prentice Hall Law & Business has published *Emergency Reporting Requirements for Environmental Spills and Releases*. This two-volume set gives information on how to resolve an emergency situation. The books include names, addresses, and telephone numbers of the federal, state, and local agencies that must be notified; what substances must be reported; and what quantities constitute a spill or a release that requires reporting. For more information on this \$150 set, contact Prentice Hall Law & Business, 270 Sylvan Avenue, Englewood Cliffs, NJ 07632; 800/223-0231; fax 201/894-8666.

National Conference of State Legislatures publishes numerous books and videos on such environmental topics as groundwater acts, a directory of key waste contacts, asbestos programs, hazardous waste, waste tracking, conservation and renewable energy, and more. For additional information or a copy of the Critical Issues 1990-91 Publications Catalog, contact the Na-

Stephanie Gretchen is APPA's communications manager and assistant editor of Facilities Manager.

The Environment

Stephanie Gretchen

tional Conference of State Legislatures, 1560 Broadway, Suite 700, Denver, CO 80202-5140; 303/830-2200, fax 303/863-8003.

Law of Chemical Regulation and Hazardous Waste, by Donald W. Stever, and *Managing Environmental Risk*, by Jennifer L. Machlin and Tomme R. Young, are available for \$297 and \$110 respectively. For more information on either book, contact Clark Boardman, 375 Hudson Street, New York, NY 10014; 800/221-9428, in NY call 212/645-0215, fax 212/924-0460.

Government Institutes is offering a number of environmental courses within the next few months. Environmental Laws and Regulations Compliance Course will be offered May 14-

15 and 16-17 in Arlington, VA. Underground Storage Tanks Course, June 18-19, and Fundamentals of Aboveground Storage Tanks, June 20, will both take place in Hershey, PA. Fundamentals of the New Clean Air Act: Strategies for Compliance will be offered in four different cities from May through August. Advanced RCRA Seminar will be held June 25-26 in Hilton Head, SC. For more information on any of these seminars, contact Government Institutes, Inc., 966 Hungerford Drive, #24, Rockville, MD 20850; 301/251-9250, fax 301/251-0638.

EPA announced February 21 that it has developed a strategy to reduce exposures to lead by banning some lead products. The strategy, to be phased in over the next several months, includes a study of the feasibility of eliminating some lead products and reducing lead levels in other products, further restricting certain plumbing products such as the use of lead solders used to join water pipes, reducing lead contamination of urban soil and dust, and promotion of increased lead-acid battery recycling. ■

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- Eliminate Unnecessary Excavation
- Prioritize Maintenance Schedule

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CURRENT AND FUTURE CHALLENGES IN HUMAN RESOURCE MANAGEMENT

The most difficult part of the physical plant administrator's job, and indeed any manager's job, is managing people—or as we now call it, human resources management. Certainly, technical knowledge and skills in running a complex physical plant—often with inadequate resources, a high backlog of deferred maintenance, and antiquated systems and facilities—is indeed a major challenge. However, many administrators will say that the toughest part of their job is the broad range of human resources issues; attracting good people, selection, motivation, training, compensation, evaluation, assignment of tasks, providing opportunities for growth, keeping the employees' interest, retaining them on the job, ensuring consistently good performance over time, and maintaining upward and downward communication. These and other matters are longstanding concerns and will continue to be so. In this column I want to discuss some matters that will further complicate managers' jobs, but also provide opportunities to demonstrate considerable skill and sensitivity.

A major change we will face, and indeed have been facing for a while, is the changing nature of the work force. One can argue that physical plant administrators have faced this change somewhat earlier than other areas of an organization, and thus have had a head start on the problems and opportunities.

According to projections by labor supply experts, by the year 2000, 43 percent of the work force will be women, approximately 12 percent will be African Americans, 11 percent Hispanic Americans, and 8 percent Asian Americans. Clearly, white male workers will be the minority. Since most upper-level managers, directors, and vice presidents in the physical plant area, as well as all other areas, are

Sig Ginsburg is vice president for finance and administration at Barnard College, and lecturer in management systems at Fordham University, both in New York City. He is a frequent author whose articles have appeared in Business Officer and American School and University, among other magazines.

Focus on Management

Sigmund G. Ginsburg



white males, dealing with subordinate managers and workers who are different will pose a significant challenge.

Understanding our differences, adapting to them, training individuals, using different motivational, communication, and supervisory techniques, all will require considerable thought and training for existing managers. Indeed, more time and money may have to be spent on training these newer employees, since they may not have had experience working in complex organizations. Of course, time and effort will need to be spent on training and motivating these employees and providing them with growth and advancement opportunities so

that they can become the supervisors, managers, directors, and vice presidents.

An offshoot of the above, but important enough to merit a separate category, is the number of women in the workplace and their particular concern for child care facilities and progressive policies by the organization (this will also be a concern by an increasing number of males). These concerns lead to policies regarding sharing jobs so the worker has more time at home to take care of young children. Alternatively, there will be concern about the four-day work week, or various flextime arrangements providing the opportunity to depart from the usual 9-to-5 working day. There also will be concern about company policies concerning maternity leave, and probably paternity leave.

The organization that provides a better maternity leave policy and program in regard to child care, work hours, sick leave when children are ill, and flexible work arrangements, is likely to have greater success than its competitors in recruitment and retention of employees. We all know that good people are hard to get and keep, and such policies and practices, though they may be costly and require greater planning and coordination on management's part, may well provide a decided advantage. Of course, state and federal laws now or in the future require an organization to provide some of the things mentioned.

Another current and growing issue is leave without pay for a reasonable period to deal with a sick child, spouse, or parent. Aging parents will be an increasing societal concern given the longer life span of individuals. Leave policies to care for parents will be of concern, as will health insurance for long-term illness. The federal government, in conjunction with health insurance plans, might have to deal with this problem.

The issue of the "glass ceiling" for women and nonwhite males will occupy the attention of management, individuals, unions, and governmental agencies. What are the opportunities for women and minorities? What types of mentoring and training can be given to these individuals so they have a full and fair shot at getting initial and higher positions, including the

top position? Various trade specialties within physical plant have not traditionally been hospitable to women. This will have to change over time.

There will be a growing tension between great concern by employers who want to moderate the costs of health care benefits by cutting back on benefits and/or asking employees to share the cost, and employee concern about "no give-backs" and the sheer costs of such benefits being passed on to them.

There will be a shared desire by employers and employees to have quality employee assistant programs available (substance abuse, personal/emotional problems, legal, financial counseling), but cost and confidentiality will be of concern.

In addition to the above, the following will be of considerable concern to top management, human resources professionals, and all directors/vice presidents of various areas:

1. The skill and educational level of the pool from which employees are recruited. This gets to the issue of the quality of the U.S. primary and secondary educational system, as well as higher education.

2. The increase in the average age of the work force and the elimination of mandatory retirement. This will involve issues of motivation, compensation, opportunities for advancement, possibility of generational gaps, and problems on the job. Further, in 1990 the average age of the work force is about forty, and about 25 percent are college graduates. Positions at the upper levels of the organizational structure are not growing at the same pace as the supply of potential managers, and thus meeting the needs of these mature, educated employees will be difficult.

3. Attitudes of the work force, society in general, and of particular groups within the work force to the importance of work in life, outstanding achievement, and high standards of performance.

4. Technological changes and demands and how these impact on the qualifications necessary, training, and procedures to deal with employees displaced from their jobs.

5. Issues of quality of work life, motivation of employees, upward and downward communication, giving employees a sense of "ownership,"

encouraging creativity, and dedication.

6. Issues of a healthy, safe workplace.

7. Career management planning and counseling.

8. Retirement planning and counseling.

9. Increased concern about what can be considered amenities. The presence of amenities can improve the quality of work life, be attractive in re-

cruitment and retention, and be helpful in regard to morale. Common amenities are recreational and physical fitness facilities, parking facilities, wellness programs, improved dining facilities, and attractive appearance of the workplace.

All administrators and all organizations face considerable challenges and opportunities now and in the future in managing human resources. ■



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The Physical Asset Legacy

by Robert A. Silverman

Institutions of higher learning have transformed their physical surroundings. But their physical surroundings have also transformed the institutions. We are moving from an era in which it was appropriate to discuss the role of land and buildings in the finances of American higher education, to one in which the discussion is increasingly dominated by land and buildings. The tail has begun to wag the dog.

Fifteen years ago, campus visionaries mostly thought about the impact of their institutions on their physical surroundings. This was logical, if one-sided. During the quarter century following World War II, colleges and universities grew at a rate and with an intensity that overwhelmed many pre-war campuses and everything around them. Physical growth came to be

Robert Silverman is managing director of Keystone Advisors, Inc., Cambridge, Massachusetts. The following article is excerpted from his book, Bricks, Mortar, and Assets.

Legacy and Language

by Walter A. Schaw

Once in a great while, one comes across an expression of ideas that offers both insight and context to the work, ideas, and sense of mission held by many. In the nearly three years since APPA embarked on its crusade to reverse the "decaying American campus," much of our emphasis has been on the treatment of facilities in higher education as a capital asset. One of the most important outcomes has been a new body of language and conceptual evolution that provides the elements necessary to properly manage and direct change that will preserve and enhance the facilities asset.

Dr. Robert A. Silverman, of Keystone Advisors, Inc. and former vice president at Harvard University, recently wrote a report on the facilities of some ninety private colleges and universities. The report, whose intro-

Walter Schaw is executive vice president of APPA.

Perspective

equated with intellectual growth and academic standing. Administrative structures and practices changed to accommodate unprecedented expansion.

All of this cost money, but there was also an emotional price. Lost in the anonymity and unfamiliar forms of the new and larger campus was the notion of a community of interests. Lost too was the delicate balance between town and gown in the often fierce competition for space and in the tradeoff between prosperity and quality of life. It was for many an uncomfortable change, which irritated most of those who remembered, or thought they remembered, a more congenial campus.

During the 1980s, the bibliographies of higher education finance and higher education facilities management grew at a pace reminiscent of the budget and campus expansions of the three preceding decades. After a generation of expansion, veterans and an-

alysts of the go-go years found time to reflect upon what had happened and what it portended. APPA, AGB, NACUBO, and SCUP encouraged a series of books and articles, often in association with a major public accounting firm, that traced the financial and physical expansion of the 1950s, 1960s, and 1970s and explained the consequences for the 1980s, 1990s, and beyond. New publications continue to appear.

Although several recent publications are intended to address the concerns of financial and physical plant administrators in a combined way, there continues to be a bifurcation of thought and a lack of communication between those who manage financial assets and those who manage physical assets. On most campuses, the people who think about cash and securities and the people who think about land and buildings either do not speak the same language, or speak it in distinctly different dialects. The financial difficulties facing many institutions today are largely attributable to this language barrier. Their financial future will be largely determined by the ability of financial and physical asset managers to learn a common language.

duction is reprinted on this page, directed to the effect facilities would have on institutions' financial future, contained a statement that, in my opinion, expresses in a most clear and cogent manner the current condition of management and the need for change:

"There continues to be a bifurcation of thought and a lack of communication between those who manage financial assets and those who manage physical assets."

This need for a common language is being addressed by both APPA and NACUBO by the creation of new terms, such as facilities equilibrium, and concepts that relate the plant asset to its treatment as a financial resource. The recent APPA Institute for Facilities Finance in Higher Education offered a three-day series of new concepts, highlighted by Sean Rush of Coopers & Lybrand as the cornerstone speaker. (Rush's presentation is now available in a one-hour APPA video.) NACUBO has just published a book entitled *Managing the Facilities Portfolio*. APPA has recently published the proceedings of the Institute for Faci-

ties Finance in Higher Education, *Facilities Stewardship in the 1990s*. For more information on this publication or the video, contact APPA.

Both books are must reading not only for facilities and business officers, but for presidents and trustees as well. They too need to learn the new language so very much required if we are going to effectively communicate not only needs but, more importantly, consequences.

Given economic constraints for many, too many institutions have reverted to the old habits of reducing physical plant budgets, and particularly plans for funding capital renewal and deferred maintenance. Such cuts were cited in a recent NACUBO survey as one of the more frequent methods of "cost cutting."

In my opinion, postponement of spending on deferred maintenance as cost cutting is a contradiction in terms. It reminds us that, in a crunch, attitudes of policy makers have not changed as much as we may have hoped or liked. A common language that addresses the consequences of such cuts is imperative for us all.

The Americans with Disabilities Act (ADA) was signed into law in July 1990 by President George Bush. This legislation is a wide-ranging civil rights statute that prohibits discrimination against people with disabilities and is similar to the protection given to women, minorities, and others since the Civil Rights Act of 1964 was enacted.

Most universities and colleges have already been introduced to handicapped accessibility, with the passage of the Rehabilitation Act of 1973. Regulations implementing Section 504 of the act became effective in June 1977. That act required that "No otherwise qualified handicapped individual in the United States . . . shall solely by reason of handicap, be excluded from participation, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance."

The concept of program accessibility was used to meet this regulation. Structural modifications did not have to be made on every campus building to achieve compliance with this law; however, the programs and activities offered by the institution as a whole needed to be accessible. Because of Section 504, many campus buildings were made accessible.

About ADA

This far-reaching new law is estimated to protect an estimated 43 million Americans with physical or mental impairments that substantially limit activities such as walking, talking, seeing, hearing, or caring for one's self. People who have a record of such an impairment and those regarded as having an impairment are also protected. In addition, people with AIDS or who are HIV positive are included under the umbrella of protection. Indi-

CAMPUS ACCESSIBILITY: A Summary of ADA

by Stephen R. Colter, AIA



Stephen Colter is principal of Colter Architects, Latham, New York. This article is excerpted from Removing the Barriers: Accessibility Guidelines and Specifications, which will be published by APPA later this year.

viduals who are in or have successfully completed rehabilitation for alcoholism or drug abuse are also protected, but those currently engaging in the illegal use of drugs are not covered.

The law bars discrimination in employment and requires most employers to make reasonable accommodations for qualified employees with disabilities starting in 1992. It also bars discrimination in any activity or service operated or funded by state or local government, similar to the Section 504 requirement that services operated or funded by the federal government cannot discriminate.

ADA also prohibits discrimination in public accommodations, many of which can be found on today's college campus. These accommodations include housing; museums, libraries, or galleries; establishments serving food or drink; theaters, concert halls, stadiums, or other places of exhibition or entertainment; gymnasiums, auditoriums, convention centers, or lecture halls; daycare or senior citizen centers; service establishments such as laundromats, banks, or barber or beauty shops; and hospitals or health-care providers. The list specifically includes nursery and private schools (elementary through postgraduate) and other places of education.

New buses will have to be accessible to people who use wheelchairs. Phone companies must provide relay services so that people with speech or hearing impairments who use keyboard devices such as TDDs can converse with people or businesses that use conventional voice phones.

Some provisions of ADA took effect when the President signed it, while others become effective over a period of years on the dates specified in the new law.

Employment

ADA bars employment discrimination in the public and private sector and state and local government. ADA takes an across-the-board approach to antidiscrimination protection in employment. It bans discrimination and requires reasonable accommodation in recruiting, hiring, employing, promoting, and training qualified workers with disabilities. Regard is given to the employer's judgment as to what functions of a job are essential. Accommodation is required unless it results in "undue hardship" (significant difficulty or expense to the employer).

Employers of twenty-five or more workers are affected starting two years after ADA was signed; employers of fifteen or more are covered two years later. Private membership clubs are exempted, except for labor unions.

Public Accommodations

Eighteen months after ADA's approval, its public accommodations section, Title III, becomes effective. Title III prohibits discrimination on the basis of disability in the full and equal enjoyment of goods, services, facilities, privileges, advantages, or accommodations of any place of public accommodation and services operated by private entities. The goods, services, and accommodations must be offered in the most integrated setting appropriate to the needs of the individual.

New facilities to be occupied two-and-one-half years or more after ADA's enactment have to be accessible, unless it is structurally impossible to make them so. Newly altered portions of facilities must also be accessible. Elevators are not required if a building has fewer than three stories or less than 3,000 square feet per story, except for shopping centers and offices of health-care providers. Many state and local codes, however, do

provide for upper floor accessibility by elevator.

Telecommunications

Telecommunications relay services for people with speech and hearing impairments will have to be in place across the country in three years. These services provide a link between users of telecommunications devices for the deaf (TDD) or other non-voice devices, and hearing individuals using voice telephones. Regulations for implementing these services are to be issued by late 1991 by the Federal Communications Commission. ADA also requires that television public service announcements produced or funded, in whole or in part, by any federal agency be closed-captioned.

Miscellaneous Provisions

The final section of ADA deals with clarifications. The following are among the provisions that could affect the campus environment:

- Nothing in ADA, except as specifically provided, shall be construed to apply a lesser standard than one already required under Title V of the Rehabilitation Act of 1973 or the regulations issued as a result of that law.
- States are subject to ADA, and ADA does not limit or invalidate state or local laws that provide protection equal to or greater than those of ADA.

Standards

The following explanation is offered to alleviate confusion as to what standards should be followed. Until the U.S. Architectural and Transportation Barriers Compliance Board revises MGRAD (Minimum Guidelines and Requirements for Accessible Design) in April 1991, design of new construction or alterations of existing facilities should follow the interim standards as set forth in UFAS (Uniform Federal Accessibility Standards).

After conversing with the Architectural and Transportation Barriers Compliance Board recently (February 15, 1991), and with the draft of these MGRADs out for review, it appears that the deadline of "on or before 4/26/91" could still be met, unless the comments from the public hearings are extensive. The draft MGRADs for the transportation parts of ADA have not been released yet, but will be shortly. These standards are technically similar to ANSI 117.1 (1980), but contain scoping provisions not found in ANSI, such as accessibility to res-



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restaurants, health-care facilities, mercantile establishments, libraries, and postal facilities. UFAS can be obtained from the Architectural and Transportation Barriers Compliance Board, 1111 18th Street, N.W., Suite 501, Washington, D.C. 20036-3894.

The UFAS specs should be used as minimum guidelines and can be considered a safe harbor as far as compliance is concerned *during this interim period*. If in specific design areas more stringent state or local laws and codes apply, then they should be followed.

Time Frame

The impact on higher education facilities will be realized over a period of time. Because of individual state laws and the previous Section 504 regulations, many of the barriers have already been removed, and most new construction completed after 1977 should be barrier-free.

Existing Facilities

All existing public accommodations are required to be accessible *by the target date of January 26, 1992*. Barriers in existing facilities must be removed if "readily achievable" (defined as easily accomplished and able to be carried out without much difficulty or expense) by this date. If not, alternative

methods of providing services must be offered. The U.S. Attorney General *intends to issue guidelines on July 26, 1991* to aid in determining what is considered readily achievable.

New Facilities

Facilities designed and constructed for first occupancy after January 26, 1993 must be designed to be accessible. This is somewhat ambiguous, because as of January 26, 1992 (a year before the effective date for this section) physical barriers in existing facilities must be removed. Therefore, it would be prudent to immediately implement barrier-free design in all proposed facilities, if this is not already being done.

Alterations to Existing Facilities

Any alterations done to existing facilities must be accessible. Again, although the effective date is January 26, 1992, it would be wise to immediately implement a barrier-free design policy for any such construction taking place on the campus. When alterations to any primary function area are made, an accessible path of travel must be provided to this altered area. Restrooms, telephones, and drinking fountains serving this altered area must also be accessible, to the extent

that the added accessibility costs are not disproportionate to the overall alteration costs.

Enforcement

Enforcement and remedies are the same as those available under Title II of the Civil Rights Act of 1964. A court may order an entity to make facilities accessible, provide auxiliary aids or services, modify policies, and pay attorneys' fees. Lawsuits may not be filed against small businesses for violations occurring before July 26, 1992, or January 26, 1993 (depending upon the size of the business and gross receipts), except for violations relating to new construction or alterations to facilities.

Conclusion

The intent of ADA is to protect Americans from discrimination based upon physical or mental disability. Many universities and colleges will find that existing state regulations already require the degree of accessibility addressed in the act, while others will need to bring their facilities into compliance. This new legislation provides an opportunity for all facilities administrators to evaluate accessibility on their campuses and correct any deficiencies. ■



STEWARDSHIP OF SEMINARY FACILITIES: Planning For The Future

by Daniel P. Conway

Within this article I will cover three things: 1) stewardship, 2) strategic planning, and 3) the physical environment that makes up our seminary campuses. I believe that there is an important relationship between each of these, and I hope to use this opportunity to share with you my conviction that the decisions we make about physical plant matters have a profound impact on the theological education that we provide to our students.

I have vivid memories of my first impression of the seminary campus at Saint Meinrad. For those of you who haven't been there, Saint Meinrad sits high on a hill in rural southern Indiana. The twin towers of the Abbey Church and the massive sandstone walls can be seen for many miles, and the first impression you get when you see Saint Meinrad is of a medieval fortress rising up in an Indiana cornfield. From the panoramic perspective of the highway, the Saint Meinrad campus suggests a timeless immutability. The huge sandstone blocks, most of which were hand-carved by Benedictine

monks and lay people from the neighboring towns more than 100 years ago, communicate a sense of permanence that can be intimidating or reassuring, depending upon your state of mind.

But the impression that Saint Meinrad never changes is a false one. In fact, during my twenty-three years of association with that monastery and seminary, there have been five major construction projects—three total renovations and two new buildings—and an almost constant stream of minor renovations. In fact, as I look back on my own theological education, it is clear to me that what I learned from the physical environment of my seminary campus was that change, renewal, and growth are an essential part of the faith experience of a Christian community. Put another way, I learned not to be fooled by the impression that nothing ever changes. The seminary, like the church it serves, is in a state of constant reformation and renewal.

There is something else that I experienced at Saint Meinrad that I didn't have a name for until, as a young development officer, I began to interact with colleagues at Protestant seminaries. That's the concept of stewardship, especially the stewardship of buildings and equipment.

While they didn't use the term "stewardship," the monks who built the seminary at Saint Meinrad knew what it meant. That is because the Rule of Saint Benedict, which dates back to the fifth century, exhorts members of the monastic community to treat the "goods of the monastery" like sacred vessels of the altar—with the respect and reverence due to the things of God.

Within the Benedictine tradition, this is a powerful symbol of the call to stewardship—a call that challenges us to see that all of creation (both material and spiritual) is God's handiwork, and that all we have and all that we are belongs to God alone. We are but stewards of the things of God, but as such we are also ministers of the sacramental symbols that material things represent.

Stewards of the Goods of the Seminary

Because our vision is limited and because we are distracted by the daily demands of administering a complex educational institution, we too easily forget that our physical facilities (classrooms, library, chapel, grounds, housing, and recreational areas) collaborate with us in the mission of theological education. Indeed, the material things that provide the frame-

Daniel Conway is development consultant at Conway Associates, Louisville, Kentucky. This article is excerpted from his keynote address to the participants of the APPA/Lilly Endowment Seminary Facilities Project.

work for our educational activity are not at all passive, silent, or indifferent in their contribution to a student's theological education. From the ornate witness of a medieval cathedral to the eloquent simplicity of a Shaker village, there is something material about the act of thanks and praise. This is not limited to the so-called "sacred objects" of religious art and architecture, but extends to things like couches, computer terminals, and classrooms.

As stewards of the goods of the seminary, we are challenged to treat our institution's physical environment as an important partner in the teaching and learning process. From sound educational theory, we know that physical environment affects learning; that our surroundings influence our patterns of social interaction; and that our physical relationships have a lot to do with how we understand ourselves and our place in the community. From the theology of stewardship, we know that we will be asked to render an account of our use of the resources entrusted to our care; and we know that God, to whom we are ultimately accountable, expects growth, not decline, and quality, not mediocrity.

How then do we take the contemporary crisis of deferred maintenance—the "ticking time bomb" of the decaying seminary campus—and make it a moment of grace, an opportunity for renewal that reinvigorates our sense of mission, and that challenges and excites the entire seminary community?

I believe that the answer lies in careful, mission-oriented planning. In our context, planning is not just good management. For us, serious, thoughtful planning is a way of situating ourselves in the midst of a living-faith tradition. It is our way of expressing a radical confidence in the future, and in the providence of a God who is present and active in a changing world.

What do we mean by planning? All of us have been involved in various kinds of planning—academic planning, fiscal planning, or long-range planning. How do all of these various kinds of planning come together into what I have called careful, mission-oriented planning? It would be helpful if we looked first at what planning is not:

- Planning is not an exotic art that requires special skills or mystic experiences. Planning is a discipline. It is clear thinking, common sense, and the



commitment to anticipate the future.

- Planning is not forecasting. It is not studying the stars or predicting the future. None of us can pretend to have the ability to know for sure what will happen five, ten, or twenty years from now. In fact, careful, mission-oriented planning is needed precisely because the only thing we know for sure about our future is that it will be different from our present and our past. That certainly is what challenges us to look ahead and be ready to make whatever changes may be needed to continue our mission in a changing world.

- Planning is not about future decisions. It is about the future implications of present decisions. As Peter Drucker says in his magnum opus called *Management*, decisions exist only in the present. The question that we face is not "what should we do tomorrow?" It is "what do we have to do today to be ready for an uncertain tomorrow?" Drucker goes on to say that while we can make decisions only in the present, we cannot afford to make decisions only for the present. The challenge of leaders is to make present decisions for the future.

- Above all, planning is not an attempt to eliminate risk. It is not even an attempt to minimize risk. Risk-taking is the essence of good leadership. According to J. Irwin Miller, who is the CEO of Cummins Engines in Columbus, Indiana and a trustee of Christian Theological Seminary in Indianapolis, "Risk and change are prudent. What is imprudent is to try and keep things the same in a changing world." In fact, Miller says that institutions that avoid taking risks are in the throes of what he calls "walking death."

Of course, as Drucker says, while it is futile to try to eliminate risk and questionable to try to minimize it, it is

essential that the risks taken be the right risks. The end result of careful, mission-oriented planning must be the capacity to take better risks.

The Exercise of Leadership

If planning is not an exotic art, forecasting, future decision-making or eliminating risks, what is it? I believe that planning is a discipline. It is the process that leaders use when they take risks and when they make decisions that will have significant, long-term consequences for the identity and mission of their organizations. As a discipline, planning must be systematic and it must be informed by the best data we have available. But data-gathering and elaborate processes and procedures are not planning. At best, they are the tools that institutions use to energize and contextualize the leaders' decision making. In the final analysis, planning is the exercise of leadership: setting direction for the future growth and development of the institution by relating today's decisions to tomorrow's challenges.

How do those of us who were not born leaders learn how to set direction for the future of our institutions? One very important way is by relating the institution's strengths to opportunities in the external environment. This is the discipline known as strategic decision-making or strategic planning. It is unique among the plethora of planning activities because its focus is directed outward to the environment in which the organization carries out its mission. Peter Drucker defines strategic planning as the effort to discover and maximize "the new and different opportunities of tomorrow" by paying attention to what is happening in the external environment today.

The significance of strategic planning is its conviction that institutions and their leaders should be active rather than passive about their position in the environment. Strategic decision-making presumes that it is possible for us to contribute to the shape of our future, even while we are being influenced by external forces. To plan strategically means to participate actively in the unfolding of history. It presumes the possibility of a dynamic interaction between individuals and communities and the cultures in which they live and work.

Of course, strategic planning must be firmly rooted in the institution's mission and identity. Otherwise, interaction with the external environment

would simply mean being buffeted about by all the changing winds of contemporary culture. Careful, mission-oriented planning that is also strategic must maintain a double focus: 1) an internal focus on the mission and goal of the institution, especially as these have expressed themselves historically, and 2) an external focus that relates the institution's mission to the changing environment.

Recognizing that we are part of a living tradition (which means we have a past, present, and future), careful, mission-oriented planning must attend to the political, social, religious, and economic issues that affect our ability to carry out the mission of theological education that is our reason for existence. Thus, strategic planning is a blend of rational and economic analysis, political judgment, psychological intuition, ecclesial relationships, and achieving whatever consensus is possible before finally taking the inevitable leap of faith. In the final analysis, strategic planning must be concerned with the possibility of charting a course for the institution and its mission.

In a very real way, theological education is all about the future, especially if we understand theology as hope seeking understanding and not simply as faith seeking understanding. In other words, theological education is not just revelation about another world; it is also a much deeper understanding of the promises that have been made about this world and its future.

If a seminary's mission is to prepare leaders for the Church who will give witness to God's promise for the future, then our planning must be based on a deep-seated conviction that what we do as individuals and as communities can make a difference. Our planning must also underscore our belief that human activity is always open-ended, imperfect, and incomplete. Hope does not diminish the importance of planning. On the contrary, because hope allows us to take responsibility for the future without pretending that the future is within our control, it gives special urgency to all of our efforts at data gathering, analysis, and strategic decisionmaking.

Of course, it's possible to approach planning from the vantage point of despair—to regard planning as a means of gaining control over a hostile or desperate future. But for us, that



kind of planning is a dead end, a road that leads only to frustration and failure. Seminary planning must be based on our ability to take risks and to discover new possibilities.

Reversing the Decline

Consider the example of a typical seminary that might easily be tempted to despair. For a variety of reasons that are beyond the seminary's control, there has been a significant decline in traditional students for ordained ministry, and there is no end in sight. Costs rise as revenues decline, and buildings that were new during the boom years of the 1950s and 1960s are in bad shape. Even if they were in mint condition, the classrooms, dorms, chapels, and recreational areas were built for a student, a church, and a conception of ministry that no longer exists. In this kind of climate, why bother to plan? Nothing that we do can change the cultural and ecclesial forces that are "out there" that have caused the current decline. And the physical and financial challenges that seminaries face today often appear overwhelming—well beyond the meager resources of most of our seminaries. What kind of planning can save a hopeless cause?

Of course, if the cause were truly hopeless, no amount of planning (with or without the aid of Lilly funding) could save seminaries. But my experience at Saint Meinrad, both the theological education I received there and the lived experience of nearly twenty-five years on campus, have convinced me that a seminary can thrive and grow (in spite of obstacles that appear insurmountable) provided that it has three things:

- Leadership that helps the seminary to develop and maintain a strong sense of identity and mission.
- A commitment to the future that

grows out of a living faith tradition and a profound sense of hope.

- The willingness to risk change and to allow growth in order to remain faithful to the fundamental mission of the seminary.

I believe that the crises we are facing today, whatever our faith tradition may be, can represent moments of grace and opportunities to reaffirm, renew, and (where necessary) reformulate our vision of who we are and what we are called to do. Shame on us, if we allow our seminaries to become the passive victims of principalities and powers that are "out there" in the so-called "real world" of economic, governmental, cultural, and ecclesial politics.

We are challenged to do strategic planning, to scan the external environment, and to develop five-year strategies and action plans because we are the stewards of something precious and irreplaceable. We plan not out of despair, but out of a vibrant hope and a deeply held conviction that our plans can help us to better understand a world that we are called to transform according to the faith that we possess and the ultimate values that our seminaries represent.

As seminaries we are not in the business of meeting consumer needs, even when the consumer is a denominational body or a local congregation. We are in the business of educating leaders and ministers who can address the deepest and most fundamental needs of the human family. In so doing, one exercises a true stewardship responsibility for the earth and its resources, for the human community and its various cultures, and for the local church or congregation.

When we struggle with government regulations for asbestos removal or handicapped accessibility, we are challenged to see these things not as unwelcome intrusions from hostile forces in Washington, but as opportunities to review our mission and to reconsider our commitment to hospitality and to stewardship of our physical environment. In Kentucky, we face the very real threat of taxes on church property striking a severe blow to the operating budgets of all local congregations and church-related institutions, including seminaries. How do these things challenge our understanding of the relationship of law and grace? How can we recognize in them the challenge to better serve our churches and our communities?

Conclusion

As stewards of the physical plant, our most fundamental challenge is to find concrete, physical ways to further the seminary's mission. Facilities planning does not take place in a vacuum. Because the seminary's buildings, grounds, and equipment collaborate with the faculty and staff in the teaching mission of the school, the task of facilities planning is much more than a mundane, practical activity. It is a response to our need to offer thanks and praise, through a physical, sacramental manifestation of our stewardship. It is also an opportunity to ask ourselves some very important questions:

- Do we have a plan for the seminary and its future? Does our plan include the needs/possibilities of our physical plant, especially as the physical environment relates to our fundamental mission as a theological school?
- Will facilities planning merely enshrine the status quo, or does our fundamental mission call us to new expressions of our physical environment?
- As stewards, have we taken what



we have received from our forbear, the people who built our seminaries and began the traditions we are committed to continue, and "buried them," or have we developed them for the use of future generations?

- Does our facilities planning happen in a vacuum, or have we related plant needs to academic and pastoral programs and to long-term financial planning?
- Do we regard plant needs as unwelcome intrusions on the time, talent, and treasure of the seminary

community, or do we see the buildings, grounds, and equipment as partners with us in the mission of theological education?

We are considering many practical things as our seminaries accept the Lilly Endowment's invitation to become better stewards of our physical resources. I hope that we will also consider the impractical or symbolic side of facilities planning, the effect that environment has on the learning process and the statements that our campuses make about our faith and our values as religious people.

When you visit historic religious centers like New Harmony or Shakertown, you immediately experience the religious faith and values of traditions that are alive today only because of the witness of their physical environment. What will future generations say about us when they discover our seminary campuses among the ruins of a consumer culture? I hope they will be amazed at the powerful statements of faith and hope that we as religious people are making through our stewardship of the seminary's physical resources. ■



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A good deal of interest has been aroused in Australia about the use of performance indicators. The catalyst for this has been the creation of a Unified National System of higher education by the federal labor government of Australia. The motives are clearly economic rationalization as it becomes essential to establish recognized and acceptable indicators of performance.

While most of the debate centers on the less easily quantifiable measures of academic performance, it also equally applies to support activities. The reality is that facilities managers in Australia have been trading data in the form of performance indicators for years and have none of the concern of such measures that lie behind the academic opposition. The Facilities Management Sub Committee of the National Committee of Rationalized Building have done a fair amount of work on this subject, and their major determinations follow.

Background

Performance indicators of various types have been developed by a wide range of individuals and organizations in order to measure the effectiveness of the use of their facilities. The essential aim of a performance indicator is to compare current operations with past performance and/or nominated standards. The measures may be relative or absolute:

- *Relative performance indicators* are essentially ratios used to assist management in determining whether current operations are at an acceptable level, either in comparison with internally set standards or externally determined typical performance of similar facilities (e.g., maintenance as a percentage of total recurrent expenditure).

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PERFORMANCE INDICATORS IN FACILITIES MANAGEMENT

by William J. Humble

- *Absolute performance indicators* highlight the scale of the operations (e.g., cleaning costs in dollars per square meter).

The use of performance indicators is not without difficulties as stated by APPA in 1989: "At best, the published indicators can only serve as a guide. Large difference are often noticeable, even among similar organizations. These wide variations reflect not only the differences in costs but also in methods of accounting."

This suggests that the prime criteria for comparison of performance indicators between different organizations managing the same asset types is that a common code of accounts must be used as the basis for recording the assets in "costs in use" data from which the performance indicators are derived.

This paper sets out to define performance indicators, their desirable characteristics, their form, advantages, shortcomings, and use, as they relate to building assets, particularly office buildings.

What is a Performance Indicator?

A performance indicator is not simply a piece of information or a statistic. An indicator implies comparison and in practice generally (but not always) contains two or more variables. Performance measures are usually expressed in index (ratio) form. Performance indicators can be of two types:

performance measures and performance indices.

A performance measure is usually, but not necessarily, a ratio or combination of items that result in a value with units, such as dollars per square foot or square meter, work hours per job, operating hours per year, etc.

A performance index is a ratio of two performance measures of the same type. It can reflect standards such that a ratio with a value greater than one indicates above expected performance, and a ratio below one indicates unsatisfactory service. A performance index can also be a ratio of a measure to a standard or norm, which should be in the form of a performance measure.

Indicators that are derived from information already needed for day-to-day management purposes are likely to be more accurate and credible than indicators resulting from objectives that are imposed from data, information, indicators, and norms. Data are the basic quantitative measurements. Information is knowledge gained from the processing of data. An indicator is a broad quantitative comparative measure of the state of a particular facility or part facility. A norm is the ideal level of an indicator.

Data, information, indicators, and norms all result from analysis of data from a lower level. The value of an indicator might be derived from information at one level and data at an-

other level of decision making. There are many categories of quantitative data that have been identified as being useful to management, e.g., work load, output, level of service, efficiency, effectiveness, and cost effectiveness.

Only three of these categories would satisfy the definition of performance measures. Work load and out-

put are measures of demand and production, but they do not in any way indicate performance, only a need (work load) or evidence of activity (outputs). Effectiveness measures whether the activity has had a useful outcome, but again bears little relation to the performance of the activity. The remaining three categories are true performance indicators. However,

work load output and effectiveness are essential information for management of the whole process.

Based on this interpretation, the performance indicators developed by APPA and reproduced in part as Appendix A are a mix of performance indicators and work load indicators.

In establishing indexes, managers must carefully consider two questions: what needs to be considered, and what index will indicate the performance?

After selecting appropriate indexes, target values (or norms) of desired performance must be determined. These will probably be based upon budgets, past history, or future goals and objectives. DHSS (1983) states that "in practice an indicators system must be at best a compromise" between top management requirements and day-to-day operational needs.

It is important to emphasize that the role of performance indicators is to inform judgments rather than to replace them. It is not required or expected that any one indicator, or even a set of indicators, will provide a definitive measure of overall accomplishment. Rather, their role is in indicating, or focusing attention on relevant areas to identify where corrective action (by individual managers, the chief executive, the board, or the government, as appropriate) might be required or where more intensive evaluation is needed.

The ideal is an interlocking system of performance measures or indices extending from the chief executive to the operator, incorporating measures of the performance of every section, group, and function. To successfully achieve this coverage, it is necessary to determine clearly the objectives of each section, group, and function so that the appropriate factors may be built into their several indices.

A specific definition of performance indicator could be: "A quantitative measure of the quality of service, efficiency, productivity, or cost effectiveness of an agency, program, or activity that enables the comparison of performance to a standard target or norm for management purposes."

Characteristics of Performance Indicators

Five characteristics that practical performance indicators should exhibit are correlation, breadth, comprehensibility, consistency, and credibility.

Appendix A Typical Performance Indicators by Sector

Sector	Index	Units
Work Order Control	$\frac{\text{Cumulative work orders received}}{\text{Number of days in the period}}$	Number per day
	$\frac{\text{Cumulative work orders completed}}{\text{Cumulative work orders received}}$	Percent
	$\frac{\text{Cumulative urgent work orders received}}{\text{Cumulative work orders received}}$	Percent
Backlog Control	$\frac{\text{Backlog work content work hours}}{40 \times \text{number of workers available}}$	Weeks
Planning and Scheduling Control	$\frac{\text{Actual time charged to sched. work}}{\text{Est. time for sched. work}}$	Percent
	$\frac{\text{Unscheduled work hours}}{\text{Scheduled work hours}}$	Percent
Contractor Control	$\frac{\text{Total contractor work hours worked}}{\text{Total plant engineering work hours worked}}$	Percent
	$\frac{\text{Maximum work hours demand by craft}}{\text{Base work load hours by craft}}$	Percent
Material Control	$\frac{\text{Cost of operation-materials supply}}{\text{Value of materials issued}}$	Percent
	$\frac{\text{Value of materials issued}}{\text{Value of materials inventory}}$	Percent
Organization Control	$\frac{\text{No. of plant eng. craftspeople}}{\text{No. of plant eng. supervisors}}$	Percent
	$\frac{\text{Plant eng. labor overhead cost}}{\text{Plant eng. payroll cost}}$	Percent
Equipment Control	$\frac{\text{Annual plant eng. cost by equipment type}}{\text{Replacement cost by equipment type}}$	Percent
	$\frac{\text{Total operating time by equipment type hours}}{\text{Total no. of failures by equipment type}}$	Hours per failure
Cost Control	$\frac{\text{Total work hours worked}}{\text{Total work hours paid}}$	Percent
	$\frac{\text{Direct plant eng. labor cost}}{\text{Facility value replacement cost}}$	Percent
Overall Performance	$\frac{\text{Total costs of plant engineering}}{\text{Total sales of plant production}}$	Costs per \$

(Source: *Facilities Management: A Manual for Plant Administration*)

It is obvious that much more weight has been placed on the usability of a performance measure than its theoretical desirability or accuracy for determining the state of a facility. In addition, there is another characteristic that should be added: comparability.

For performance indicators to constitute a useful aid of management, their implementation should have the following characteristics.

- The measurements must be reported in such a way that speedy action can be taken by executives and supervisors to correct or improve the processes of production while they are still in operation.
- The indicators should be directed primarily to those responsible for taking action.
- They should refer solely to matters over which the individuals have control and should exclude irrelevant data.
- They should highlight discrepancies between planned and actual achievements during the period under review.
- They should be presented as speedily as possible, even at the expense of detailed accuracy.

The experience of APPA has shown that managers have the most confidence in measurements established for their own operations, because it is known exactly what is being measured, the source of information, its reliability, and its intended use. A further outcome of use of indicators by APPA members is that each organization seems to need to measure the same basic performance factors.

Use of Performance Indicators

An asset manager using performance indicators must compare present performance with past performance; set new targets and control against these; record changes in results and analyze the reasons; assess how the organization rates against others in similar activities; and assess the quality of service being provided.

To do this the manager must find ways of measuring performance as objectively as possible. This information must be expressed in a language that tells the reader how effective that performance is.

A maintenance department in itself requires measures of performance that show the efficiency of this engineering service—the actual service is compared with an ideal or the maintenance service criteria specified for the

asset.

To make the greatest use of performance indicators, they must be presented in the most comprehensible manner possible. Newbrough (1967) noted that the most common method is to plot them periodically against time, sometimes as moving averages. This enables the time trends to be made clearly evident. Often a number are plotted simultaneously to identify relationships between movements in the indicators in order to help identify the underlying cause of changes.

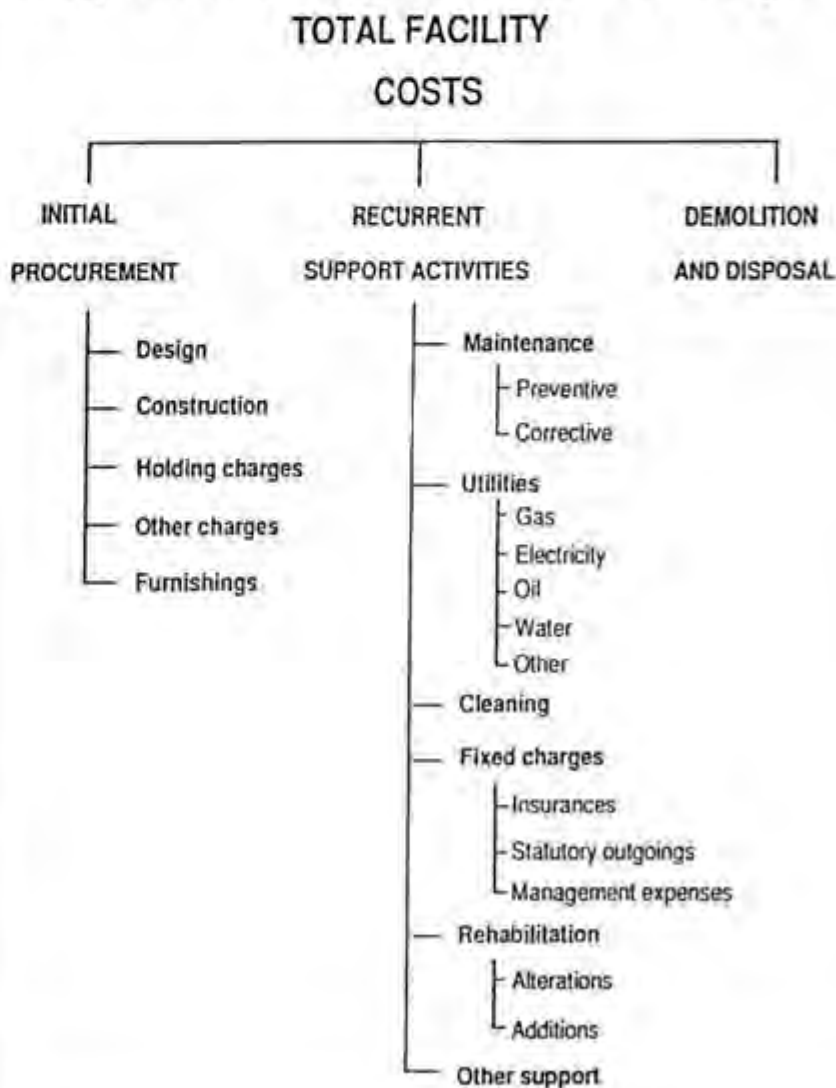
Newbrough suggested another practical way to use performance indicators: to develop a multi-index profile. Relatively few indicators are selected for each optimum point

established. Then optimum points become goals against which to measure performance.

All the selected indicators must be allocated maximum and minimum values for excellent and poor performance respectively so that they can be uniformly scaled. Variations from the optima are measured in absolute values (i.e., +3 is the same as -3). A table or graph of the difference between the actual optimum for each indicator at a particular point in time can be created by columns to highlight indicators that are furthest (in relative terms) from the optimum value.

The DHSS has tried bar charts and standard error graphs to show the significance of a particular value of an in-

Figure 1
NCRB System for Recording Performance Data-Facility Costs



indicator relative to the average distribution of values, but there seems to be little agreement on what is an ideal way to identify unusual values of indicators.

It is clearly not possible to take action that immediately returns the value of a particular performance indicator for a specific building to an acceptable value, as it takes time to

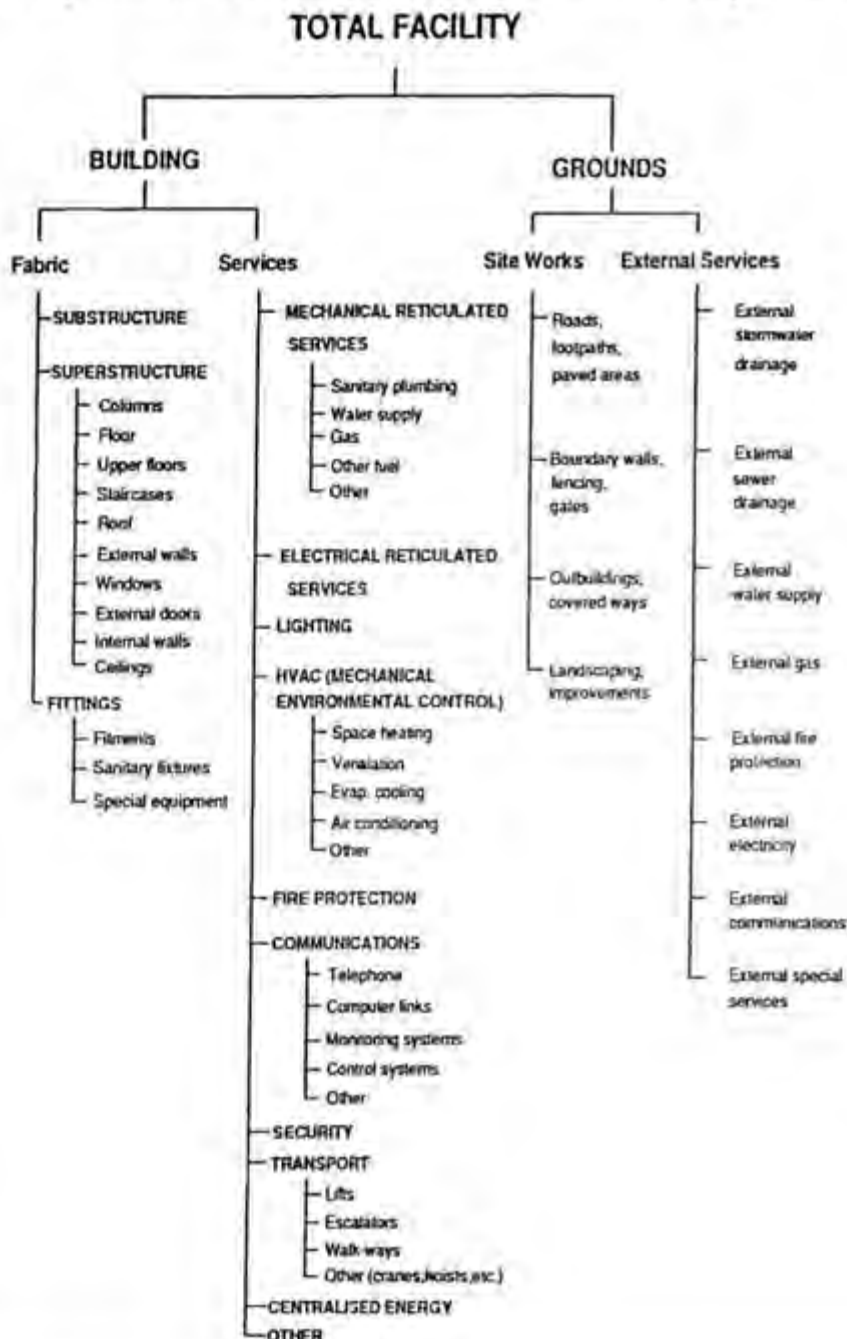
identify the problem, plan the correction, and implement it. This would apply whether it was a management, technical, or financial solution that was required. Early warning of declining standards by observing trends in indicator values would be of considerable assistance in managing facilities with optimal use of resources.

A form of presentation is proposed

in this paper using as its categories those of the recording structure published in the National Committee on Rationalized Building (NCRB) document, "Building Life Cycle Costs—A National System for Recording Performance Data" (Bromilow et al. 1986).

Some performance indicators published by BOMA have counterparts in the NCRB system of data recording. As is readily observable, there is no consistent pattern, the performance indicators being shown for that which is readily calculable and may have some immediate application or interest to a building manager.

Figure 2
NCRB System for Recording Performance Data-Facility Elements



Development of Performance Indicators

The interest in performance measures and indicators has resulted in many organizations preparing sets of indicators that are useful in managing their assets or resources. The costs of maintenance (people, materials, and overhead) have become too great to ignore, and it is essential that maximum effectiveness be gained in return for these costs. Without some formal measure of performance it is difficult to plan, control, and develop the maintenance function. Indices are, therefore, essential tools of maintenance management.

A major problem with indicators that include costs in dollar terms is the change with time because of inflation. Comparison of values from year to year can become almost meaningless unless some system is used to consistently allow for inflation.

In essence, indices seek to assess the general effectiveness of the maintenance function. Building and life cycle performance are not simply a function of maintenance effectiveness. They can be affected by other variables such as the level of capital investment, the level of usage and maintenance standard applied to the equipment, and the general age of the plant. A maintenance performance measure ideally should seek to measure aspects of the work that are solely dependent upon maintenance management policy, strategy, and tactics. To make maintenance indices credible outside the maintenance function, it is also necessary to link maintenance activity to investment return and occupants' comfort or satisfaction, or maintenance inputs including inspections to prevent delays caused by breakdown.

Indicators for large buildings can

conveniently be broken down into two categories along the two dimensions of the NCRB system for recording life cycle data: elements and support activities (see Figures 1 and 2). The first category, consisting of building fabric, being almost static, and the second, the more dynamic component of building operations, being capable of noticeable change from year to year. Under the first category, the indicators would reflect design characteristics, use of land and measures of quantity and quality of the facility. Under the second category, indicators would reflect the support activity costs and standards. The first level of breakdown in the second category is most appropriately under the support activities of maintenance, utilities, cleaning, fixed charges, reconstruction, and other support costs.

The total number of indicators for each of the two categories would have to be less than ten, with each of them having a further set of up to perhaps even indicators of their own. In the terms of the DHSS approach, these subsets could be considered qualifiers to the primary set of indicators so that the cause of any apparent irregularities in the primary set can be more readily identified.

There is an extremely wide range of indicators available. A simple one is maintenance cost in dollars per hour for any given time period. Obviously, the aim is to gradually reduce the indicator value. A second one is the direct cost of breakdown repairs (people and materials) divided by the total direct cost of all maintenance.

This second indicator can be useful in assessing, over a number of time periods, the influence of additional preventive maintenance. These indicators act as important frameworks for rational discussion between maintenance and management when both downtime and maintenance performance are being analyzed. Indicators should be considered on a continuing basis. Many of these indicators are best seen as an evolving form of comparison.

According to the DHSS, the real problem is not in preparing an adequate list of indicators, but in meaningful presentation and interpretation for decision making. The values of indicators should be presented in such a way that their significance is easily understood and that comparisons can easily be made. The relative importance of the various indicators should

Figure 3

Categories of Performance Indicators with Examples

Category	Indicator
Broad	Ratio of maintenance costs to value of facility Ratios of various maintenance costs
Workload	Current backlog Total backlog Ratio of potential maintenance man-hours to total maintenance man-hours
Planning	Ratio of jobs completed on schedule to jobs undertaken Ratio of overtime to total hours worked Ratio of down time to total operational hours
Productivity	Ratio of maintenance labour costs to material costs Maintenance cost per unit of production
Cost	Ratio of maintenance cost to total operational cost Ratio of actual to budgeted maintenance costs

also be readily comprehended. This is somewhat difficult when the indicators are in different units.

Mann (1983) considers that performance indicators have a hierarchy in application, in particular for maintenance of buildings: "Also necessary for any complete maintenance-management system are indicators that show how well each level of maintenance management is performing. A system must consider both measurement and appraisal of total maintenance performance at three levels: top management, maintenance management, and the individual maintenance craftsman."

Figure 3 shows the types of indices considered under five categories by Newbrough (1967) are similar to those identified by PA Management Consultants.

A comprehensive listing of performance indicators has been developed by APPA under sector headings for in-

Figure 4

APPA Sector Classification for Performance Indicators

Sector
Work order control
Backlog control
Planning and scheduling control
Contractor control
Material control
Organisation control
Equipment control
Cost control
Overall performance

house maintenance work and outside contract work as shown (see Figure 4). These examples demonstrate that different organizations include work load indicators as performance indicators, which is contrary to the definition adopted in this document.

A further concept is shown in Figure 5 as representative of a typical hierarchy for a performance indicator reporting structure suitable for an organization responsible for the management of building assets dispersed on a national basis. From these illustrations it can be seen that there are a number of classifications and categories to which performance indicator data can be applied. The same range of variations applies to the development of an asset management reporting hierarchical structure such as demonstrated in Figure 5, in which the policy and planning functions have been linked to performance indicator categories, bringing into account the issue of quality of maintenance performed.

Indicators for Building Assets

The users of performance measures generally want to assess a building so that reducing costs or increasing income will improve the quality of the investment, not necessarily the design quality of the building. Good design may have resulted in a lower cost and a higher quality of service. Measures of the design of a building can be misleading measures of the quality of a building, e.g., design efficiency (ratio of net lettable area to gross floor area) can vary considerably because of design or site difficulties, and construction cost per square meter is difficult to relate strictly to quality.

The following are some particular income-related areas where a building manager's current emphasis lies and where performance indicators could be of some assistance to assess a building.

- Outgoings to identify which components could be reduced.
- Income to identify methods of attracting higher rental.
- Lettability of floor space to identify layouts that are inefficient.
- Vacancies to ensure minimum vacancies by better management.
- Tenant cost to identify total costs of lease and fitout.

This list will need to be reviewed, revised, and rearranged in some hierarchical form that can satisfy the desirable characteristics of a performance

indicator system mentioned previously.

Possible expenditure related performance indicators for the building fabric include the following.

- Plot ratio—the ratio of the gross floor area to land area.
- Design efficiency—the ratio of rentable floor area to gross floor area expressed as a percentage.
- Car provision—the number of car parking spaces per 1,000 square meters of rentable floor area.
- Elevator accessibility—the number of elevators per 1,000 square meters of rentable floor area.
- Building value—in \$/square meter of rentable floor area.
- Building decline—the cost of backlog maintenance in \$/square meter of rentable floor area.

Possible performance indicators for building operations include the following.

- Occupation factor—the annual hours of operation divided by 8,760 (hours per 365-day year).
- Maintenance—the actual annual expenditure in \$/square meter of rentable floor area.
- Maintenance level—the ratio of the annual cost of maintenance above the capital replacement value.

- Energy—the annual energy usage by square meter of rentable floor area.
- Energy cost—the annual cost of energy in \$/square meter of rentable floor area.
- Environment index—the perceived ratio of environmental control to the desirable level of control.
- Cleaning—the annual cost in \$/square meter of rentable floor area.
- Standing costs—the fixed charges in \$/square meter of rentable floor area.
- Insurance index—the ratio of annual insurance costs to building value.
- Statutory charges index—the ratio of annual statutory charges to building value.
- Management index—the ratio of the annual management costs to gross rental.
- Reconstruction index—the ratio of reconstruction costs over the last five years to building costs.
- Other support costs index—the ratio of other annual support costs to building value.

A Performance Indicator Structure

The NCRB believes that there is merit in furthering the development of a performance indicator structure of building assets that could have an

Figure 5
Maintenance Management Hierarchy and Performance Indicator Categories



application for building asset managers nationally in a range of facility types. Based on the information provided on current practices in recording building asset costs, a form of presentation for a performance indicator structure is proposed for further development and adoption as a national standard for building assets.

The principle of the proposed structure uses as its categories the recording system published in NCRB's "Building Life Cycle Costs." The application is demonstrated incorporating BOMA's "Operating Profiles of Buildings" cost-in-use recorded data and additional information relevant to building asset performance measures. The form of presentation of this scheme is shown in Figure 6.

This illustration utilizes the Recurrent Support Facilities structure recommended by the NCRB, combined with a mix of performance indicators commonly in use by BOMA and other asset management organizations. Extensions to this matrix use the format shown in Figure 2 to complement the information from Figure 1 that has been incorporated in Figure 6.

The principle to be applied is that the performance indicators along the top of the table shown in Figure 6 need to be grouped in a hierarchy from the left, with each group containing up to seven indicators. The group should contain only those indicators that are useful to the manager of that group such as the structure in Figure 5. The number of columns would thus be restricted to about thirty.

Such a structure then combines the recurrent support activities of the NCRB system for recording performance data with a hierarchy of performance indicators grouped by those who will use them.

Variations of this presentation will apply to other organizations and establishments such as university campuses and health care facilities. Additionally, the management reporting hierarchies in the total facility concept will need to be established as the performance indicator data recording requirements are being evaluated.

The initial requirement would be establishing the structure of a chart of accounts that describes the expenditure items' costs against the building elements identified in NCRB's "Building Life Cycle Costs—A National System for Recording Performance Data."

The Australian Experience: Practical Applications

There is general and high interest from the Department of Employment, Education, and Training (DEET) and the Australian Vice-Chancellors' Committee (AVCC) in measures of performance of institutions.

The following selected material is relevant to current applications of performance indicators for facilities managers.

- Report of the AVCC/ACDP Working Party on Performance Indicators, December 1988.

- Review of Efficiency and Effectiveness in Higher Education, CTEC 1986.

- Performance Indicators for Building Assets Facilities Management Sub Committee of the National Committee on Rationalized Building, 1989.

Proposal for Performance Indicators

There is value in establishing a limited range of performance indicators for Australian universities. These indicators should not be used as a basis of comparison between universities; the wide range of variables can create different conditions in each university. These variables include climate, size of institution, age of buildings, range of disciplines, record keeping standards, etc. The indicators give the institution the opportunity to review its performance against the range of performance indicators offered. The institution can make its own assessment of the impact of the variables and decide whether some action is necessary to correct any unfavorable trends.

In that proposed framework, we offer the following range of performance indicators and hope that the AVCC

Figure 6
Basis for the Future Development of Performance Indicators

	\$ per sq. m.	\$ per occupant unit	Operating cost per lit. (\$)	Usable floor area per occupant unit	Gross building area per occupant unit	% of total recurrent expenditure	% of total facility expenditure	% of C.R.V.	\$ per hectare	Q. J per occupant unit	Q. J per sq. m.	Rental \$ per sq. m.	Income \$ per annum	Total expenses v gross income (%)
TOTAL FACILITY	●	●	●	●	●	●	●	●	●	●	●	●	●	●
RECURRENT SUPPORT ACTIVITIES	●	●						●						
Maintenance	●	●				●	●	●						
Preventive	●	●				●	●	●						
Corrective	●	●				●	●	●						
Deferred	●	●				●	●	●						
Utilities	●	●				●	●							
Gas						●				●	●			
Electricity						●				●	●			
Oil						●				●	●			
Water						●								
Other						●								
Fixed charges	●	●					●	●						
Insurances														
Statutory outgoings														
Management expenses														
Rehabilitation	●	●				●	●	●						
Alterations														
Additions														
Deferred														
Other support costs	●	●				●	●	●						

will consider them of value and recommend their use to the individual universities.

Levels of Indicators

Indicators can be of a type to indicate the performance of an individual building, or of a complex of buildings within an institution, or of the whole institution, or a system. (Level 1)

Other types of indicators can indicate the performance of a facilities management department, e.g., time taken to complete a task, number of projects outstanding, etc. (Level 2)

A complex matrix can be evolved, but at this stage some simple examples are proposed to enable experience to be gained.

Recommended Range of Performance Indicators

A range of indicators is offered, because of the different nature of institutions and the variable factors impacting on the performance of institutions in this area. If an institution is outside a range, then a review of performance is suggested. Terms used in this range, such as "maintenance" and "rehabilitation," are used as defined in the Ritchie Report material, e.g. "Maintenance—all actions necessary for retaining an item in or restoring it to a specified original condition."

A staged approach is suggested with the first group being readily available and usable. The second stage could be applied when more information is available.

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LEVELS OF INDICATORS

Level 1 Indicators

Proposal Range

Expenditure on Maintenance

"A" Expenditure per m² (Gross Area Maintained)
Present Range—1988 \$6.26 to \$19.51

\$10 m² to \$20 m²

"B" Expenditure as a Percentage of Current Replacement Value. N.B. Ritchie Report Recommended Range was 1 percent to 1.5 percent. As this is not being achieved, for this exercise a recommended range is

0.75 percent to 1.5 percent

Present Range—1988 0.51 percent to 1.39 percent

Energy

"A" Energy Usage per m²

400 MJ/per m²
to 950 MJ per m²

N.B. BOMA Energy Budget levels for Office Buildings vary from State to State from 330 MJ per m² to 475 MJ per m²

Percent Range—1988 375 MJ per m² to 1620 MJ per m²

"B" Cost per m²

\$7.50 per m² to \$12 per m²

Present range—1988 \$7.69 m² to \$14.95 m²

Cleaning

Expenditure per m² cleaned

\$6 m² to \$15 m²

Present Range—(1988) \$5.69 per m² to \$31.62 m²

LEVEL 2 INDICATORS

Indicators that could be supplied in another year with more information now becoming available.

Allocation of Space

"A" square meters overall per EFTSU

"B" square meters per discipline for EFTSU

Utilization of Teaching Facilities

(Efficiency of Use)

Hours of use per week (standard week=40 hours)

Backlog of Maintenance and Rehabilitation

"A" Maintenance Backlog per square meter

"B" Rehabilitation Backlog per square meter

Break-down maintenance. Even in the abstract, the term suggests failure. There is not one of us in facilities management, however, who will pretend that breakdown maintenance has not been practiced at our college or university some time in its recent history.

Every physical plant department is different, but one task we have in common is maintenance. Much of our satisfaction and customer relations centers on how well we maintain our institution's facilities.

In recent years, we have had intensive communication concerning capital renewal and deferred maintenance. The task of rallying support for funding the rebuilding of higher education's infrastructure is critical. In many cases, it consumes a major part of the physical plant director's time. But it usually does not consume the time of the remainder of the director's staff. It is important that the efforts of these others—our people resource—not be neglected because of our preoccupation with obtaining adequate financial resources to fulfill our role as stewards of the institution's facilities.

A large part of our people resource is involved in the unglamorous job of maintaining these facilities. They are the front line troops in the battle to prevent the accumulation of deferred maintenance. The most important thing we can do to help these people with their task is to clear the obstacles, to make it easier for people to work.

Making it easy to work involves many steps, such as the prioritizing of work, project planning, material staging, scheduling, equipping, transportation, training, and supervision. If we provide the resources and guidance to do these and similar tasks well, it makes it easier for the maintenance person to do the job. In fact, loafing is not so much an indication of poor performance by the worker as poor per-

MAINTENANCE MANAGEMENT FOR THE 1990s

by James E. Christenson

formance by the supervisor. Most people do not like to loaf.

Past Maintenance Management Paradigms

What, then, is the history of our attempts to clear the obstacles for the maintenance worker? In most organizations, there was a time when breakdown maintenance was the common and, perhaps, necessary approach. This view of maintenance may have its root in a philosophy that says, "If it ain't broke, don't fix it." More likely, it happens because a superintendent has felt that this is the least expensive way to maintain the facilities of an institution whose mission is not laced with terms such as "urgency" and "life-threatening." Or the superintendent, supervisors, or director have not been aware of a better way to perform maintenance.

One of the payoffs of breakdown maintenance is that one can whip up a sense of urgency and high motivation while things are falling apart all around the troops. Those who perform dramatic rescues are sometimes looked on as heroes. In fact, there is a cynical saying to the effect that any manager who is competent enough to avoid a crisis should, nevertheless, create one from time to time so that he or she can receive accolades for this dramatic performance.

At the other end of the spectrum, the Navy's Bureau of Yards and Docks (now the Naval Facilities Engineering Command) created a maintenance management system in the 1950s that

organized maintenance to an unprecedented degree. The system involved the following elements of control:

1. A thorough inventory of facilities and equipment.
2. Maintenance standards.
3. Work classification or categorization of work.
4. Work generation, primarily through condition inspections.
5. Work input control.
6. Planning and estimating.
7. Specific job authorization.
8. Material coordination.
9. Shop loading and scheduling.
10. Integrated reporting.

Setting maintenance standards is one of the more difficult, and most ignored, of the tasks. The standards can rarely be completely quantitative. In addition, they should be related to how important the facility is to the mission of the institution. That is, some facilities are crucial to the mission of the institution, while others are of much less importance and, therefore, can be assigned lower standards.

The Navy's maintenance management system classified work into five categories: emergency work, service work, minor work, specific jobs, and rework. Service work was a term applied to routine work requiring sixteen hours or less. There was no formal planning for the work and it was done promptly. The breakpoint between minor work and specific work was, determined by an analysis that at-

James Christenson is director of physical plant at the University of Iowa, Iowa City, Iowa.

tempted to control the majority of the labor hours while controlling a minority of the jobs. Typically, minor work, which received minimal planning, gave way to specific job orders at about forty labor hours. Specific jobs were precisely controlled using detailed estimates, staged material, and a full comparison of estimated and actual labor hours. In fact, critiques of variances exceeding 5 percent of the estimates were typically held on a monthly basis with relatively few candidates for analysis.

One of the real contributions of the maintenance management system was the formalization of condition inspections. It was intended that 65 to 80 percent of the specific jobs be originated by inspectors who conducted a thorough inspection of all facilities and equipment on an annual basis. The goal was to identify deficiencies before they became costly to repair. With today's technology, an inspector would use infrared, ultrasound, vibration analysis, and other devices to help detect deficiencies requiring correction.

One big advantage of this maintenance management system was that the work was not done on the basis of who makes friends with the maintenance foreman or whose wheel squeaks the loudest. Work was identified, prioritized, planned, and estimated by the maintenance control division, an overhead division completely separate from the maintenance division that carried out the work. The smaller jobs were authorized by the maintenance control director; the major work was typically authorized by the public works officer, the counterpart of the physical plant director.

Planning and estimating under this system typically used engineered performance standards (EPS). These standards are an approximate equivalent of an automotive flat rate manual and are specifically developed and updated for facilities maintenance and alteration work. Standards even cover preventive maintenance, custodial, and grounds work.

Another useful feature of this system was the complete packaging of the material for any significant job before the work was issued to the shop. Estimated work would be in an "awaiting materials" status until there was assurance that the materials would be on hand for a given month. The stores staging area typically contained pallets marked with job num-

bers, accumulating material for the next month's programmed work.

Work was programmed at least three months in advance, typically filling the available labor hour totals to

*"People
who control
most aspects
of their work
do it better
and achieve
higher
quality."*

100 percent, and 70 percent for the next three months respectively. This shop load plan was prepared by the maintenance control division and authorized by the equivalent of the physical plant director. Compliance was expected. The shops, in turn, scheduled their people on a weekly basis to carry out the plan.

This Navy maintenance management system provided the nearest thing possible to absolute control of maintenance work. The claim was made that this system could save at least 30 percent of the direct costs over a poor or nonexistent system, and would result in much better reliability.

One disadvantage of this system was that it required the addition of overhead staff, perhaps approaching 10 percent of the direct labor force. Each planner and estimator (P&E) was expected to generate work for 25 to 40 people. So a P&E group would be required, adding another 3 percent. A director and clerical staff would typically round out the maintenance control staff. If 8 to 10 percent in overhead causes a reduction of 30 percent in human and financial resources, it still sounds like a good deal. But the initial addition of overhead at the expense of direct labor is an unpopular move.

A more significant disadvantage comes into focus as we deal with the ideas raised by Tom Peters and other management gurus. While this highly structured maintenance management system provided control and information that one could depend upon, crafts workers and maintenance supervisors were not in complete control of the work. Even the workers' methods would often be dictated by the P&E. Experience with quality circles and many well-run companies suggests that people who control most aspects of their work do it better and achieve higher quality. Rigid separation between work identification and planning by one division and accomplishment by another does not fit this philosophy.

What Paradigm is "Right" Today?

So we have the dilemma: Do we throw out a maintenance management system that has been used faithfully by a major federal agency for more than thirty years and copied by other agencies and many corporations? Do we revert to breakdown maintenance?

I suggest that it is possible to use most of the elements of the formal system while adapting them to today's management philosophies and crafts workers' abilities. There are many potential maintenance management systems that fall between total control and no control. The original development of the Navy's maintenance management system was a significant shift in the viewpoint concerning maintenance—a major paradigm change. Another paradigm change from that system is now required. Some of you may have found the ideal paradigm. I confess that I have not; I am still looking. What follows are observations on what appears to have promise or what may work

MAINTENANCE MANAGEMENT PARADIGMS IN A NUTSHELL THE EVOLUTION OF ORGANIZATIONAL RELATIONSHIPS

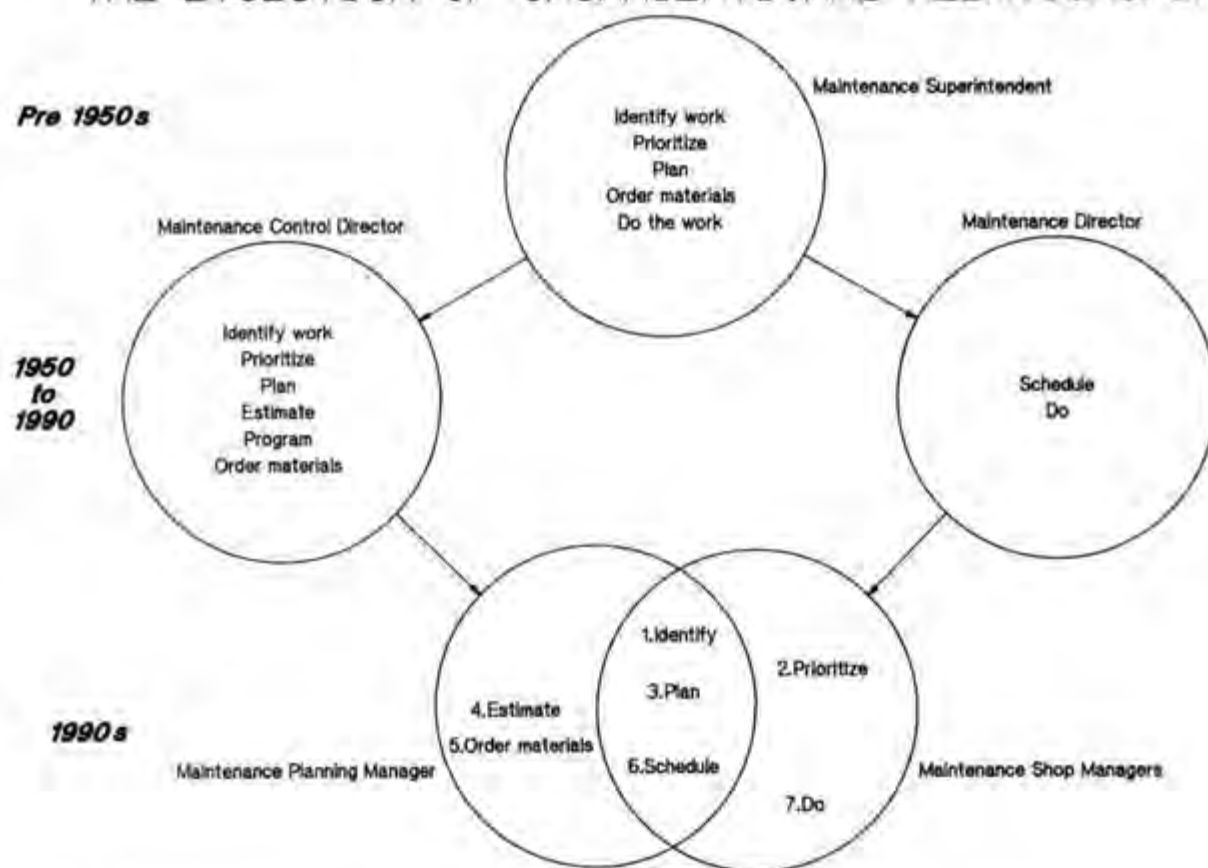


Figure 1

based on partial experience.

One way to eliminate the problem of concentrating maintenance resources in support of people that the maintenance superintendent particularly likes, is to find a maintenance superintendent who cannot make friends. At Iowa, however, we tried a different tack. We have created two groups within the building maintenance division: central shops and area shops.

There are five area shops, each headed by a shop manager who supervises approximately eleven mechanics. Each maintenance manager is responsible for the maintenance condition of that area, and will soon be responsible for the energy consumption in that area as well. The mechanics perform the preventive maintenance, typically take care of the service calls, and may, on occasion, perform some larger planned maintenance. Their primary tasks, however, are preventive maintenance and service calls.

The key is that the manager is expected to know the users and the

needs of the area thoroughly. This helps the manager serve the users better, identify potential energy savings, and be the most important physical plant contact for the faculty and staff in that area. The manager is the advocate for physical plant to the occupants, and their advocate to physical plant.

In the case of the University of Iowa, the central shops consist of approximately ninety people in eight trade-specific shops with the following skills: carpenters, masons, floor coverers, painters, glaziers, sheet metal mechanics, roofers, pipe fitters, insulators, asbestos workers, electricians, systems control technicians, elevator system mechanics, environmental systems mechanics, and locksmiths. It is intended that most of the central shop people will work on planned, estimated, and scheduled work in any part of the university; their job is primarily to do planned maintenance and minor alterations.

There are some exceptions, of course. While the six insulators and asbestos workers often provide the

"purification" of a site for major work, they also are available at a moment's notice to abate asbestos in connection with a service call or for any other reason. The elevator mechanics are mostly involved in preventive maintenance of vertical systems, and the locksmiths do both service calls and major work. Each shop typically also has at least one person who handles the odds and ends that are beyond the capacity of area shops.

Now, back to the question of how we plan work so that we have some benefit of planning while giving a sense of wholeness and responsibility to shop managers. One option is to allow each manager to hire a planner. That could work, but it appears that one planner per shop is excessive. In addition, the shop supervisor then must not only deal with knowing a variety of trades, but also must supervise and train a technician in inspection and EPS. Typically this arrangement results in the planner becoming a "go-fer." There is also the question of who integrates multi-discipline work plans.

Experimenting With Planners

At Iowa, we have experimented with different approaches. For the last three years, planners have been part of the engineering division, which has three branches: maintenance planning, facilities engineering, and energy management. The intent of that organizational arrangement is to provide engineering backup to the planners and to facilitate gradually moving from strictly preventive maintenance to predictive maintenance. Most of the planners came from our shops and maintain close working relationships with the shops.

Our next experiment will be to assign each planner to two of the area shops with one supporting the utilities division, while also providing shop loading and scheduling support. The planners will visit each area shop daily, specifically visiting the sites of jobs that they must plan and estimate, and discussing with the managers or their mechanics concerning ideas that they may have on methodology, products, user schedule, and interferences. The intent is that the planners and estimators be looked upon as part of the area maintenance team. In fact, they also will continue to work closely with the central shops. This is as critical as the dialogue with area maintenance people, since the planner develops most of the work for the central shops.

The planner will also serve as the project coordinator for all the projects planned. If a customer wants new laboratory casework, the planner discusses the needs with the customer using a checklist to minimize omissions and "oh, by the ways." The planner then develops an estimate, typically using EPS and incorporating suggestions by area maintenance people. Once the work is planned, it is offered to the customer on a fixed-price basis; that is, the work is guaranteed at a given price, providing the scope does not change. Any significant change in scope would require a change order. If the customer authorizes the work, the planner orders the materials and has them staged by work order number. The work is scheduled when the critical materials are all assembled or when assurance is given that they will be there at a specified time. During work performance, the planner is available to work out glitches in the work.

The planner will also be available to analyze the reports by mechanics performing the preventive maintenance.

Iowa has, for many years, had a computerized preventive maintenance program. Currently, more than 7,000 pieces of equipment are covered by this program. Mechanics are asked to suggest changes in frequencies so that we are not over- or under-maintaining. The mechanics are expected to report any deficiencies that will require work by the central shops. The planner is expected to work out the adjustments that will optimize the preventive maintenance program.

Although we do not have the resources to conduct full annual condition inspections, the deficiencies identified by a variety of sources—including the area mechanics, area managers, custodians, occupants, and anybody else from physical plant—will be funneled to the planner for that area to formulate planned maintenance work orders. It is expected that the area manager will have the authority to prioritize the work in his or her area. After all, she or he is responsible for that area; for these responsibilities to be carried out both the preventive maintenance and the planned maintenance must be controlled.

The planners are still selected, trained, supervised, and evaluated by the maintenance planning manager in the engineering division. But a major portion of their evaluation is to be determined by how well they support the area manager and central shops.

Figure 1 roughly depicts the evolution in organizational relationships and level with the changing maintenance management paradigms. The significant changes are in shared responsibility and lower organizational level. This makes maintenance management more complex, but also more satisfying.

In summary, we intend that the current maintenance management system at Iowa recognizes the importance of planning, estimating, and scheduling work, as well as the importance of empowering those who do much of the work to control the work done in their area. We do not pretend that this system is perfect. We expect that we will continue to improve the system as we proceed. I offer these thoughts in the hope that they will stimulate some writing and presentations on a subject that I feel is critical to the success of physical plant directors. ■

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FINDING A COMPUTER CONSULTANT

Even when the problem goes away, the people working on it never do.

When you hire a consultant you do so because you are dissatisfied. You perceive a need to establish a new function in your sector or improve an existing one by reducing its cost, increasing its responsiveness, or eliminating unacceptable productivity variances.

Let's assume you need someone to design and install a cost-effective, trouble-free, computer-based facility management system. You don't have the in-house expertise and hiring someone full time is absolutely out of the question. What do you do? You rent an expert.

How do you find the right consultant—someone who will add to the solution and not the problem? Actually, finding a competent consultant is just like finding a capable accountant, proficient internist, or a trustworthy lawyer (or is that last comparison a contradiction in terms?)

Here are some tips:

1. The consultant should serve only your interests. So hire an independent consultant, someone unrestricted by direct ties to any one hardware or software vendor. That will increase your chances of receiving the best combination of quality and low cost.
2. Postpone hardware and software purchases until after your consultant reviews your circumstances, evaluates your needs, and makes recommendations.

Your next step would be to

- Network. Check with similar sized schools or facility management professionals at other types of institutions to learn from their experiences.
- Call publishers of FM software applications you are considering; ask them who they recommend. See the Sources Guide for some publishers of facility management software. Remember: publishers will likely suggest consultants loyal to their product, so call more than one.
- Check with the independent computer consultants association (800/GET-ICCA). Outline your needs, and

Howard Millman is a frequent writer and consultant for facilities management and computer issues. He designs and installs computer systems for universities and hospitals. He is based in North Tarrytown, New York.

Data Base Update

Howard Millman

they will furnish names of members who possess that kind of expertise.

- Follow the ads or (sorry to be so obvious) contact the authors of relevant articles in trade journals.
- Attend trade shows organized by or around the type of consulting services you seek.

Qualifying Skills

You want your consultant to possess first-rate skills in three areas.

- Facilities Management. They should have well-rounded experience in operating a physical plant, preferably more than five years and preferably including exposure in supervision and scheduling.
- Computer literacy. In the computer industry, keeping track of new releases is like speed reading a calendar—new products and upgrades come down the chute daily. You want someone familiar with multiple operating systems, operating environments, current hardware availability, as well as system and dedicated application software.
- Communication skills (written and verbal). The consultant will represent you and your interests before your staff, your colleagues, and perhaps your seniors. Since the consultant is there to implement change, and many people react to changes with concern, you want your consultant to possess the requisite political sensitivity to avoid ruffling anyone's feathers (as much as reasonably possible, that is). Since the consultant will provide occasional reports and perhaps memos as well as accurately documenting the completed system, above average writing skills are also essential.

- Meet with the consultant. Even if you are no expert in high-speed Netware 386 dedicated file servers employing 16 bit thin Ethernet topology and intelligent peripheral sharing local area networks, you know people. How does the consultant come across to you. Competent, confident, and well spoken? Personable? When you find someone with these attributes, it

is time to start talking contract details.

Contract Terms

Consultants may be retained on either a fixed fee or, more likely, a per-hour cost. You can expect to pay anywhere between \$75 to \$200 per hour depending on the size of the job, its complexity, the level of expertise required, and how quickly your institution pays their bills. Most consultants are small businesses, and for them cash flow is critical.

Let the consultant draft the contract, then deliver it to you for review. If you or your legal department draw up the contract you may omit some exotic piece of equipment or obscure procedure that will lead to delays and misunderstandings. You must have trust and confidence in the consultant to draft at least the technical portions of the contract. If not, find another consultant.

In addition to a scope of work, the contract should specify how payments will be made. For example, when I draft a contract, I divide the project into verifiable stages so my client has a way to measure the installation's progress:

1. Initial facility inventory and survey (40 hours).
2. Prepare hardware/software specifications for bidders; prequalify bidders, review bids, recommend award (15 hours).
3. Configure hardware, software, and peripherals (5 hours).
- 4a. Install work order modules including codes, rates, classifications (35 hours).
- 4b. Install schedules, nonscheduled preventive maintenance modules (20 hours).
- 4c. Install capital project tracking, bar coded inventory tracking, and resource management modules (15 hours).
5. Install employee history data base (15 hours).

Ultimately, the same system can include work processing, computer aided design (CAD), and financial management applications.

At the completion of the project, if the consultant did the job right, your personnel will take over the reins. Perhaps somewhat hesitantly at first, but with increasing confidence over time. The consultant will phase out, perhaps returning occasionally for upgrading or retraining.

And when the problem finally disappears, so will the consultant. ■

Managing Nonprofits

Managing The Nonprofit Organization, by Peter F. Drucker. New York: HarperCollins Publishers, 1990. hardcover.

Every once in a great while I come across a book that gives me insights and stimulation that cause me to have a "conversation with the author," underlining and writing notes that I'll reread as a text I want to come back to again and again because its ideas are so essential to my own work, life, and thought. Peter Drucker's new book about managing nonprofits is one such book for me, and I'd like to share it with you.

It is not only about associations. In fact, most of the examples used for illustration are not from associations. Colleges and universities are frequently referred to, reminding us that our institutions have the same advantages and disadvantages of other nonprofit environments. From this book, you as a facilities officer can better understand the context for their challenges and opportunities in several contexts: the institution you serve, those who work for you, and, most importantly, yourself as a manager.

The sections offer a progressive outline that begins with the need for a clear definition of mission and a relationship of performance to mission followed by managing performance. The first section on mission is vital to all else, a "simple and clear" statement of why our institution exists. What it's not, according to Drucker, is "a hero sandwich of good intentions."

The final two sections on the book is People and Relationships and Developing Yourself. What and why become translated into how. Sections develop such topics as "What is the bottom line when there is no bottom line?"—an illustration of the special challenges of nonprofits as compared to a business where new profits are easily measurable.

Practically every page of the book contains gems that give clear insights into what we often do wrong as well as our opportunities to be effective. I'll share just a few to give you a taste of the book:

"Success has ruined more organizations than failure... because you tend to expand and outrun your resources."

"Most people brush aside the evidence of success because they are so problem oriented."

"As you add on, you have to abandon."

"One thing that is predictable is crisis. You can't avert it but you can anticipate it. To wait until it happens is to abdicate your responsibilities.... Change is not a threat but an opportunity."

"You have two things to build on: the quality of the people in the organization and the new demands you make on them."

"To build a successful team, you don't start out with people—you start out with the job."

The Bookshelf

"If they (employees) try, work with them. If they don't try, you're better off if they work for the competition."

"There is no greater achievement than to help a few people get the right things done."

A reviewer ought to have critical comments, I'm told. Personally, I have a bias against the recipe books so popular in our society. ("If I follow points 1-5, I'll get it right.") Because we work in an infinite variety of institutions and with an infinite variety of human beings, I have always believed that management is as much an art as a science. This book, however, gives dimension to not merely the *how* of managing but, more importantly, the context of which our institutions, those we work with, and ourselves can contribute to a purpose much greater than ourselves.

I sincerely hope I've given you enough of a taste of a book I've found personally enriching to cause you to get a copy. Enjoy!

This book is available from your local bookstore or from HarperCollins Publishers, 10 East 53rd Street, New York, NY 10022.

—Walter A. Schaw
Executive Vice President
APPA
Alexandria, Virginia

Compendium of Decision Tools

The Economics of Building: A Practical Guide for the Design Professional, by Robert Johnson. New York: John Wiley and Sons, Inc., 1990. 248 pp. \$39.95, hardcover.

Since World War II the cost of building construction has increased about twenty-seven times. The complexity of the projects, cost of capital, and cost of design have increased. Cost increases emphasize the importance of sufficiently accurate information and analysis to assure selection of the best alternative. The degree of detail and accuracy of cost information expands as specific project decisions are made. The sunk costs and costs of redesign increase with the project commitment.

Early in the decision process, alternative projects should be considered. Various quantified methods are presented to aid in determining the project that best fits the organization's objectives. Identifying the appropriate decision is like shooting at a moving target. Hopefully, the relative

speed of change or material inconsistencies are known. The text gives a candid assessment of the evaluation tools presented. Alternative tests designed to counter weakness in the primary evaluation tool should be used to assure that the ultimate decision would not change.

Evaluations are subject to place and time constraints. Standard cost data and indexes can be used to compare experience-based information with expected project costs for the specific location. Consideration must be given to differences not covered by the indexes, and any index construction weakness. Gross estimating methods are appropriate early in the design process. Specific estimating schemes should be used for more detailed and accurate applications as the design is finalized.

Generating comparable values for different projects expands the design constraints while continuing to meet the program objective. Life cycle costing for maintenance and facilities provides alternative design solutions. Two twenty-five-year facilities may have a lower present value cost than a fifty-year design, and may be appropriate for the program. The ability to present meaningful information about an option not previously considered could be the cornerstone for creative solutions. Consideration must be given to future availability of funding.

This book is a storehouse of tools that can be used to assure a quality decision will be reached. Techniques are provided that could be used to develop a capital budget process for an entity. Computer spreadsheet examples with layout and coding information are included. The bibliography provides access to additional information on tools, techniques, problems, and solutions.

The authors clearly present information and examples on design costing and relative worth measurement tools. The text is straightforward; formulas are set out from the text for easy reference; graphs and tables are included for clarification of examples; machines and manual computation methods are provided. The book is an easy-to-use reference tool for occasional or experienced evaluators.

Economics of Building is a welcome addition to the library. It will see use by staff wishing to improve their knowledge and understanding of the techniques used in ranking capital projects. Supervisors will use it as a ready reference as needs are identified by departments. Scarce resources require responsible choices among competing projects; many diverse parties must understand the rationale of selection.

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

—Kate Fenton
Fiscal Officer
University of Alaska/Fairbanks
Fairbanks, Alaska

Job Corner Deadlines

Job Corner advertisements are available to any nonprofit institution with a facilities-related position opening available. Regular classified advertisements cost \$20 per column inch; display ads cost \$25 per column inch. There is a two-inch minimum charge on all ads and no agency discounts are available.

Upcoming Job Corner deadlines are **May 10** for the June issue, **June 10** for July, and **July 10** for August. Closing deadlines for job announcements are posted at the request of each institution. In some cases, deadlines may be

Job Corner

extended by an institution. APPA encourages all individuals interested in a position to inquire at the institution regarding its closing/filing date.

Send all ads, typed and double-spaced, with an official purchase order to Diana Tringali, Job Corner Advertising, APPA, 1446 Duke Street, Alexandria, VA 22314-3492. Or send your ad

via fax 703/549-APPA (703/549-2772). Call 703/684-1446 for more information.

• • •

Associate Director of Facilities Operations. The University of Kansas is seeking applications for the position of associate director of facilities operations. This position is responsible for directing and administering the financial, operations, and personnel functions of the landscape, construction, and garage/motor pool departments. The associate director reports to the director of facilities operations and contributes to smooth operations of the entire physical plant. Requirements include 10 years of progressively responsible administrative, management, and supervisory experience in landscape work, including the full responsibility for the direction of a medium to large (25-50 employee) landscape maintenance organization; possession of a baccalaureate degree in horticulture, landscape architecture, or forestry from an accredited institution of higher education. Additional directly related professional experience may be substituted for the educational requirement on a year-for-year basis. The successful candidate must possess good interpersonal and communication skills, budget development/management experience with personal computers and automated work control systems. Desired and preferred qualifications include knowledge and/or experience in construction methodologies related to masonry and concrete finishing, building roof repair, and street pavement repair; experience as a vehicle fleet manager or service manager for operations including small engines, motor vehicles, and/or heavy equipment. Salary range: \$35,000 to \$38,750. Excellent benefits as provided by the Kansas Board of Regents. Qualified applicants should submit a letter of application, resume, and names, addresses, and phone numbers of three references to Phil Endacott, Chair-Search Committee, The University of Kansas, Facilities Operations, Lawrence, KS 66045. Deadline for receipt of application is **April 30, 1991**. A tentative start date of June 18, 1991 has been established. A complete position description is available upon request. *The University of Kansas is an EOE/AA employer.*

DIRECTOR OF PLANT OPERATIONS

THE UNIVERSITY OF MICHIGAN seeks a Director of Plant Operations to plan and direct the operational and administrative activities of the division. This highly visible and challenging position reports to the Associate Vice President for Business Operations and is responsible for planning and directing the development and implementation of goals, objectives, programs and activities for a large and multi-faceted organization which provides landscape architecture, custodial, parking, transportation, and grounds and waste management services; facilities maintenance and renovations; and energy production and distribution systems for the Ann Arbor campus of the University.

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Qualifications include: a Master's degree in business administration or engineering or an equivalent combination of education and experience; progressively responsible supervisory and administrative experience in physical plant management or auxiliary services, preferably in an institutional setting; considerable knowledge of modern management practices, principles and methods; and a demonstrated commitment to the principles of diversity and equal opportunity.

Please submit a letter of application and two copies of your resume to:



The University of Michigan

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Manager of Employment
Employment Services
2031 "DPK" Administrative Services Bldg.
1009 Greene Street
Ann Arbor, MI 48109-1432

Preference will be given to applications received by **April 19, 1991**.

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Special Projects Coordinator. Florida Atlantic University invites applications for the position of special projects coordinator. The coordinator will be responsible for the administration of engineering/management functions under the guidance of the director of physical plant. This will include preparation of specifications for small projects, coordination of con-

tracted projects, and initiation of engineering studies; identification of requirements, budgets, and methods of accomplishment for numerous categories of work, such as fire code corrections, preventive maintenance, deferred maintenance, minor projects, etc., and oversight of special events. A bachelor's degree in a construction engineering discipline, construction management, architecture, or similar discipline is required. A minimum of four years of relevant experience in an institution of higher education is preferred. Florida Atlantic University is located in Boca Raton, Florida. The

main campus comprises approximately 800 acres and 1.5 million square feet of building space. The physical plant division consists of approximately 200 personnel and has a budget of about \$8 million a year. For consideration a letter of application, resume, and names and phone numbers of three professional references should be sent by **May 15, 1991** to: Florida Atlantic University, Robert H. Nall, Director of Physical Plant, Coordinator Search, 500 N.W. 20th Street, Boca Raton, FL 33431. *Florida Atlantic University is an equal opportunity employer.*

DIRECTOR OF PHYSICAL PLANT **July 1, 1991**

The Hawken School—Independent, coed, nonsectarian, kindergarten through grade twelve, on two campuses in the eastern suburbs of Cleveland—is seeking applications for the above position. Reporting to the assistant headmaster, the director has primary responsibility for planning, coordinating, and directing all programs relating to the operation and maintenance of the school's physical plant and grounds on its 300-acre upper school campus in Gates Mills, and the 29 lower and middle schools' campus, Lyndhurst. The selected candidate will have excellent management and personal skills with which to 1) supervise the school's maintenance and custodial staffs; 2) work effectively with other staffs, faculty, and buildings and grounds committee of the Board of Trustees; 3) assist in the planning and implementation of deferred maintenance funds and projects; 4) carry out the director's other duties, which include safety audits of all buildings and regular contracting of services beyond those provided by the school's regular staffs. The director must also be prepared and inclined to oversee the school's computer-supported energy management system.

The compensation includes a competitive salary, and participation in Hawken's benefit program: medical/dental insurance, major medical, disability and life insurance, pension plan, social security, and worker's compensation. Attractive housing on the Gates Mills Campus is a job requirement. Qualified candidates should write to Alan D. Matta, Assistant Headmaster, Hawken School, Clubside Road, Lyndhurst, Ohio 44124. The screening of letters and resumes will begin April 25, 1991.

ASSISTANT DIRECTOR, FACILITIES MAINTENANCE **DEPARTMENT OF RESIDENTIAL FACILITIES** **UNIVERSITY OF MARYLAND/COLLEGE PARK**

The Department of Residential Facilities is responsible for providing the principal facilities management services for the 1.9+ million square feet of undergraduate residence halls for 50+ buildings on the flagship campus of the University of Maryland System. The FY 91 budget exceeds \$12 million (\$6 million in salary and wages, \$6 million operating budget). We employ 167 full-time employees and between 80 and 150 student staff during the academic year and summer months, respectively.

A copy of a more detailed job description and an overview of the department and the campus is available by contacting Mr. Sean Ballantine, Department of Residential Facilities, University of Maryland, College Park, MD 20742.

Assistant director, facilities maintenance establishes and reviews service standards, performance criteria, and workmanship expectations for a staff of approximately 30 trades workers and supervisors. Aggressively reviews existing programs to improve and assure the effective delivery of services to the residents and/or the building. Analyzes and projects repair and replacement costs, including the development of multi-year facilities renewal and deferred maintenance budgets. Assures compliance with applicable building, fire and life safety, and health codes, as well as regulations. Reviews with staff major unresolved and ongoing maintenance deficiencies and reprioritizes work or funding as needed to respond to critical or unforeseen problems. Acts as the department liaison and director's representative with major campus and off-campus service agencies.

Experience: A bachelor's degree, preferably in administration or engineering fields is required. Minimum of seven years of full-time involvement in the management of the full range of maintenance services. Minimum of four years in a supervisory capacity of maintenance/trade operation, with at least two years of supervising a staff of 15 or more employees. Preferred—minimum of two years direct supervisory responsibility for a facility in excess of 1 million gross square feet, with previous experience on a college or university campus. Experience with automated facilities management, inventory, work control, scheduling, and financial systems.

To apply: For best consideration, apply by **May 3, 1991**. To apply, send a letter of application with resume to Dr. Patricia Mielke, Department of Residential Life, 2101 Annapolis Hall, College Park, MD 20742-9123. Applications material should clearly describe 1) the numbers and types of trades positions currently or previously supervised; 2) numbers, square footage, and types of buildings; and 3) other relevant experiences and job responsibilities that will assist the search committee in the review of each candidate's qualifications.

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Apr. 15-16—**Facilities Audit Workshop.** Tempe, AZ.

Apr. 28-May 3—**Executive Development Institute.** South Bend, IN.

Jul. 21-24—**78th Annual Meeting.** Orlando, FL.

Aug. 18-23—**Institute for Facilities Management.** New Orleans, LA.

Nov. 17-19—**Institute for Facilities Finance in Higher Education.** Washington, DC.

Other Events

Apr. 22-23—**Custodial Staffing Guidelines.** St. Charles, IL (Chicago area). Contact: Robert A. Getz, M/C 270, University of Illinois/Chicago, Physical Plant Department, Box 4348, Chicago, IL 60680; 312/996-2837.

Apr. 22-24—**Environmental Regulation Course.** Boston Marriott Long Wharf, Boston, MA. Contact: Executive Enterprises, Inc., 22 West 21st Street, New York, NY 10010-6904; 800/831-8333, fax 212/645-8689.

Apr. 30-May 2—**Telecommunications Infrastructure Planning.** Cincinnati, OH. Contact: Washington State University, Conferences and Institutes, College of Engineering and Architecture, Pullman, WA 99164-2712; 509/335-7225, fax 509/335-7632.

May 6-10—**A/E/C Systems '91: Computer Management Show for Design and Construction Industry.** Washington, DC. Contact: Sharon Price, A/E/C Systems '91, P.O. Box 310318, Newington, CT 06131-0318; 800/451-1196, 203/666-6097.

May 13-15—**Gas Mart '91.** Orlando, FL. Contact: Gas Price Index, P.O. Box 70587, Washington, DC 20024; 202/444-4505.

May 15-17—**Environmental Regulation Course.** Washington, DC. Contact: Executive Enterprises, Inc., 22 West 21st Street, New York, NY 10010-6904; 800/831-8333, fax 212/645-8689.

May 16-17—**How to Meet New Ventilation Standards: Indoor Air Quality and Energy Efficiency.** Chicago, IL. Contact: AEE Energy Seminars, P.O. Box 1026, Lilburn, GA 30226; 404/925-9633, fax 404/381-9865.

May 20-21—**Thermal Energy Storage for Cooling Applications.** Houston, TX. Contact: AEE Energy Seminars, P.O. Box 1026, Lilburn, GA 30226; 404/925-9633, fax 404/381-9865.

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Jun. 18—Construction Estimating Seminar. Los Angeles, CA. Contact: BNI Building News, 3055 Overland Avenue, Los Angeles, CA 90034; 800/873-6397.

Jun. 22-26—International District Heating and Cooling Association's Annual Conference: District Energy and the Environment. San Francisco, CA. Contact: IDHCA, 1101 Connecticut Avenue, N.W., Suite 700, Washington, DC 20036; 202/429-5111.

Jun. 22-28—AACE Seminars and Annual Meeting. Seattle, WA. Contact: American Association of Cost Engineers, P.O. Box 1557, Morgantown, WV 26507-1557; 304/296-8444, fax, 304/291-5728.

Jun. 23-26—American Association of Cost Engineers Annual Meeting. Seattle, WA. Contact: AACE Headquarters, P.O. Box 1557, Morgantown, WV 26507-1557; 304/296-8444.

Jun. 24-25—HVAC: Testing, Adjusting, and Balancing for Maximum Efficiency. Atlanta, GA. Contact: Association of Energy Engineers, P.O. Box 1026, Lilburn, GA 30226; 404/925-9633, fax 404/381-9865.

Jul. 7-12—38th Annual International Campus Safety Association Meeting. University of California/San Diego. Contact: Bill Bernard/Marty Malter at 619/534-3660, or Rich Belanger at 619/594-6778.

Aug. 15-16—How to Meet New Ventilation Standards: IAQ and Energy Efficiency. Lake Tahoe, NV. Contact: Association of Energy Engineers, P.O. Box 1026, Lilburn, GA 30226; 404/925-9633, fax 404/381-9865.

Oct. 16-20—Historic Preservation: The Next 25 Years. San Francisco, CA. Contact: Vice President, Programs, Services, and Information, National Trust for Historic Preservation, 1785 Massachusetts Avenue, N.W., Washington, DC 20036.

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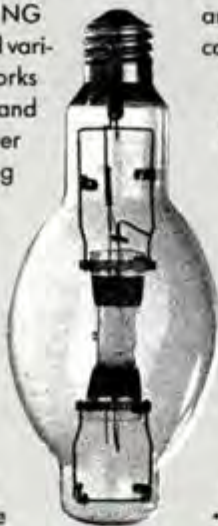


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