

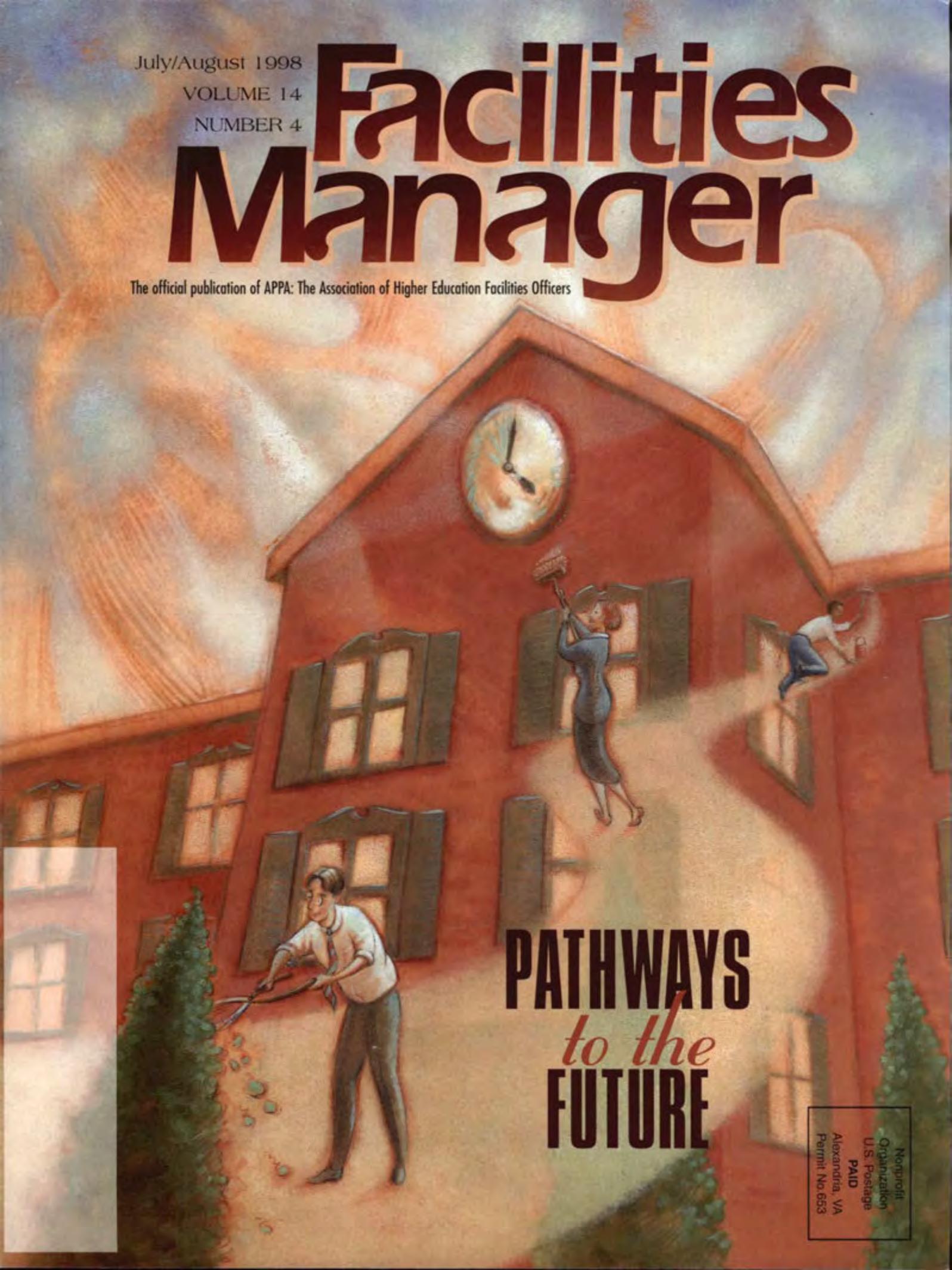
July/August 1998

VOLUME 14

NUMBER 4

Facilities Manager

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



PATHWAYS
to the
FUTURE

Nonprofit
Organization
U.S. Postage
PAID
Alexandria, VA
Permit No. 653

Truth Can Be Stranger Than Fiction



- 8:59 am:** *The Dean is panicked.* The weather report calls for 105° on the first day of summer school.
NO PROBLEM: Based on your improved Preventive Maintenance schedules, you're confident the HVAC systems will handle the heavy load.
- 9:48 am:** *Housing is frenzied.* They need a new dorm built ASAP to meet increased student enrollment.
NO PROBLEM: You show them how to better utilize existing space to accommodate the fast growing student body.
- 10:17 am:** *The President wants* his house renovated before Alumni Weekend.
NO PROBLEM: In an afternoon you can organize the work, line up the right labor, secure materials from inventory, and order the new furniture. And you can easily share the information with your in-house financial system.
- 11:34 am:** *The Controller is having a fit* over the total costs for contracted maintenance.
NO PROBLEM: You can point to the first-ever reduction in total contracted maintenance costs — you used the right contractors for the right jobs.

Finally! A day where you can quickly and confidently respond to complaints with ideas and information that count. Fiction? It doesn't have to be. Make these conversations a reality with FM Enterprise from AssetWorks. A comprehensive solution for professionals like you

who want to more effectively use your physical assets — people, facilities, space, equipment and materials. Help your organization be more profitable — achieve measurable results, do more with less, and still provide high quality service to your customers.

Turn fiction into reality with FM Enterprise.™

Visit us at www.assetworks.com

1-800-659-9001 Ext. 30



AssetWorks, Inc. Formerly AEC Data Systems, Inc.

© 1998 AssetWorks, Inc., San Antonio, Texas

VISIT US IN BOOTH 811 IN SAN JOSE!

Facilities Manager

The Official Publication of APFA, The Association of Higher Education Facilities Officers

Volume 14 Number 4

July/August 1998

FEATURES

18 Maintenance Staffing Standards for Zero-Based Budgeting

by Matthew C. Adams, P.E., Joseph C. Fisher, P.E., & Theodore J. Weidner, P.E., AIA

24 Expand Your Parking Paradigm to Meet Diverse Needs

by Susan A. Kirkpatrick, Ph.D.

39 How NOT to Get Outsourced

by Thom Wellington

45 Decision Making Tools for Custodial Operations

by James E. Sears

50 Energy Management and the Infrastructure System

by James M. Blackburn, P.E., MBA



PATHWAYS to the FUTURE

Cover illustration by Lina Chesak.

Departments

From the Editor	2
APFA Annual Reports	3
Executive Summary	15
Blazing New Trails in Facilities Management by E. Lander Medlin	
Facility Asset Management	56
Off-Balance Sheet Financing by Matthew C. Adams, P.E.	
Software & Solutions	40
Unorthodox Solutions by Howard Millman	

The Bookshelf	42
Book Review Editor: John M. Casey, PE. Reviewed in this issue	
• <i>Special Planning for Special Places</i>	
• <i>Disaster Planning and Recovery: A Guide for Facility Professionals</i>	
• <i>Financing Energy Projects Deskbook</i>	
• <i>Handbook of Energy Engineering</i>	
Coming Events	68
Index of Advertisers	68

Facilities Manager

PRESIDENT: Pieter J. van der Have,
University of Utah

EXECUTIVE VICE PRESIDENT:
E. Lander Medlin, Alexandria, Virginia

EDITOR: Steve Glazner

ASSOCIATE EDITOR: Medea Ranek

ASSISTANT EDITOR: Alycia Eck

SUBSCRIPTIONS: Cotrenia Aytch

CREATIVE DIRECTION:

Corporate Design

PRINTING: Corporate Press, Inc.

EDITORIAL OFFICE:

703-684-1446 ext. 236

FAX: 703-549-2772

E-MAIL: steve@appa.org,

medea@appa.org, alycia@appa.org,

cotrenia@appa.org

WEB: www.appa.org

ADVERTISING:

Gerry Van Treecck

Achieve Communications

3221 Prestwick Lane

Northbrook, Illinois 60062

Phone: 847-562-8614

Fax: 847-562-8634

E-mail: gerryvt@concentric.net

Facilities Manager (ISSN 0882-7249) is published six times a year (January, March, May, July, September, and November). Editorial contributions are welcome and should be sent to the address below.

Of APPA's annual membership dues, \$40 pays for the subscription to **Facilities Manager**. Additional annual subscriptions cost \$48 (\$60 for non-U.S. addresses). For information on rates and deadlines for display advertising, telephone 847-562-8614 or 703-684-1446 ext. 238.

Copyright ©1998 by APPA: The Association of Higher Education Facilities Officers. Contents may not be reprinted or reproduced in any form without written permission. The opinions expressed are those of the authors and do not necessarily reflect the views of APPA. Editorial mention of companies or products is for informational purposes only and should not be construed as an endorsement, actual or implied, by the Association.

POSTMASTER: Send address changes to **Facilities Manager**, 1643 Prince Street, Alexandria, VA 22314-2818.

Published by APPA:
The Association of Higher
Education Facilities Officers
1643 Prince Street
Alexandria, VA 22314-2818

From the Editor

Steve Glazner

Pathways to the Future is our issue theme and the theme of APPA's 1998 Educational Conference and 85th Annual Meeting. We have selected for this issue five features on some of the diverse topics that affect the facilities profession daily.

The first, "Maintenance Staffing Standards for Zero-Based Budgeting," is excerpted from the authors' presentation at the San Jose educational conference. APPA has made great strides in the area of custodial staffing guidelines, and we're beginning to develop a set of grounds staffing guidelines as well. But a major missing link is credible guidelines in the maintenance and trades areas. This article is intended to open the discussion for what that effort might entail.

Sue Kirkpatrick tackles the complicated and contentious world of campus parking in her article, "Expand Your Parking Paradigm to Meet Diverse Needs." Her work at the University of Michigan can serve as an objective model for all institutions with varied transportation and parking needs.

While outsourcing some facilities functions may be desired or appropriate in certain cases, Thom Wellington makes a case for keeping it mostly in-house. In his article, "How NOT to Get Outsourced," he provides several suggestions that remind us of the basics of our jobs and our purpose to the institutions we serve.

James Sears of Georgia State University provides some specific instruction in the process of improved housekeeping services. "Decision Making Tools for Custodial Operations" uses APPA's *Custodial Staffing Guidelines for Educational Facilities* as a beginning structure for developing building profiles and quantifying custodial needs throughout the institution.

In the last feature, "Energy Management and the Infrastructure System," James Blackburn provides a detailed case study of how Wake Forest University has

leveraged energy cost savings to draw down the deferred maintenance that has accumulated over recent years.

You'll also find in this issue the first Executive Summary column by Lander Medlin, APPA's new Executive Vice President. In her article on page 15, Lander shares her vision for APPA and our current goals and objectives for the association and the facilities management profession.

When you're finished reading this issue, we invite you to visit APPANet again (<http://www.appa.org>) and see the changes that we've made to the *Facilities Manager* pages. From the main page, click on the Bookstore icon, then click on the *Facilities Manager* icon, or go directly to www.appa.org/publish/fmtoc.htm.

You'll find completely redesigned pages and the addition of several full-text articles from each *Facilities Manager* issue beginning with January/February 1998. We will usually highlight two articles and one column from each issue. Articles currently available online include:

- **January/February:** Doug Christensen's article on the new Professional Leadership Center; and Charlie Jenkins' article on ethics
- **March/April:** Jack Dempsey & Gretchen Wesenberg's article on using a design partner; and John Huish & Pete van der Have's dialogue on value management
- **May/June:** Dave Cain's article on benchmarking and auditing; and Steve Cripps' article on using the FMEP at the Calgary Board of Education

My thanks and appreciation to Alycia Eck, assistant editor of *Facilities Manager* and APPA's web manager, for her great work in organizing and designing the new *Facilities Manager* pages. We will continue to improve the website and add useful content, and we welcome any comments, suggestions, and assistance that our members and readers are willing to provide. 🏠



*President-Elect L. Joe Spoonemore
Washington State University*

The President-Elect

year is not a year of casually observing while you wait your turn at the wheel. As Past President Jack Hug advised me, "You better have your agenda ready to go, or the presidential year will pass by and the membership will wonder who the heck that guy was."

Admittedly, the year began with the very sad experience of losing a tireless member and my predecessor, Tom Vacha. This was the real low point of my term and was quickly followed by the very gratifying experience of participating in the selection of Pete van der Have to fill Tom's term as President. How fortunate we are to have members who are willing, on very short notice, to offer their services for the good of our association. Pete has done just that and without the benefit of a warm-up year as President-Elect. Knowing that Pete is reluctant to blow his own horn, I will take this first of several opportunities to note that he has performed with dispatch, resolve, and consensus.

The 1997-98 year has also been highlighted by the departure from the APPA staff of my longtime friend and advisor, Wayne Leroy. Wayne's dedication, good humor, and total commitment will be missed. We have been reminded, however, that he will be available to offer assistance in the future. This is especially beneficial during the transition period between Executive Vice Presidents at the APPA office. Speaking of which, we couldn't be more fortunate than to have Lander Medlin poised and willing to leap into Wayne's very big shoes. Yet another marvelous orchestration by President van der Have.

Noteworthy during my President-Elect year, in addition to the election of a very capable slate of officers, was



Gilsulate[®] 500^{XR}

**Thermal Insulation and
Protection System for
Underground Pipes Operating
at 35° F to 800° F**

- District Heating & Cooling
- Cogeneration
- Retrofit
- Hydrophobic
- Load Bearing
- Computerized Heat Transfer Calculations and Design Reviews
- Engineered Drawings

For complete material and design assistance contact:

American Thermal Products, Inc.
3371 Bonita Beach Road
Bonita Springs, FL 34134
800-833-3881

VISIT US IN BOOTH 200 IN SAN JOSE!

the overwhelming passage of the proposed Bylaws revision that now allows Affiliate members to hold elected or appointed office. This was personally gratifying to me in that I have lobbied for the change ever since I realized that dedicated individuals in the Affiliate membership category were severely limited in their participation. My congratulations to the membership for their action on this proposal.

Shortly after my year began as President-Elect, I was privileged to visit the Australasian region. I previously had not given due credit to those individuals who were so gracious, informative, and accommodating that the trip could only be classified as a total success. I therefore wish to formally acknowledge the following individuals and couples who gave their precious time with good humor to the visitors from APPA: Ted & Coral Dews, Lloyd & Yvonne Cushman, Denis & Margaret Brennan, Russel & Pam Englefield, John Simmons, Ian Alford, Julie Hood, and the coordinator supreme, Parr Esdale. Numerous other AAPP members also contributed in part to my everlasting appreciation and genuine fondness for the people and institutions of Australia and New Zealand.

What do I have in mind for this coming year during my term as APPA President? Following extensive discussions with our Board members, our staff, the new EVP, and various individual members, I believe we should hold fast to the precepts outlined in the strategic plan, and I view Initiative #1 on education as absolutely vital. Among the program enhancements that Vice President Gary Reynolds and his committee will be working on are: off-site programs for Institute credit, greater reliance on members as faculty, transformation of the PETS program to a Web-based service, energy deregulation seminar, and the possibility of a joint annual meeting with the Construction Specifications Institute in 2002 in Las Vegas.

In that our Professional Leadership Center's "education" component is now well established, we are ready to move on to finalizing the "research" and "recognition" components. The most exciting element of this brand-new program is the much needed and long-awaited APPA Fellow designation. One of my goals is that I will be able to participate in the presentation of the very first APPA Fellow awards.

In terms of outreach, it is clear that the APPA discussion listservs are functioning well and that the newly instituted K-12 listserv is picking up momentum. The K-12 facilities managers have been largely ignored and present a real opportunity for APPA to provide education and leadership. We all know school district facilities personnel who are essentially left to their own devices. We must encourage affiliation and give serious consideration to offering scholarships to our flagship Institute program.

APPA is gathering momentum as the facilities "go-to" organization, as recently demonstrated by the excitement that an acquaintance with NASA showed when, after she reviewed our offerings, was informed that she was authorized to join the association. It is this kind of contact, as well as our affiliation with our strategic partners, that will ensure our position of leadership. In addition to our established alliances with CSI and the Professional Grounds Management Society, we look forward to formalizing a relationship with the Association of College and University Housing Officials-International. Alliances such as these are essential to our goal of being able to direct inquiries through APPANet, our learning resource center.

As we move into the next APPA year, let me invite you to contact me whenever you are moved to offer advice, support, or simply comment. I will listen and hope to be able to react appropriately. For instance, I am in favor of publishing the *Comparative Costs and Staffing Report* in both hard copy and disk formats. I am also in

favor of reintroducing the GSF ratios to the report. What do you think? Finally, I would also invite you, as I have done numerous times, to present grassroots articles for publication. Many times I have seen ad hoc surveys over the Web that, if published, would serve the greater membership well.

I truly look forward to working with our membership, staff, and officers over the coming year and ensuring that APPA is your Association of Choice. 🏠



**Immediate Past President
Ronald T. Flinn
Michigan State University**

This is my last report as an APPA officer and Board member, and I must tell you that the experience has been extremely rewarding and pleasurable. Certainly one of the most pleasurable aspects has been the opportunity to attend the regional meetings and even some state meetings. It's been great getting to know everyone and see the enthusiasm and fine work being done out there. Each region is unique, and all share a strong dedication to serving the mission of higher education.

This year President van der Have asked me to represent him at the 1997 Rocky Mountain 45th Annual Education Conference, held September 17-20 in Jackson Hole, Wyoming, hosted by Wayne White of Utah State University. I have been extremely fortunate in that circumstances have

continued from page 7

•PALMER SNYDER•

Choose the durable folding table that's right for you.

VALUE

Super-sturdy
plywood tables

VERSATILITY

Laminate tables for
fit and function

CONVENIENCE

Mobile folding tables for
roll-away storage

**EASE OF
HANDLING**

Lightweight ABS
plastic tables

All Palmer Snyder folding tables are built with the highest quality materials for long life and low maintenance. Choose the one that's right for you from a complete range of rugged options.

For more information, call
(800) 762-0415.

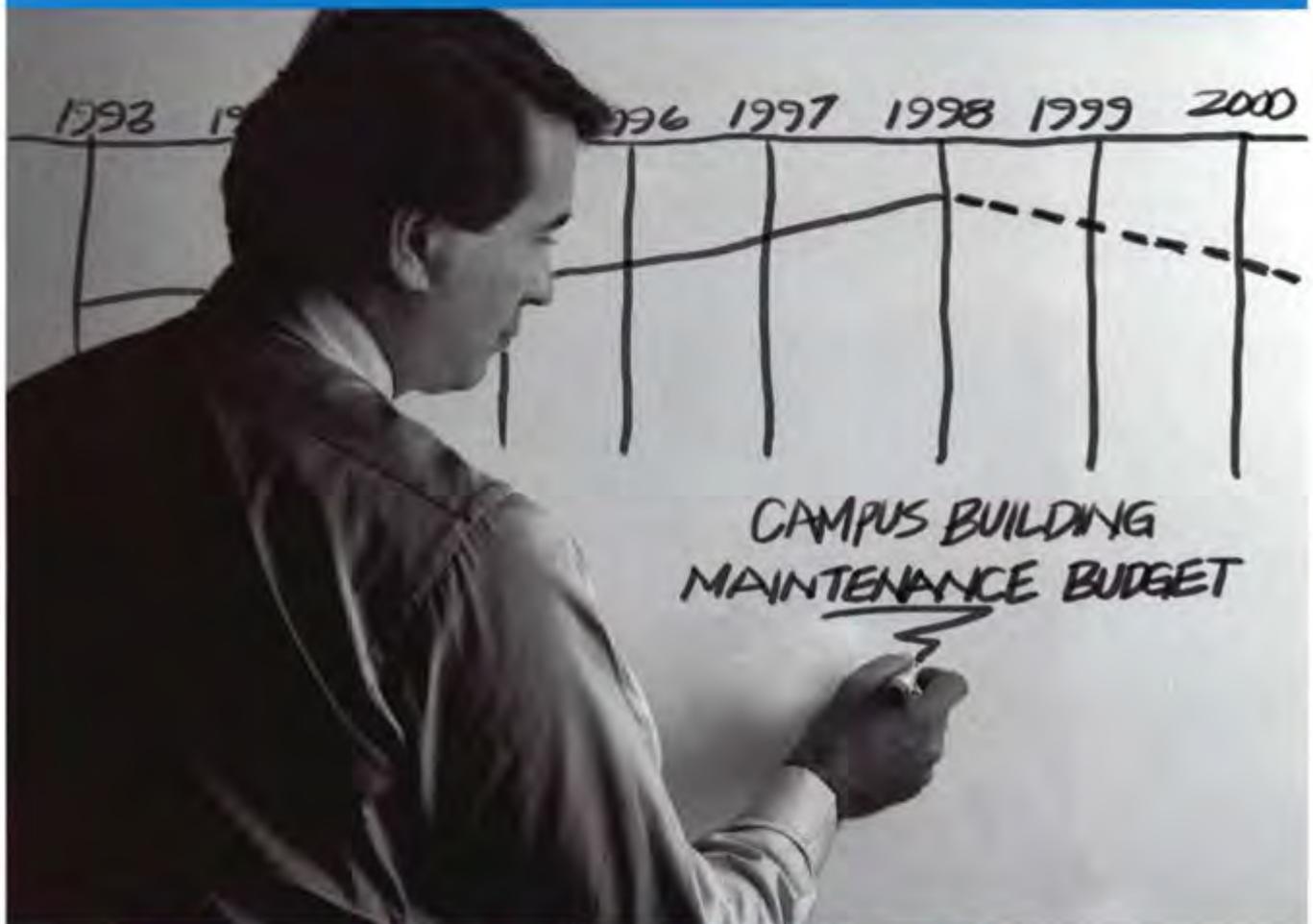
•PALMER SNYDER•

The Durable Table Company™

201 High St., Conneautville, PA 16406 (800) 762-0415 (814) 587-6313 FAX: (814) 587-2375

VISIT US IN BOOTH 211 IN SAN JOSE!

Let ABM Show You How To Reduce This Year's Campus Maintenance Costs



Then Grade Us On The Curve.

For over 88 years, American Building Maintenance Company has provided high-quality contract maintenance services—without the high cost or the liability you would have if workers were employed by the campus.

We've learned our clients' real needs. Studied dozens of ways to save them money. Analyzed costs, productivity and quality levels so well that our clients can save as much as 15% over in-house programs. Without sacrificing quality.

You'll find that our proposals are detailed, accurate, and meet the unique demands of your campus. Building maintenance is all we do—and we've learned to do it very well indeed. More and more institutions are finding that an "operating partnership" with ABM Janitorial Services

for contract custodial, engineering services and grounds care are exactly what they need to operate with today's tight maintenance budgets.

Call today: 415-597-4500, Extension 148.

Or write: Robert Ramirez, Vice President,
ABM College and University Program. It's time.



Robert Ramirez, Vice President
College & University Program
American Building Maintenance Co.
50 Fremont Street, 26th Floor
San Francisco, CA 94105-2230
Fax 415-597-7160

a subsidiary of **ABM** Industries Incorporated

continued from page 4

caused me to attend the annual RMA meeting for the last three years. As usual, Rocky Mountain put on a great meeting and Norene and I had a wonderful time. One piece of advice to future APPA officers—if you have the opportunity to go to a RMA meeting, don't miss it!!!

One of my responsibilities this past year has been to chair the Nominating Committee. Our responsibilities were successfully completed and I would like to thank fellow members of the committee: Brian Fenn (AAPP), Mike Reuck (CAPP), Jack Kree (ER-APP), Jim Landers (MAPP), Martin Holzman (PCAPP), Bob Lashaway (RMA), Dave Sims (SRAPP), and Steve Glazner as the APPA staff liaison. Congratulations to Maggie Kinnamon, President-Elect, Gary Reynolds, Vice President for Educational Programs, and Joe Rubertone, Vice President for Information Services. A total of 512 votes were received and tabulated on April 16 by a Tally Committee composed of Chair Al Stearns, member emeritus Al Guggolz, and current members Patrick Andriuk and Willy Suter. Steve Glazner reports that the 1998 percentage of return was 37.26%, an increase from 1997 (34.75%) and 1996 (34.47%).

Looking back over these last five years, a few highlights are worthy of mention:

- Identifying and implementing a strategic plan;
- Acquiring a new headquarters building;
- Improved staff alignment;
- New curriculum for the Institute for Facilities Management;
- Partnership with PGMS and CSI;
- Implementation of APPANet;
- Improved linkage with the regions;
- Completion of the third edition of the APPA *Facilities Management* manual.

When I was first elected, I voiced my concern that we guard against

complacency and recapture APPA's youthful vigor. I believe that APPA indeed is revitalized and is in an excellent position as we move into the 21st century. Although I can take very little credit for these accomplishments, I thank you for the wonderful opportunity to participate in this very exciting time in APPA history. 🏰



**Vice President for Educational Programs Gary L. Reynolds
The Colorado College**

Wow! What an incredible past two years it has been. There is virtually no educational program that APPA offers that has gone untouched. Everything from the introduction of the new Institute for Facilities Management this past January, to the creation of the new Leadership Academy, to the revamping and finetuning of several other programs.

Institute for Facilities Management

After a two-year gestation period, the revised and greatly improved Institute was offered during the winter program in Houston, Texas. The realization of this significant effort is due largely to six key people: Emily Wren from Indiana University/Purdue University at Indianapolis and Jim Roberts from Campbell University as co-chairs, and Don Briselden from Philips Exeter Academy, Jay Klingel from University of Virginia, Don Guckert from University of Missouri/Columbia, and Mo Qayoumi from University of Missouri/Rolla as the "deans" of the four core divisions of the Institute.

Initial feedback from attendees has been very positive with the identification of the need to iron out a few kinks in the on-site logistics. In addition, the Institute exceeded our financial projections. Plans for the future include the development of additional electives and monitoring the program.

Leadership Academy

The Leadership Academy is now a reality under the leadership of Doug Christensen, Bill Daigneau, and John Harrod. The Academy takes the current Notre Dame Executive Institute and combines it with two other week-long programs to create a comprehensive and outstanding follow-on to our basic professional development Institute for Facilities Management. The program is designed around the concepts of personal development, organizational development, and professional development. The Foundations of Leadership program is no longer offered, as its content has been incorporated into the new Academy. APPA has obtained licensing from Franklin-Covey to use their material, and several of our members have attended Franklin-Covey's training to qualify as Franklin-Covey trainers.

The first program is Effectiveness Skills and was offered this past March on the Stanford campus. The next Effectiveness Skills program will be offered March 15-19, 1999 at Stanford University. The development experience is centered on Franklin-Covey's Seven Habits and Principle Centered Leadership skill sets. The second program is Organization Skills and was offered in April on the Notre Dame campus. This program is a new version of the Executive Institute previously offered at Notre Dame and has been modified so that its content is integrated with the entire leadership program. Concepts and skill sets covered included mission and vision development and deployment, performance measuring, process

improvement, and human resource, financial, and marketing skills. The next Organizational Skills program will be held April 11-16, 1999 at the University of Notre Dame. Both of these programs were well received by the attendees.

The final program is the Professional Skills program which will be a highly modified version of the Institute for Facilities Finance. This program will cover the major topics and issues affecting higher education and society and their impact on facilities. These include business and financial planning and forecasting, information technology, capital planning and programming, strategic utility planning, asset management and investment, internal and external relationships, and regulatory issues.

In addition to attending the three programs and in order to graduate from the Leadership Academy, the candidate must complete a creative component task such as presenting a paper at the annual meeting, writing an article for the *Facilities Manager* magazine, or completing research that can be archived in the Learning Resource Center. It is proposed that a person completing the three programs and the creative component be recognized with a special fellow membership status.

Plans for the future include finalizing the third program, developing a strong marketing campaign, and monitoring the programs.

Partnership in Educational Training Series

This program grew out of a desire to provide access to national level speakers on a regional basis. As originally envisioned, APPA would provide the logistics of identifying speakers and handling the logistics of the meeting. However, the program as designed has achieved limited success with only seven programs offered in the past two years. While APPA will continue to provide this service to those regions, chapters, or schools

who request it, the program is being redesigned in 1998. The new program will provide our members with a Learning Resource Center accessible through the World Wide Web that will include a speakers list with resumes, a checklist of items to help with the logistics of organizing an educational session, and sample forms for registration, program evaluations, etc. This form of the program will meet our goal of providing more timely access to information and help our membership with their local programs.

Annual Meeting

The Education Committee continues to work to find ways to make our annual meeting a meaningful and rewarding experience. Last year we introduced the concept of making our vendor show a true learning experience through the addition of theater presentations by our subscribing members. This year we are planning to take this concept further and make the theater a central part of the vendor area. We also introduced a new session that allowed regions to meet and share ideas and we plan to continue that interactive session this year.

We are continuing to explore the possibilities of partnering with other associations and possibly locating our annual meeting with one of them. Jointly locating an annual meeting would allow both organizations to share resources in the form of educational sessions, vendor access, and keynote speakers. We will also be looking at the format of the educational sessions, thematic content, and presentation solicitation process to improve the educational experience of the attendees.

In addition to all of the above activities, we are constantly reviewing topics of current interest to our membership that may be worthy of a national or international seminar. We are also looking at ways we can make

our educational programs meaningful to the Australasian region.

The past two years have been very exciting with our efforts finally coming to fruition in the form of many new and exciting programs. A great debt of gratitude is owed to the many volunteers and APPA staff who have put in so much effort these past two years. But there is still more work ahead, and I look forward to another exciting two years of working with this great team called APPA: The Association of Higher Education Facilities Officers. 🏢



*Vice President for Information Services Joseph D. Rubertone
Quinnipiac College*

I am pleased to offer the following report on the activities of the Information Services Committee for the past year. I wish to thank all members of the committee for their enthusiasm, responsiveness, and commitment. I am even more pleased that all committee members have been reappointed for the 1998-99 year; there is little question that the continuity will provide us with a significant head start. The committee includes Phil Cox, Cornell University (ERAPPA); C.R. Lyons, Florida Gulf Coast University (SRAPPA); Sue Kirkpatrick, University of Michigan/Ann Arbor (MAPPA); Vickie DeWitt, Kansas State University (CAPP); Duane Timmerman, University of Wyoming (RMA); Larry Givens, University of California/Irvine (PCAPP); and Sam Ragusa, Griffith University

(AAPP). Please feel free to contact any committee member with questions or comments.

Strategic Assessment Model (SAM)

Perhaps the committee's greatest disappointment this past year was our inability to move the Strategic Assessment Model out of its "rut" and into a format usable and meaningful to our members.

You are all probably aware of the survey's history, but I would like to take this opportunity to remind you of some of the more pertinent information. Benchmarking, a buzzword of our times, is an historic technique that uses an established reference point against which measurements of certain conditions can be taken and evaluated. Arising out of a need by facilities organizations to develop continuous improvement processes and to measure internally and externally, APPA began developing the Strategic Assessment Model, or SAM, in 1995. A consortium of APPA members, along with American Management Systems (AMS), developed the first draft.

The initial model had 15 core benchmarks. Using some landmark work on benchmarking, such as the balanced scorecard approach and the Carnegie-Mellon Software Process Assessment model, the model and measurements were refined. SAM incorporated four key components—Financial Perspectives, Internal Processes, Innovation & Learning, and Customer Satisfaction.

In late 1995, APPA began beta-testing the model. Following this effort, the consortium began refining the benchmarks, rewriting definitions, and adding items as appropriate. By May 1997, approximately 100 of our members completed this survey.

In the fall of 1997, the information was forwarded to a consultant and the results tabulated. Unfortunately, the results were presented in a format that resembled the information we use for



CALL24™ WIRELESS CALLBOX SYSTEMS

Providing 24 hour callbox protection in your parking lot and other remote areas without costly boring or trenching.

CALL24 Benefits:

1. "Any Radio" control using DTMF (does not require dispatcher)
2. Can use existing 2-way channels
3. Automatic location alert and remote monitoring
4. Highly visible, vandal-resistant enclosure with built-in tamper alarms
5. No expensive boring or trenching
6. No monthly hard-line or cellular charges
7. "Real-time" emergency dialogue
8. Personal safety pendants
9. Easy and economical to install
10. Solar or AC powered

Order today to begin protecting your employees, students, and visitors with CALL24.

CALL24
1-800-441-9191

A Div. of RCS Communications Group ©1998



the *Comparative Costs and Staffing Report* and not in the matrix format that had been painstakingly developed by the original SAM consortium in 1995.

The Information Services Committee, with the assistance of some members of the original consortium, reviewed the data and determined it would not work in the format presented. We requested the staff to return it to the consultant with additional information and instructions on the desired format. This information has now been received and has been forwarded to the committee for review prior to our meeting in August. It is my fervent hope that this reformatted data will meet our expectations and allow us to verify a number of the assumptions the initial designers envisioned.

It is possible that the Information Services Committee will attempt some form of joint meeting with the consortium to move the project to its

next steps. Hopefully, these will include further refinement of the survey and publication of a SAM toolkit, which will enable us to finally utilize the data at our institutions! SAM will clearly be the Information Services Committee's highest priority for 1998-99.

International Experience Exchange

One of the first tasks of the committee this past year was to evaluate the relevance and usefulness of the International Experience Exchange, in light of the growing use of listservs and APPANet. The highly detailed, 12-page survey had not been submitted to the membership for update since 1994, and although the information was available, it had been infrequently accessed by the general membership. The committee, after considerable deliberation which included several attempts to shorten the document, came to the realization that the document and database had

outlived its usefulness. The committee's unanimous decision to extract the handful of vital items from the survey and incorporate them as part of the Comparative Costs and Staffing Survey. This process is well under way and will be completed by the time the committee finishes its deliberation at the August annual meeting.

Comparative Costs and Staffing Report

You are all well aware from APPANet and *Facilities Manager* magazine that the 1995-96 *Comparative Costs and Staffing Report* is now available for purchase. Several hundred members have already purchased the four-disk set, and orders continue to arrive at a brisk pace.

Looking to the future of the CCAS survey and report, the Information Service Committee is dedicated to soliciting inputs for the 1997-98 data with a new and hopefully improved

survey instrument early in the fall of 1998. It is the committee's goal to have the 1997-98 results available to the membership in the spring of 1999—a goal the entire staff and committee have promised to accomplish!

Finally, there have been concerns expressed by several members about the elimination of the square foot cost data from the report. You may remember the discussions about the square foot information not being relevant from campus to campus, primarily because there was no way to verify which costs were included or excluded. There were also concerns expressed that some finance officers were using the numbers as clubs to justify cost cutting or reengineering on some campuses. All of these comments have been heard, and the committee is going to thoroughly revisit the decision prior to the issuance of the new survey document. I personally favor the reinstatement of the

square foot costs, and hopefully we can create an innovative way to provide more veracity to the numbers. Please feel free to express your opinion to your regional representative to the committee prior to the August meeting!

Facilities Manager Magazine

The new bimonthly format of our flagship publication has been overwhelmingly received by our members and advertisers. I have personally enjoyed the variety and focus offered by the magazine and have received many positive comments from other members. While our editor Steve Glazner deserves the lion share of this praise, I would like to thank all of our members who have taken the time to author the articles, which are clearly the heart of this publication. We all should be looking forward to future publications, and be very proud of the last six editions.



LSU SAVED A SMOOTH \$4.5 MILLION A YEAR IN ENERGY COSTS. LIKE TO FIND HOW? HINT: TRY A FREE ENERGY SURVEY.

The free Energy Survey for companies or institutions with a million square feet of space or energy bills exceeding \$1,000,000 a year is the opening step in a process which can save you hundreds of thousands of dollars.

Believe it or not, it's that simple.

We have pioneered a method of financing energy-savings capital improvements out of existing budgets.

But it is. Call for details.



CES|Way

A Sempia Energy Solutions Company

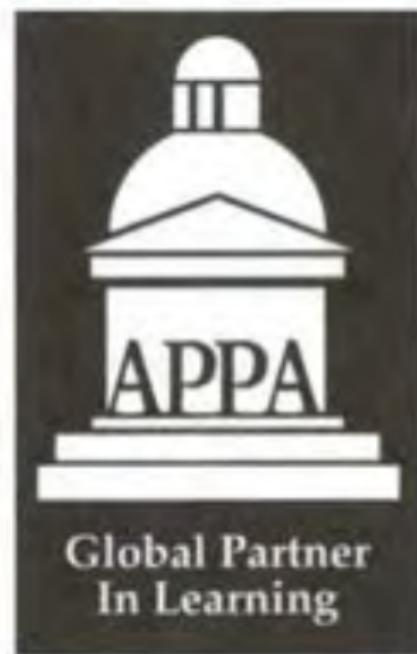
2500 CityWest Blvd., Ste. 1800
Houston, TX 77042

713-361-7600 phone • 713-361-7650 fax • www.cesway.com

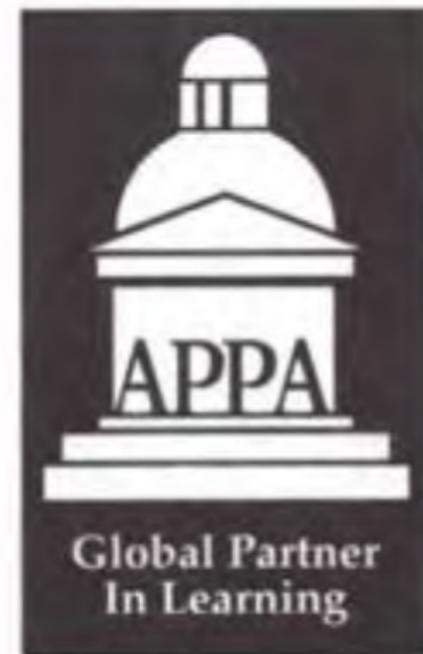


VISIT US IN BOOTH 310 IN SAN JOSE!

Get a *free* registration to the APPA
Institute, and other great *stuff*.
Look in the back for details!



Get a *free* registration to the APPA
Institute, and other great *stuff*.
Look in the back for details!



Publications

Successful Funding Strategies for Facility Renewal, authored by Matthew C. Adams, has been well received since its publication last October. It is a case study followup to the *Foundation to Uphold* research study on accumulated deferred maintenance.

The second edition of APPA's highly successful *Custodial Staffing Guidelines for Educational Facilities* should be available for purchase in September. This revised edition will update previous information and outline current trends for custodial service at colleges and universities.

APPA's *Electric Restructuring and Utilities Deregulation* publication provides the latest information on the state of the industry and offers useful guidance for making the most of deregulation.

The 1997 commitment made between APPA and the Professional Grounds Management Society (PGMS) included the opportunity to cooperate on the development and publication of a grounds staffing guideline. Work has recently begun on this effort, and it is the intention of both organizations to have the document available in the 1998-99 timeframe.

APPANet

Since its July 1995 inception, APPANet has become a highly utilized and increasingly valuable tool! Usage for the first quarter of 1998 averaged over 395 users sessions per day, which reflects a greater than 60 percent increase when compared to the first quarter usage in 1997. The most accessed Web page continues to be the APPA Job Express position listing, which accounted for approximately 18 percent of the total usage.

APPANet is also currently undergoing a redesign. In order to better address the needs of the membership, the new design will reflect the four core areas of facilities management already emphasized by the *Facilities Management* manual and the Institute

for Facilities Management: General Administration and Management; Maintenance and Operations of Buildings and Grounds; Energy and Utilities Systems; and Planning, Design, and Construction.

Currently, the website mirrors the association's organization with sections named after key departments such as Education, Member Services, Research and Information, Public Policy, and K-12. The new look will reorganize navigational elements and information into areas that facilities officers can truly relate to, understand, and utilize which enhances the website as a reference tool and resource center. The new APPANet is scheduled to launch in August. 🏠



APPA Vice President for Professional Affairs Jack K. Colby
University of North Carolina/Greensboro

As Vice President for Professional Affairs, I am very pleased to report on the activities of two committees, Professional Affairs and Awards & Recognition. The following items represent the major topics that were addressed during the 1997-98 year.

Bylaws Change for Affiliate Members

In past years, the APPA Bylaws limited participation in the governance and elected offices to Institutional and Associate members. Members in the Affiliate category were limited to regional offices or committee membership. To expand

the opportunities for other members and to help keep APPA as the "Association of Choice," in 1996 the Board asked Professional Affairs to study the issue and make recommendations. The issue was heavily debated due to its potential impact on governance of the association.

At the Orlando meeting last year, the Professional Affairs Committee received Board approval of its recommendation to revise the Bylaws to allow members in the Affiliate category to hold elected office in the Association. A briefing document was produced and widely distributed to explain this proposed change to regional officers and the membership. The Bylaws change was included in the 1998 election ballot and was successfully passed by the membership. We are very pleased that worthy Affiliate members will now have the opportunity to serve APPA while still preserving the governance of the association by its Institutional members.

Facilities Management Evaluation Program (FMEP)

The current version of FMEP has been available to member institutions for almost ten years. This valuable program provides an objective assessment of an institution's facilities operations by a team of skilled facilities professionals. In recent years, declining participation in the program and input from participants has indicated the program is in need of an overhaul to update and refine the evaluation criteria and the processes for the evaluation.

This process started in Orlando with a review of the current program and a critique by current and past members of Professional Affairs. The real work began in November when the Professional Affairs Committee held its mid-year workshop. A task group was established from committee members and charged with the review of the program and the formulation of recommendations for its updating. To serve as the basis for the

effort, a survey of participating institutions and evaluation team members was conducted by staff liaison Medea Ranck.

The results were very insightful and have been a valuable tool. Concepts such as Baldrige, Strategic Assessment Model (SAM), and other benchmarking factors are being considered for inclusion in the criteria. The draft development is ongoing with the task group working toward the San Jose meeting of the full committee. My thanks go to Kathleen Mulligan (chair), John Harrod, and Brian Nielsen for their work on the FMEP Task Group. A special thanks goes to Bob Collins for his excellent work on the Baldrige Model draft.

Award for Excellence

The recognition of excellence among our institutions is a very important core responsibility for APPA. Recognition by your peers is one of the greatest forms of reward, and this has always been the case with the Award for Excellence. In past years, the award has gone through many changes and modifications. Participation by the membership has also gone through peaks and valleys based on its perceived benefit. Currently, only a few submissions are received each year, and the award no longer holds the prestige that it once held in the eyes of the membership.

As we review the FMEP to update its criteria and processes, it is also time to update the Award for Excellence to reflect current trends and values. To address this task, I have named another task group from within Professional Affairs to study this issue, to survey the membership, and to formulate recommendations on how the award can be revamped. This group began its work at our November workshop and is reviewing the criteria for selection, the evaluation process, and the methods whereby award recipients are recognized.

An excellent survey was conducted by Medea Ranck to determine membership issues and perceptions about the award. This survey will form the basis for recommendations to modify the current program. Work is progressing toward a draft of the criteria to be discussed at the San Jose meeting. My thanks go to Chuck Rhode (chair), Bob Beeler, Stephen Saulis, and Peter Brennan for their work on the task group. The comments of the membership are certainly welcome. Let us know what the Award for Excellence should become.

APPA Scholarships

APPA has always supported its mission to provide professional development opportunities for facilities managers through scholarships to APPA's Institute for Facilities Management. APPA provides these scholarships to the regions where candidates are selected. In recent years applications for this assistance have declined. The Board has asked Professional Affairs to provide recommendations on how we can increase participation in the scholarship program and achieve other membership goals of the association. Based on feedback from the regional representatives, Professional Affairs will formulate recommendations that may be used by the regions in their application and selection processes for the award of scholarships. These recommendations will also address changes in the structure of the scholarships to encourage minority participation in APPA's programs and to improve the diversity of our membership.

Awards and Recognition

The Awards and Recognition Committee was established as a full standing committee by Board action in Orlando. The committee is chaired by the Vice President for Professional Affairs to provide a direct link to the Executive Committee and the Professional Affairs Committee. This year

has proved to be very challenging as we have responded to President van der Have's charge to review the entire inventory of awards and recognitions that APPA offers to its membership, to validate the inventory, and to make recommendations for changes.

To accomplish this goal, the Awards and Recognition Committee met for a two-day workshop where each award was evaluated. The results of the meeting were excellent, with good progress toward the goal. The results of this process will be reported to the Executive Committee in June and to the Board in July. Recently, the committee also evaluated nominations for the Meritorious Service Awards that will be presented at the annual meeting in San Jose. The new evaluation process developed by the committee greatly improved the evaluation and selection process for this prestigious award. I would like to express my appreciation for all the fine work done by Committee members Mike Sofield, Bob Getz, Mike Besspiata, John Amend, Don Mackel, and Russell Candy. My thanks also to staff liaison Medea Ranck for her excellent support of the committee's work.

National Electrical Code NFPA Technical Review Committee

As a block, institutions of higher education comprise one of the largest users of electrical power in the country. To raise the awareness of our issues, Mike Anthony and Jim Christenson at the University of Michigan have been pursuing a seat on one of the technical review committees of NFPA. If our application is successful, APPA will finally have a voice in the formulation of a portion of the NEC that affects each of our campuses. I would like to express my appreciation to Mike and Jim for their persistence in working to obtain a role for APPA that will provide national exposure for our association. 📌



DURABLE • LIGHT WEIGHT
Folding Tables & Chairs

*Sturdy Polypropylene Chairs
High Strength ABS Tabletop - 18' & 30' Wide and 60" & 72" Round
Plywood Tables also available*



CALL FOR FREE CHAIR SAMPLE & INFORMATION

1-800-333-2687

1001 North 3rd Street Fort Smith, AR 72901 FAX 501-783-7608

VISIT US IN BOOTH 235 IN SAN JOSE!

MAILBOXES AND MAILROOM EQUIPMENT

*Attention
School Officials!*

**FREE
CATALOG**



Products Include:

*Brass Mailboxes
Aluminum Mailboxes
Free-Standing Mail Centers
Pedestal Boxes
Apartment Mailboxes
Free-Standing Drop Boxes
Wall Mounting Mail Drops
Mail Carts
Stamp Machines
Name Directories
Key Cabinets
Specialty Boxes
Spare Parts
Custom Systems*



**Salsbury is the #1 Supplier of Mailboxes
to Colleges & Universities**



**SALSBURY
INDUSTRIES**

People Committed to Quality Since 1936

To order literature, please contact us 24hrs. by phone, fax, or mail.

Salsbury Industries (800) 323-3003
1010 East 62nd Street (213) 232-6181
Los Angeles, CA 90001 Fax (213) 232-7021

VISIT US IN BOOTH 412 IN SAN JOSE!

Executive Summary

Blazing New Trails in Facilities Management

by E. Lander Medlin

"All things change." Few would argue with the Greek sage Heraclitus' pronouncement. And the majority of us would also agree that, in the world of higher education, all things are changing much faster!

As I assume the responsibilities of Executive Vice President in the midst of this exciting time, I feel I am truly blessed to have the opportunity to serve the facilities professionals that make up APPA. I am grateful to APPA's Board of Directors for the confidence they have placed in me, and I look forward to meeting the challenges that lie ahead to advance the facilities profession and articulate its importance to the education community and the private sector.

My experiences as both a facility professional (11 years in physical plant with the University of Maryland) and an active APPA volunteer (both on the Educational Programs Committee and elected as its Vice President), heightens my own passion to continue to move the association successfully into the 21st century. I want to share with you my thoughts to help to reinvent our association as we approach the new millennium.

I use the word "reinvent" because by all accounts, the associations of tomorrow will be radically different from what we know today. In order to maintain their roles of leadership and to continue to respond proactively to member issues and needs, associations must maintain their focus while striving to offer

Lander Medlin is APPA's executive vice president. This is her first Executive Summary column. She can be contacted at lander@appa.org.

greater diversity and specificity to better serve our members.

Fortunately, when it comes to focus, I have the enormous advantage of inheriting an association strategic plan developed in concert with the membership and the Board. This strategic plan, which outlined our vision to become a "global partner in learning," focuses on five key strategic initiatives: 1) increase the effectiveness of education, 2) forge stronger links between APPA and its regions, 3) expand the use of electronic services, 4) promote awareness of APPA among senior higher education officers, and 5) establish a process for stakeholder feedback.

In creating these initiatives, the volunteer leadership and staff have done an exceptional job in outlining the framework for the delivery mechanisms so important for the association to deliver products, programs, and services to meet the future needs of the profession. These initiatives have served as an invaluable roadmap over the past three years and have led to profound changes within the association.

Readily visible signs of these changes are found among all of APPA's programs and services: the newly redesigned Institute for Facilities Management; the ever-expanding information and services on APPANet; our closer relationships to our regions; strategic partnerships with relevant outside groups; our daily staff operations here at the office headquarters; and, perhaps most ambitious, the Professional Leadership Center, of which the new Leadership Academy programs are just a small part.

The association's strategic plan, however, represents only one side of

the coin. The other side of that coin is the facility profession's strategic plan. The facility profession's long-range plan, originally established in the late 1980s, needs to be revisited. With the 1990s considered to be the decade of the arrival of the future, it is time to review that long-range plan with our eyes on future trends and impacts.

A good body of knowledge on this future already exists within APPA. In developing the Professional Leadership Center, a group of APPA volunteers with special interest in leadership issues in facilities resulted in invaluable insights into the future of the facilities profession. By defining the specific needs of the profession for the future, the efforts of this leadership group provide the focus our association needs to meet our combined mission "to support educational excellence through quality leadership and professional management."

Their ideas are outlined in Bill Daigneau's article entitled "The Future of Facilities Management" (*Facilities Manager*, Oct/Sep 1997). This group identified, through a scenario planning exercise, several key conditions or driving forces were identified which are expected to affect the nature and state of higher education in the future. These driving forces are: 1) information technology, 2) resource scarcity, 3) societal needs, 4) governmental rules and regulations (intervention), and 5) the environment.

The group further discussed the effect these conditions would have on the facilities profession and the roles the facility professional will be expected to play to be successful in the future. These roles are:

1) operations expert, 2) information technologist, 3) partner, 4) strategist, 5) asset manager, and 6) executive.

Building on the work of this leadership group, APPA can chart a course for continuing change in order to assist its members in meeting their expanding needs and their new roles previously identified. The question is, how do we prepare facilities professionals to live and work creatively, productively, and successfully in such a world?

APPA must exercise due diligence on behalf of the membership to ensure value, and correspondingly explore mutually beneficial partnerships with those entities whose specialization and customization best fits our members specific technical needs. Our industry, like others, is becoming increasingly specialized. The facilities professional is barraged daily with information by one group or another targeting various areas of specialization within the profession.

Ultimately, our institutional members want assurance that both the technical skills training and the managerial/supervisory education needs of their managers and supervisors who possess specialized expertise are being met. Directly, APPA can approach its own delivery differently. Some examples might be distance learning courses provided via the Internet in areas like safety compliance and basic supervision techniques, or a speaker's bureau available online for use by both the regions and local/state chapters in delivering short courses locally.

Beyond these few scenarios, there are other areas of concern in which APPA must be willing to think differently, in more innovative ways. They center on "value." Is APPA membership of value? Membership is increasingly transactional; people join for the specific value they get from it. Membership must become increasingly meaningful.

APPA can enhance this meaning by, for example, 1) using technology to offer personalized services; 2) involving volunteers more fully and in different ways beyond the traditional committee structure; 3) using both personal and electronic means to continue to foster a sense of community; 4) gaining specific knowledge about representative groups with the goal of providing more personalized service; 5) and increasing the awareness and understanding of the staff about facilities information and then improving upon these sources of information to create a rich information stream. We must create an association that would evoke an enthusiastic "Yes!!" to the question: "Would you recreate the association if it disappeared today?"

Granted, the future is uncertain, full of chaos and discontinuities. But it is within these discontinuities that opportunity exists. We must be poised to seize these opportunities, to actively look ahead and let go of the past, take on risks to forge a new path. In a book entitled *Rethinking the Future*, Charles Handy states, "The way you make sense of the future, in organizations and in societies and in your own life, is by taking charge of the future. Not by responding to it."

APPA is actively rethinking its future and the role the association should play in training and developing future facilities "knowledge workers." Yes, all things do change, and I look forward to working with APPA to unleash our collective energy to stay ahead of the change curve. Through the synergism of members, volunteers, Board, and staff, APPA can redefine the profession, create new opportunities, blaze new trails, and challenge the status quo like never before. 🏛️

Pro-Stop[®]

COLLAPSIBLE BOLLARDS

NOT ALL BOLLARDS ARE CREATED EQUAL

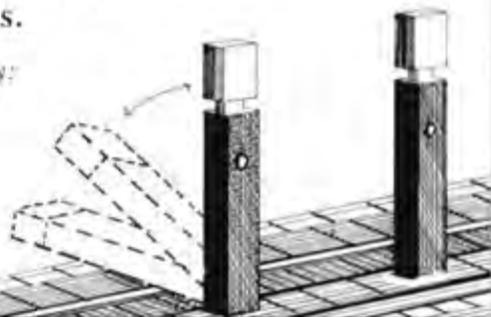
Only Pro-Stop offers all these benefits:

- Collapses with standard hydrant wrench.
- Raises and lowers effortlessly.
- Discourages illegal parking.
- Eliminates hazards caused by chains.
- Increases campus security.
- Protects pedestrians.

For more information, call today:

1-800-BOLLARD
(265-5273)

Prosec, Inc.
P.O. Box 1
Downingtown, PA 19335
Tel (610) 640-9355



WHY DON'T YOU GO AHEAD AND TRAIN YOUR SUPERVISORS?

Supervision is not an easy job. These listed video tapes can provide you a tool that will help your Supervisors lead and direct your people more effectively.



VIDEO TAPES ON SUPERVISORY TRAINING AND DEVELOPMENT

ORDER FORM

1/2" VHS	Title	Price	Qty.	Total
#1	Improving Our Supervisory/Leadership Skills	\$195.00	_____	_____
#2	Leadership Principles That Will Help You Make Better Judgment Decisions	\$195.00	_____	_____
#3	"Have You Upgraded Your Communication Skills?"	\$195.00	_____	_____
#4	"Motivation is the Discovery of --"	\$195.00	_____	_____
#5	"You Want To Have Balance and You Want To Do These Things"	\$195.00	_____	_____
#6	What is "Customer Relations?"	\$195.00	_____	_____
		TOTAL	_____	\$ _____
			MINUS	\$ _____
			MINUS	\$ _____
		GRAND TOTAL	_____	\$ _____

5% DISCOUNT for purchasing 3 tapes
10% DISCOUNT for purchasing all 6 tapes

[] Payment Enclosed [] Purchase Order # _____



Make checks payable to:

The George B. Wright Company, Inc.
561 Chateaugay Lane, N.E.
Atlanta, Georgia 30342
E-Mail: tgbwco@mindspring.com

Visit our Home Page:

www.mindspring.com/~tgbwco

Maintenance Staffing Standards for Zero-Based Budgeting

by Matthew C. Adams, P.E.,
Joseph C. Fisher, P.E.,
& Theodore J. Weidner, P.E., AIA



Every aspect of facility maintenance is coming under increasing scrutiny in these days of doing more with less. Administrators are calling upon the various departments within their schools and colleges to build up their resource budgets. Facilities professionals are finding themselves in a defensive position. It is difficult to explain exactly what the maintenance department does and what is required to support its functions.

Facilities management is complex. The staff required for this work must have a multitude of skills, and the work that the department performs is technical. What the lay business administrators see of the facility staff represents very little of their overall functions. Given this, the compilation of a built-up budget for maintenance must be concise and highly credible.

APPA and PGMS (the Professional Grounds Management Society) have made significant efforts to create the standards and guidelines that allow facilities administrators to create built-up resource standards for both custodial functions and landscape maintenance respectively. Unfortunately, little has been published in the way of standards for building maintenance. Research into the subject shows that most data available is either benchmark data (from a number of sources)

This article is authored by a team conducting ongoing research into the subject of maintenance staffing algorithms. It is adapted from their presentation at APPA's San Jose educational conference and annual meeting. Matt Adams is president of the Adams Consulting Group, Atlanta, Georgia, and writes the Facility Asset Management column for Facilities Manager. Joe Fisher is assistant vice president for facilities at Georgia State University, Atlanta, Georgia. Ted Weidner is director of facilities planning and management at Eastern Illinois University, Charleston, Illinois.

or generic standards for commercial office buildings (from the International Facilities Management Association). No standards or frameworks exist for calculating the staff requirements for institutional building maintenance.

One possible reason for this may be the complexity of the maintenance function. A clear definition of maintenance and its components is not widespread at this point. Moreover, few attempts have been made to establish a baseline of maintenance staff trade definitions. In order to create standards for staffing, the basic staffing units must be defined. This dialogue is our attempt to represent the systematic development of maintenance staffing standards.

The basic framework and assumptions of this research are set forth in such a way as to allow simple interpretation by the institutional community. It is our goal to outline and present the most simple variables associated with staffing standards. As research continues, the basic building blocks of this work may be modified to reflect the conclusions drawn from the collected data.

Maintenance Definitions

Because the large majority of the campus constituency has no real understanding of the complexity of building maintenance, it is important from a modeling as well as a communications standpoint to clearly define maintenance. The variety of maintenance activities have distinct purposes and sometimes even varied funding sources. The unique nature of each drives the respective staffing needs. Maintenance is categorized systematically for this research.

Staffing model maintenance considerations, "True Maintenance":

- Preventive Maintenance: Proactive maintenance by various trades based on scheduled inspections, tuning, and minor element replacements. Based on equipment manufacturers specifications.

- **Capital Maintenance:** As defined by the Internal Revenue Service. Equipment or component replacement, both planned and unplanned.
- **Repair Maintenance:** Unplanned repair, adjustment of equipment or components.
- Set-up, record keeping, and all work germane to individual maintenance projects.

Maintenance activities not considered:

- Deferred maintenance, uncompleted capital maintenance.
- Valet maintenance, light painting, and carpentry items done by request.
- Non-maintenance activities, construction, renovations, moves, set-ups, miscellaneous.

In addition to the "maintenance activities not considered" are other activities considered routine in the maintenance department. However, the scope of this research is to create true maintenance standards. Estimation of the associated hours dedicated to ancillary work is ultimately a localized issue.

Maintenance Measurement

The measurement of maintenance is a critical element of staffing analysis. As APPA used the five levels of service in custodial service measurement, so must an empirical gauge be applied to the three forms of modeled maintenance. Previous efforts in this area have suggested that the maintenance measurement was based on the response time to customer requests.

However, response time is a metric that applies to a subset of the total maintenance task inventory. The more meaningful measurement of maintenance revolves around the timely completion of both the predictable/planned preventive and capital actions as well as timely completion of unplanned equipment failure repair/replacement.

Measurement for preventive maintenance is based on completion of the manufacturers specified procedures. The manufacturers' specifications are comprehensive and represent the maximum preservation of equipment life cycle. One scenario might suggest that an institution sets a goal of 80 percent completion of all manufacturers' preventive maintenance standards. The reduction in percentage comes not in canceling activities but reducing the frequency.

Planned capital maintenance is scheduled based on the life cycle of building components. Numerous sources provide recommended component life cycles, which may be used to schedule equipment replacement or overhaul. Adherence to this schedule and completion of unplanned capital maintenance in a timely fashion form a measurement. Percentage completion is appropriate here as well.



Gunn Levine Associates

Architects Planners Interior Designers
 726 Lothrop Detroit Michigan 48202
 313 873.3280 313 873.8090 fax
 internet: <http://www.gunnlevine.com>

Repair maintenance is one activity that is gauged by response, but also in relation to the other activities. The total labor resource commitment to this activity is important in relation to the other activities.

Define Staffing

Staffing is "bodies on the job." For budgeting, bodies on the job are accounted for in FTEs, or full-time equivalents. This unit represents one or more working bodies supplying the equivalent of one year of work. It is here where the model encounters its first variable. What is one FTE? Each institution may offer differing benefit packages. There are variable vacation and sick days offered.

The maximum number of hours per year is 2,080. From this is subtracted vacation, sick days, and any other off-the-job

time. Clearly this variability is so unique to each institution and even employee that it cannot be pinpointed. As such, the lowest common denominator for staffing is the working maintenance hour. A "maintenance hour" is one hour of work that occurs at the location of the respective equipment or project site. The total number of maintenance hours is convertible to FTEs at a local level. Existing staff and future hires have specific employment packages that are easily applied to a "pool" of required maintenance hours.

It is interesting to review the additional working time that is not part of the maintenance hour pool. This other time is a sort of "overhead." The overhead comprises a wide variety of elements, not all of which are consistent with productive work standards. Industrial engineering studies of trade staff at a variety of institutions have suggested that less than half of a given day is spent performing maintenance hours. The overhead of any maintenance department represents an opportunity for increased efficiency.

In this era of zero-based budgeting, it is clear that 50 percent overhead is difficult to justify. On the other hand, should the required maintenance hours exceed the total available staff FTE pool, a case is then made for increasing resources.

Trade Positions

If you examine the job descriptions you will find that there are many ways to define work and to split job responsibilities. This model uses crafts to build upon. Following is a list of basic job functions as they are most commonly referred to. It is important to note that the model only includes the immediate level of supervision (i.e., foreman) which is not listed but assumed; all higher levels are captured as administration costs so are not part of the model. Following is each functional group with associated skilled and other positions listed.

I. Preventive Maintenance

A. Skilled Trades

1. Air Conditioning Mechanic - maintains and repairs heating, cooling, and air conditioning equipment and systems.
2. Mason - maintains and repairs masonry and plaster systems.
3. Controls Technician - maintains and repairs control instrumentation for lab equipment and systems such as HVAC, fire alarms, security, clocks, public address, sound, TV, satellite, gas detectors, pneumatics, and boilers.



4. Electrician - maintains and repairs building electrical service systems and associated electrical devices. Is also capable of new installation.
5. Elevator Mechanic - inspects, maintains, and repairs all types of conveying equipment per ANSI standards.
6. Plumber - maintains and repairs building piping systems (gases and fluids) and associated fixtures
7. Skilled Mechanic - maintains and repairs hardware, lab equipment, mechanical equipment such as pumps, motors, compressors, fans, turbines, and heat exchangers. Also performs welding.

B. Other jobs

1. Mechanic - performs maintenance and inspection tasks requiring basic skills such as oil machinery, change filters, replace belts, roof repair, ceiling system repairs, hardware repair (including doors), floor covering systems repair, exterior wall repair, insulation repair and replacement, and glass replacement.
2. Painter - applies protective coatings to all types on interior and exterior systems.
3. Trades Helper - person of limited mechanical skills that supports skilled positions or mechanics directly or through ancillary duties such as job site clean up and delivery of supplies.

II. Capital and Repair Maintenance

A. Skilled Trades

1. Air Conditioning Mechanic, Mason, Controls Technician, Electrician, Plumber - same as above.
2. Millwright - fabricates, welds, and installs metalwork.
3. Pipefitter - possesses plumber skills and also fabricates high pressure piping systems (e.g., steam piping).
4. Roofer - replaces all types of roofing systems per manufacturers' specifications.
5. Sheet Metal Worker - fabricates and installs all types of sheet metal structures for heating and cooling and in support of roofers.
6. Carpenter - skilled in wood working activities such as building construction and cabinet making.

B. Other jobs

1. Mechanic, Painter, and Trades Helper - same as above

III. Central Plant Operations

A. Skilled Trades

1. Air Conditioning Mechanic, Controls Technician, Electrician, Pipefitter - same as above.

2. High Voltage Electrician - possesses electrician skills and also operates and maintains high voltage distribution lines and equipment.
3. Stationary Engineer - operates and maintains boilers, refrigeration compressors, and associated equipment.
4. Skilled Mechanic - same as above.

B. Other

1. Firefighter - supports stationary engineer by: pull fires, blow down boilers, check and record pressures and temperatures.
2. Mechanic and Trades Helper - same as above.

There are several factors to consider when creating a maintenance program and identifying the annual costs. All building components requiring maintenance must be identified. Major building components, where they are discrete elements, are counted. Examples include doors, windows, chillers, boilers, pumps, motors, fan coil units, etc. Other building components that are more naturally continuous are measured in units such as linear or square feet. Examples of this include piping, wiring and cables, floor surfaces, walls, ceilings, and roofing.

Obtaining a complete and detailed list of all the components in a given building is extremely difficult in an older, constructed building. Detailed surveys and measurements are necessary to develop a list of components and require significant expertise to find those items that are often hidden by other components. It is difficult to determine the length of piping that is behind a wall and when the construction drawings are schematic. Obtaining this information from the contractor of new construction is preferable but still requires planning and some cost to notify the contractor that these detailed lists will be one of the deliverables of the project.

Once the components have been counted or measured, you must identify and separate the different types of components. Building components that function similarly may have very different maintenance needs; i.e., terrazzo flooring has quite different maintenance needs compared to carpet. Each of these items has a different useful life or life cycle. Terrazzo is typically considered to have a life greater than 50 years, while carpet is considered to have a life of less than ten years. In a simple life cycle cost analysis, an architect or engineer will use



E-Mail: sales@hescoinc.com



HESCO

We're the largest discount wholesale distributor in the USA, stocking over 40,000 items and we ship within 24 hours!

We're the One Stop Shop for all of your Vacuum and Janitorial Supplies

WE STOCK THE LARGEST SELECTION OF VACUUM REPAIR PARTS!

Hoover • Eureka • Sanitaire • Royal Panasonic • Windsor • Clarke Maintainer Shop Vac • Advance • Oreck • US Floor Koblenz • Elky Pro • Electrolux

WE ALSO HAVE THE LARGEST SELECTION OF CLEANING SUPPLIES TOO!

Rags • Sponges • Buckets • Mops • Trash Liners • Paper Goods
Rubber Gloves • Brushes • Brooms • Feather Dusters • Pails
Trucks Triggers and Bottles Sprayers • Scrapers
Pumps and Motors • Carpet Care Products





7 Convenient Locations Across the USA

Atlanta, GA / Baltimore, MD / Chicago, IL / Columbus, OH
Dallas, TX / Springfield, MA / Phoenix, AZ

1-800-822-7467

24 Hour Fax Ordering, 7 Days a Week: (847) 647-0534

VISIT US ON THE INTERNET: www.hescoinc.com

VISIT US IN BOOTH 727 IN SAN JOSE!

the first cost of a particular component versus the first cost of a similarly functioning component to determine the annual (or building life) cost for selection purposes. However, if one does not consider the annual maintenance (preventive and corrective) costs, the comparison will be flawed.

A third factor to consider is the type of maintenance and the qualifications required to perform the maintenance. This often sets the labor cost. In some states, these labor costs are not controlled by the facilities officer, and specific maintenance activities require very different maintenance personnel. Floor materials again illustrate this. Carpet can be installed or replaced by carpenters or a lower paid trade, while terrazzo requires a subset of the masonry trade that is specialized. It is also unlikely that a carpenter will be assigned the task of performing welds on regulated pressure vessels.

A fourth factor is the amount of time required to perform a given maintenance activity. Is it easier (shorter duration) to perform the preventive maintenance activity for one component type versus a functionally comparable component? Painting drywall may take less time than painting concrete block, but repairing damage resulting from errant equipment carts may not. In one case, two trades and some interactivity wait periods may be required, while in the second case the damage may be so minor that only one trade is needed to effect a similar result.

A fifth factor is the age of a component. The age is used to determine whether the component has remaining useful life or must be replaced. In some cases, major equipment should be overhauled as part of annual maintenance once a given age is reached. If component replacement is known it can also be used to reduce the annual maintenance costs and identify the one-time major maintenance cost. The shift in maintenance activity may not affect the overall O&M budget but may be used to justify expenditures regardless.

This discussion has identified most of the factors that can assist you in deriving the cost of maintenance for specific building components. However, the level of detail required also requires significant information, computational resources, and time to determine annual expenses. A more effective means to determine annual needs is to reduce the number of variables needed to make the expenditure predictions. This can be done by eliminating those variables that are dependent on other factors or which may be assumed to be homogeneous.

Likely variables to eliminate are the type of maintenance, the qualities of the person performing it, and the length of the maintenance activity. Regardless of the amount of maintenance to be performed on a given building, each building component must be attended by a specific individual who is trained in delivering the appropriate amount of maintenance. The service delivery is specified by the manufacturer and delivered by the trained employee. The employee is identified above in Trade Position. In an effort to identify the appropriate amount of maintenance, the quality of service delivery must be taken as an immutable factor. Therefore, the specific trade position can be factored into the building components as can the type of maintenance and the amount of time to deliver it.

The next variable that is logical to eliminate is the detail of building components. When you consider the number of different components that make up even the simplest of

buildings, a means to eliminate this variable, with its many possible choices and complexities, will greatly simplify any problem.

It can be eliminated by recognizing that campuses have and continue to standardize buildings for maintenance and design. Similar buildings contribute to a memorable character or quality of the campus. Similar buildings also allow employees to be trained in fewer specialized maintenance functions and to work more efficiently. Similar buildings are not devoid of special or attractive architectural features, they utilize appropriate forms of standardization. Many APPA members have campus standards that specify the types and quality of building components to be installed.

Additionally, building codes and standards are increasingly prescribing the functional components for a building of a particular use. Laboratories require a set number of air changes to control chemical fumes. Offices will have similar architectural characteristics if only to avoid distinguishing differences of an egalitarian faculty. The federal government has standards for energy consumed by a facility, less than 50,000 Btu per gsf. So, one could then assume that for a specific facility use a particular group of building components must be present in order to operate the facility.

Elimination of the above variables leaves three independent variables that are considered in the proposed model. The remaining variables are area, use, and age. Building area may be used to normalize costs based on typical facility needs or space types. Instead of individual building components with



three non-compatible units of measurement it should be possible to create a reasonably accurate model using only floor area. Colleges and universities utilize the *NCES Postsecondary Education Facilities Inventory and Classification Manual* (National Center for Education Statistics, 1994) to define, report, and compare how institutional space is used. Building age, or years since major replacement/rehabilitation, assists in identifying major maintenance activities that are not considered part of the annual maintenance budget. Use of this data as an input factor can make the determination of annual maintenance needs more uniform and without the need for expensive and detailed data.

Application of an area-, classification-, and age-based model to determine annual building maintenance needs then requires relatively generic data that may be maintained by the central institutional planning office. The ability to draw on data that may exist in a data warehouse eliminates the cost of duplicate or specialized information. It should also reduce the likelihood of errors resulting from non-communication of changes. Lastly, use of data that is known and understood by non-facilities administrators may improve the acceptance of the calculated expenditure needs or allow comparisons between on- and off-campus activities or programs.

This discussion offered in this article represents the initial thoughts of the authors in our attempt to develop quantifiable means for predicting annual building maintenance expenditures. The next steps will be to gather comments from other facilities managers on the approach to assure its validity. If inappropriate assumptions have been made, the proposed approach may be modified.

Data must then be gathered from as many sources as possible. Examination of the data may result in the creation of regional adjustment factors to compensate for differences in design standards or building codes as well as trade practices and wage differences. Some interpolation between the NCES classifications may also be required. Ultimately, a set of tables will be developed. It should be possible to create a program that will draw information about campus facilities from a data warehouse and the tables on facilities maintenance to quickly and easily provide recommendations for annual building maintenance expenditures. 🏠

Custom coils *and* short lead times? No problem!



APPLICATIONS

- Fluid (cooling/heating) ■ Cleanable
- Steam ■ DX ■ Condensers ■ Hot Oil ■ Brines ■ Ammonia

SERVICES

- Complete Product Line ■ Custom Built and Made to Fit ■ Computerized Coil Selection ■ Local Representation
- Field Measurement ■ Industry's Shortest Lead Time (Standard 11-15 days with 10, 5 and 2 day available)
- Application Solutions

HEATCRAFT

Commercial Products

P.O. Box 1457 / 1000 Heatcraft Drive / Grenada, MS 38902-1457 / Telephone 1-800-225-4328
Fax 601-229-4212 / e-mail coils@heatcraft.com

Deregulation of the electric industry means new opportunities. We can make them work for you.

Select Energy offers you a broad range of innovative energy products and services designed to lower the total energy costs of your college or university.

Our team of experts can identify the pricing options and energy management solutions that can save you money and protect your investments.

To learn more from one of our accredited account executives, call us toll-free at 1-888-810-5678.

Select Energy
The Northeast Utility System

©1998 Select Energy, Inc.

Expand Your Parking Paradigm to Meet Diverse Needs

by Susan A. Kirkpatrick, Ph.D.

Many from the campus community might say that to meet or exceed customer parking expectations is to figure out how to park all customers, free of charge, near the front door. A quick assessment of this traditional thought and practice will lead one to conclude that, for the 1990s, this is not realistic in terms of campus master planning and available space. For our present and future direction, we are looking at the wrong solution; therefore, we need to expand our parking paradigm.

One Permit Fits All?

No longer is the traditional one-permit-fits-all approach the best solution for the majority of colleges and universities. Campus communities are experiencing more and more diverse access needs. For example, a professor might be dropped off on Monday and Tuesday, commute by motorcycle on Wednesday and Thursday, and take the bus to work on Fridays and use a university vehicle during the day. Family needs might require that the individual, on occasion, drive his or her car. Multiple options increasingly are needed to better serve and meet current access requirements cost effectively.

Provide a Menu of Options

A menu of options should present multiple choices for the customer to choose from allowing access to the worksite. Thus, driving a car becomes one of many available choices. Ideally, the menu of options offers a better approach to driving a vehicle such that the increased popularity and use of options, at minimum, corresponds to the decrease in the core-area parking supply.

Sue Kirkpatrick is director of plant operations planning at the University of Michigan, Ann Arbor, Michigan. She is a member of APPA's Information Services Committee.



As the parking supply is moved to the perimeter of campus, building and maintaining a system of parking structures as the sole parking solution is not likely to be a cost-effective approach. For example, why not figure out how to share resources that are not used to capacity with the surrounding community? Perhaps the local high school or shopping center has extra space, which could result in a win-win arrangement. This might actually be a good solution for the customer.

Integrate Parking and Transportation with the Surrounding Community

Especially for urban campuses, integration of parking and transportation systems with the surrounding community might provide a better service for customers at a reduced cost. For many, this opportunity is a recent phenomenon.

For many colleges and universities, facilities are expanding and replacing core-area surface parking lots, space increasingly is at a premium to maintain the image of a pedestrian-oriented campus, and deferred maintenance on existing parking structures is climbing. The expanded parking paradigm should encompass a variety or menu of options to meet the diverse needs of today's campus community to get from home to the worksite. In such a case, parking a vehicle in a structure becomes one of many choices.

This article focuses on the paradigm shift and planning implications applicable to those colleges and universities that are experiencing a perceived parking shortage, customer perceptions of high parking costs, increasing costs to operate and

maintain a parking system, and customer dissatisfaction with the parking system. Present and future parking solutions may be found in a changing parking paradigm.

The University of Michigan in 1990

Planning Approach/Traditional Parking System

The Planning Focus

For many colleges and universities, planners have focused on the number of vehicles within given parking parameters. Considerable energy has been focused on the management of vehicles and pedestrians within the boundaries of the parking area. Current parking technology has contributed to this planning focus with a pay-on-foot approach for structures, central pay stations for surface lots, smart cards, debit cards, proximity cards, and so on. Planners have been bombarded with issues, concerns and solutions, within the parking space boundaries. Traditional master planning guidelines also have contributed to this planning focus.

Many colleges and universities have successfully implemented a pedestrian orientation to the campus environment. As a result of this direction, parking is being located at perimeter or off-site locations. Typically, with this approach, the need for transportation has correspondingly increased.

The planning focus has remained within the boundaries of the parking areas as planners have attempted to match and manage vehicle demand to space availability. Over the years, many strategies have been developed to manage the increasing demand for limited parking space.

As parking administrators match various forms and combinations of reserved parking, zoned parking, and open parking to their campus cultures, the planning focus remains directed at single-occupant vehicles within designated parking boundaries.

At many colleges and universities, regardless of the system that is used to manage vehicles within designated parking boundaries at perimeter locations, customer dissatisfaction with parking appears to be increasing. Customers are lamenting that convenient parking space is not available, thus hindering their ability to perform their jobs, and that the cost of parking is rising—at times, faster than salaries. At the same time, many parking administrators are being faced with deferred maintenance, escalating operating

and maintenance costs, and increasing customer demand for a decreasing supply of parking.

Because many customers no longer considered the traditional system to be successful, the University of Michigan identified the need to expand planning beyond the traditional parking paradigm. The goal of providing every employee a reasonable method to get to work was initially established. The phrase "get to work" was not limited to mean "from the parking lot to the office," but was expanded to include from the home to the worksite—and expanded further to include circulation throughout the day—to conduct university business.

Characteristics of the University of Michigan Parking System: 1990

The University of Michigan had 21,600 parking spaces within 230 surface parking lots and 9 parking structures, that range in age from 5 to 36 years old and vary in capacity from 443 to 2,000 parking spaces. A staff paid parking permit provided faculty and staff a "hunting license" for any designated staff paid parking space throughout the system. This non-reserved parking policy accounted for the consistently high occupancy rates—approximately 97 to 99 percent—as compared to the industry standard of 90 percent considered fully occupied. The lack of dependable parking contributed to a high level of anger and frustration.

COLUMBUS

"The Door People"

Discover Columbus Door, the single source difference for everything you need in doors, frames and hardware for total entry systems. When you need doors fast!

STOCKING DISTRIBUTORS FOR:



Most Complete In Stock Inventory Available For "Quick Ship" 10 Days or Less

**FAST DELIVERY
FAST TRACK SERVICE**

UL Licensed

One Call Gets It All!

800-350-7792

**All Major Brands Available
Fax For A Quote 1-401-467-3620
E-MAIL columbus-door@worldnet.att.net**

**1884 Elmwood Ave.
Warwick, RI 02888**

2200 Clarendon Boulevard
Arlington, VA 22201
703/741-7000



ANADAC Facilities Group

Construction Management,
Facilities Engineering
and Facilities
Management Consultants

- Project Management
- Feasibility Studies
- Design Reviews
- Value Engineering
- Life Cycle Costing
- Relocation Management
- Inspection & Testing
- Furniture Procurement
- Cost Estimating

Additional
Offices In:
Richmond, VA
Virginia Beach, VA
Boston, MA

Increasingly, employees were saying that they could no longer afford to park on campus, but they had very few alternative options. As a result, planners gave careful consideration was given to cost-effective strategies in determining the best approach to expand and modify the parking system.

The Traditional Parking Paradigm Might Not Be Working

The following factors, experienced at the University of Michigan and most likely at many colleges and universities, have contributed to the increasing customer and administration dissatisfaction with parking systems, which traditionally were perceived as successful.

Cost

The cost of parking is escalating in comparison to the perceived value.

New parking structures. Depending on the size and site constraints, cost per space can range from \$12,000 to \$18,000. These costs typically are shared throughout the system. Thus, some customers benefit directly from a new structure whereas others continue to use older facilities while receiving no direct benefit from the new structure.

Surface parking lots. Depending on lot size, cost per space can range from \$1,800 to \$3,000. Because planners are now sensitive to the importance of aesthetics and the reduction of deferred maintenance, initial construction costs have increased. Lots today have concrete curbs and gutters, as opposed to bituminous curbing. A heavy-duty bituminous drive is needed if buses drive into the lot. In addition, good lighting, landscaping, sidewalks, barrier-free access, emergency phones, and campus directories are now required. Because these costs typically are shared throughout the system, some customers will benefit directly from the new lots, whereas others will continue to use older facilities.

Deferred maintenance costs are adding up for many older structures and surface lots where security, aesthetics, and quality construction might not have been a priority in the past.

As parking continues to be moved to perimeter locations or off-site locales transportation costs are increasing and typically are passed on to the customer.

Declining Supply

As the supply of core-area parking space continues to decline, perceived parking solutions are typically not in place.

Many core-area surface parking lots are future building sites. As building expansion continues, core-area parking continues to be reduced at a time when the demand for such parking is increasing.

As competition increases for a reduced supply of core-area parking space, access to buildings for service may be interrupted.

Trends

The following trends contribute to customer and administrator dissatisfaction with current parking systems:

- Increasingly, colleges and universities are marketing themselves to potential students. Many of these students are choosing schools, based, to a large extent, on aesthetics, including an exterior environment that typically does not include surface parking lots adjacent to buildings.
- As building expansion continues, to accommodate the growth of new programs, core-area parking space will continue to be reduced.
- As core-area parking space continues to decline, access to existing space must be prioritized. While prioritizing the core-areas, consideration to

continued on page 28

The calm before the storm can be just as damaging to your voltage-sensitive equipment.



When lightning strikes, the effect on your equipment can be instant and obvious. But even on the calmest day, low-level surges in your sensitive digital equipment can be damaging. Studies indicate over 80% of damaging transients originate within your facility. In either case, round-the-clock protection is necessary.

Unnoticed for months, this activity can degrade the performance of your equipment. Now, there is a way to guard against these constant attacks in real-time: The AMP ACCU-SCAN 804 Electrical Environment Monitor and AMP EVERGUARD AC and Dataline surge protectors.

The ACCU-SCAN Monitor alerts you to potential problems before they become real ones. Unlike periodic ground system audits, the ACCU-SCAN System provides continuous monitoring of both AC and DC current flow patterns. The ACCU-SCAN Monitor profiles and warns of the low-level transients that gradually compromise your system. It also acts as a diagnostic tool

to localize the problem. Its annual savings in downtime and damaged equipment usually means a first year payback.

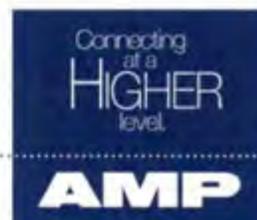
The complete line of EVERGUARD Surge Suppressors offers uncompromising protection. AC products offer free lifetime replacement modules, diagnostics and monitoring, patented low-inductance design, and decades of proven on-the-job protection. Dataline products round out the coverage by protecting signal line interfaces. Products are available for building entry, mid-building and local area power management.

Today's calm may just be a lull before tomorrow's storm. Let an AMP Product Specialist fix today's problems and prevent tomorrow's. Because downtime is unacceptable.

Product Information Center: 1-800-522-6752 (fax 717-996-7575). AMP Incorporated, Harrisburg, PA 17105-3608. In Canada, call 905-470-4425.

www.amp.com

AMP, ACCU-SCAN, ACCU-SCAN 804 Electrical Equipment Monitor, EVERGUARD and Connecting at a Higher level are trademarks.



continued from page 26

accommodating service vehicles and providing handicapped and visitor parking must be kept in the forefront.

- Costs to maintain and/or expand parking facilities continue to increase.
- As parking is expanded to perimeter or off-site locations, transportation costs are added. Demand for evening and weekend access increases.
- Construction costs have increased as added emphasis has been placed on security features, such as good lighting and emergency phones, aesthetics such as good landscaping and signage, and quality construction to reduce future deferred maintenance.
- Deferred maintenance expenses typically are passed on to the customer.



In the absence of customer-perceived solutions to traditional inexpensive, convenient, front-door parking, customer dissatisfaction continues to grow.

The University of Michigan identified the need to expand planning beyond the traditional parking paradigm and looked at how faculty, staff, and students get from home to their worksite and access various locations throughout the day.

Planning Assumptions Initially Identified

Strategic planners expanded the "parking" paradigm to address how faculty, staff, and students get from home to their worksite and to access various locations during the course of the day. Planning for parking now included figuring out solutions in addition to parking a vehicle in a university facility. The following planning assumptions were initially identified:

- The supply of core-area surface parking, or centrally located parking, will continue to decline as building expansion occurs and as colleges and universities implement a pedestrian-oriented campus.
- Parking in campus core-areas will continue to be restricted for service access, visitor parking, and handicapped parking.
- Planning for parking and transportation systems will support the Campus Master Plan direction of a pedestrian-oriented campus.

- Parking Services will initiate planning with the surrounding community to develop shared resources.
- Transportation access will increasingly be part of parking solutions.

Goals Identified

Also through strategic planning, the following overall goals were identified:

- To voluntarily reduce the demand for core-area parking.
- To maintain a percentage of vacant core-area parking throughout the day.
- To meet the parking demand by providing better service at reduced costs.

Expanded Paradigm for Planning

Facility managers are being challenged at both ends of the continuum. They must develop fair and customer-focused parking strategies, prioritize the use of decreasing core-area interior parking resources, understand the explosion in parking technology, and provide cost-effective parking solutions. At the same time, facility managers must catch up with deferred maintenance and address the widely held perception that safe and convenient parking can only be provided next to the front door.

To meet this challenge, the parking paradigm must be expanded. In the past, planning focused on the number of vehicles within given parking parameters. As the number of available sites decreases and the cost to develop and operate parking systems increases, campus communities are demand-



ing more cost-effective solutions. An expanded parking paradigm must have a more comprehensive view of the entire transportation infrastructure, including alternative ways to get from home to the worksite. For many colleges and universities, the challenge is how to update and improve existing parking systems that do not meet the needs of a diverse campus community.

Planning that started once a vehicle reached a parking area now encompasses options for getting from home to the

continued on page 30

M3 GROUP SYSTEM

The elevator group documented to reduce hall call waiting time up to 81%

MCE Elevator Control Systems Unlock Your Building's Potential

IMC-SCR

The only elevator control that can deliver 12-pulse premium performance

Reach new heights in elevator system efficiency.

Join satisfied building owners worldwide — from Manhattan high rises to corporate headquarters...from hotels to hospitals — that have *substantially*

reduced hall call waiting time and made *increased* building occupancy possible.

Call, write or e-mail us at mkt@mceinc.com for real world performance data from actual installations.

MCE
Engineered Elevator Control Solutions

Q

I'm missing elevation drawings of some of my buildings. Is there *any* way to get accurate drawings without spending a fortune?

A

Yes! Use Digital Documentation.

A new service for facilities managers and architects who need accurate elevation drawings in a CAD format. In less time than conventional measuring methods, this digital technology uses 35mm cameras and Swiss software to deliver high-quality as-built drawings.



Public School #751
New York City

Fast. Accurate. Economical.

**FRAZIER
ASSOCIATES**

213 North Augusta Street • Staunton, Virginia 24401
800.567.0367 • e-mail frazier@cfw.com
For more information, please contact Peter Aaslestad

continued from page 28

worksites. Driving a vehicle to core-area parking becomes one of many options to choose from. The expanded paradigm has become necessary because 1) many colleges and universities cannot operate and maintain the traditional expansion of surface lot and structure parking in a cost-effective manner; 2) the campus community typically is not willing to pay the increasing cost; 3) increasingly, space is not available as we strive for a pedestrian-oriented campus; and 4) the traditional parking system of one vehicle per person no longer meets the diverse needs of all customers.

What might a menu of parking options look like? If the future parking paradigm requires first knowing the customers, to meet their needs and provide better service, the menu of options will differ slightly from one institution to another. The University of Michigan offers the following menu of parking options.

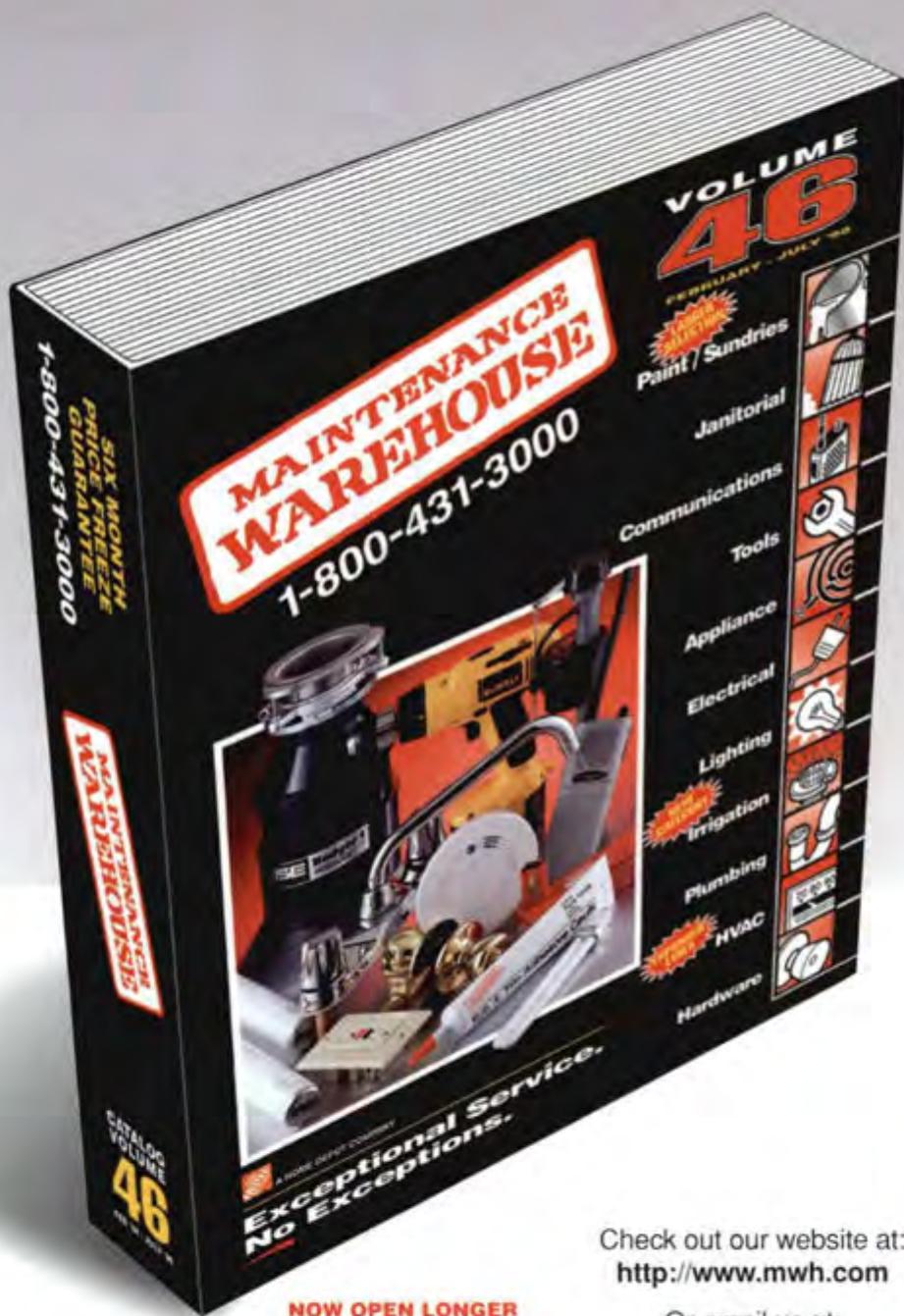
Menu of Parking Options

The following menu of options is listed from the most expensive to the least expensive. A traditional color-code system was established for ease of customer use, ease in marketing, and ease in adding future options. With the color-coded system, the permit color is matched to the sign color:

- **Gold Parking: Reserved Area.** This option is the most expensive (\$923/year) and has the lowest occupancy rate. It typically is as close as possible to buildings. This option is available to all faculty and staff.
- **Blue Parking: Core-Area Parking.** This option is available to all faculty and staff at a cost of \$507 per year. Parking typically is located within a reasonably short walking distance of the worksite.
- **Yellow Parking.** This option is available to all faculty and staff at a cost of \$321 per year. Yellow parking is within walking distance of buildings; however, it typically requires a longer walk than Blue parking.
- **Orange Parking.** This option is available to all faculty and staff for \$217 per year. Orange parking typically requires a short shuttle or bus ride or is within walking distance of some university buildings.
- **Motorcycle Parking.** This option is available to all faculty, staff, and students for \$299 per year in Blue parking areas. Typically, this is space that is too small for a vehicle. Customers are entitled to three complimentary passes per month that allow for vehicle parking.
- **Green Parking.** This option is available to all faculty, staff, and students free of charge. Green parking is located on the perimeters of the campus and typically requires bus transportation to reach the worksite.
Whereas commuter lots once were perceived as an inexpensive approach to expanding the supply of parking, the cost to fund such parking is increasing. Security issues are being addressed, through extensive lighting, emergency phones (some colleges and universities are even installing video equipment), and additional security patrols. Transportation costs may increase as the demand for extended hours increases.
- **Park & Rides.** This option is available to all faculty, staff, and students free of charge. The Ann Arbor Transportation Authority (AATA) provides bus service from various locations to campus. This option provides an opportunity to share resources with the surrounding community, reduce operating cost, and take advantage of parking spaces that would otherwise typically remain vacant. It also addresses a unique need of commuting faculty, staff, and students. Parking revenue funds the AATA ridership for all faculty, staff, and students. University and community

continued on page 33

Order today. Install tomorrow.



Fast delivery? Got it.

Free next day delivery to most areas on orders of \$25 or more.

Low prices? Got it.

Competitive, every day low prices plus quantity discounts on most items.

Quality products? Got it.

Top brands you know and trust, plus our own sources, carefully chosen to suit your needs.

Exceptional customer service? Got it.

Your call is answered in seconds, not minutes, by friendly, experienced professionals.



Check out our website at:
<http://www.mwh.com>

Or email us at:
service-is@mwh.com

For your free catalog,
call **1-800-480-0480**
ext. **4225** today.

NOW OPEN LONGER
Extended Service Hours:
7AM TO 9PM ET



APPLIANCE



COMMUNICATIONS



ELECTRICAL



HARDWARE



HVAC



IRRIGATION



JANITORIAL



LIGHTING



PAINT/SUNDRIES



PLUMBING



TOOLS

Exceptional Service. No Exceptions.



VISIT US IN BOOTH 212 IN SAN JOSE!

MORE WAYS TO PAY



"The Uniform Drawing System™ (UDS) will do for drawings what MasterFormat™ and SectionFormat™ did for specs. This new system of organizing drawings will streamline both preparing and finding information on drawings."

Robert W. Johnson, FCSI, CCS, CCCA, AIA
Vice President, Director of Technical Resources
RTKL Associates Inc.

Architects

**Who Use the UDS
Build a Following**

Blueprint for Consistency

The *Uniform Drawing System* (UDS) was developed as a standardizing tool for organizing and presenting construction drawings.

Currently the UDS contains three interrelated modules: Drawing Set Organization, Sheet Organization, and Schedules. A CD-ROM containing templates for 16 sheet sizes and 24 schedules is also available.

Future modules on symbols, terms and abbreviations, drafting conventions, layering, plotting guidelines, and keynoting are being developed.

What Price Standardization?

The guidelines and tools provided in the UDS are designed to bring greater efficiency to your office by establishing a system that is both easy to use and simple to follow.

For CSI members the UDS hard copy version costs \$50; for nonmembers the cost is \$100. A hard copy and electronic version is available to members for \$80; it's \$160 for nonmembers.

Draw the Right Conclusion

Don't draw up another project without it. To order your copy of the UDS or a technical documents catalog, fax your request to Customer Service at (703) 684-8436, e-mail us at membcustsrv@csinet.org, or call (800) 689-2900.



**The Construction
Specifications Institute**

*50 Years and Still Building
1948-1998*

sites are used for Park & Rides, which are available for the community's use.

The community sites currently include a local high school and a shopping center parking lot. These areas had experienced considerable vacancy even though they are on heavily traveled routes to the university. At university sites, AATA funded the majority of the site development expanding existing parking areas beyond the university's parking demand. The university provides all maintenance to the lots.

- **AATA Bus Pass Program.** This option is available to all faculty and staff free of charge and is funded by parking revenue. Customers are able to leave their cars at home and ride the AATA bus to campus. Many customers use this option in combination with other parking options. The AATA Bus Pass option has been the one most positively received by the campus community.
- **Bicycle Lockers.** This option is available to faculty and staff, at the Medical Center, for an annual fee of \$55. Storage lockers are available on a rental basis to promote the cost-effective option of parking bicycles rather than vehicles in the core areas. The lockers have been provided to address the customer concern that many bicycles are expensive and warrant better protection than the traditional, tightly spaced bicycle hoops. Bike locker users may purchase a yearly Blue, Yellow, Orange, or Green permit; or they may obtain daily permits (up to 24 free per year), which are valid in Yellow, Orange or Green lots for those days when a vehicle is needed.
- **Handicapped Parking.** Designated handicapped parking is available in all parking areas (excluding service areas) for faculty, staff, students, and visitors at the prevailing rate.
- **Visitor Parking.** Visitor parking is provided throughout the university at meters and attended cashier locations, with access to staff parking areas through permits issued by departments.
- **Service Parking.** Reserved spaces for designated university service vehicles are provided at the majority of buildings.
- **Loading Zones.** Reserved space designated for loading/unloading activities is provided for use by vendors and university faculty and staff for an annual fee

of \$221.

- **Business Vehicle Parking.** Reserved space is designated in Blue parking areas for vehicles conducting university business. These spaces are used for university-owned sedans. Departments may purchase a Business Vehicle permit to encourage use of personal vehicles for university business.

To a large extent, the success of a menu of parking options depends on flexibility and the ease of using multiple options. For 10, 20, and even 30 years, many faculty and staff have used the traditional permit to park as close as possible to their offices. Being completely cut off from core-area parking was too much of a change for many customers. Flexibility was required so that this option would always be available if needed.

Flexibility

Many faculty and staff lamented that they would like to take advantage of the bus pass program or use a Park & Ride lot from which they could quickly reach the grocery store or dry cleaners. But they were worried that occasionally they would need to have access to their cars during the day. The following options provide the flexibility needed:

- **Scratch-Off Permits.** Faculty and staff may purchase an unlimited supply of daily scratch-off permits that can be used as needed.
- **Monthly Permits.** Monthly permits are issued upon request.
- **Eight-Month Permit.** For those students who will be leaving during the summer, this option saves them the time of returning their permit for a refund.

Assessment

Goals established for a menu of parking options have been met as far as the following are concerned: 1) a voluntary reduction in the demand for core-area parking, 2) availability of space during the day throughout the parking system in most locations, and 3) the ability to meet most of the parking demand, provide better service, and reduce cost. The options have been perceived as cost effective to the customer, that is, the cost matches the convenience level and/or the approach meets the customer's needs. Thus, the expanded parking paradigm of providing a menu of options for getting from home to the worksite meets the following requirements:

- Provides options for the customer in terms of cost and convenience.



Students petition College officials befuddled by request.



A surprise demonstration in fluid dynamics is something your engineering majors might appreciate. Unfortunately, the rest of the students won't be quite as understanding.

Building problems, whether they're related to plumbing, heating, lighting or general upkeep, can bring a wave of protests. Students will even transfer, if the problems persist. Which is why you should know about the services of Johnson Controls. Your campus environment is a major recruiting tool.

Our job is to help keep it that way. We offer a broad range of products, services and programs that can help your facilities look better and work better. Plus programs that can make your operations more cost-effective. Like performance contracting, where improvements in comfort,

productivity and safety are paid for by the savings they create. For details, call our Education Group at 1-888-214-0916. Also visit our corporate website at www.johnsoncontrols.com. Because anyone thinking you can ignore facility maintenance issues is all wet.

**JOHNSON
CONTROLS**

for dry campus.



VISIT US IN BOOTH 101 IN SAN JOSE

Grounds Management Concerns?

Are you concerned with increased labor costs? Does it seem like your equipment is always in the shop? Are your budgets stretched to the absolute limit? What about staffing challenges? Public safety concerns? Pesticide certification? Training? Equipment storage? And all the while your administration wants more?

Since 1880, Davey has been the recognized leader in tree, shrub and lawn care. And academic campuses nationwide have benefited from the expertise of our commercial grounds management division, a group dedicated to solving the unique problems of large, complex grounds environments. From providing specialized tasks like aerial tree work to handling complete grounds management with our own on-site crews, Davey has the solutions for cost effective grounds management.



Call 1 800 447-1667 x 245 or email info@davey.com
Visit our Website www.davey.com

VISIT US IN BOOTH 516 IN SAN JOSE!

- Encompasses a variety of options that recognize diverse lifestyles.
- Provides flexibility to use multiple options throughout the year.
- Provides revenue to maintain existing assets.
- Adequately meets most demand for parking without costly expansion of the university's parking system.

As university communities become increasingly diversified, no longer does one parking solution fit all needs. Each option must be targeted to meet the needs of a specific market segment. For example, the bus pass program, as popular as it is, is a viable solution only for those customers who live in the surrounding community where driving to a Park & Ride lot or a Green lot would require more time. The key is to talk to and know the customers and to be able to propose possible solutions based on their feedback.

Sharing Resources or Partnering with the Surrounding Community

Especially for urban colleges and universities, maintaining separate systems for parking and transportation no longer makes sense in terms of providing the best service in the most cost-effective manner. For many, the parking paradigm needs to be expanded further to explore sharing resources with the surrounding community.

Parking and Transportation Consortium

For the University of Michigan, the first step was to form the Parking and Transportation Consortium with representatives from University Relations, University Planning, University Parking Services, the Ann Arbor Transportation Authority (AATA), the City of Ann Arbor, and the Downtown Development Authority (DDA). To date, the consortium has developed and guided the Park & Ride system and the Bus Pass Program (see Menu of Options, p.33), which are creative ways to reduce operating costs and meet the unique needs of commuting faculty, staff, and students.

24-Hour On-Call Emergency Engineering Assistance

1-888-7-PAGE PE

If you find yourself in an emergency situation, call us. We're here and we're ready to help. It's another way of extending our quality engineering services to institutions across the country.

www.stanleygroup.com



VISIT US IN BOOTH 421 IN SAN JOSE!

Stanley Consultants INC.

A Stanley Group Company
Engineering, Environmental and Construction Services Worldwide

AUSTIN • CHICAGO • DENVER • IOWA CITY • DES MOINES • LAS VEGAS
MINNEAPOLIS • MUSCATINE • PHOENIX • SALT LAKE CITY • WEST PALM BEACH

S E A R S I N D U S T R I A L

CRAFTSMAN®

#1 ON CAMPUS

Sears Industrial Sales is the nation's leading supplier of Craftsman® and other premier industrial tool brands to higher education facilities. The Industrial Tool Book features over 7,000 tools and accessories.

TAKE ADVANTAGE OF THE APPA DISCOUNT.

Phone or fax today for your free
1997-1998 Industrial Tool Book!

1-800-776-8666

Extension 760. Ask for Al.
Or fax 1-800-233-4557, attn. Al

SEARS

NEW! FREE!



VISIT US IN BOOTH 410 IN SAN JOSE!

Opportunities

The group synergy has resulted in many exciting opportunities that are currently being considered by the consortium.

Student parking has not only been a problem plaguing the university, the DDA parking system, the City of Ann Arbor, and its surrounding neighbors, but it has also been problematic for students. A comprehensive solution needs the involvement of the university, the DDA, the city, and AATA working together.

When many people within the campus community need to reach both university and community locations throughout the day, integration of transportation systems will likely result in better service for the customer and be a more cost effective operation.

To what extent can card technology integrate university parking and transportation with community parking and transportation systems? Could one card be used for city and university buses, parking facilities, central pay stations, and meters, as well as at restaurants, book stores, and so on?

Increasingly, a change in one area affects everyone. Ideally, change will be planned, marketed, and implemented together to the benefit of the university and the surrounding community.

Summary

Planning that traditionally started once a vehicle reached a parking area now encompasses options to get from home to the worksite. Thus, the parking goal is to provide every employee a reasonable method to get to work. For many colleges and universities, this goal has become a necessity for several reasons: many institutions cannot cost effectively operate and maintain the traditional expansion of surface-lot and structure parking; the campus community is increasingly unwilling to pay the escalating cost of parking; and the traditional parking system of one vehicle per person no longer meets the diverse needs of all customers.

The keys to expanding the parking paradigm and implementing a successful menu of parking options are an understanding of customers' needs and their perceptions of solutions, as well as a willingness by all involved to be receptive to trying new ideas. Another key to success is flexibility to access multiple options to best fit diverse lifestyles.

Ideally, the expanded parking paradigm will be a source of revenue to maintain existing parking assets from those employees who choose to pay the cost for convenience, minimal expansion of existing parking assets, and cost-effective (in customers' perception) options, such as the Park & Ride system and the Bus Pass Program, to creatively meet an increasing demand for effective access to the worksite.



IS IT POSSIBLE TO BE IN MORE THAN ONE PLACE AT A TIME.

yep!

Announcing Silicon Energy™, the world's most powerful Enterprise-wide Energy Management System. For the first time, you have the power to perform real-time energy monitoring and facility control plus sophisticated energy analysis accessible anywhere.

Silicon Energy communicates bi-directionally and securely with all major energy management systems and utility meters via the Internet or your Intranet - allowing you to actively manage energy usage, improve productivity and enhance your bottom line. And by employing the power of advanced data visualization techniques, this is one system you can truly use.

Whether you operate a single building, entire campus, or a nation-wide network of buildings, Silicon Energy puts you in control. For more information on Silicon Energy products and services, call 877-744-9400 or visit our web site at <http://www.siliconenergy.com>



VISIT US IN BOOTH 224 IN SAN JOSE!

How NOT to Get Outsourced

by Thom Wellington

Has the word "outsourcing" come up in conversation a lot lately? Especially in staff meetings or conferences with your superiors? Have you heard it suggested that perhaps some of the duties of your department might be handled more efficiently by an "outside" firm?

And rather than making your facility services team more energized and productive, does it have them running scared? Because they believe that "out" is exactly where they're headed—out the door to be replaced by consultants who will tell you what you could be figuring out for yourself.

Not getting outsourced takes some time and effort, but isn't it worth it to preserve your job and those of your staff? And you may discover ways of working smarter and more productively that will streamline your duties, while at the same time making the facilities management department one of the administration's most valuable assets.

Essentially, you need to take the steps yourself that an outside firm would do.

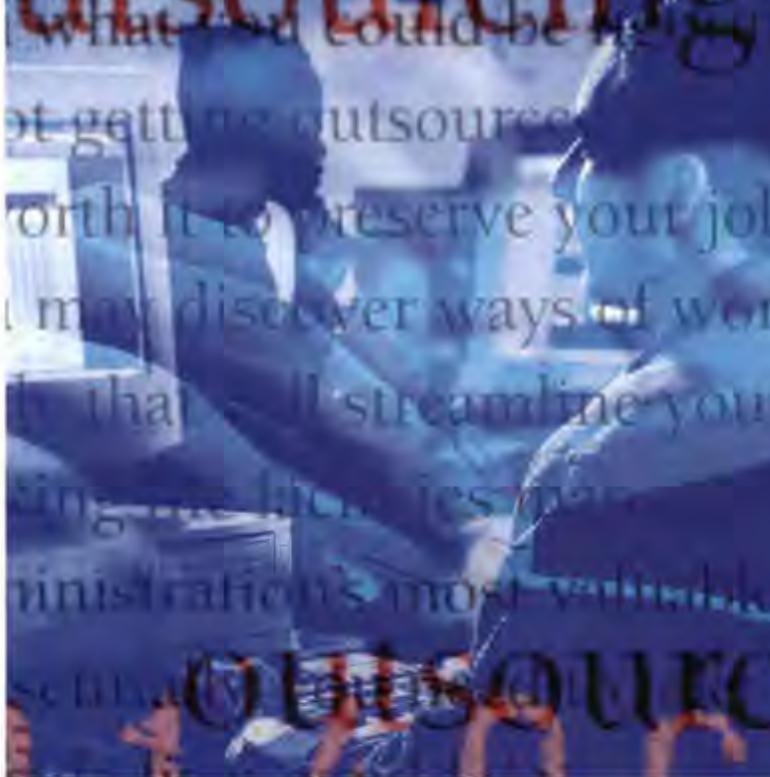
Use Your Computer

First, investigate software that will help manage maintenance, housekeeping, security, landscaping, and other facilities services. Installing a good maintenance software system is frequently the first thing an outsourcing company does when taking over the operations of a facility. Outsourcers know that an effective software program will improve the flow of work orders and track operational efficiency.

In addition, the housekeeping software produces reports that justify staffing numbers and document exactly what functions an employee performs and the cost. It enables you to track housekeeping costs on a daily basis, providing up-to-date figures to support budget requests. The best programs are user-friendly and enable the custodial manager to quantitatively analyze and strategically manage the cleaning process while documenting the results.

One great way to find a good software program is to contact outsourcing companies and ask what type of software they would use if they were awarded a contract at your facility.

Thom Wellington is president of Wellington Environmental, St. Louis, Missouri.



Communicate, Communicate

No matter how good a job your department is doing, unless you're telling others about it—management, faculty, other staff, suppliers—who's going to know? No news is *not* good news; it's *no* news.

Here again the computer comes into play. Computers can enhance communication effectiveness via speed, accuracy, and documentation. Customers can write their own work orders and send them to your office via the Intranet. Records of labor, cost, and work completed can be easily filed and referenced almost instantly.

Use door hangers to signal that a repair has been completed. They are much less high-tech, but effective. A brightly colored door hanger will inform the occupant that work was completed, saving your office unnecessary phone calls.

Some facilities administrators report that 15 to 30 percent of the service calls they receive are from customers where the repair has been completed. No one was around while the work was being done, however, and the maintenance technician didn't leave a note or call to inform the customer that the work was completed.

Track your performance with your customers. Leave a questionnaire with the customer when a maintenance request is performed. It can be as simple as a postcard that can be routed back to your department via the school's in-house postal system.

Typically, the questionnaire is designed to rate the service performed, the technician, response time, and how well the entire team responded. Results should be tracked (use the computer again) to determine which areas in the maintenance

continued on page 41

THE PROBLEM:

As a construction owner, how do you stay on top of the critical information that can mean the difference between successful projects and the alternative?

THE SOLUTION:

Get Smart Owner.™ It's the only construction management software designed *exclusively* for the construction owner. You'll be alerted to problems *before* they happen.

The image displays three screenshots of the Smart Owner software interface. The top screenshot shows the main dashboard with various toolbars and project navigation options. The middle screenshot shows a 'Pending Change Order Requests' table with columns for Project ID, COR #, Date Submitted, Amount Requested, Date Reviewed, Days Due, and # of Days Left. The bottom screenshot shows a detailed view of a 'Business School' project, including contract price, substantial completion date, and a detailed table of change orders.

Owner Alerts™ toolbar alerts you to approaching deadlines.

Click on any line item and pull up a full display of detail on that item.

Smart Owner...

- Provides full project management functionality
- Makes you a proactive owner
- Saves you time and money
- Manages all your projects
- Tracks all deadlines and vital information

Work Smarter And Save Money With Smart Owner.™



Call 888-767-1007 or visit our website: www.smartowner.com
Smart Management Systems, Inc. • P.O. Box 57310 • Atlanta, GA 30343

©1998 Smart Management Systems, Inc.

VISIT US IN BOOTH 328 IN SAN JOSE!

process need improvement. This can also be a useful tool to show management that your team is doing a good job.

Start a departmental newsletter with the goal of informing everyone on campus how your department keeps the facility running smoothly. Include stories about the group who arrived at 3:00 a.m. to make sure the walkways would be free of snow before students and faculty arrived. Or the employee who worked all weekend on an air conditioning unit to make sure the building would be comfortable on Monday morning.

Assign a committee to produce the newsletter, making sure everyone understands why you're doing it. You may be surprised to find that some members of your team have a knack for telling stories. Others can use the computer to layout and produce the publication. Distribute the bulletin in the cafeterias, administration areas, and in staff mail boxes. Leave one behind whenever you complete a maintenance task. This type of information can go a long way toward making sure the right people understand the importance of your team.

Internal communication is also critical to efficiency and productivity. Use radio communications to dispatch personnel. Hand-held computers linked to facility maintenance software are working their way into field operations management. Some facilities are dividing large campuses into zones, then assigning staff to specific areas to reduce travel time.

Sponsor an event such as a picnic to show off new landscaping or landscaping equipment. This should be an event where your staff can interact with others on a non-work related basis. This is a good opportunity to distribute your newsletter and have your crew looking sharp—not to mention serving some great barbecue to administrators and other key officials.

The appearance of your staff communicates a lot about attitude, their feelings about the institution, and the quality of their performance. Uniforms that don't show the dirt but look a little more professional than the typical dark blue work clothes can really help. Replace worn uniforms with a new color; perhaps a new supplier will be eager to get your business.

Earrings have become popular among the younger crowd. Keeping your staff earring-free may be one of your more difficult challenges. A grooming consultant may be a good idea. Remind your staff of the overall goal—to serve the institution and not to be outsourced. When management notices the professional appearance of your staff, they'll know you are serious about not being outsourced, and that your team responds to your leadership.

Teaching Old Dogs

Your team will need to be taught and motivated to put these new ideas into practice. If you already have a training program in place, then do even more—and that means for all members of the department. Everyone from security guards to landscapers to laundry workers need to be trained. The first step is to communicate how and why you are making



INFORMED* CUSTODIAL STAFFING SOFTWARE

In a friendly Microsoft Windows atmosphere:

- Benchmark and justify your staffing level against national norms.
- Perform "what if" scenarios with the "click" of a button
- Establish balanced cleaning areas and multiple shift schedules.

From Jack C. Dudley, PE, Editor and Co-author of the APFA Publication *Custodial Staffing Guidelines for Educational Facilities*, who has refined those methods through added research and on-site consulting. The software, featuring those refinements, has received many excellent reviews by users since its' introductory offering late last year.

Several models are available starting at:

\$179

Call or Write Jack for Details.

* The Institute for Facilities Operations Research and Management Educational Development

5335 South Lakeshore Drive
Racine, Wisconsin 53403
(414) 552-8966

Older College Buildings Learn, Even They Can Be Cool...

The UnicoSystem Provides Benefits That Other HVAC Systems Can't...

- Won't compromise architectural integrity
- Works with boilers, chilled water, standard condensers
- Fits in limited space
- No need to lower ceilings
- Small, 3-1/2" duct
- Quiet

Colleges & Universities That Chose UnicoSystem® To Let Comfort Fit In...

Monroe College/New York; Washington University/St. Louis; University of Southern California/Los Angeles; The United States Naval Academy/Annapolis.

Call Today For FREE Case Study Sheet & Brochure

UNICOSYSTEM®

4160 Meramec • St. Louis, MO 63116 • (314) 771-7007 • (800) 527-0896

Letting Better Comfort Fit In...

www.unicosystem.com

VISIT US IN BOOTH 526 IN SAN JOSE!

these changes. Make sure they understand the goals. Then, everyone should be trained (at a minimum) in the following:

- how to use your computer system, hardware and software
- new trends in their work area
- customer service strategies and skills
- appearance requirements (and why)
- safety and first aid
- cross training in other skills, as appropriate

New Trends

Perhaps the best ammunition you can have in preventing your department from being outsourced is to convince

management and customers that you are current on the latest trends in facilities management. Let management know that your staff is well educated in the systems they maintain and how to maintain them most cost-effectively. This will send a signal that your department is not stagnant, but constantly striving to do the best job for the school.

Most equipment manufacturers have specialists whose job it is to conduct presentations for large clients. Make a list of all of the major equipment and controls in your facility, then indicate which most affect customer comfort and those which are most costly to operate. Send a letter to manufacturers to inform them that you are looking for ideas on how to save money and increase customer satisfaction, and that you

would like them to visit your facility to make recommendations. Be sure to tell them that you want to know all the latest technology for operational efficiency, and that you want it in presentation form so that all appropriate staff might attend.

Customer Service

Training focused on improving the customer service skills of your team is a must. The receptionist, as well as the field technician who has contact with customers every day, should be polished in this important area. Check with local manufacturers' associations and training providers to find out who offers this type of training. Ask for referrals. If your school has a marketing department, they might be willing to put together a training seminar as a class project.

Safety First

Increase the safety performance and awareness of all staff members. Include CPR, first aid, confined space, freon recovery, and all other OSHA-required awareness training. Think of the positive effect your staff can have if an injury occurs requiring CPR or first aid and your staff is equipped to respond. Be sure to inform management and other staff that your team is being trained to make the campus a safer place for everyone.

Learning a New Skill

Cross training will be a key to success in the future. Educated, informed workforces will be considered a prime asset of a "corporate campus," rather than a prime candidate for outsourcing. Zoned staffs that are cross-trained to have multiple skills speed response time and keep technicians

PLANNING A NEW FACILITY AUTOMATION SYSTEM?

UPGRADING YOUR EXISTING SYSTEM?

UNDER THE GUN?



Call in the artillery. You will receive time and cost saving implementation technologies that work... and avoid those that do not. You also receive specific software recommendations, selected from the 350 packages available, that will meet your facility automation, information sharing and team building goals.

Call us. Our fifty-five years of combined experience in university facility management and civil engineering will save you time, increase your purchasing power and help guarantee success.

CALL, AND ADD OUR FIRE POWER TO YOURS.

WE DO NOT SELL SOFTWARE OR HARDWARE.

AN OBJECTIVE, AFFORDABLE SOLUTION TO YOUR NEEDS IS OUR ONLY GOAL.

Howard Millman
Dan Millman, P.E.
Data System Service, LLC
888-271-6883

in the field rather than traveling back and forth. Cross-trained workers can handle preventive maintenance items or perform inspections when not responding to maintenance calls.

Finding Training Providers

There are a few ways to provide training with as little cash outlay as possible. For example, you may be able to use outside contractors and/or vendors for large or specialized services currently provided to the school. Make it a part of each contractor's next contract to provide an "in-service" training session on the latest trends in equipment and/or methodology. A mechanical contractor could discuss advances in mechanical system design or retrofitting. An electrician might explain how variable speed motors could cut costs.

Explore computer training opportunities. Soon almost every kind of training imaginable will be available via a CD or on the Internet. Your staff can log onto training sessions at their convenience and to review material at any time. Computer training also saves you from tying up the entire staff at one time to attend a training class.

If a custom training provider is what you need, check the Internet, trade associations and publications, and with your peers. As with all purchases, request bids and negotiate for the best price.

To help evaluate the success of all of this training, try instituting performance contracts with your team members. Together, prepare a list of the most important tasks each team member should focus on for the coming year. In addition, establish goals for each of the following categories:

- Training
- Operations
- Customer satisfaction
- Organizational skills
- Personal skills

Evaluating Equipment

Aside from your most important resource—personnel—your equipment should also be evaluated for cost-effectiveness and performance. Sell old equipment, tools, shelving, etc., that is not being used. Administrators will appreciate the effort to save space and convert old equipment and supplies into cash.

Track the maintenance history of equipment to determine cost effectiveness. If the purchase price was low, but the equipment

requires constant maintenance, perhaps it would be wise to pay more going in.

Lights Out

Outsourcing firms quickly focus on utilities for quick cost savings when assuming management of a facility. Electricity issues they address include:

- System use (making sure lighting and fans are turned off when facilities are not in use)
- Use of high efficiency equipment
- Use of variable speed drives on fans, chillers, and pumps
- Use of high efficiency lighting
- Use of high efficiency chillers

SVBK CONSULTING GROUP

A KERSTEN-BROWN CORPORATION

Professional Consulting Services for the Utility Industry

- Electric Industry Restructuring & Deregulation
- Fuel Supply Development
- Regulatory Support
- Cogeneration Analyses
- Contract Negotiations
- Project Financing Support
- Strategic Planning
- Aggregation
- Rates and Cost Recovery
- Supply Planning
- Privatization
- Economic Feasibility Studies
- Public Procurement
- Litigation Support

SVBK Corporate Office

205 East. Central Blvd, Ste. 500

Orlando, FL 32801

Telephone (407) 872-1500

Fax (407) 843-3200

E-MAIL svbkcg@magicnet.net

Consider cogeneration and thermal storage systems. Natural gas and oil usage can also produce savings. Improve utilization by shutting down systems when not in use. One chief facility engineer recently rewrote some of his facility's direct digital control programs to optimize performance of air handling equipment. HVAC systems are now turned off when they're not needed, realizing a 14 percent savings on electrical consumption. Install high efficiency burner

systems and consider recovering stack heat. Outsourcers often look to buy gas from the well head to help save on costs.

To reduce security expense consider installing more electronic security systems and utilize video scanning of facilities. Many facilities are installing electronic access locations and reducing the number of security stations.

Consider Outsourcing

You thought the goal was *not* to outsource, right? Sometimes, however, outsourcing services that can be provided on an as-needed basis are the best way to keep your team focused on the day-to-day activities that keep the school humming along. There are companies that will perform small to large jobs on a few hours notice without charging a retainer or a minimum service call fee. Compile a list of dependable outside contractors and use them for emergencies, times of peak workload, or when special equipment or expertise is required.

Rebid already outsourced work and ask more of your suppliers. Ask potential bidders what they would do to reduce maintenance costs and enhance campus aesthetics.

Finally, many of the ideas presented here require capital expenditures. Outsourcers partner with companies that can bring capital to your facility. Partners that will install, finance, and guarantee equipment performance, for example, will also produce presentation materials that will help you sell these ideas to management. Make it part of their contract that after installation they will provide information detailing how their equipment is saving money for the facility.

When the "O" word comes up in conversation, it should be you who is speaking it. Whether or not to outsource work should be your suggestion, based on training, experience, and purpose.

Taking the steps to do yourself what an outside consultant would do, then communicating your efforts and your results to the administration, will make you one of the school's most valuable assets—one that is "in" to stay. 🏠

MAINTENANCE SUPERVISOR 2000™

Computerized Maintenance Management System • Developed in Microsoft Access 97

Maintenance Supervisor 2000 Work Order

File Edit View Base Record Memoize Mail Options History Help Help

Main Summary Labor Parts Tools Other Costs Lost Time Drawings Inspection Comments UDF

Service: Order Free M52000 Evaluation Today

Description: Call Now - Toll Free 1-888-888-1600 for Free Maintenance Supervisor 2000 Evaluation Software from MicroMain. Full Working Copy. No Obligation. 30 Days to Review. Built in Sample Data. Easiest CMMS to Learn, Implement, and Use.

Asset: Equipment, Areas, Vehicles

Property: Any Type of Facility

Location: Worldwide

Requester: Maintenance Department

Phone: 1-888-888-1600

Ship: Efficient

Supervisor: Maintenance Director

Project: Install CMMS

Status: Open

Type: Demand

Priority: 1

Due: Today

Standard: 10

Taken by: MS

Inspector

Warranty Safety

Documents Shutdown

Printed Print Message

Find number

Record: 1 of 1

**Location and Equipment Based Work Orders, Source Code, Asset Tracking
Preventive Maintenance, Inventory, Purchasing, Inspections, Capital
Budgeting, Deferred Maintenance Tracking, Year 2000 Compliant,
Submit Work Requests Via Network or Internet, Meter/Mileage Tracking,
Asset Histories, Warranty Alerts, Projects, Comprehensive Reports,
Customizable and MUCH MORE!**

Call TOLL FREE for YOUR FREE no-obligation EVALUATION COPY

1-888-888-1600

MicroMain Corporation • www.micromain.com • email: info@micromain.com

VISIT US IN BOOTH 527 IN SAN JOSE!

Decision Making Tools for Custodial Operations

by James E. Sears



Many times the custodial budget ranks second only to maintenance in physical plant operations. With the custodial budget primarily composed of labor, it becomes a clear target for budget reductions. Today's custodial manager is charged with the job of maintaining a clean, safe environment, managing in many cases large numbers of people, and efficiently administering supply dollars.

But the most difficult task faced by the custodial manager is communicating his or her processes to stakeholders and customers who know little about the cleaning business. How well an individual communicates this information has a direct effect on the organization and their careers.

The APPA publication, *Custodial Staffing Guidelines for Educational Facilities*, gives the reader clear information on how to understand cleaning standards, cleaning audits, standard space descriptions and standard activity lists. This information will give the average reader the necessary understanding

James Sears is assistant director for building services at Georgia State University, Atlanta, Georgia. He is a contributor to the revised second edition of Custodial Staffing Guidelines, which will be published soon by APPA.

of business strategies associated with cleaning services applied in building profiles.

The descriptions in the APPA custodial staffing guidelines are easy to understand and build an information base from which one can determine what standards to look for with each cleaning level. This is especially valuable since many cleaning standards are written in text that is difficult to understand.

The cleaning audit process outlined by the guide is especially valuable; it gives the reader a real understanding on how to apply the cleaning standard. During our initial audit at Georgia State University, we utilized this process to develop a Quality Assurance Program. This tool enables us to quantitatively measure our units performance. This has been so useful that we developed software that helps us to monitor our progress and keep records.

Space descriptions help the reader to understand why all cleaning categories are not lumped together. This is a common problem because most individuals do not know all that is involved in cleaning various spaces. A clear understanding of space descriptions gives you a pivotal reference point when looking at labor allocations and associated tasks.

Figure 1

Building Profile

General Classroom

I. Use of Building

This building is primarily used for classroom instruction. The facility is in its heaviest use M-F 6:30 a.m. until 11:00 p.m. On weekends this building is used for special programs and testing. Therefore, cleaning activity is necessary seven days a week.

II. Area Breakdown by % and Square Footage

[This is the most utilized instructional facility]

A) Corridors	34%	62,778 sq. ft.
B) Classrooms	33%	61,078 sq. ft.
C) Offices	24%	45,230 sq. ft.
D) Restrooms	7%	12,895 sq. ft.
E) Lounges	2%	2,987 sq. ft.

* Conference rooms in suites are included with offices

III. Student Population In Building

14,096

IV. Floor Type By Square Footage

- A) Marble _____
- B) VCT _____
- C) Carpet _____
- D) Terrazzo _____

V. Building Facts / Issues

- A) Classrooms go from the 6th to 1st floors.
- B) Morning student break is 10:00 a.m. to 10:45 a.m.
- C) Evening student break is _____.
- D) The 1st and 2nd floors receive the heaviest flow of traffic. Consequently, restrooms and hallway maintenance must receive constant attention.
- E) Graffiti from the 6th floor to 1st floor provides a problem (concentrated in men's restrooms).

VI. Cleaning Strategies

- A) Corridors - Hallways on the 1st and 2nd floors will be maintained at Level (1); all other similar areas will be maintained at Level (3).
- B) Classrooms - All classrooms will be maintained at Level (3).
- C) Offices - Offices will be maintained at Level (4), and special circumstances will be maintained at Level (2). Offices of deans and department chairpersons will be maintained at Level (2) cleaning, primarily because of the visitors these individuals receive. Open areas in each suite will be kept at Level (3) because of its position as a first impression area (regular vacuuming/dusting on a daily basis). This translates into trash cans being put outside of doors daily for emptying with general cleaning once per week by schedule.
- D) Restrooms - All restrooms will be maintained at Level (2).
- E) Lounges - All lounges will be maintained at Level (3).

Figure 2

CUSTODIAL CLEANING STANDARDS

The general standards that will be kept on campus will be at Level 3 according to APPA's custodial staffing guidelines.

Level 1 - Orderly Spotlessness

Level 1 establishes cleaning at the highest level. This level of cleaning is formulated for areas such as corporate suites, donated buildings, historical focal points, or any prime facility that requests this level of cleaning.

- * Floors and base moldings are cleaned and shined; colors are fresh. There is no buildup in the corners or along walls.
- * All vertical and horizontal surfaces have a freshly cleaned or polished appearance and show no accumulation of dust, dirt, streaks, smudges, or fingerprints.
- * Washroom and shower tile should be free of dirt, soap scum, and odors. Fixtures should be polished.
- * Trash containers should be emptied, cleaned, and odor-free.
- * Pencil sharpeners should be emptied and cleaned.

Level 2 - Ordinary Tidiness

Level 2 is the base upon which the APPA guidelines are established. This is the level at which cleaning should be maintained. Lower levels for washrooms, changing/locker rooms, and similar type facilities are not acceptable.

Activity lists match the tasks and frequencies at each level of cleaning in each space. This allows the development of work schedules that accurately reflect the cleaning strategies for each building profile.

By utilizing building profiles, critical information can be communicated or utilized by building managers, cleaning contractors, upper administrators, or anyone who needs critical information about:

- Cleaning strategy (by APPA guidelines)
- Square footage allocation by category
- Types of space
- Building population
- Times of operation
- Building usage
- Labor allocation
- Key building occupants (for communication)
- Particulars in the building that can affect the cleaning process

This information is compiled in Figure 1.

These profiles allow the cleaning manager to develop cleaning strategies that show a clear picture of how levels of cleaning can be utilized to maximize labor allocations. (See Figure 2 for APPA Cleaning Levels.) This permits the operation to be analyzed for strategic planning by giving the foundation for different labor models to be considered. This is

* Floors and base moldings are cleaned and shined. No buildup in corners or along walls, but there can be up to two days' worth of dirt, dust, stains, or streaks.

* All vertical and horizontal surfaces are cleaned but marks, dust, smudges, and fingerprints are noticeable with close observation.

* Washrooms and shower tile gleam and are odor-free. Supplies are adequate.

* Trash containers and pencil sharpeners should be emptied, cleaned, and odor-free.

Level 3 - Casual Cleanliness

This level reflects the first budget cut, or some other staffing-related problem. It is a lowering of normal expectations. While not totally acceptable, it has yet to reach an unacceptable level of cleanliness.

* Floors are swept clean, but upon close observation dust and stains, as well as a buildup of dirt, dust, and/or floor finish in corners and along walls, can be seen.

* There are dull spots and/or matted carpet in walking lanes and streaks and splashes on base molding.

* All vertical and horizontal surfaces have obvious dust, dirt, marks, smudges, and fingerprints.

* Lamps are in working order and all fixtures are clean.

* All trash containers and pencil sharpeners have old trash and shavings.

Level 4 - Moderate Dinginess

Level 4 reflects the second budget cut, or some other significant staffing-related problem. Areas are becoming unacceptable. People begin to accept an environment lacking normal cleanliness. In fact, the facility begins to constantly look like it requires a good "spring cleaning."

* Floors are swept clean, but are dull. Colors are dingy and there is an obvious buildup of dirt, dust, and /or floor finish in corners and along walls. Molding is dull and contains streaks and splashes.

* All vertical and horizontal have conspicuous dust, dirt smudged fingerprints, and marks that will be difficult to remove.

* Fewer than 5 percent of lamps are burn out, and fixtures are dingy.

* Trash containers and pencil sharpeners have old trash and shavings. They are stained and marked. Trash cans smell sour.

Level 5 - Unkempt Neglect

This is the final and lowest level. The trucking industry would call this "just in time cleaning." The facility is always dirty, with cleaning accomplished at an unacceptable level.

* Floors and carpets are dirty and have visible wear and/or pitting. Colors are faded and dingy, and there is a conspicuous buildup of dirt, and/or floor finish in corners and along walls.

Figure 3

Space Category	Level 1	Level 2	Level 3	Level 4	Level 5	Actual
Classroom with Hard Floor						
Non-Project Work Task						
Clean chalkboards and trays	Daily	Daily	Daily	Alternate Days	Alternate Days	Daily
Clean erasers	Daily	Daily	Daily	Alternate Days	Alternate Days	Daily
Damp-mop floors	Daily	Monthly	Monthly	Semiannually	Never	Alternate Days
Dust flat surfaces	Daily	Weekly	Weekly	Monthly	Never	Weekly
Empty pencil sharpeners	Daily	Daily	Daily	Alternate Days	Never	Twice Weekly
Empty waste containers	Daily	Daily	Daily	Alternate Days	Alternate Days	Daily
Spot-clean walls and doors	Daily	Weekly	Monthly	Semiannually	Never	Monthly
Sweep, dust-mop floors	Daily	Daily	Alternate Days	Alternate Days	Alternate Days	Never
Project Work Tasks						
Clean trash containers	Weekly	Semiannually	Semiannually	Annually	Never	Semiannually
Clean windows	Semiannually	Annually	Annually	Never	Never	Never
Dust blinds	Monthly	Annually	Annually	Never	Never	Never
Classroom with Hard Floor—Heavy Use						
Non-Project Work Tasks						
Clean chalkboards and trays	Twice Daily	Twice Daily	Twice Daily	Daily	Daily	Daily
Clean erasers	Twice Daily	Twice Daily	Twice Daily	Daily	Daily	Daily
Damp-mop floors	Twice Daily	Monthly	Monthly	Semiannually	Never	Daily
Dust flat surfaces	Twice Daily	Weekly	Weekly	Monthly	Never	Daily
Empty pencil sharpeners	Twice Daily	Twice Daily	Twice Daily	Daily	Never	Daily
Empty waste containers	Twice Daily	Twice Daily	Twice Daily	Daily	Daily	Daily
Spot-clean walls and doors	Twice Daily	Weekly	Monthly	Semiannually	Never	Monthly
Sweep, dust-mop floors	Twice Daily	Twice Daily	Daily	Daily	Daily	Daily

APPA Model Task Frequencies: All Used Tasks in All Used Space Categories

Pedal Pick-Up®



The Simple Solution

Pedal Pick-Ups® are the solution to cargo delivery in pedestrian areas where zero-emission vehicles are necessary. They are perfect for use in grounds and building maintenance, for delivering campus mail or picking up recyclables. These "tricycle trucks" are an inexpensive, low-maintenance alternative to conventional trucks and electric vehicles.

Features include:

- 21-speeds, index shifting
- 12 sq. ft. cargo area
- 500 lbs. (quarter ton!) capacity
- Powerful rear hydraulic brake

Main Street Pedi-Cabs has been perfecting the design of human-powered vehicles since 1992.

Main Street Pedi-Cabs, Inc. (303) 295-3822

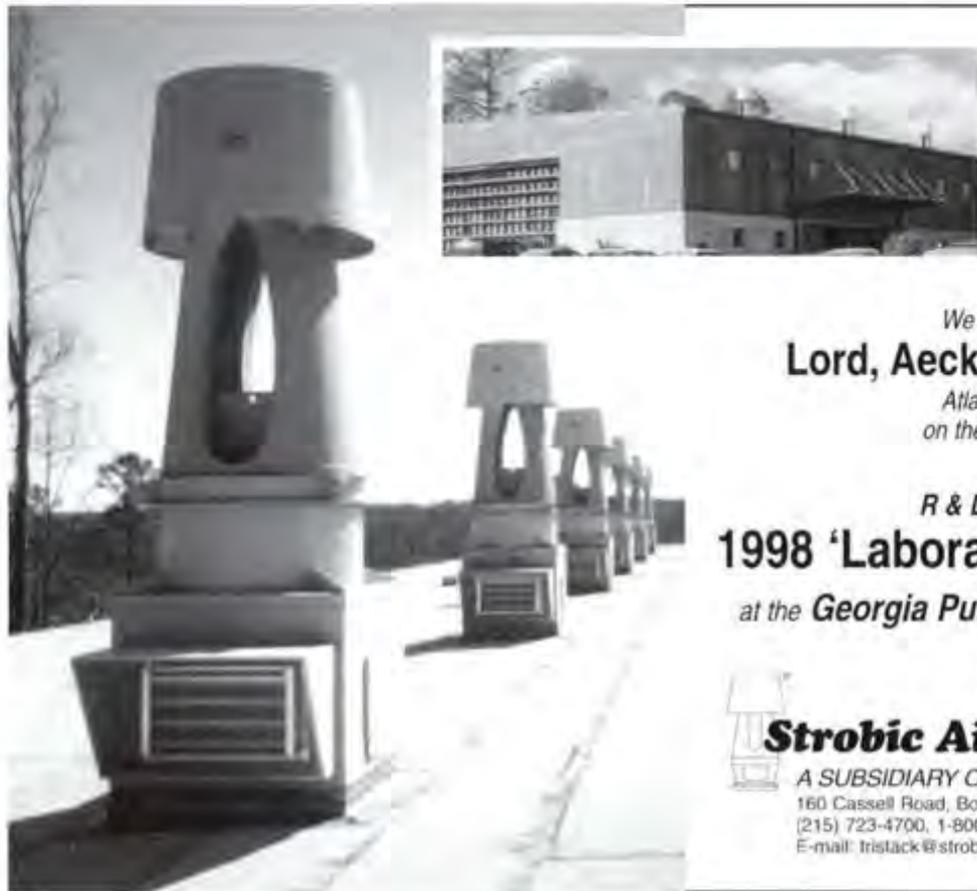
invaluable when budget cuts are a reality. The manager can surgically make changes to minimize the effect of budget reductions.

By utilizing the industry standards, profiles can be used to analyze proposals cleaning contractors submit by comparing their labor allocations to the cleaning levels outlined on contract specifications. This is an effective tool for assuring that the contracts, which often are as decipherable as an unknown foreign language, are written in an easily understood text. This allows you to make critical decisions before a contract is signed. Many times customers are dazzled by all the information. Because they have no method of visualizing what is being proposed, they will make decisions that they may not be happy with.

These profiles also give the honest contractor with high standards the ability to give an accurate picture of the real service they offer. In a competitive bidding situation, this can demonstrate that price is not the only factor.

In a cleaning operation, a manager can utilize these profiles to verify standards through quality assurance, schedule their time to monitor processes, and know who the key customers are. Employee assignments can also be tailored to each level of cleaning by utilizing the frequency schedule associates with each level for a specific category (see Figure 3).

These building profiles are an invaluable tool not only for custodial operations, but can be utilized in other areas of physical plant management. With some imagination and foresight, this process can be incorporated into most facilities operations. 🏢



We are proud that our Tri-Stack Laboratory Fume Hood Exhaust Systems were selected for this award winning project

We congratulate
Lord, Aeck & Sargent, Inc.
Atlanta, Georgia
on their selection as

R & D Magazine's
1998 'Laboratory of the Year'
at the Georgia Public Health Laboratory



Strobic Air Corporation

A SUBSIDIARY OF MET-PRO CORPORATION

160 Cassell Road, Box 144, Harleysville, PA 19438

(215) 723-4700, 1-800-SAC-FANS, FAX: (215) 723-7401

E-mail: tristack@strobicair.com, Web Site: www.strobicair.com



FACILITY CONDITION ANALYSIS • elevator engineering • infrastructure: utility analysis • energy systems: evaluation and design • power plant: cogeneration analysis • operations and maintenance analysis • construction management • deferred maintenance / capital renewal management • security analysis

• facility condition analysis • elevator engineering • infrastructure: utility analysis • energy systems: evaluation and design • power plant: cogeneration analysis • operations and maintenance analysis • construction management • deferred maintenance / capital renewal management • security analysis • facility condition analysis • **ELEVATOR ENGINEERING**

• operations and maintenance analysis • elevator engineering and maintenance analysis • elevator engineering • **INFRASTRUCTURE: UTILITY ANALYSIS**

• operations and maintenance analysis • elevator engineering and maintenance analysis • elevator engineering • infrastructure: utility analysis • construction management • infrastructure: utility analysis • construction management • deferred maintenance analysis • **ENERGY SYSTEMS: EVALUATION AND DESIGN**

• construction management • utility analysis • energy systems: evaluation and design • deferred maintenance / capital renewal management • deferred maintenance analysis • energy systems: evaluation and design • **DEFERRED MAINTENANCE / CAPITAL RENEWAL MANAGEMENT**

• infrastructure: utility analysis • construction management • deferred maintenance analysis • infrastructure: utility analysis • construction management • deferred maintenance / capital renewal management • security analysis • facility condition analysis • elevator engineering • infrastructure: utility analysis • energy systems: evaluation and design • power plant: cogeneration analysis • operations and maintenance analysis • construction management • **SPACE UTILIZATION, MASTER PLANNING**

• operations and maintenance analysis • facility condition analysis • power plant: cogeneration analysis • operations and maintenance analysis • facility condition analysis • operations and maintenance analysis • elevator engineering • **POWER PLANT: COGENERATION ANALYSIS**

• operations and maintenance analysis • elevator engineering and maintenance analysis • elevator engineering • space analysis • construction management • infrastructure: utility analysis • operations and maintenance analysis • **OPERATIONS AND MAINTENANCE ANALYSIS**

• construction management • infrastructure: utility analysis • construction management • infrastructure: utility analysis • **CONSTRUCTION MANAGEMENT**

• elevator engineering • space analysis • construction management • elevator engineering • space analysis • construction management • **SECURITY ANALYSIS**

YOU AND ISES ... PARTNERING FOR A HIGHER STANDARD.



ISES CORPORATION
 2165 West Park Court / Suite N / Stone Mountain, GA 30087 / Telephone: (770) 879-7376 / Fax: (770) 879-7825 / <http://www.isescorp.com>

VISIT US IN BOOTH 908 IN SAN JOSE!



Energy Management and the Infrastructure System

by James M. Blackburn, P.E., MBA

has made the engineering and infrastructure systems more important than ever before.

The objective of this article is to present the various aspects of cost and benefit to Wake Forest University for a new energy management program (EMP) that will include all on-campus property, portions of the off-campus properties, and a new high voltage distribution system (HVDS) that will include all on-campus property. These improvements will include all critical utilities to the campus (cooling and heating loads, and electrical loads).

The cost/benefit analysis of the EMP has looked at the type and manner of energy consumption and how energy conservation measures could be taken. The HVDS project's chief benefit has been to design a system that will allow the university to exploit various aspects of the electrical utility deregulation market. The objective of the university's top leadership is to reach the turn of the century with a campus whose infrastructure is in relatively good shape.

Energy Management Program

The Objective

The energy management program for the campus has consisted of a three-pronged attack. The first aspect of the program was to go after the electrical savings that could be obtained easily. This program consisted of the changing out of lamps and ballasts from T-12, 40-watt lamps, and magnetic ballasts to T-8, 32-watt lamps, and electronic ballasts. The savings associated with this project were conservatively estimated at 700 kW in demand and slightly less than 4 million kWh in electrical use. The payback was about four years with a 25 percent return on investment.

The second aspect of the program was to change out the old steam traps as well as other aspects of the steam distribution system. The cost of this project was estimated at \$300,000 with a payback of just over three years.

Third and last, Wake Forest has entered into a program for design of a central building automation system for the campus. Our objective is to follow four simple goals:

1. The system must be achievable using the DDC hardware and software that is currently available
2. The system must maintain environmental conditions (these include temperature, humidity, and air quality) within acceptable limits

For the last two years, Wake Forest University has been involved with the master planning process for infrastructure improvements on the university campus. The Wake Forest campus is located in Winston-Salem, North Carolina. The university moved from Wake Forest, North Carolina to Winston-Salem around 1957. Construction on the campus began in 1955. The Reynolda campus consists of slightly under 500 acres of land, 25 buildings, and slightly over 2.5 million square feet of building space.

Like many other university campuses Wake Forest has had to deal with budget constraints along with the construction of new facilities. These problems can be somewhat opposed to each other. In addition, Wake Forest is three-quarters into a program to provide computer laptops to every freshman student (beginning with the entering class of 1996). All students will have a computer by the year 2000. This program has put the university into an aggressive program to "wire" the campus, and the infrastructure across the campus has to support the new technology in ways that provide security and quality. The typical power outage has to be a thing of the past. This

James Blackburn is assistant director, technical services, at Wake Forest University, Winston-Salem, North Carolina.

3. The system must minimize energy consumption
4. The system must be understandable by the operating staff who are responsible for the day-to-day operation and maintenance of the building conditioning systems

The goal has been to save energy on campus while maintaining a relative comfort level for students, faculty, and staff. Understanding that energy conservation is third on the list has meant that we would have to understand how the university consumes energy. What is the nature of that energy, and how we are charged for that energy? Based on our consumption pattern, is there a way we can design an energy management system that will exploit possible savings retained in an EMP? The following section will provide some of the reasoning behind the decisions for the above programs.

The Campus Profile

Approximately 90 percent of the campus is fed from its own high voltage distribution system. This accounts for about 1.85 million square feet. The cost per square foot for electrical has gone from \$0.633 to \$0.851 dating from 1990 to 1996. This represents a 34 percent increase over a period of six years. Over the same period the total utility cost per square foot has increased from \$1.244 to \$1.603, which represents a 29 percent increase. Over the same time, the percentage breakdown of electrical, thermal, and water/sewer has changed very little (49 percent electrical, 44 percent thermal, and 7 percent water/sewer; see Figure 1).

Interestingly, the real increases have been in the electrical and the thermal utilities. These utilities were relatively flat prior to 1993, but they have taken on increases over the last several years as shown in Figure 2.

Electrical Energy Analysis

An in-depth analysis of the consumption profile for the campus was reviewed to identify any patterns that might determine how best to save energy. This analysis was performed on data beginning in 1990 to 1994. The first step in this process was to understand how the Duke Power rate structure worked for the campus. This rate structure works as follows:

- The rate structure (a time of day) is designed to delay plant construction by controlling peak production requirements
- The structure penalizes "on-peak demand" and "on-peak use"
- The demand charge for winter is \$6.54 and summer is \$11.89
- The energy charge (kWh) is \$0.043 on-peak and \$0.021 off-peak
- The summer demand window in general is 1:00 to 9:00 p.m.
- The winter demand window in general is 6:00 a.m. to 1:00 p.m.

Considering our five-year analysis from 1990 to 1994, the following trends were most evident.

- 36 percent of the cost of electrical service for the year is directly related to on-peak demand (KWD) charges

Figure 1
Wake Forest University
1990 Energy Consumption

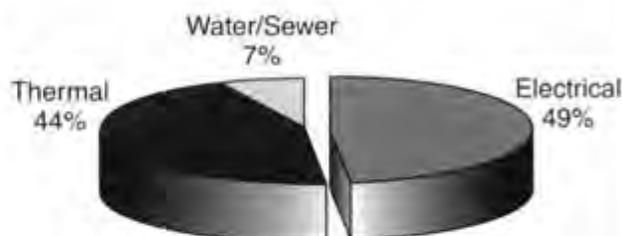


Figure 2
Utility Expenditures 1990-96



- 25 percent of the cost of electrical service for the year is related directly to on-peak energy, the kWh on-peak portion of the bill
- 39 percent of the cost of electrical service is related directly to off-peak energy, the kWh off-peak portion of the bill
- Based on the above percentages 61 percent of the electrical services cost occurs during 22 percent of the potential energy consuming hours of a year. For practicality, "potential energy consuming hours" has been defined as 22 of the 24 hours in a day and 337 days out of the year. (See Figure 3.)
- The most obvious conclusion to this analysis has been that all kW was not created equal and that a kilowatt saved during peak hours can be much more valuable than one saved during non-peak hours. (See Figure 4.)

Thermal Energy Analysis

An analysis of the steam production facility (the central boiler plant) looked at steam production costs over the last several years. The cost of steam has generally trended downward over the last six years. This cost, measured in dollars per 1,000 pounds of steam produced, measured around \$7 in 1988 and has decreased to around \$4 in 1995. This represents a 43 percent decrease in seven years. The central boiler plant consists of two Erie City boilers, each with a capacity of

Figure 3
Average Electrical Cost Distribution

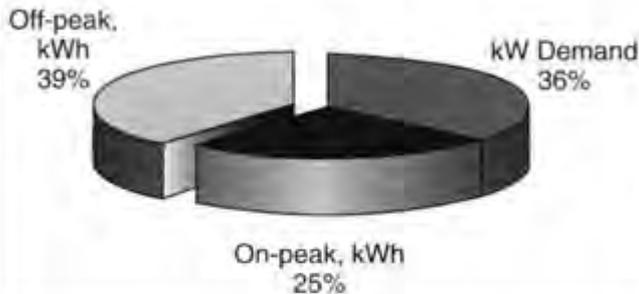
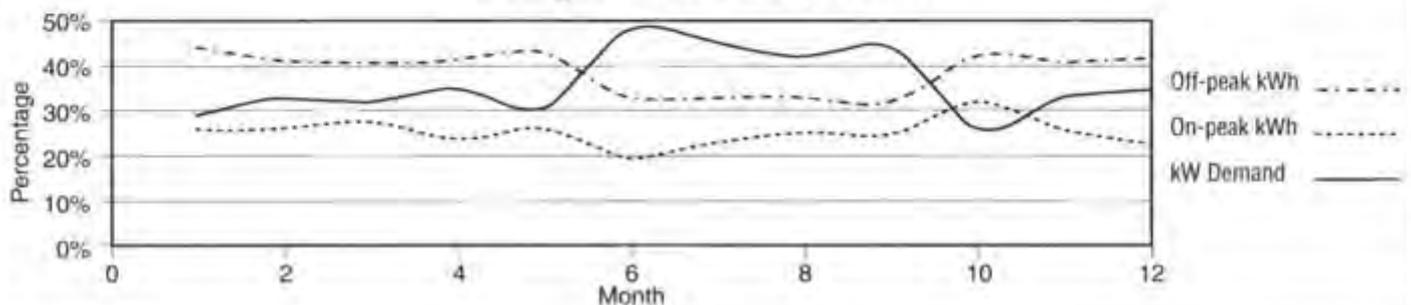


Figure 4
Trending for Electrical Expenditure



60,000 per hour and 518,400,000 pounds per year. The production data for FY 94-95 indicates 51 percent or 265,000,000 for one boiler or 26 percent of the plant capacity (the plant capacity is 1,036,800,000 pounds of steam). The financial breakdown for the same year was as follows:

Energy Costs	
Fuel cost (variable)	\$797,000
Water cost (variable)	\$20,000
Electrical cost (variable)	\$54,000
subtotal	\$871,000
Operational Costs	
Labor cost (fixed)	\$192,600
Equip. Repair (var.)	\$13,700
Supplies (fixed)	\$59,700
Maintenance (fixed)	\$5,600
subtotal	\$274,100
Total	\$1,145,100

The above cost information means that 76 percent of the cost for producing steam is directly energy related. The total cost for energy \$871 million for producing 265,000,000 pounds of steam is \$3.29 per 1,000 pounds of steam. The operational costs for steam production was 24 percent of the total production cost (\$274,000 or \$1.03 per 1,000 pounds of steam production). The total cost for steam production was \$4.32 for the year. This figure does not include any costs for equipment replacement, equipment insurance, or any

accounting depreciation costs. The results are conclusive from the standpoint of where do you concentrate your energies in saving dollars. They have to be in the energy cost area. This would mean that anything you could do to save in the cost of the energy it takes to produce steam, do it.

Building Automation System

The design of the building automation system will endeavor to exploit various aspects of how in large part electrical energies are spent. The system will be designed so as to make the existing maintenance staff more efficient, be proactive in addressing building comfort problems before they are called in, and catch potential maintenance problems within the building systems that are monitored by the automation. The cost of the system is

estimated at between \$1.5 and 2.0 million. The potential savings are estimated at slightly less than \$400,000. This represents a payback of between 3.9 and 5 years. The savings are broken down as follows:

Cost/Benefit Analysis

The cost of the EMP is estimated to have a total cost of slightly over \$3 million with annual savings projected \$1 million. These include all the projects discussed above. The individual projects are represented as follows.

High Voltage Distribution System

As most organizations look at what types of problems present the most difficult solutions, power outages are near the top. Most research-oriented universities know that power outages present difficulties to the faculty and the tests they are performing. The trick is to design high voltage power distribution in a way that presents the lowest chance for an outage to occur, while staying cost effective. At Wake Forest the high voltage distribution system belongs to the university. Duke Power brings power to the campus from one substation that splits into two feeds, one on the north end of the campus (called the Scale Fine Arts Substation) and one on the south (called the Physical Plant Substation). The system uses 4,160 kV service that has been stepped down from 12,470 kV.

The second problem we have seen on campus is the growth in the number of facilities and how we are to distribute power

Table 1

Measure Description	Electrical Energy Savings	Electrical Demand Savings	Steam Energy Savings	Total Annual Saving
1. Constant Volume Fans	\$153,300	\$15,200	\$162,700	\$331,200
2. Variable Volume Fans	7,300	0.0	2,900	10,200
3. Pumps	26,300	2,000	0.0	28,300
4. Economy Control (WPC)	8,000	2,500	0.0	10,500
Category Totals	\$194,900	\$19,700	\$165,600	\$380,200

Table 2**Projected Costs and Savings by Project**

Project	Cost (\$000)	Annual Savings (\$000)
Relamping Project	\$400	\$200
Thermal Energy Project	\$450	\$200
Building Automation System Campus	\$2,000	\$400
UCC/RBC	\$450	\$250
Total	\$3,300	\$1,050

to these buildings. When the university made the decision to solve these problems, the overriding design criteria was to:

- provide for redundancies to buildings (multiple feeds to any one building)
- provide for a service to the campus with a significantly reduced outage rate
- provide for "new" growth in the system
- provide for a higher "quality" of service
- provide for a maintenance friendly system
- do the above in the most cost effective manner

Solution

The solution to these problems appears to be easily addressed by construction of the university's own substation. This solution would require Duke Power to construct on university property a major substation, fed from transmission lines. The route electrical power typically takes to the building it feeds is as follows: a) generating plant, b) transmission lines, c) primary cable, d) secondary cable, and e) service drops. The electrical service on transmission lines could be as high as 100 kV. These lines for the university are located on large metal poles about 80 to 100 feet high. Transmission lines typically do not experience outages due to winter storms or high winds.

The second part of this solution includes the design of the high voltage system on the campus. The cost of the project is estimated at \$4.5 million. There are aspects to this program that can produce significant payback. They include but are not limited to the cost of procuring electrical service.

HVDS Construction

The construction of the HVDS will be built with a two-phase approach. The first phase will include the following:

Phase 1

- construction substation to provide for a permanent feed onto campus
- construction of the East Feed Circuit (EFC) and a portion of the North Main Feed Circuit (NMFC) beginning from the DP substation completed to the electrical vault adjacent to the central boiler plant
- the EFC provides power distribution for the Facilities Management Complex, the North and South Chiller Plants, seven residence halls, the Worrell Professional Center, the Information Services Building
- the estimated KWD for the ECF is approximately 4 megawatts
- the approximate cost for this phase is \$1.5 million

Phase 2

- construction of the balance of the NMFC through the main portion of the campus
- construction of the South Main Feed Circuit (SMFC), West Feed Circuit (WFC), the Central Feed Circuit (CFC)
- each of the circuits provided for above will distribute power to the balance of the university
- the estimated KWD for the NMFC, SMFC, and the WFC is approximately 4.5 megawatts
- the approximate cost for this phase is \$2.75 million

Cost/Benefit Analysis

Costs and benefits for the HVDS were summarized as follows:

Costs: The first costs for the HVDS project have been somewhat easy to identify (see cost per phase above). Other costs that are somewhat more difficult to identify include shut down of equipment, interruption of experiments, phasing costs, and operation and maintenance costs for the system. The worst case total cost for the project would be about \$4.5 million. The ongoing operation and maintenance cost has been summarized below.

Benefits: There are certain benefits that can be measured quantitatively and therefore summarized with a dollar figure.

Table 3
Summary of Utility Budget Data
Wake Forest University

Year Number	Budget* Utility Costs (\$)	Actual** Utility Costs (\$)	Budget Savings	Projected Savings	Total Savings
1995-96	\$4,151,210	\$3,420,797	\$730,413	\$127,098	\$857,511
1996-97	4,244,612	3,489,213	755,399	207,745	963,144
1997-98	4,340,116	3,558,997	781,119	247,996	1,029,115
1998-99	4,437,769	3,630,177	807,591	267,644	1,075,236
1999-2000	4,537,618	3,702,781	834,838	289,248	1,124,086
2000-01	4,639,715	3,776,836	862,879	348,908	1,211,786
2001-02	4,744,108	3,852,373	891,735	393,360	1,285,095
2002-03	4,850,851	3,929,420	921,430	425,904	1,347,334
2003-04	4,959,995	4,008,009	951,986	428,264	1,380,250
2004-05	5,071,595	4,088,169	983,426	435,721	1,419,146
NPV	37,024,743	30,187,002	6,837,741	2,482,395	9,320,136

There are also other benefits that are more qualitative in nature and wherefore make a dollar value somewhat more vague. The biggest unknown would be what effect electrical deregulation will have on the purchase of electrical utility. Some saving we can calculate that are quantitative are the metering savings we will get because of utility diversity and delivery. The total cost of the project over a two-year period is \$4.25 million. Operation and maintenance adds another \$150,000 per year. Benefits begin in year two at approximately \$200,000 and are projected to increase to \$1 million by year five to ten. This makes the Benefit to Cost (B/C) ratio 1.15 by years 5 to 10. The payback is 8.4 years (12 percent IRR).

Financing

One of the most interesting aspects of the program has been how to finance all the above projects. The concept used to fund these projects has been referred to as "self-funding." The university began the program with an initial investment of \$3 million. The program is kept aloft with its own savings.

Background

A detailed review of the cost of energy was performed for the campus and its surrounding properties. The FY 95-96 budget was slightly under \$4.2 million. This projects to just over \$5 million by FY 04-05. Using the rate of increase on the budget for ten years does this. For this same period of time there will be some rate of expenditures. These rates of expenditures will change based on what is done within a given building. The savings would be calculated by comparing the budgeted expenditure to the energy adjusted cost.

The actual savings calculations have been projected through fiscal year 2004-05 and the net present value was determined. Those projects are shown below.

The total savings represent the future cash flows for projects. Not included in the above NPV of \$9,320,136 is the start funding of \$3 million. This makes for a total of \$12.3 million in funding. The first thing that should be relatively evident is the fact that sufficient funding is not in place to eliminate the replacement maintenance and to fund all the projects discussed above. Future additional funding will be required to complete all the projects listed. Another thing is that some items listed in the replacement maintenance category are also considered energy projects or infrastructure projects. Therefore, it is not necessary to count these projects on both sides of the equation.

Conclusion

The campus is currently in the middle of the construction of a state-of-the-art energy management system and the upgrade of the high voltage distribution system. These two projects in themselves will require funding of \$7 million to \$8 million. It stands to reason that if the work we are doing is to be considered a success, projected saving will have to be obtainable and measurable.

Much in the way of strategic planning has gone into the design of these systems. Much more work is required before they will be completed. Energy consumers may have to rethink their current pattern of energy consumption. This will require people to rethink the patterns currently used in providing whatever services are delivered.

In our case this product includes both research and education. University administrators are being told to hold down the cost of an education. Facilities managers, engineers, administrators, and faculty will have to climb out of their respective boxes and look around so they can see more than their own world. A team effort is required. 🏢

APPA Salutes the Following Suppliers for Their Continued Support!

Visit Them at the San Jose Educational Conference
and Support Them Throughout the Year

A

AAF/McQuay International
Alarm Lock Systems Inc.
American School & University
Magazine
American Seating
American Thermal Products,
Inc.
Anchor Fence/Monumental
Iron Works Division
Applied Computer
Technologies
Applied Management
Engineering
Ascension
Asser Works, Inc. (formerly
AEC Data Systems
Avian Flyaway Bird Relocators

B

Bartlett Tree Experts
Bayview Technology Group,
Inc.
Best Access Systems
Best Litter Receptacle
BetzDearborn
Bird Master
Blue Ridge Carpet Mills
Brady USA - Graphic Solutions
Brainerd Compressor, Inc.
BTG, Inc.-Delta Research
Division

C

C.R. Klewin
Cannon
Capitol Partitions, Inc.
Carl Walker, Inc.
Ceramic Cooling Tower Co.
CES Group, Inc.
CES/Way, A Sempra Energy
Solutions Co.
College Planning &
Management
Collins & Aikman
Floorcoverings
Comtec Industries
Construction Market Data
Group
Council of Educational
Facility Planners
Country Roads Inc.
Crothall Education Services
Culbertson Enterprises
Custom Window Company
Cutler-Hammer

D

Dahlen, Berg & Co., Inc.
Davey Commercial Grounds
Management
Direct Low Voltage Supply
DriTherm, Inc.

E

E & I Cooperative
E M C Engineers, Inc.
Education FM
Edwards Engineering Corp.
Electric Power Research Inst.
EMSL Analytical, Inc.
Engineering Associates, Inc.
Engineering Systems Magazine
Enron Energy Services
Environmental Design Group
Essex Industries, Inc./ASSA
Abloy
EVANTAGE, a division of VA
Power

F

Facility Engineering
Associates, PC
FIRSTENERGY
Flexspace, Inc.

G

Gage-Babcock & Associates,
Inc.
GE Capital Public Finance,
Inc.
General Meters Corporation
Genie Industries

H

Hager Companies
Harbor Group Inc., The
Hardy Instruments, Inc.
HCI Systems
Hesco, Inc.
Hillyard, Inc.
HNTB Corporation
Host/Racine Industries, Inc.

I

Indus International, Inc.
Intermatic Inc.
International District Energy
Association
ISES Corporation

J

Jacknob Corp.
Johnson Controls, Inc.
Johnsonite

K

Karlsberger Companies
Kartner/FVB District Energy
Inc.
KeyTrak, Inc.
Kimball Office Group
Kinetics Noise Control

L

Landis & Staefa, Inc.
Lerch Bates-Elevator
Consulting Group

Lithonia Lighting
Locknetics Security
Engineering

M

Maiman Company, The
Maintenance Warehouse
Marelstone, L.L.P.
Marketect Corporation
Marks USA
McCourt Mfg.
Mechanical Ingenuity Corp.
MicroMain Corporation
Milliken Carpet
Mity-Lite, Inc.
Motion Control Engineering,
Inc.
Musco Lighting, Inc.

N

Nalco Chemical Company
Natare Corporation
New Hermes Inc.
New Horizon Technologies,
Inc.
Nova Solutions, Inc.

O

O'Brien Kreitzberg

P

Palmer Snyder Furniture Co.
Parke Industries, a div. of SRS
Patterson-Kelley Co., A Harsco
Co.
Performance Roof Systems,
Inc.
Perspective, a CSI/DBIA Joint
Venture Product
PinnacleOne
Polo-Surface Protection
Industries
Portable Pipe Hangers, Inc.
Power Measurement Ltd.
Prism Computer Corporation
Pro-Team, Inc.
PSDI/MAXIMO

R

Ramtech Corporation
Rebuild America/U.S. Dept. of
Energy
REDICHECK Associates
Refinishing Touch, The
RMF Engineering, Inc.
Roesel, Kent & Associates
Rolf Jensen & Associates, Inc.
Roof Consultants Institute
Rovanco Piping Systems, Inc.

S

Salsbury Industries Mailboxes
Santana Products, Inc.
Sarnafil Inc.

Scaltril Inc.
Schoolcraft Publishing
Screenflex Portable Partitions
Inc.
Sears Industrial Sales
Sebesta Blomberg & Associates
ShowerShapes
Silicon Energy
Skyjack Inc.
Sloan Valve Company
Smart Management Systems,
Inc.
Spectrum Industries, Inc.
Square D Company
SRC Systems, Inc.
StageRight Corporation
Stanley Consultants, Inc.

T

3D/International
Technical Concepts
Tesa Access Control
Thermal Pipe Systems, Inc.
Thomas Lighting
TMA Systems, Inc.

U

U.S. Filter/Stranco
Unico Service Company
Unico, Inc.
United States Pumice
Company
United Technologies Carrier
University Loft Company
Urecon Systems, Inc.

V

Victor Stanley, Inc.
VingCard PERSONA
Virco Mfg. Corporation
Viron Energy Services

W

Watt Stopper, Inc., The
Western Group, The
Wiremold Company, The
W.L. Gore & Associates, Inc.
Wooster Products, Inc.
World Dryer Corporation

Y

Yale Security Inc.

Z

Zola-Surface Protection
Industries
Zurn Industries, Inc.

Correct as of July 6, 1998

Off-Balance Sheet Financing

by Matthew C. Adams, P.E.

The slow but inevitable progress of electrical deregulation offers great potential in operational savings for our nation's educational institutions. Recently, the groundbreaking deal in California for both the California State and University of California systems provides a solid paradigm for future initiatives in other states. As this activity intensifies, administrators are reminded of the increasing variety of financing options available to them. In fact, "creating something from nothing" is a recurring theme for those that have taken it upon themselves to squeeze every dollar out their facilities operating budget. When successful, administrators strike aggressive deals with vendors of all sorts for their services. Often the end result is more than just services provided. It is a capital asset or improvement. When no debt is incurred by the institution this is off-balance sheet financing.

At a recent Delaware Valley APPA meeting, I suggested to the group that traditional accounting policies offer opportunities to facility administrators. Most of the attendees are still using "fund-based" accounting methodologies. The annual budget is increased or decreased by a percentage of last year's budget. After years of this policy, the budget of the department is based only on spending experience, not built-up resource cost

Matt Adams is president of The Adams Consulting Group, a management/engineering consulting firm located in Atlanta, Georgia, specializing in the facility maintenance and management within higher education, school districts, and other institutions. He can be reached at mc.adams@facinet.com.

standards. This can present cash flow opportunities. Upon close review, some of the service centers show waste and inefficiency. It may be that the institution simply does not enjoy the correct economies of scale to deliver this service. This sets the stage for leveraging the savings.

A subset of off-balance sheet financing is "energy performance contracting." Many institutions have engaged in these contracts for years with good success. The basic premise is the same for all projects—save operational dollars (energy costs in this case) and use the cash flow to finance capital improvements. The three largest energy control companies have engaged in this work for years. Now, the big utilities have set up "for profit" subsidiaries and called them "Big Utility Name—Energy Services Co." The new energy service companies or "ESCOs" hope to capture supply-side contracts as well. The good news for the institutions is that competition is heating up for their business. APPA has made a point to support its membership in engaging both supply and demand-side contracts. Refer to APPA's website (www.appa.org) and past publications for more information.

Food service contracts serve as great vehicles for off-balance sheet financing. At the Savannah College of Art and Design, Sodexo was awarded the food service contract for the new dormitory. Unfortunately, the new dormitory was not new—it was very old. SCAD, as they are called, located in historic downtown Savannah purchased the only suitable property it could find—a run-down Ramada Inn. The deferred maintenance was very extensive. Sodexo and SCAD saw a win-win opportunity to partner in

improving the old inn. The vendor needed new kitchen and dining facilities to serve the kids and SCAD simply wanted renewed facilities. The result is a multi-year contract that yields significant capital renewal improvements for each of the five years. The company depreciates the capital improvements and gets the tax benefit. SCAD on the other hand cannot enjoy the benefits of depreciation and just wants the improved facilities. At the end of the contract, the depreciated improvements become the property of SCAD. As Dan Stephens, the chief financial officer of SCAD sees it: "We offer companies the opportunity to take the depreciation benefit of assets while the college is utilizing them."

Partnerships are becoming more creative as well. Before the Olympics, Georgia Tech foresaw the need to renovate its basketball coliseum. This venue served the boxing events and then would house Georgia Tech's mens' and womens' basketball teams. Undersized for any of the latter events, Tech needed the capital to expand and renovate the facility. A unique financing partnership grew out of the shared needs of Tech and McDonalds. In return for a multi-year contract for food service in the new coliseum, Tech was "fronted" the capital required to finance a large part of the needed capital improvements. Over \$3.5 million was supplied by McDonalds for the renovations. Naturally, all of the deferred maintenance in the facility was eliminated as well.

When a vendor must install new hardware to execute a contract, the college can benefit. The College Television Network is a broadcast network devoted exclusively to college kids. The programming is

beamed from satellites to college unions and dormitories. The company installs its own televisions, cable, and associated hardware to its technical specifications. This hardware is also used by the college for announcements and other needs. The college earns cable assets by allowing the company to show its CNN-style broadcast to the students. With no cash payments involved at all, this is a great example of off-balance sheet financing.

If you think that this sounds too good to be true, you may be right. The tax laws are designed to prevent institutions from getting carried away with off-balance sheet financing. In fact, there are specific rules that apply to such deals. As it turns out, institutions are sometimes tempted to reclassify financing deals as expenses rather than capital costs or worse—as debt. Most institutions are restricted by state regents, the legislature, or if private, by their primary lending institution or even all of the above. Just like private businesses, the public and private money lending bodies want to control the spending and debt structure of their respective clients. In the private lending world, these rules are called “covenants.”

When assets are used by the institution under a contractual agreement, the vehicle is generally classified as either an “Operating Lease” or a “Capital Lease.” In true off-balance sheet financing situations, the assets are used and transferred through an operating lease. In the strictest sense, a capital lease is debt incurred by the institution that will show up in tax audits. This debt presents consideration for the limits, rules, or covenants placed on the institution.

Joe Berkemeyer, business development manager for financial services of Landis and Staefa, points out that “more than \$20 billion is currently used in tax-exempt equipment leases in the nonprofit community nationwide. Many of the deals associated

with energy performance contracting are carried on the books as assets and hence debt. This classification is based on an evaluation by the FASB rule 13.” This rule is really four criteria that determine if a lease is considered capital (carried on the books) or operating (not carried and expensed). A lease is not capital if it meets all of the following criteria.

- The life of the deal must be less than 75 percent of the life of the equipment.
- The cannot be a defined purchase option at the end of the lease.
- No titled ownership can pass as per the contract.
- Present value of the payments must be less than 90 percent of the value of the equipment.

The specific rules and a variety financial vehicles that are available can be seen at www.elaonline.com under info and types of leases.

It is clearly difficult to classify many equipment acquisitions as operating leases. Many of the best financial experts go to great lengths to create contracts that meet the four criteria. However, equipment need not be the only consideration. Operational improvements offer savings in material and labor resource expenses. Many contractors offer shared savings for improvement in productivity. The savings can serve to purchase a variety of capital improvements. Using savings for improvements after they are realized is certainly not considered debt. In fact, in house service centers can operate in the same fashion and share savings with the business office. This is a great incentive for departments to perform.

Creativity in financing is a tool that the most successful administrators keep at their disposal. Not all of the capital investment dollars necessary can be expected from traditional funding sources. Partnerships with various business enterprises and simple redirection of saved dollars provide cash flow streams that offer the opportunity for campus improvements. 🏢

3D/International

Full Service Construction Professionals

Facility Assessments

Architecture

Engineering

Interior Design

Program and Construction Management

Environmental Services

Contact: Carl Rabenaldt @ (713) 871-000
rabenaldt@3di.com

Or come see us at the APPA conference
2nd-4th August 1998. We are located next
to the APPA Showcase in booth 923.

1900 West Loop South, Suite 400
Houston, Texas 77027 + 3292

<http://www.3di.com>

Fax (713) 871-7171



Is Deferred Maintenance Keeping You Awake at Night?

Are you losing sleep
over the impact that deteriorating facilities are having on your
institution's ability to achieve its mission over time?

*The Decaying American Campus: A Ticking Time Bomb*¹
and

*A Foundation to Uphold*²

...uncovered the great need for colleges and universities to maintain their existing facilities
to meet the demand in higher education.

We focus
on the unique elements of maintaining and upgrading historic structures
to assure that they'll be around to continue to serve you
well into the future.

We'll Help You Sleep Better...



Walter Sedovic Architects

Historic Preservation & Contextual Design

914 591 1900

Fax: 914 591 1999

One Bridge Street, Suite One

Irvington, New York 10533-1543

eMail: modernruins@earthlink.net

¹A joint report of APPA, NACUBO and Coopers & Lybrand; ²A joint report of APPA, NACUBO and SALLIE MAE



Share the *Benefits* of APPA Membership

New members provide fresh perspectives and new ideas, and they expand the circle of professional peers. This month, APPA kicks off Share the Benefits, our new Institutional member recruitment campaign, and we need your help. We're asking you to reach out to your facilities colleagues at nonmember colleges and universities in your region and invite them to join APPA as Institutional members. You will be well rewarded for your efforts—read on for more details!

Top Ten Benefits of APPA

1. Access to a network of facilities colleagues ready to assist you.
2. Top notch educational programs to assist your professional growth.
3. On-line resources that put information at your fingertips.
4. *Facilities Manager*, APPA's bimonthly magazine to keep you up-to-date on trends and practices.
5. Opportunities to get together with your peers at annual meetings and other events.
6. Recognition of your accomplishments.
7. A forum to demonstrate your professional knowledge through speaking and writing opportunities.
8. Information on legislative and regulatory changes, and how you can prepare for them.
9. Committees, task forces, and other volunteer activities where you can develop your leadership skills and contribute to your profession.
10. Inside information on career opportunities.

What's in it for you?

In addition to the warm glow you'll get from helping a colleague get connected to a great professional organization, APPA will reward your efforts with a generous thank-you. Check out these prizes:

1 new member

Set of *Facilities Management: A Manual for Plant Administration* (A \$170 value!)

2 new members

One free registration to the Institute for Facilities Management for your institution (A \$700 value!)

3 new members

Your choice: Two free registrations to the Institute or \$1500 toward APPA's new Leadership Academy programs.

How it works

All you need to do is contact your local colleagues and give them the attached application form. Ask them to fill your name and institution on the application under "referred by." When we receive their application and payment, we'll notify you.

Not sure who in your area is not a member? Call APPA at 703-684-1446 ext. 232 or 227 and we can provide you with a list of prospects. But hurry! This campaign ends December 1!

Application

Dues Matrix

GIE ▶	\$0-10 MILLION		\$10-25 MILLION		\$25-50 MILLION		\$50-100 MILLION		\$100-200 MILLION		\$200-400 MILLION		\$400+ MILLION	
	FTE ▼	Dues	Assoc. Members	Dues	Assoc. Members	Dues	Assoc. Members	Dues	Assoc. Members	Dues	Assoc. Members	Dues	Assoc. Members	Dues
0-999	\$260	0	\$300	0	\$360	0	\$420	0	\$505	0	\$595	0	\$765	1
1,000-1,999	\$280	0	\$325	0	\$390	0	\$445	0	\$535	0	\$650	1	\$785	1
2,000-2,999	\$320	0	\$370	0	\$420	0	\$480	0	\$560	0	\$720	1	\$840	1
3,000-4,999	\$410	1	\$475	1	\$530	1	\$585	1	\$665	1	\$770	1	\$885	1
5,000-11,999	\$520	2	\$560	2	\$610	2	\$710	3	\$790	3	\$890	3	\$1,020	3
12,000-19,999	\$600	4	\$690	5	\$745	5	\$805	5	\$890	5	\$990	5	\$1,115	5
20,000+	\$695	4	\$800	5	\$850	5	\$935	5	\$1,005	5	\$1,100	5	\$1,235	5

Join APPA as an Institutional member and you will become a part of the largest global network of higher education facilities professionals. To take advantage of APPA benefits, fill out this application. Refer to the Dues Matrix to look up your institution's dues amount, and mail your payment along with this application to:

APPA Membership, 1643 Prince Street
Alexandria, VA 22314-2818
Questions? Call 703-684-1446 ext. 232 or 227.

Referred by: _____
Institution Name: _____
Street Address: _____
City & State: _____
Zip or Postal Code & Country: _____

Primary Representative

Individual's Name: _____
Title: _____
Address (if different from above): _____

Phone, Fax, & Email: _____

Additional Associate Members (Refer to the Dues Matrix for number of Associates included in your membership. If desired, additional Associates can be added for \$160 each.)

1. Individual's Name: _____
Title: _____
Address (if different from above): _____

Phone, Fax & Email: _____

2. Individual's Name: _____
Title: _____
Address (if different from above): _____

Phone, Fax & Email: _____

Membership can be paid by purchase order, credit card, or check, or you can have APPA invoice you. Checks and purchase orders should be payable to APPA in U.S. funds.

Method of Payment:

- Check enclosed
- Purchase order (attach copy)
- Credit card
- Invoice me

Credit card payments only

Card type:
 Visa MasterCard American Express
Card number: _____

Expiration date: _____

Cardholder's name: _____
Authorized signature (required): _____

Membership Dues Amount: \$ _____

Additional Associates: \$ _____

TOTAL: \$ _____

Unorthodox Solutions

by Howard Millman

Popeye, a childhood hero, was forever trying to strong-arm the bully Bluto into unhanding his cartoon love, Olive Oyl. Bluto, of course, defiantly laughed into Popeye's chipmunk-checked face. Exasperated, Popeye would declare "I've had all I can stands; I can't stands no more!" and then proceeded with his inevitable rescue mission.

My sentiments exactly, Popeye. In April, I delivered the keynote for TMA System's first users conference. On the trip to the Tulsa, Oklahoma, weather delays caused me to miss a connecting flight and I had to loiter at O'Hare for three hours. I arrived at 2 a.m. to learn that the Tulsa Marriott, despite guaranteed reservations, rented my room to someone else. That night, I slept on a couch in a meeting room.

The next morning, my bones still creaking, I delivered the keynote speech. The theme, a favorite of mine, centered on letting go of the past as a prelude to moving into the future. I reported why some universities and hospitals enjoyed success while others failed to achieve the time and sanity-saving benefits of automation. We focused specifically on helping, inspiring, or eliminating "legacy" personnel. I define "legacy" personnel as staff members with 15, 20, or 25 years on the job who resist change

Howard Millman operates the Data System Services Group, a problem-solving consultancy group based in Croton, New York that helps universities and university hospitals automate their facility management process. He can be reached at 914-271-6883 or by e-mail at hmillman@ibm.net.

and improvement out of ignorance, fear, or personal agendas.

For the next two days I spent more time listening than speaking as some of the conference's 150 attendees publicly and privately shared their own solutions on what to do when you "can't stands no more." While I don't necessarily agree with these novel strategies, I relate them to keep you informed of how some peers opt to improve productivity. I do not necessarily disagree with these strategies either.

Solutions ranged from the obvious such as increased training opportunities, heart-to-heart talks, and progressive discipline for errant workers to the less traditional solutions for those times when by-the-book solutions won't work. Usually, the less traditional approaches involved some form of reassigning the staffers.

One administrator said that he transformed a problem employee into

a "gopher" to keep him out of the way by making deliveries or picking up supplies. That helped keep the employee away from customers and academics who, while appreciating his schmoozing skills, would have preferred him to do maintenance work.

Another administrator reassigned a lone employee to a newly-created night shift with a block on the telephone limiting calls to on-campus extensions only.

A third person told of two employees who were slowing undermining her operation to further their personal goals. One of their goals, she said, was to unseat her from her newly-acquired position as assistant director. Her unorthodox solution involved periodically sending these two staffers to free local classes for computer literacy. On the surface, this looked like the actions of a manager trying to improve the skills of subordinates. However, in truth, this Machiavellian

IPM System
System: IP/Process, IP/Asset, IP/Code, IP/Unit, IP/Type

Detailed Assets

Id: 1 Area: 399 Security and Utilities Asset [Lease/Maturity] [Relocate Asset]

Asset Type	HVAC System	Quantity	1	ID / Bar Code Number	034674648
Description	100 Ton Chiller	Date in Service	05/05/1992	Date Out of Service	?
Make / Model	Honeywell 4574	Original Cost	\$80,000	Market Value	
Social Number	2546434674	Purchase Order #			
Status	Owed through Acquisition				

CBP

Effective Life in Years	10	Depreciation	Convention	None
Replacement Year	2002		Method	None
Estimated Replacement Cost	\$100,000		Recovery Period in Years	0
Annual Replacement Budget	\$10,000		Percentage Factor	0.0
Deferred Maintenance	\$7,500		Depreciated Value	

Include in IPM Watch Include in IPM / CBP

Notes

Property Summary

ID	NH	ZS	00001	001	Name	Government Office
Address	500 Grant St.	City/Type	Com/Institutional			
Phone	(800)555-5000					
City	Anytown	State	NH	Zip	12345-	

Buttons: New, Edit, Delete, Print, Next, Back, Home, Cancel, Done

The IPM System collects and catalogs facility assets.

We listen...



Then we work.

*Improving your estimating process...
building solid project budgets...
benchmarking performance... developing
new costing solutions... analyzing building
products' installed costs.*

To get a new perspective on your unique construction and facilities challenges or to request our brochure, call:

1-800-448-8182
www.rsmeans.com

RSMeans

Consulting Services Group

*"Construction Cost Estimating
Know-How for North America"*

plot was primarily designed to frustrate the employees. It did, she reports.

I asked if reassigning these staffers was a luxury that further diminished their already understaffed operations? Interestingly, the three administrators had, more or less, reached the same conclusion. They said that these employees contributed so little real work that their absence was not a burden, but a blessing. The three also admitted that they would have preferred to

terminate the employees, after expending all reasonable corrective efforts, but unions or other forces necessitated this stealth approach.

Following these and other enlightening conversations, I had one more very spirited chat with an airline ticket agent following my return trip. I wondered why, when I went to LGA, my bags went to Newark. Good thing for him I didn't have a can of spinach handy.

Product Watch

Your facility's real property and equipment represents a significant investment. Seeing to its care and feeding takes a large chunk of your and your staff's time. Surprisingly, many facilities have never cataloged the age, condition, and location of their assets. Although the task does not require a degree in rocket science, you do need strong organization to keep it from getting out of hand. Software vendors, such as HCI Systems, offer products that can help.

Their product, the IPM System, integrates the collection and cataloging process to give facility managers a comprehensive knowledge of their assets. Some of its specific features include:

- Property and fixed asset surveys (including buildings, building components, furniture, fixtures, and equipment)
- Facility-wide audits to help prioritize physical plant needs
- Better management of long-term deferred maintenance and capital renewal planning
- Space and occupancy management

Benefits can include:

- Improved quality and distribution of information
- The ability to establish "best practices" benchmarks
- Reduced liability and possibly lower insurance premiums through the identification and prioritization of life, health, and safety concerns
- Improved quality of decision-making
- Quantified and prioritized deferred maintenance
- Reliable capital renewal forecast

You can contact HCI for more information at 800-750-4424 or visit their website at www.hcisystems.com.



The Bookshelf

Book Review Editor: Dr. John M. Casey, P.E.

The theme for this issue of *Facilities Manager* is Pathways to the Future. Most of us would probably agree that, in terms of institutional direction and support, the exact location of each school's future is subject to much speculation. In the early 1980s, the Carnegie Council reminded the academy in *Three Thousand Futures* that each institution has a different road to travel; I suspect that many schools that think they know exactly where the future will take them have been badly misinformed. At best, we all need to let our knowledge of where we are now help us plan for this trip. Two areas where we should be especially proactive concern planning and energy management. This issue's reviews cover both these general subjects. The planning titles reviewed include a work by SCUP addressing special areas and a book on disaster planning and recovery. The last two reviews cover financing energy projects, and an energy engineering handbook.

Special Planning for Special Places, edited by Persis Rickes. Ann Arbor, Michigan: Society for College and University Planning, 1997. 141 pp, softcover.

Special Planning is an anthology of 23 articles and book reviews which appeared in *Planning for*

John Casey is manager of the engineering department of the physical plant division at the University of Georgia, Athens, Georgia. If you are interested in reviewing a book for *The Bookshelf*, contact Casey at jcaseype@uga.cc.uga.edu.

Higher Education, the journal of the Society for College and University Planning (SCUP). As the editor indicates, "all campus spaces are special, but perhaps some are more special than others...." This book covers four types of special spaces: cultural, instructional, student, and outdoor. The discussions for each space type are current and informative, written by individuals with extensive experience in higher education facilities.

The section on cultural spaces contains planning information for performing arts, visual arts, and museum buildings. Dedicated structures for these functions are not present on every campus, but most higher education institutions have rooms or sections of buildings for these activities. The article on acoustics for music buildings is especially well done, as is the primer covering museums. This cultural space type was especially interesting to me since my university has recently completed a performing and visual arts center which includes all the facilities described here.

The second special type of space covered is the one that affects all facilities managers in the academy. Instructional spaces continue to need constant attention to take advantage of the untapped potential of the electronic age to support pedagogical evolution. Classroom, library, and laboratory designs are reviewed in four articles and four book reviews. The articles which were future-directed, especially "What Size Libraries for 2010" and "Designing Tomorrow's Laboratories," are very well done. Unfortunately, one book review discussed the report by the Higher Education Colloquium on Science Facilities' Task Force on Academic Facilities Costs. This group spent

enormous time and energy reporting that science buildings cost more to build and take longer to design and construct than other college buildings; this profound disclosure was another example of experts who borrow your watch and then tell you that time it is.

Student spaces are the focus of the third special space type discussion. Resident hall, student activity center, and bookstore planning articles convey valuable information for facilities managers. The "New-Wave Student Housing" article is an excellent review of the resurgence of student housing in the academy, both as an element of college choice and as a location for technology access. Also, the discussion of student activity centers listed the new facility on my campus, a building which has become a source of great pride for the entire student body.

Outdoor spaces on campuses are covered in the last section of this anthology: Landscape design is often given short shrift during periods of budget contraction, and these articles point out the importance of planning and design in creating the special ambiance that a college should have. Curb appeal not only attracts students, but also helps form the social cement that builds faculty, staff, alumni, and students into a cohesive academic community.

Special Planning for Special Places is an important publication by an important higher education association. SCUP, like APPA, provides its members with literature and services which can be very helpful for professional facilities managers. I freely admit that I am biased toward SCUP, since its journal stresses the value of book reviews, done by its members, to

keep all members informed about the literature affecting its area of higher education. This book is very informative, and should not be overlooked by APPA members. It is now available through APPA's Resource catalog.

Dr. John M. Casey, P.E.

Manager, Engineering Department
Physical Plant Division
University of Georgia
Athens, Georgia

Disaster Planning and Recovery : A Guide for Facility Professionals, by Alan M. Levitt. New York, New York: John Wiley and Sons Inc., 1997, 417 pp, hardcover.

Typically, anyone reading the magazine in which this review appears will, as an APPA facility professional, be overworked and underpaid. And whether by personal inclination or by executive fiat, you are or will have a good chance of becoming the party responsible for the Campus Emergency Plan. "How

should you proceed," you ask yourself. The tried and true approaches include borrowing a plan from another campus and changing the wording to suit, hiring a consultant, assigning it to a junior member of your department, or buying a book on the subject. The title of this book attracted my attention and I eagerly ordered it for my junior staff person to read and get on with the assignment. As this approach did not seem to be proving overly productive, I found myself trying to peruse the book during the work day in order to find some inspiration. After the normal daily slew of phone calls, queries, and other immediate priorities rendered this approach impossible, I then took it home for bedside reading.

The author's background is as a consultant in "disaster planning" for a broad range of clients, both corporate and institutional. The author's contention is that a disaster is not necessarily an emergency if it is to some degree predictable. Here is where I must disagree with his approach. He claims that with sufficient discipline and thoroughness all eventualities (vulnerabilities) can be searched for, analyzed, and rectified. There is an assumption that it is possible to have a written planned response to every "out of course" event. This will seem comfortable to those with a military background and experience in "doing it by the book." What seems to be missing from the text is a discussion of the "at the moment" organizational response, defining the roles and resources that need to be filled in responding to the disaster or emergency, not by assigning specific persons but rather by clarifying roles and responsibilities that must be performed by whomever and whatever is available.

The author has indicated that his intent was to produce an overview of the complete spectrum of the subject area. Considerable effort has been spent, over half of the book or the first six chapters, on what is essential-

ly the definition of terms. The writing style is rather academic and each chapter contains redundant material mentioned in earlier discussions. As bedside reading, this was tough to get through. The later portion of the book tends to be focused on the prediction of what can go wrong. This material can be helpful in your own review of the situation on your campus.

To those with experience in dealing with the reality of a disaster, certain elements stand out as being the keys to successful response. Was the initial design or planning of the affected facility cognizant of the weakest link in the chain? Are the resources, both people and materials, internal and external, necessary for response put in place? Are the lines of communication and authority established? Are exercises in response to typical situations being practiced? Is there an ongoing program to evaluate areas of vulnerability, and are steps being taken to rectify these situations? The above issues are explored but not necessarily with any insight into how a campus facility manager can move them forward in an academic model of collegial decision making and competing resource needs.

The later chapters in the book proved to be more interesting and helpful to me for developing a working response plan. The paper plan espoused in the author's approach would probably end up looking good and be well-received, but then sit on a shelf, much as this book will, unless the reader makes it past the definitions and reiteration of the obvious.

Lee Gavel

Assistant Director of Facilities
Management
Simon Fraser University
Burnaby, British Columbia, Canada

Financing Energy Projects Deskbook, by Albert Thumann and Fred E. Wainwright. Lilburn, Georgia: The Fairmont Press, Inc., 1997, 247 pp, hardcover. *continued on page 64*

carpenter Emergency Lighting

Carpenter Emergency Lighting: Featuring a Complete Line of Emergency Lighting Since 1925. Exit Signs: L.E.D., Self Luminous, Incandescent, and Fluorescent, Also, Emergency Ballasts, IPS, UPS, Emergency Lighting Units, Commercial and Spec. Grade, L.E.D. Exit Retrofit Kits, and Portable Lights.



Call for more information
and or a free catalog

CARPENTER EMERGENCY LIGHTING
702 Charlton Avenue
Charlottesville, VA 22903
804-977-8050

From **A** to **Z** Cutler-Hammer Is Your Single Source



AMPGARD[®] Medium Voltage Starters... **B**usway...



Circuit Breakers

Dry-Type Transformers



... **E**nergy Sentinel[™] Submetering Devices



... **F**uses

Ground Fault Protection...

Heavy Duty Safety Switches



... **I**MPACC Communications...

JIT Manufac-

turing Capability... **K** Factor Transformers...



Loadcenters... **M**otor Control Centers



Network Protectors... **O**PTIM[™] Trip Units, the Programmable



Trip Unit System

Pow-R-Line C[™] Panelboards



and Switchboards... **Q**uicklag[®] Industrial Breakers



Reduced Voltage Starters... **S**ubstations



... **T**ransfer Switch Equipment

Unitized Power Centers



... **V**acClad-W Medium Voltage Switchgear and Breakers



WLI



Load Interrupter Switchgear... **X**citation[®] Control



... **Y**ou (the customer is always

number one)... **Z**one Selective Interlocking, Provided in Most Digitrip[™] RMS Trip Units.

We have thousands of products and services for the distribution and control of electrical power.
To find out more about Cutler-Hammer products, call 1-800-525-2000 for the location of your nearest distributor.



Cutler-Hammer

EATON

VISIT US IN BOOTH 925 IN SAN JOSE!



Contracting
Alternatives, Inc.

Physical Plant Contracts Now Available

Updated and improved as needed to meet today's standards, each complete document includes: Bid Instructions, Scope of Work, Technical Specifications, Terms and Conditions, and Pricing Schedules. Individual contracts and complete volumes are presented in a professional binder and available on computer diskette using a WordPerfect format.

Construction - Part A: Carpentry Services; Concrete Installation and Replacement Services; Drywall Services; Electrical Services; Excavation Services; Painting Services; Ready Mix Concrete; Resilient Flooring Services; and Suspended Ceiling Tile Services.

Construction - Part B: Crushed Stone Supplies; Doors, Windows, and Hardware Supplies; Electrical Supplies; Lumber and Building Supplies; Masonry Services; Masonry Supplies; Mechanical Services; Mechanical Supplies; and Plaster Services.

Buildings & Grounds: Atrium Plant Maintenance; Electrical Utility Services; Elevator Inspection Services; Elevator Preventive Maintenance Services; HVAC Preventive Maintenance Services; Pest Control Services; Refuse Collection Services; Trash Removal Services; and Tree Trimming Services.

Hard Copy w / Diskette

One Volume	\$ 195	\$ 295
Any 2 Volumes	345	445
Complete 3 Volume Set	495	595
Individual Contracts	50	75

To place an order, obtain a current listing of available contracts, or to inquire about customized contract documents please contact:

Contracting Alternatives, Inc.
Tel: (540) 552-3577 Fax: (540) 552-3218
P.O. Box 1, Blacksburg, VA 24063-0001
www.bidspecs.com

continued from page 62

Thumann and Wainwright's use of the term "deskbook" implies that this text is so valuable that it should be a ready reference this book's audience, but I doubt the audience is university energy managers. More likely it is facility managers for the industrial and commercial sectors, who lack the constraints of a university system. With that said, I did find sections that, for new energy managers, will shed light on how to justify and implement new projects.

In their introduction, the authors present three goals: to explore many different financing options, to provide the tools for financial engineering analysis, and to identify new trends. What they provide is six different ways to describe energy service companies (ESCOs) and third party financing. This is not surprising since chapters written by ESCO representatives make up almost half of the book minus the extensive appendixes. Inserting the papers written by Shirley Hansen, Ph.D., and John R. Armstrong and Suzanne G. Smith, gives the book a disjointed feel, especially with the chapter on international markets.

The first goal, the different financing options, falls to the wayside after the first chapter and its definition of terms. Similarly, the authors fall short in their third goal to identify trends, unless you did not already know that utility companies are becoming ESCOs. Where they excel is in their second goal to provide financial engineering tools. These tools include rate-of-return analysis, a model third party finance agreement, and measurement and verification protocol.

What more do I want from this book? More meat. The information on what an ESCO is and how third party financing works is reiterated several times, but what I wanted to know is how to get approval for it in a bureaucracy like state government. Also,

how to write the contract between parties so to best use existing maintenance staffs. Lastly, how to get more information on the financing types that the authors hint at in the first chapter, covering asset sale/buyback and utility rebates.

Overall, if you have not had an ESCO at your door wanting to explain the process of third party finance to you, or if you heard about it but never done one, *Financing Energy Projects Deskbook* is a useful resource. If you have already tried this method to accomplish your retrofit needs, then its contributions will be marginal.

Kevin Swisher

Manager, Engineering and Energy
West Virginia University
Morgantown, West Virginia

Handbook of Energy Engineering (fourth edition), by Albert Thumann and D. Paul Mehta. Lilburn, Georgia: The Fairmont Press, 1997, 478 pp, hardcover.

Now that Prentice Hall has assumed the role of distributor for Fairmont Press publications, it is safe to announce that the energy engineering empire of Albert Thumann has finally come of age. Frankly, this reviewer wondered if all the Fairmont Press books sponsored by the Association of Energy Engineers would ever attain the lofty plateau of recognized technical publications. Now, however, with the imprimatur of Prentice Hall, these books have become consistently more professional, and APPA readers should selectively review the association's frequent publication notices for informative literature in the facilities management field.

Thumann and Mehta have recently published the fourth edition of *Handbook of Energy Engineering*, covering a topic of universal interest to all APPA members. Energy conservation may not be a front-burner issue in 1998, due to declining fuel oil prices and a

continued on page 67

PAPERLESS JUST GOT SERIOUS



The Digital Maintenance Assistant™ Interface from TMA gives you the power of an electronic work order system that fits nicely in the palm of your hand.

- Upload work orders to the PalmPilot™ organizer from TMA's CMMS database
- Download work, labor and materials into TMA's CMMS database from the PalmPilot™ organizer
- Update all lookup data on the PalmPilot™ organizer from within TMA's CMMS database
- Download inventory records of space and equipment from the PalmPilot™ organizer, creating new records in TMA's CMMS database

TMA is dedicated to taking your facility's maintenance operation to a higher level of efficiency with **cutting-edge technology**. Through exploration, research and ambition we strive to develop products for the computerized maintenance management industry that fosters improved standards for increasing productivity and eliminating unnecessary downtime.

You can understandably see why TMA is excited to be offering you the industry's **first affordable** handheld paperless electronic work order system that is totally integrated into TMA's entire lineup of CMMS software.

In addition to the Digital Maintenance Assistant™, TMA's complete CMMS software line is a **wise investment** featuring simultaneous multi-platforming capabilities

(Windows 95, Windows NT, Power Macintosh and Windows 3.x) delivering work order management, preventive maintenance, inventory control, equipment histories, multiple repair centers, project management and hazmat tracking.



Looking to further streamline operations?

TMA's additional interfaces will assist you in your plans.

- Utility Tracking
- Event Scheduling
- ViewCAD™
- E-mail
- Key Management
- RS Means
- Internet/Intranet

If you would like more information about what TMA can do for you, contact TMA Sales toll-free **800.862.1130** or visit **www.tmasys.com** to download a FREE demo.



TMA Run With the Authority...™
CMMS

©1998 TMA Systems, Inc. All rights reserved. All other product names referenced herein are trademarks of their respective companies.



VISIT US IN BOOTH 429 IN SAN JOSE!

Poor planning and placement of

SIGNS

Not enough or too many

SIGNS SIGNS

No compliance with ADA



Slow delivery of

S I G N S

Poor quality of

SIGNS

Confusing



Poor installation of



Why take chances with your wayfinding system?

INNERFACE®

ARCHITECTURAL SIGNAGE

"The Company That Does Things Right"

For a free brochure, video, local representative 1-800-777-8283 or in Atlanta (770) 921-5566

feeling of complacency caused by the recent implementation of energy management systems, but energy costs are usually the second-highest expense in a facility's budget and these deserve constant attention. This is especially important in the near term, when institutions will be faced with making decisions on energy suppliers due to electrical deregulation. Based on these considerations, facilities managers should be very receptive to sound energy engineering advice.

But does this *Handbook* provide such advice? This book has been written to serve not only as a reference text for college and university engineering courses, but also as a basic text to help individuals prepare for the Certified Energy Manager (CEM) examination. The authors claim that no prior knowledge of the subject

matter is required, but it becomes obvious that some such experience would be very helpful for readers. The book is divided into sixteen chapters with basic information on auditing, economics, systems, and applications covering all but the final two chapters. This basic information is informative, and puts an energy engineering spin on the subject matter.

The two chapters on "Energy Economic Analysis" and "Energy Auditory and Accounting" are especially well written and useful. The final two chapters, however, covering "Competitive Power" and "Financing Energy Projects" do not provide sufficient current information to help make decisions concerning the electrical deregulation dilemma. In all fairness to the authors, these two chapters may not be able to be written precisely until this complex scenario

plays out in the next few years. In the meantime, facilities managers must continue to monitor the day-to-day evolution of the deregulation problem for decision-making direction.

The question posed above—"Does the *Handbook of Energy Engineering* provide sound energy engineering advice?"—has two answers. Yes, the *Handbook of Energy Engineering* provides much sound basic advice, and no, it does not provide specific advice regarding the ultimate solution to the electrical deregulation dilemma. In spite of this, *Handbook* remains a good source of information in the field of energy management, and is recommended for all APPA institutions.

Dr. John M. Casey, P.E.
Manager, Engineering Department
Physical Plant Division
University of Georgia
Athens, Georgia

ARE YOUR ELEVATORS ASSETS or LIABILITIES?

- User Complaints?
- Noisy?
- Abnormal "Down" Time?
- Lack of Maintenance?
- Adjustments Required?
- Excessive Trouble Calls?
- Vandalism?
- Rough Riding?

GET AN INDEPENDENT OPINION



**Lerch Bates North America
Elevator Consulting Group**

**16 Offices Nationwide - Certified Inspectors
50 Years of "Client - Focused" Service
For More Information Call: (303) 795-7956
E-Mail: lbna050@ix.netcom.com**

- EMPLOYEE OWNED FIRM - EQUAL OPPORTUNITY EMPLOYER -

VISIT US IN BOOTH 100 IN SAN JOSE!

Coming Events

For more information on APPA seminars and programs, contact the APPA Education Department at 703-684-1446, ext. 230 or ext. 231.

Aug. 2-4—*Educational Conference & 85th Annual Meeting*. San Jose, CA.

Sept. 20-25—*Institute for Facilities Management*. Portland, OR.

Nov. 1998—*Leadership Academy: Professional Skills Program*. East Coast.

Jan. 17-22, 1999—*Institute for Facilities Management*. Reno, NV.

Mar. 15-19, 1999—*Leadership Academy: Individual Effectiveness Program*. Stanford, CA.

Apr. 11-16, 1999—*Leadership Academy: Organizational Skills Program*. Notre Dame, IN.

Jun. 20-22, 1999—*Educational Conference & 86th Annual Meeting*. Cincinnati, OH.

Jul. 16-18, 2000—*Educational Conference & 87th Annual Meeting*. Fort Worth, TX.

APPA Regional Meetings

Aug. 31-Sep. 3—*AAPPA regional meeting*. Darwin, Northern Territory, Australia. Contact the Conference Secretariat, meeting@tavnet.net.au, or visit www.ntu.edu.au/local/atem/conference/index.html.

Sep. 16-19—*RMA regional meeting*. Yavapai College, Prescott, AZ. Contact host Charles Andersen at 520-776-2181.

Oct. 2-6—*CAPPA regional meeting*. Little Rock, Arkansas. Contact

host Jerrel N. Fielder Sr., University of Central Arkansas, 501-450-3196.

Oct. 4-7—*MAPPA regional meeting*. St. Paul, MN. Contact Thomas Dale, University of St. Thomas, 612-962-6530.

Oct. 4-8—*PCAPPA regional meeting*. Palm Springs, CA. Contact James Hansen, California State University/San Bernardino, 909-880-7206.

Oct. 16-20—*SRAPPA regional meeting*. Birmingham, AL. Contact: Brooks Baker, University of Alabama/Birmingham, 205-934-4427.

Nov. 1-4—*ERAPPA regional meeting*. Providence, RI. Contact Norman Young, University of Hartford, 860-768-7924.

Other Events

Aug. 4-6—*MAPPA/PGMS 7th Annual Midwest Grounds Management Conference*. Western Michigan University, Kalamazoo, MI. Contact Natalie Richert, 616-387-4174 or natalie.richert@wmich.edu.

Sep. 14-18—*National Fire Alarm Code & Automatic Sprinkler Systems Seminar*. Braintree, MA. Contact National Fire Protection Association, 800-344-3555.

Sep. 27-30—*HACU 12th Annual Conference: Hispanic Challenges in the 21st Century: Leadership, Vision, and Compassion*. San Diego, CA. Contact the Hispanic Association of Colleges and Universities, 210-692-3805.

Oct. 13-16—*EDUCOM '98: Make Your Vision a Reality*. Orlando, FL. Contact EDUCOM, 202-872-4200.

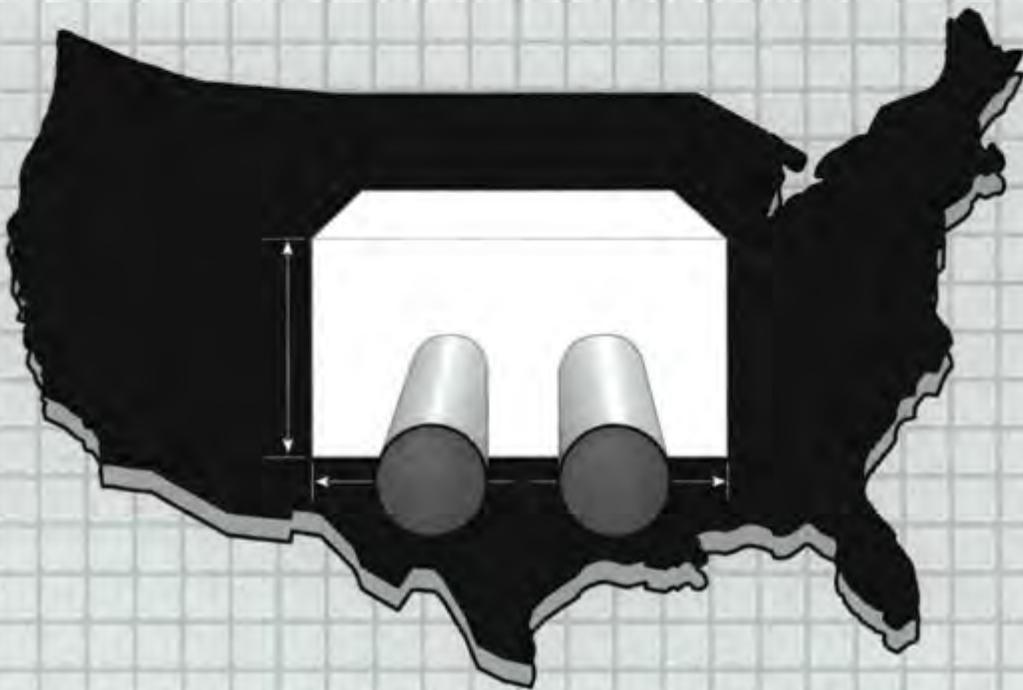
Index of Advertisers

ABM Industries	6	Johnson Controls, Inc.	34-35
American Thermal Products, Inc.	3	Lerch Bates North America	67
AMP Inc.	27	Main Street Pedi-Cabs, Inc.	48
ANADAC	26	Maintenance Warehouse	31
AssetWorks, Inc.	Cover 2	McCourt Manufacturing	13
Call 24 Wireless Call Box Systems	9	Micromain Corporation	44
Carpenter Emergency Lighting	62	Motion Control Engineering	29
CFSWay	10	N.E. Utilities/Select Energy	23
Columbus Door Company	25	Palmer Snyder	3
Construction Specifications Institute	32	Prism Computer Corporation	Cover 4
Contracting Alternatives	64	ProStop Bollards	16
Cutler-Hammer	63	R.S. Means Company Inc.	60
Data System Services	42	Salsbury Industries	19
Davey Tree Expert Co.	36	Sears Industrial Sales	37
DriTherm	Cover 3	Silicon Energy	38
Frazier Associates	30	Smart Management Systems, Inc.	40
George B. Wright	17	Stanley Consultants, Inc.	37
Gunn Levine Associates	19	Strobic Air	48
Heatcraft Commercial Products	23	SVBK Consulting Group	43
HESCO Inc.	21	3D International	57
Informed	41	TMA Systems, Inc.	65
Interface	66	Unico Systems	41
ISES Corporation	49	Walter Sedovic Architects	58



Dritherm®

Underground Pipe Insulation / Corrosion Protection



PROTECTING AMERICA'S PIPES

YESTERDAY

TODAY

TOMORROW

- Continuously Manufactured Using Same Formula Since 1967
- Closed Cell - 100% Hydrophobic Design
- Temperature Range: -273°F (Cryogenic) to +480°F (250°C)
- Ideal for New Piping Systems / Repairs / Tanks
- Approved by Department of Defense for New Construction

DRITHERM INCORPORATED

P.O. Box 5296

Parsippany, New Jersey 07054

(800)343-4188

FAX (201)428-3391

VISIT US IN BOOTH 305 IN SAN JOSE!

THE FAMIS ASSET
ENTERPRISE



Maintenance Management

Space Management

Calibration Management

Inventory Control

Tool Control

Key Control

Event Management

AutoCAD Interface

Web Site



TRADEMARKS:
ORACLE of Oracle Corporation
FAMIS of Prism Computer Corporation
BANNER is a registered trademark of
Systems & Computer Technology
Corporation

What Do You Want In A Facility Management System?

How about everything?

You could buy a maintenance management system from vendor X and a space management system from vendor Y and try to force the two to talk to each other. Or you can take a look at Prism Computer Corporation.

Prism's FAMIS Asset Enterprise is a suite of integrated software modules for managing facilities. Since each module is designed to work together, you can easily create the ideal facility management solution for your organization.

And with our advanced technology, you can also easily expand the FAMIS Asset Enterprise to people outside of your organization to create a true enterprise-wide system. For example, you can electronically communicate with your customers using the World Wide Web. You can also integrate it with Oracle Financials, SCT BANNER and just about any other financial system using our FAMIS Open Financial Interface.

The FAMIS Asset Enterprise is based on pure Oracle technology and supports Windows, Windows95/NT, Macintosh and Power Macintosh.

To find out a better way to manage your facilities, call us today at 800-774-7622 or visit our web site at www.prismcc.com.

PRISM



PRISM COMPUTER CORPORATION

TELEPHONE 800-774-7622 / FAX 714-553-6559

E-MAIL: famis@prismcc.com

<http://www.prismcc.com>

VISIT US IN BOOTH 404 IN SAN JOSE!