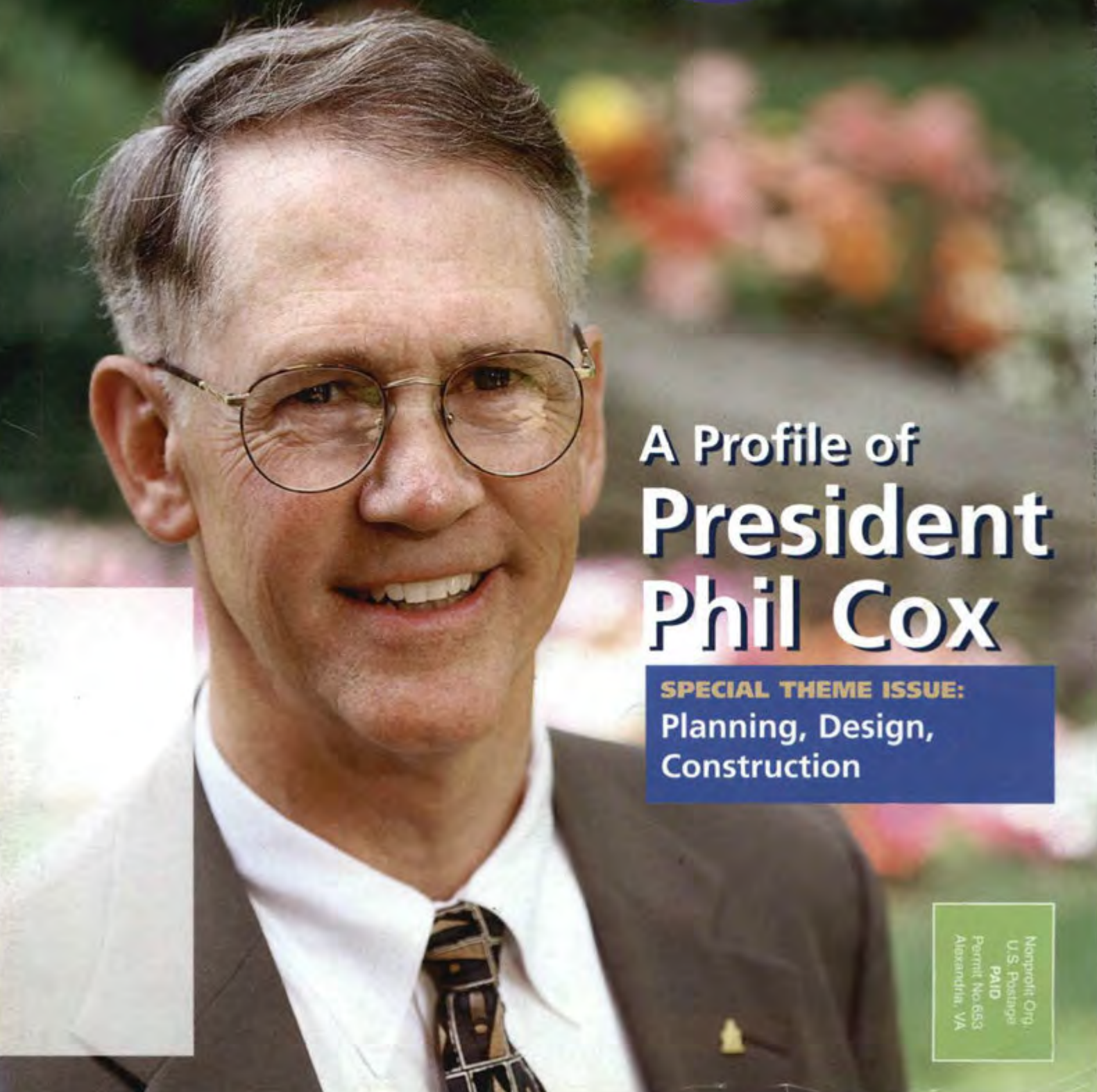
September/October 2002
VOLUME 18
NUMBER 5

Facilities Manager

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



A Profile of President Phil Cox

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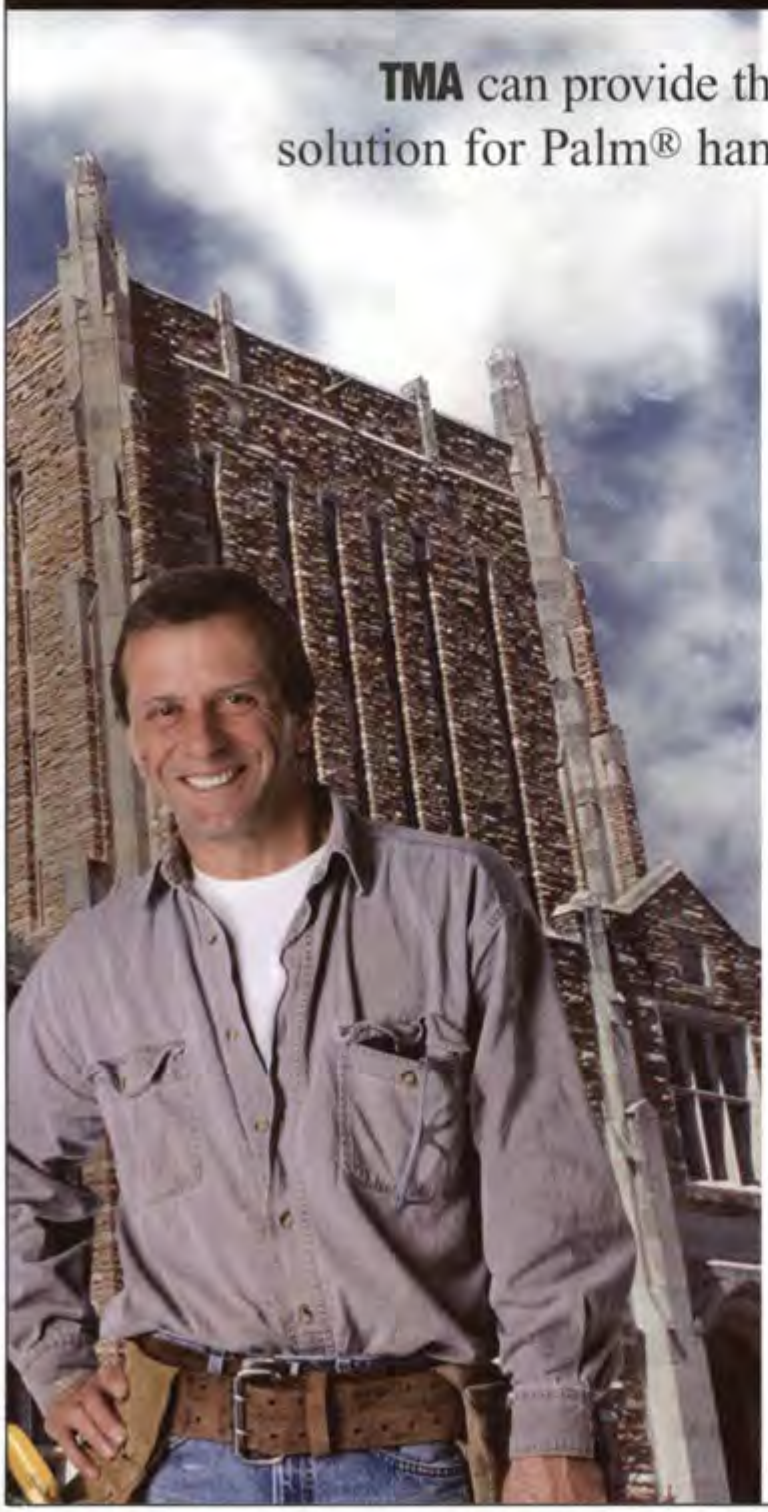

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Facilities Manager

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

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Cover photo by Frank DiMeo/CU

Facilities Manager

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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, $53 pays for the subscription to ***Facilities Manager***. Additional annual subscriptions cost $66 for APPA members, $120 for non-members. For information on rates and deadlines for display advertising, telephone 847-562-8633 or 703-684-1446 ext. 238.

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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
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In addition to these valuable educational sessions, an Exhibitor Fair will also be held. Nashville will be the place to be in November to learn about the various products and services that will help you deal with facilities issues on your campus.

Registration Information

Conference Fees
(includes registration to educational sessions and breakfast and lunch Monday-Wednesday)

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Environmental Concerns

"Treat the Earth well. It was not given to you by your parents. It was loaned to you by your children."

—*Kenyan Proverb*

2002 Winter Games a Zero Emissions Event

The Salt Lake Organizing Committee (SLOC) for the Olympic Winter Games of 2002, the Utah Energy Office, and Leonardo Academy created the "Olympic Cleaner and Greener" program to make the Salt Lake 2002 Games a zero emissions event. The goals of this program were to increase public education on emission reduction and to offset emissions caused by the energy use associated with the 2002 Games. Participants were asked to record energy savings in their homes, schools, and businesses on an energy checklist provided by Leonardo Academy. The savings were then reported to the Olympic Games Organizing Committee to offset emissions caused by energy use at the games.

"Now that the Salt Lake 2002 Olympic and Paralymic Winter Games have been successfully completed, we can take stock of how the net zero emissions goal has been achieved and recognize the organizations that contributed to this achievement," said Diane Conrad Gleason, director of environmental programs for SLOC.

The use of renewable energy projects also helped to offset emissions. For example, wind energy was purchased from the Blue Sky Program of Utah Power and Pacificorp by retail electric consumers in Utah, Oregon, Washington, and Wyoming, and these savings also helped offset the emissions of the 2002 games.

"We were very pleased to have energy efficiency help offset the emissions caused by the Olympic Winter Games of 2002 because energy efficiency provides multiple benefits including emission reductions, reduced energy bills, and increased energy security," said Michael Glenn, director of the Utah State Energy Office.

For more information on "Cleaner and Greener" programs,

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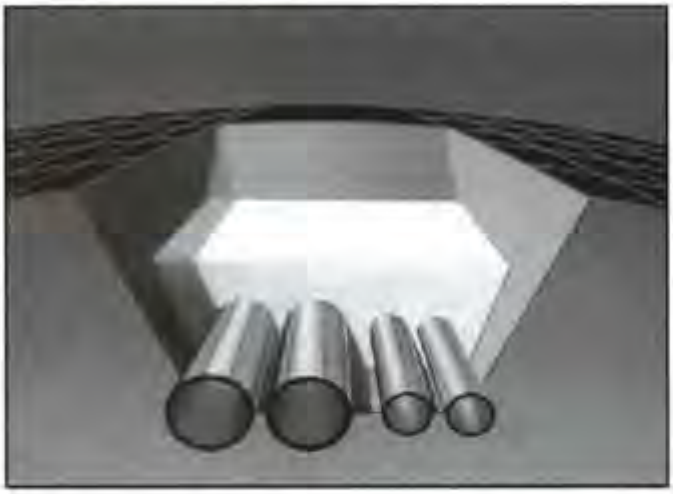

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Environmental Sustainability

Welcome to UB Green (http://wings.buffalo.edu/ubgreen), an umbrella website for the University at Buffalo (UB) environmental standing activities and programs. With the environmental impact of a modest-size city, UB embarked upon a program to make campus operations less consuming of natural resources and less polluting of natural ecosystems—hopefully on the way to becoming a "green campus."

UB's environmental programs began in the late 1970s with energy conservation and recycling. An environmental task force was created in 1990 to accelerate campus environmental policies and add more green campus programs. In 2001, Governor George Pataki signed Executive Order No. 111, "Directing State Agencies to be more energy sufficient and environmentally aware." This order reinforced campus environmental efforts by increasing energy efficiency, green building design, and green power purchases.

The UB Green Office is maintained in the University Facilities office, a primary supporter of the campus environmental policies.

Annual Energy Efficiency Forum

The 13th Annual Energy Efficiency Forum was held June 12 at the National Press Club in Washington, D.C. Secretary of Energy Spencer Abraham was the keynote speaker and addressed the topic of the federal energy landscape. Secretary Abraham is head of the Department of Energy, which is responsible for enhancing national security through domestic energy production, energy conservation, and nuclear safety. This year's forum, "Evolution of the Energy Economy: Ensuring Security and Stability," was cosponsored by the United States Energy Association (USEA) and Johnson Controls, Inc.

Under this new agency, the Army will develop a plan to renovate, overhaul, or demolish every facility at least every 67 years, rather than the 123 years it now takes, as shown by a recent Pentagon survey.

Representing the United States in the World Energy Council, the USEA is made up of approximately 150 public and private energy-related organizations, corporations, and government agencies. The Energy Efficiency Forum is an annual event created to raise the awareness of energy efficiency issues. For more information on this year's forum, visit www.eeforum.net.

Army Centralizes Facilities Management

Beginning in fiscal year 2003, the Army will centralize facilities management under the Installation Management Agency, a new 200-person organization located at the Pentagon. Currently, installation management is handled by base commanders. This reorganization will ensure better management of the Army's 166,000 deteriorating facilities.

Under this new agency, the Army will develop a plan to renovate, overhaul, or demolish every facility at least every 67 years, rather than the 123 years it now takes, as shown by a recent Pentagon survey.

If the services cannot adequately maintain their existing infrastructure, Defense Secretary Donald Rumsfeld recommends that more military bases be closed down.

"The focus of the Army has always been on having a trained and ready force. We've taken risk in our installations," said Army Maj. Gen. Robert Van Antwerp, who said the service has funded building repair and maintenance accounts at only 60 to 70 percent of their needed dollars for the past two decades. As a result, he said, the average Army building is 44 years old and is not maintained on any regular schedule. "In recent years, we've been in only 'fix what's broken' mode," he said.

The Army has set aside $1.8 billion for building maintenance and repairs, says Antwerp, about 94 percent of what is needed.

Quality Award

On March 7, 2002, Iowa State University's Facilities Planning and Management department received Tier 3 leadership recognition in the Iowa Recognition for Performance Excellence program. This is a quality improvement program developed by the Iowa Quality Center.

Organizations must demonstrate, both in theory and practice, a high level of performance excellence to achieve this recognition. The quality program uses the seven criteria of the Malcolm Baldrige National Quality Award—leadership, strategic planning, customer and market focus, information and analysis, creative human resources, process management, and business results—to select the award winner.

In receiving the Quality Leadership Award, Christopher Ahoy, Iowa State University associate vice president for facilities, and the facilities staff demonstrated a commitment to self-examination and continuous improvement and developed processes that supported higher productivity.

College Students' Habits Revealed

According to a study published by the Center for Policy Analysis of the American Council on Education, three-quarters of the students who enter four-year colleges either graduate or are still enrolled after five years.

Continued on page 6

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Continued from page 4

The study, *Access and Persistence: Findings from 10 years of Longitudinal Research on Students*, is the first of a series of studies to be published using data collected by the National Center for Education Statistics.

"It is difficult to track student's success because they do not always follow a straight path to a degree," said Jacqueline King, director of the ACE Center for Policy Analysis. "A significant number of students transfer to other institutions for any number of personal, financial, or education-related reasons. Even if students leave the first college in which they enrolled, they do not necessarily drop out of the postsecondary system; they often transfer to another school."

Some of the study findings include:

- Today's college students are 30 percent minorities; 20 percent were born outside the United States or have a foreign-born parent and 11 percent spoke a language other than English growing up.
- Only 40 percent of today's students enrolled full-time after high school, depended on their parents to take care of most of the financial responsibilities, and worked only part time or not at all.
- Approximately three-quarters of all four-year students now earn a paycheck and about one-quarter of them work full time.
- Sixty-four percent of the students earning their bachelor's degree in 1992-93 finished within five years. Just over one-third took more than five years to earn their degree.
- About one-third of those who earn a bachelor's degree enroll in a graduate program within four years. Women and men enroll in graduate school at the same rates, with men choosing MBA, professional, and doctoral programs; women are more likely to choose master's programs other than an MBA.

For a copy of the study, *Access and Persistence: Findings from 10 years of Longitudinal Research on Students*, call 301-632-6757.

2003 Programs

Registration opens November 1, 2002, for the next Institute for Facilities Management. The Institute will be held in Fort Worth, Texas, January 26-30, 2003. For more information, go to www.appa.org/education.

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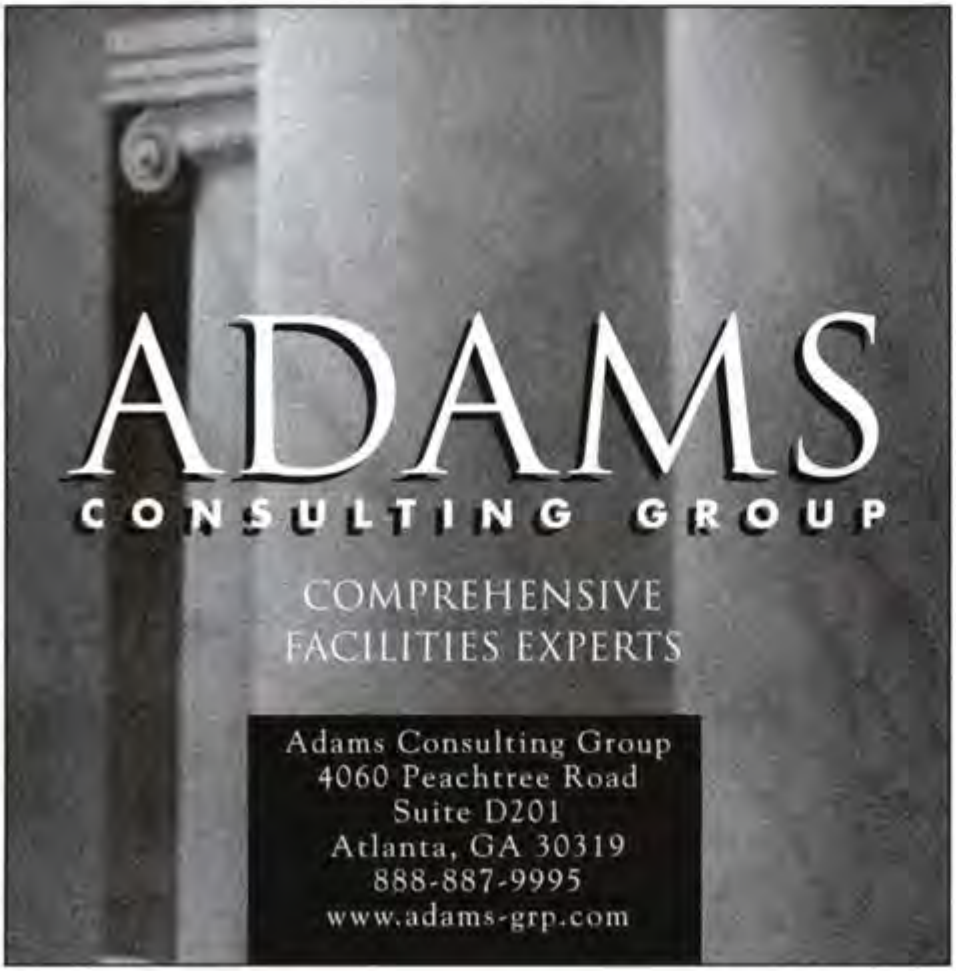

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HIGHLIGHTS

Text by Suzanne Healy • Photos by Rhonda Hole

The 2002 Educational Facilities Leadership Forum in Phoenix was an overwhelming success thanks to your participation and support of the work that is continually being done at APPA throughout the year. For those who were able to join us, we hope that your experiences were enjoyable and that you had the networking and educational opportunities you expected. If you were not able to be with us, please join us next year in Nashville, Tennessee, July 27-29.

We offer these snapshots into the heart and soul of the 2002 Forum. Our deepest gratitude goes out to the APPA membership, business partners, speakers, spouses, and guests for a great time.

We Started With A Bang!

The 2002 Forum began with opening breakfast ceremonies and a talk by keynote speaker Daniel Pink, former speechwriter for Vice-President Al Gore and author of *Free Agent Nation,* sponsored by Siemens Building Technologies.

Pink spoke on every industry's need for talented people as he enthusiastically recruited from the audience.

Which Perspective Did You Choose?

The Educational Facilities Leadership Forum provided a new educational program for attendees without losing the networking opportunities that APPA meetings are known for. The Forum offered a tightly focused program taught by invited experts and leaders in the educational facilities field. Structured perspectives consisted of Customer Service, Innovation & Learning, Internal Process Management, Financial Stewardship, Technology Management, and Knowledge Management. Each perspective examined a different critical area within the educational facilities organization. Our invited speakers helped participants understand the full range of issues, from a visionary level through a hands-on, practical application level.

Brenda Albright speaks on the topic of financial stewardship.

Speaker Joe Hollander shares experiences from Massey University in New Zealand.

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Those Who Have Raised The Bar ...

The President's Award is given to individual APPA members who have demonstrated exceptional achievements in facilities management and who have made outstanding contributions to the association. This year President Gary Reynolds bestowed the honor on:

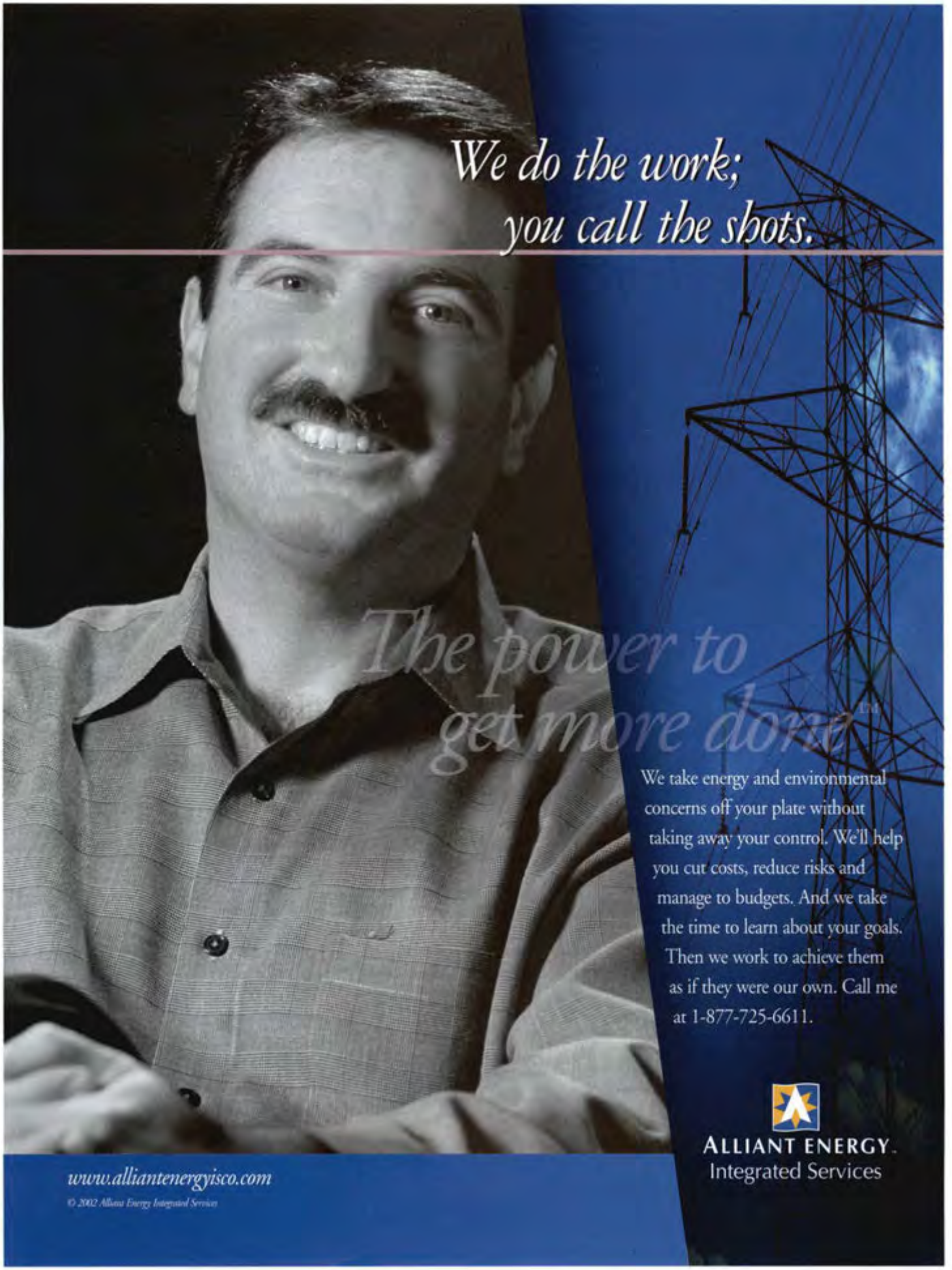
David Cain

Ted Weidner

Chong-Hie Choi

The Pacesetter Award is designed to encourage further participation in APPA among those who have already made significant contributions in their regions or chapters. The following individuals were recognized this year for their ongoing support and contributions:

Awardees: Sam Polk, Chris Ahoy, Mary Vosevich, Brooks Baker, and Earl Smith. (Absent: Tom Stepnowski.) Flanked by Mike Besspiata, Vice President for Professinal Affairs, and Gary Reynolds, President.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Contributors to *Facilities Manager* were also recognized during the Forum. The Rex Dillow Award is presented to the author of the best article published in the previous calendar year. This year we congratulate Walter Simpson for his article in the March/April 2001 issue, "A Facilities Manager's Guide to Green Building Design."

APPA's highest individual honor is the Meritorious Service Award. Each year APPA members bestow the Meritorious Service Award upon the individual member or members who have made significant, life-long contributions to the profession of education facilities management. This year's proud recipients were:

Jack Colby

Maggie Kinnaman

This past meeting marked not only a new format to our annual educational gathering, but the presentation of a new award recognizing excellence among APPA members. The Effective & Innovative Practices Award recognizes programs and processes that enhanced service delivery, lowered costs, increased productivity, improved customer service, generated revenue, or otherwise benefited the educational institution. This year APPA and award sponsor Sodexho USA, represented by Deb Naughton, recognized achievements made at the following institutions:

Accepting for Florida State University: Buddy Watkins.

Accepting for the University of California/Long Beach: Rob Quirk and Eric Johnson

Accepting for the University of Miami: Vic Atherton and Mike White.

Accepting for the University of Missouri/Columbia: Don Guckert.

Accepting for the University of Oklahoma: Sue Anne Miller.

APPA's 2002 Business Partner Award Recipients—Exceeding Expectations!

APPA's Business Partners are companies that provide products and services to the facilities management marketplace or have an interest in reaching facilities managers in the educational environment. There was an enormous amount of support this year from the Business Partners in their sponsorship, educational support, and individual projects throughout the year. The Global Business Partner Reception allowed us to say thank you to all those sponsors who have collaborated with APPA during the past year. Below are this year's award recipients.

2002 Platinum Award Recipient

Sodexho USA

2002 Gold Award Recipients

Johnson Controls, Inc.

Siemens

2002 Silver Award Recipients

Adams Consulting

Echelon

Prism/famis

ISES Corporation

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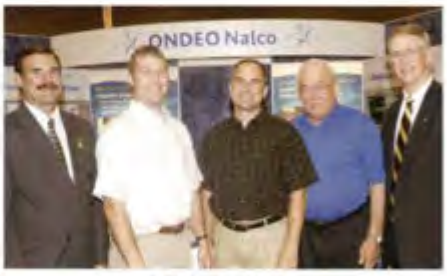

ONDEO Nalco

Reliability Management Group

Sebesta Blomberg & Associates

UNICCO

Absent: VFA, Silver Award Recipients

2002 Bronze Award Recipients

APS Energy Services

Gage Babcock & Associates

GLHN Architects

Maximus

The Butcher Company

The Gordian Group

The Western Group

TMA Systems, Inc

APPA awards two individual Business Partner Awards: the Eagle and the APPA Oscar. The Eagle award is given to those individuals who, on behalf of their company, have found additional ways to partner with APPA on projects and programs at various meetings. This award is given only when merited. This year's Eagle award went to Matt Adams of the Adams Consulting Group.

The APPA Oscar is awarded to those individuals who are "up and comers" in the organization's eyes. This year the award was presented to the following individuals:

Ron Bernstein, Echelon

Gary Merrow accepting for Ed Gee, ISES

John Johnson, TMA Systems, Inc.

Steve Nelson, Reliability Management Group

Kelly Baxley accepting for Dwight Storie, Siemens

What's a Party Without a Host?

There are many components that go into planning and orchestrating each and every Educational Conference. The APPA staff worked this past year in conjunction with another group of individuals who worked almost as many hours as we did ... the Welcome Committee.

Their dedication and assistance was invaluable throughout the entire meeting. We extend a special thank you to Dave Brixen and Polly Pinney for their service and dedication as the 2002 Welcome Committee Co-Chairs.

Our attendees were also very proud to be part of this year's fundraising cause—ASU Cares. ASU Cares is an annual community service project performing facility renovation and improvement utilizing donated labor from the ASU faculty, staff, and students. Congratulations to ASU Cares and the Welcome Committee as they raised funds in the amount of $2002. In addition, let's give a special thanks to the generosity of the raffle winner (Tom Hagge of UNLV), who turned his winnings back over to ASU Cares.

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Your Regional Representatives

Please give a special thank you to the following regional representatives for their dedication to the 2001-02 Board.

From left: Gary Reynolds; Senior Representatives: Mike White (SRAPPA), Harvey Chace (RMA), Jerrel Fielder (CAPPA), Bob Carter (ERAPPA), Greg Fichter (MAPPA), Andrew Frowd (AAPPA), and David Gonzales (PCAPPA).

Networking among colleagues and nurturing new relationships are an important part of the educational conference. As an association, APPA encourages these activities and hopes that attendees enjoyed the social aspects of the Forum as well. The following scenes were taken at the Welcome Party, sponsored by Johnson Controls, Inc., the Arizona Diamondbacks baseball game, the Hall of Resources, and the Banquet. Again, we hope that you enjoyed your week with us. We want all of our members to share in these memories and cherish them as much as we do.

The Welcome Party

APPA staff members Lander Medlin, Randel Edwards, Holly Judd, and Cotrenia Aytch greet members at the Welcome Party.

Jay Klingel, Gary Reynolds, and Jack Hug share a moment as the evening begins.

APPA staffer Steve Glazner spends time with President-Elect Brooks Baker.

Jim Cesen and Sal Chillarelli pose for a photo op.

Registration is OPEN

APPA intern Mallory Thompson assists with exhibitor check-in.

Member Registration.

Cotrenia Aytch waits for the opportunity to show off APPA's new releases to attendees.

Exhibitors check their booths one last time before the opening of the Phoenix Forum.

President Gary Reynolds receives help from School Dude.com as he prepares to open the hall.

And with one clean cut … the Hall of Resources is open!

And they're off….

The calm before the storm at APPA's booth.

Randel Edwards, director of membership, discusses pin trading secrets with John Kinnaman.

Alan Bigger and Brooks Baker haggle over a pin trading deal.

All is quiet outside the Civic Plaza after our first day—now it's time for a little fun!

PLAY BALL!!!

As the Arizona Diamondbacks take the field, meeting attendees prepare for a fun evening.

Gary Reynolds with his wife Paula and daughter Jessie enjoy the festivities with APPA's Executive Vice President Lander Medlin and husband Ron.

Our delegates from Mexico, Juan Vargas and Hilde Cuevas delaTorre, enjoy the game with PCAPPA's David Gonzales and other APPA members.

AUE delegates Henry Gun-Why and Garry East take in a night at the ball game. And seem to be enjoying themselves!

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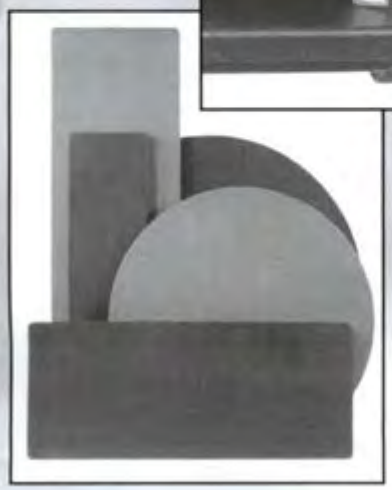

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Back to the work...

Medea Ranck, director of marketing & outreach, spends a moment with speaker Matt Smith of AAPPA.

President-Elect Cox verifies that the VPs are ready for the Town Hall meeting.

Hear no evil, see no evil, and speak no evil. Wait a minute—is this APPA? VPs Jim Roberts, Vickie DeWitt, and Mike Besspiata

The 2002-03 Board of Directors poses for their first official photo as they await the beginning of their terms on July 24th.

The 2003 Welcome Committee Chair, Sam Polk, provides attendees with an overview of Nashville, site of the 2003 Forum.

The Grand Finale.....

As we finished up our last sessions and packed for our return trip, we look forward to one final gathering, the banquet.

As President Gary Reynolds finished his term, we welcomed President-Elect Phil Cox to the threshold of the APPA leadership.

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If You Are a Present or Past Owner or Operator of a Commercial, Governmental or Residential Building In the United States or Canada in Which Asbestos-Containing Products Are or Were Present, You May Have a Property Damage Claim Against the Following Entities (The "Debtors") in Bankruptcy Proceedings:

Federal-Mogul Corporation
T&N Limited
J.W. Roberts Limited
TAF International Limited

NOTE: The above Debtors are four of 157 affiliated Debtors in the Federal-Mogul bankruptcy proceedings. While these four Debtors are the only companies affiliated with Federal-Mogul that have been sued in asbestos property damage litigation, you may assert a claim against any one of the 157 affiliated companies. Please consult the Federal-Mogul Claims Website, the Federal-Mogul Claims Helpline, or the Claims Agent listed below to obtain a complete list of the Debtors.

Your Property Damage Claim Must Be Filed by March 3, 2003 at 4:00 P.M.

PLEASE TAKE NOTICE that the United States Bankruptcy Court for the District of Delaware (the "Court") has established March 3, 2003 at 4:00 p.m., Eastern time (the "Bar Date"), as the last date and time by which claims may be filed in the Debtors' chapter 11 cases on account of damage caused by asbestos to property located in the United States and Canada (the "North American PD Claims"). North American PD Claims include claims from losses or damages to property or property interests for which any of the Debtors may be liable arising out of such things as the cost of removal, testing and maintenance, or the diminution in value resulting from any products or material containing asbestos. **All entities, including governmental units, that wish to assert any North American PD Claims against the Debtors are required to file proofs of claim on or before 4:00 p.m., Eastern Time, on March 3, 2003.**

PROCEDURE FOR FILING PROOFS OF CLAIM

If you wish to assert a North American PD Claim, you are required to use the Debtors' proof of claim form for North American PD Claims. **These forms can be downloaded from the Federal-Mogul Claims Website, or obtained by calling the Federal-Mogul Claims Helpline listed below.**

ADDITIONAL INFORMATION

Additional information about the claims process and the Bar Date may be obtained from the Federal-Mogul Claims Website, the Federal-Mogul Claims Helpline, or the Claims Agent listed below. Information about asbestos-containing products manufactured or sold by the Debtors, the known geographic regions where the asbestos-containing products were applied and the dates of such applications, and the names of the Debtors' sub-licensees who may have sold or applied the asbestos-containing products may also be obtained from the website.

CONSEQUENCES OF FAILURE TO FILE PROOF OF CLAIM

Any entity that fails to file a proof of claim by March 3, 2003, shall be forever barred, estopped, and enjoined from asserting any North American PD Claim against the Debtors; or voting upon, or receiving any distributions under any plan or plans of reorganization in these chapter 11 cases in respect of such claims.

You may wish to consult an attorney regarding this matter.

This is a summary notice only.

For complete information, including all relevant forms, notices and instructions, please consult:

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HIGHLIGHTS

Outgoing APPA President Gary Reynolds is escorted into the banquet hall to begin the evening's festivities.

Garry East and Henry Gun-Why of AUE present APPA with a letter from the prime minister of the United Kingdom, Tony Blair.

Banquet attendees enjoy a touch of the Southwest with Native American music and dance.

APPA's newly elected president, Phil Cox, is invited to participate in the closing ceremonies with the Native American dancers.

Additional board members join in the final dance that celebrated the cycles of life.

Under the desert sky and palm trees our final night ends and we bid farewell to Phoenix.

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Source: Cahners Research Co.

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2003 Nomination Form

Meritorious Service Award & Pacesetter Award

APPA's volunteers shape and strengthen both the association and the profession through their contributions of time, energy, and ideas. Each year, APPA recognizes the contributions and achievements of a few of these talented and hardworking individuals through the APPA awards program. But identifying the most deserving from among a large group of active individuals requires input from those who know best: other APPA members like yourself. Help us ensure that APPA volunteers get the credit and appreciation they deserve: Nominate an outstanding APPA member for the Meritorious Service Award or the Pacesetter Award. Purpose and criteria for each award are described below.

To submit your nomination, complete the following nomination form and fax it to your regional Awards & Recognition committee member. The Committee will review jointly all nominations and select the recipients. Awards will be presented July 29, 2003, at APPA's Educational Facilities Leadership Forum in Nashville, Tennessee.

Meritorious Service Award

Each year APPA members bestow the Meritorious Service Award upon the individual member or members who have made significant, life-long contributions to the profession of higher education facilities management. APPA's highest individual honor, the Meritorious Service Award is given to no more than three individuals each year. To be eligible for the Meritorious Service award, nominees must meet all of the following criteria:

1. Active member of APPA for a minimum of five years,
2. Attended and participated in meetings and other functions at the international level, and
3. Demonstrated continued and distinguished service to the association through one or more of the following:
   - ❑ Service as an officer of the Board
   - ❑ Chair or member of an official APPA education program, special project, or committee
   - ❑ Service to an associated professional organization whose principle purpose is related to the betterment of facilities management.

Pacesetter Award

The Pacesetter Award is designed to encourage further participation in APPA among those who have already made significant contributions at their regions or chapters. Up to seven Pacesetter Awards will be given each year. To be eligible for the Pacestter Award, nominees must meet the following criteria:

1. Active member of APPA for a minimum of three years.
2. Service/contributions/accomplishments to the association through one or more of the following:
   - ❑ At the international, regional, or chapter level.
   - ❑ As a member of an APPA committee, program, task force, etc.
   - ❑ Through participation in an APPA educational program or special APPA project.
   - ❑ Authorship of a publication, article, or chapter for APPA or presentation at an APPA annual meeting or educational program.
3. Other voluntary contributions of time, effort, resources, and leadership abilities to promote and enhance APPA and the educational facilities management profession.

2003 Nomination Form

Please complete the information below as thoroughly as possible and submit this form to your regional APPA Awards & Recognition Committee representative listed below. Use additional sheets as needed. Attach supporting documentation when available (e.g., letters of commendation, recommendation, newsclips, etc.) All nominations must be received by **January 31, 2003,** in order to be considered for the 2003 awards. This form may be copied for multiple award nominations.

I nominate the individual named below for the following award:

❑ 2003 Meritorious Service Award ❑ 2003 Pacesetter Award

Name of Nominee _____ No. of years in APPA: _____

Title _____

Name of Institution _____

List any positions and/or offices the nominee has held at the international, regional, or chapter level of APPA:

Office	Level (Int'l, Regional, Chapter)

List committee, task forces, or other special projects upon which candidate has served at the international, regional, or chapter level of APPA:

_____

_____

_____

List and describe other ways your candidate has served APPA (e.g., presenting at the annual meeting, writing for an APPA publication, teaching at the Institute):

_____

_____

_____

What other facilities-related organizations has candidate served?

_____

_____

Briefly state how this candidate has contributed to the growth and professionalization of the facilities management profession.

_____

_____

_____

_____

_____

Submitted by _____

Institution _____

FAX THIS FORM AND ANY SUPPORTING DOCUMENTATION BY JANUARY 31, 2003, TO YOUR REGIONAL A&R COMMITTEE MEMBER LISTED BELOW.

Eastern ..... Kenneth L. Bollig, Millersville University
Fax: 717-872-3087; Ph: 717-872-3644

Southeastern ..... Daryl Crider, University of Alabama/ Birmingham
Fax: 205-934-4990 Ph: 205-934-4427

Midwestern ..... Alan S. Bigger, University of Notre Dame
Fax: 219-631-6149 Ph: 219-631-5615

Rocky Mountain ..... Greg Wiens, Athabasca University
Fax: 780-657-6455; Ph: 780-675-6648

Central ..... Darrel Meyer, Metropolitan Comm College
Fax: 816-759-1333; Ph:816-759-1061

Pacific ..... Tony Ichsan, Pomona College
Fax: 909-612-8656; Ph: 909-621-8136

Australasia ..... Andrew Frowd, Queensland Univ of Technology, Fax: 61-07-3864-3625

Center for Facilities Research (CFaR)—Opening New Opportunities

by Rod Rose

During the coming months, APPA will introduce what may be one of the most important programs in its history—the Center for Facilities Research (CFaR)—established to organize and consolidate research in facilities management issues. Research developed through CFaR will enhance APPA's visibility among higher education institutions and associations, attract new members and new business partners, increase opportunities for sponsored research contracts or grants, and energize strategic alliances with educational institutions and associations worldwide.

Over many decades, effective management of college and university facilities has been the primary focus of APPA's membership and its programs. However, it has become increasingly important for facilities planners and managers to understand and to more clearly articulate the link between what they do and what they manage to the essential survival and success of the institution itself. This means placing more attention on the importance of facilities management relative to institutional policy, academic planning, budgeting and finance, community relationships, and higher education policy at the state, region, and federal levels. By developing a body of knowledge and expertise on specific issues that can influence these

environments, APPA and facilities managers will become more influential in making decisions at the most critical institutional levels.

APPA hopes that CFaR will be perceived as a national and/or international resource for specific types of information that are critical to policy making in higher education—a place where critical higher education issues are explored that are not being explored by others. In order to accomplish this, CFaR will solicit research proposals from its members, business partners, and/or other associations with an interest in the important role that facilities play in institutional decision making. Research projects may involve individuals, institutions, or teams with varying professional or academic expertise. Some research projects may focus on very specific, tactical issues such as cost-effective project delivery or the impact on facilities of year-round education. Other topics might include exploration of the value of integrating academic and facility plans, the role of facilities design or maintenance in college or university competitiveness, or the impact of emerging distance learning technologies on campus facilities.

In some cases, resources for research projects may be provided from the participating institutions. For others, CFaR may solicit resources from other associations, foundations, corporations, or federal agencies to support its required research activities. In all cases, CFaR will establish a diverse oversight group that will review the merits of each proposal and monitor the progress of research. Research results may be disseminated through publications, conference presentations, websites, or other media.

Of the hundreds of issues that face higher education today, there are at least four that are not only at the top of the list of concerns of the majority of colleges and universities, but that also provide significant opportunities for APPA-sponsored research to make significant contributions. These issues include: 1) the ability to attract and retain students and faculty; 2) the dramatic increases in the cost of higher education; 3) the impact of changing technologies; and 4) the important relationships of colleges and universities to their communities and the environment. Strategic connections between effective planning and facility management may not always be obvious. The more that institutional administrators, Boards of Trustees or Regents, and legislators understand these links, the easier it will be to justify resources, make changes in deferred maintenance funding formulas, and develop consistent design and energy management standards in the areas of facilities management.

By establishing CFaR as a national and/or international resource for consistent, comparative, and relevant facilities information, APPA believes that educational facilities managers, as well as institutional policy and decision makers, will have reliable research on which to base critical decisions that affect the future of their institutions.

Rod Rose is vice president of the JCM Group in Los Angeles and an at-large member of APPA's Board of Directors. He is also editor of* Planning for Higher Education, *a journal published by the Society for College and University Planning. He can be reached at rrose@jcmgroup.com.

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Reflections on the Forum—Rising to the Challenge

by E. Lander Medlin

Although I was saddened by the fact that the economic downturn dramatically affected the ability of many of you to travel to or finance the trip to this year's Forum, it was still an incredible success and definitely worth further reflection. The theme "Rising to the Challenge" was exemplified by the enormous effort put forth by speakers and participants alike as we inaugurated our new, redesigned format for the Educational Facilities Forum (which now replaces the Annual Meeting of the past).

The Forum was accented by the backdrop of a dramatic and exotic southwestern panorama. The enrichment of the southwestern/Native American theme banquet added a dimension of historic value along with perspective, tradition, and colorful exuberance.

And yes, it was hot in Phoenix, but the heat did not deter anyone from the wealth of educational opportunities and array of fun activities. By all accounts from the attendees' evaluations, the program not only turned out to be inspirational and informative, but downright fun. From the meals to the conversations to the educational sessions, the senses were assaulted by new and exciting thoughts, images, and perspectives. It was indeed an adventure to remember for all who attended.

The Forum was a fitting culmination for a year none of us will ever forget. Past President Gary Reynolds led us from the national tragedy of

September 11, 2001, through the triumph of the new Forum. His theme "leadership is personal" resonated throughout the year with exceptional programs, increased member involvement, and the initiation of some dynamic organizational changes. We are grateful for his personal commitment and leadership during these tough times.

Our hats also go off to the Educational Programs Committee for their vision and diligence in making this a worthwhile and meaningful new endeavor. Judging from the evaluations, we are not the only ones who felt this way. There was overwhelming enthusiasm for the new approach. For those not in attendance, our new approach in educational content, format, and delivery is best described in the following way.

The educational experience we offered was a tightly focused program taught by insightful experts and leaders both inside and outside the educational facilities field. The program was structured into six perspectives, each examining a different and critically important strategic issue impacting the educational facilities organization. Each perspective was dissected through a framework of different insights (visionary, trends alert, hands-on, how-to, etc.) to help participants understand the full breadth of issues.

The six perspectives we explored were 1) customer service, 2) innovation and learning, 3) internal process management, 4) financial stewardship, 5) technology management, and 6) knowledge management. Each perspective followed the same framework beginning with

a) the visionary, big picture viewpoint,
b) the state of the industry from a knowledgeable expert or writer,
c) an effective/best institutional practice,
d) a critical issues panel,
e) best-in-class organization, and
f) a how-to/ practical applications session.

Each perspective, along with the framework and the expected learning outcomes, was described fully in a number of previous program brochures and magazine articles. (However, if you are interested in receiving more detail about our content structure, format, and delivery system, please do not hesitate to e-mail me at the APPA office.)

Besides the substantive educational sessions offered each day, Daniel Pink (author of the book *Free Agent Nation*) provided a provocative, insightful, and lively opening keynote address in which he focused on the dramatic changes occurring in the workplace today. He suggested that we have moved from a traditional employer/employee relationship to that of a non-traditional arrangement full of soloists, freelancers, temps, and/or micro-businesses consisting of only one or two people. He said that the icon of the late 1950s, best repre-

Lander Medlin is APPA's executive vice president. She can be reached at lander@appa.org.

sented by "the organization man," has been transformed today into that of the independent, self-employed worker. Pink stressed that the reasons behind this trend are even more important than the trend itself. Briefly those reasons are:

- *Changed role in the way we treat employees*—"Corporate Paternalism" is no longer considered of value nor desirable.
- *Technological innovation*—Specifically, laptop computers give us a new means of production that does not necessarily tie us to the workplace.
- *Economic shifts and quality of life issues*—The general feeling of prosperity experienced to date by most people in this country changes the value proposition previously offered only by the organization.
- *Organizational ethics*—Ethics, or the lack of character and moral fiber pervasive in most organizations today, has had a major negative impact on many employees.
- *Authenticity*—Individuals want to be authentic. They want to be able to do and be who they want to be. They want to bring their whole, real self to work.
- *Accountability*—Individuals want the work they do to be of value. They want to be assured they are making a real contribution, making a difference.
- *Self-defined success*—In other words, what motivates me may not be what motivates another employee or even be part of the organization's values.

He ended his presentation by highlighting what he considered to be "dirty words" in the workplace today. They are:

- Empowerment
- Retention
- Promotion
- Work for
- Human Resources
- Flexibility

Ultimately we must recognize that today organizations *need* employees more than employees/people *need* organizations. Therefore, we must rethink the value proposition from the employees' perspective. Value must include something that is more transcendental and provides meaning, purpose, and quality to their lives, our lives.

In addition to the opening keynote and the overall, formal educational sessions we offered a dynamic Hall of Resources. Business partners and attendees alike found the hall informative with just enough time to renew business acquaintances and begin building new relationships. We also provided a series of facilitated roundtable sessions on Monday and Tuesday that were well-attended and gave new meaning to the words "experience exchange." The Welcome Committee's warm hospitality and wonderful spouse/guest programming received rave reviews from everyone as folks took advantage of all the local hot spots Arizona had to offer.

As you can see from the montage of photographs, many members, business partners, and staff were honored for their meritorious service, effective and innovative practices, and exemplary dedication to the facilities profession. What a great time and place to honor all of them!

Finally, the banquet topped off the entire conference with an artful, creative, and inspirational Native American theme that spotlighted an unbelievable hoop dancer and his inviting "circle of life" closing dance. Everyone was quite impressed as shown by the standing ovation at the end of the program.

As the new educational year unfolds, we hope to see you either at an Institute for Facilities Management, the Leadership Academy, or of course, at next year's Forum, July 27-29, 2003 as we co-locate with NACUBO at Opryland in Nashville, Tennessee.

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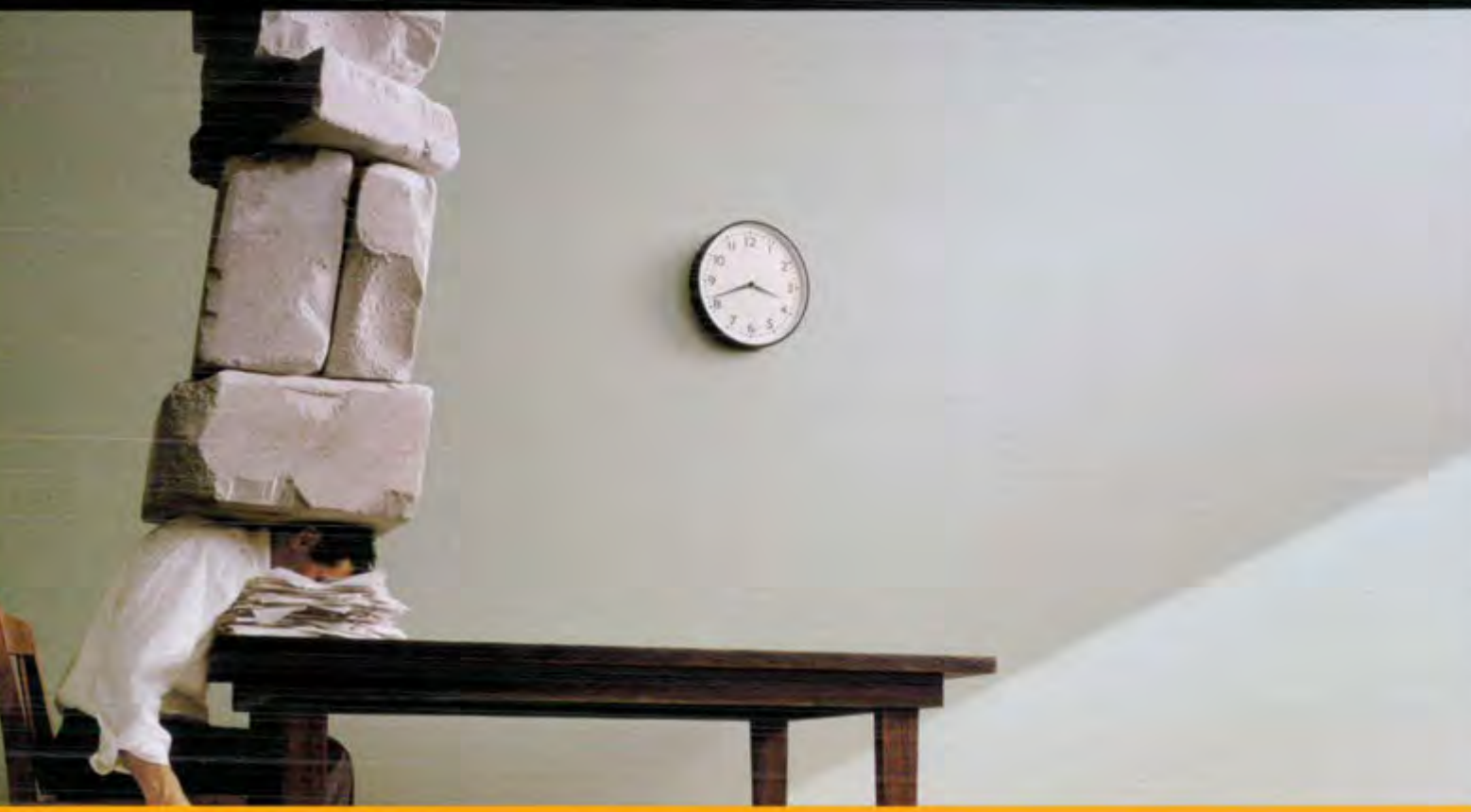

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Phil Cox

takes on APPA presidency with energy, experience, and commitment

by Ruth E. Thaler-Carter

Photo by Robert Barker/CU

APPA's new president takes the helm at a challenging time for higher education and the facilities management profession in general, and the association in particular. Thanks to his solid work experience and 20 years of dedicated APPA service, though, Philip L. Cox is ready to take on the challenges and provide the strong leadership needed by the association and its member campuses in these difficult times.

Outside Angles

Phil Cox, 55, comes to the association's top leadership position with a solid background in several aspects of the facilities management profession, from both within and outside higher education. Currently serving as director of facilities management for Cornell University in Ithaca, New York, Cox joined the university in 1982 after seven years as city engineer for Ithaca and several years as an engineer with the Corps of Engineers in Detroit, Michigan, as an Army officer and a civilian. He earned his A.A.S., B.S., and M.S. degrees in civil engineering from Broome Technical Community College, Michigan Tech, and Wayne State University, respectively, and is a registered professional engineer.

Cox's department has about 400 employees. The Ithaca campus—Cornell's main campus—has about 750 acres, of which 450 acres are maintained landscaping; there are about 13.5 million square feet of buildings. The 2001 enrollment included 19,269 students at the Ithaca campus and 665 at the Medical College in New York City.

Hooked on APPA

Cox had been involved in various civic and professional organizations before joining the facilities management staff at Cornell and APPA, but APPA became his "association of choice" almost immediately. He first got "hooked on APPA" when he attended the Institute for Facilities Management in the summer of 1983 and realized that "this was the professional association for me." His involvement in APPA has been a long series of positive experiences ever since.

"It was apparent to me that my past association affiliations, while valuable to me as an engineer, were not going to meet my professional development needs in managing facilities in higher education," Cox recalled. "The special circumstances that surround facilities management in an academic environment require unique tools to get the job done effectively, and APPA is the association most closely allied to where I am in higher education, so it's the best fit."

Cox was elected to the ERAPPA Board of Directors and served in the various offices of the region, eventually serving as ERAPPA president in 1993-94. He then served two years on the APPA Board of Directors as an Eastern Region representative and was elected by the other senior representatives to serve on the Executive Committee. He served three years on the Information and Research Committee and as an

Ruth Thaler-Carter is a freelance writer and editor based in Rochester, New York who writes often for* Facilities Manager. *She can be reached at Rthalerc@aol.com.

"My APPA membership has been a tremendous asset to my career over the past nearly 20 years," Cox said. "APPA has been a key source for my professional development through a myriad of training programs and contemporary publications.

Upward Bound mentor, member of the Electronic Information Users Group, New York State contact member, NYAPPA Education Committee, first chairman of ERAPPA's education committee, presenter at ERAPPA annual meetings, and as APPA Secretary-Treasurer, which also entails serving on the Executive Committee and chairing the Membership and Bylaws committees.

"My APPA membership has been a tremendous asset to my career over the past nearly 20 years," Cox said. "APPA has been a key source for my professional development through a myriad of training programs and contemporary publications.

Photo by Chris Hilferik/CU

Cornell Arts Quad high above Cayuga Waters

Perhaps even more valuable have been the things I have learned through informal networking. It never ceases to amaze me how much one can learn by simply asking others who are in the same profession and facing similar challenges."

For Cox, being so involved in a membership association has provided many benefits, both within APPA and on the job. In fact, he says, the experience of being active in APPA has taught him a lot about leadership in general and helped groom him for his on-campus responsibilities, while overseeing people and projects on campus has helped him be a better association leader. "Association leadership—working primarily with volunteers—is different from leading a facilities organization and working with employees and colleagues on campus, but the principles are the same," he explained. "It's all about working with people. My role in APPA leadership has been exciting and rewarding. The fun part of my APPA experience has been trying out new leadership tools and techniques that I was learning about back on campus, in a new setting among APPA colleagues. Conversely, I have enjoyed applying leadership principles that I've learned from APPA to my position at Cornell. It seems to me that these two leadership opportunities, running in parallel, provided a great complement to each other and have broadened my experience base as a leader."

His proudest achievement as an APPA board member and leader is easy for Cox to identify: "establishing greater linkages between the regions and the APPA board and staff through a staff liaison appointed to each region." Cox also is quite proud of his role in revitalizing the Membership Committee as APPA Secretary-Treasurer, with the result of increasing membership numbers in all categories.

Family Comes First

One of the most important parts of Cox's life is his family. "My wife Marsha and I are proud parents of three great kids, all of whom are grown and out of the nest," he said. "We are thrilled with our role as grandparents and especially thankful that both of our grandsons live nearby in Ithaca."

In fact, APPA involvement has been somewhat of a family affair for Cox. One of the things he relishes most about his long APPA experience is that Marsha has been there alongside him at many of the regional and international meetings, as well as at many committee, Board, and executive committee meetings. "It has meant a lot that she could travel with me and be a partner involved in sharing my rich APPA experiences," he said.

Professional Challenges

To Phil Cox, the facilities management profession within higher education has a wide range of challenges to face, starting with the familiar issue of economics and budgets.

"'Doing more with less' is a phrase all too well-known among facilities professionals, particularly over the past few years," he said. "However, with the recent difficulties in our economy, the crunch on finances for education is especially acute, so it is becoming more problematic than ever for institutions to adequately fund their facilities needs. Campuses continue to expand and many of the new facilities coming online are high-tech buildings with intense operating and maintenance requirements. Coupled with these sorts of capital demands on already-strained institutional budgets are the looming needs for major renovations—huge portions of many campuses that were constructed right after World War II now are worn out or obsolete, and require major capital renewal. Piled on top of all these pressures are the ever-increasing demands on our resources that result from new occupational health and environmental regulations."

It's a daunting vista, but there are resources available, and APPA is one of them, according to Cox. "One of the most effective ways that facilities professionals can cope with the challenging financial constraints they are facing is to learn from one another," he said. "By using the tremendous potential represented by the collective knowledge and experience of the APPA membership, members need not start at square one and solve problems alone. Rather, by tapping into the APPA network, facilities professionals can learn about what has worked for other schools facing similar financial problems. My experience has been that APPA members freely share their knowledge and advice. Likewise, many of the APPA educational and publication offerings speak directly to exactly the sort of issues that member schools face."

Technology also is a key issue for many APPA member schools, according to Cox. "There is kind of a basic requirement that you must be wired these days; so much of our business is conducted over the Internet now," he said. "Technology is also having profound effects on how teaching is being done. It affects how we're doing our jobs in terms of how classrooms have to be designed and set up." To cope with these aspects of the job, Cox said he relies a great deal on APPA programs and training, such as the 2001 Emergent Building Technologies Conference—services that he plans to support throughout his term as president.

Despite the challenges, there also is some good news for facilities management at institutions of higher education. "The good news is that higher education continues to expand," said Cox. "As an example, I recently attended a presentation at which Dr. Michelle Gauthier of the Association of Universities and Colleges of Canada, forecasted a 20 to 30 percent growth in enrollment in Canadian higher education by 2011. To me, it appears that higher education facilities management will continue as a thriving profession."

Challenges for APPA

As he takes on the presidency of the association, Cox sees APPA's greatest challenge as mirroring the concerns of its members and "revolving around the hard economic times we are experiencing. We are concerned about our revenue stream, which depends so heavily on dues and attendance at educational programs," he explained. "We also are concerned about how to deliver services most effectively to our members, to maximize the value they receive for their scarce training and development resources. As we become more global, we also need to determine how to tailor our service delivery

Photo by Frank DiMeo/CU

Myron Taylor Hall at Cornell University

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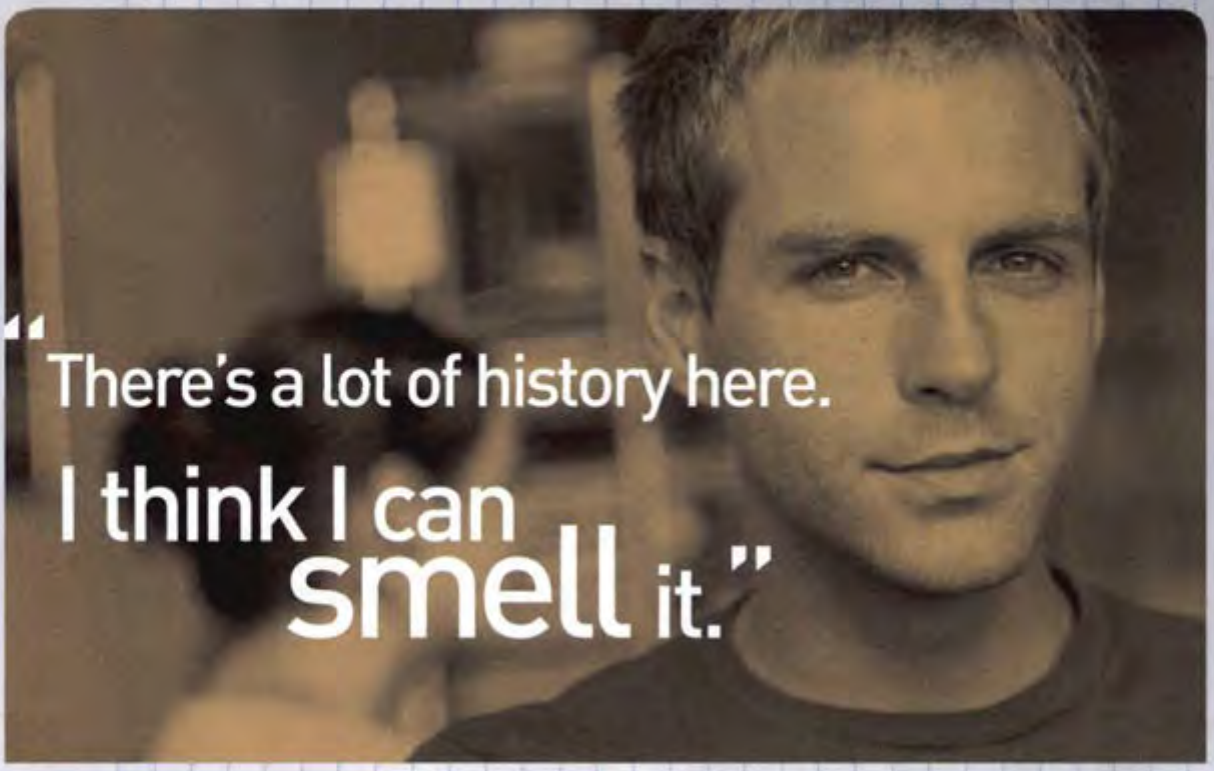

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to meet the needs of international members, which might vary from those of members in North America."

Cox expects economic issues to be a key concern for schools and the association in coming year. "I haven't much evidence of economic recovery," he said. In fact, "we are seeing many signs of economic belt-tightening among our member institutions. APPA and many of our peer associations are bracing for tough times—meeting and program attendance is expected to be off by about 20 percent in the coming academic year and there has been some speculation among the Council of Higher Education Management Associations (CHEMA) members that the worst may be yet to come, since academia often sees a lag in reactions to economic movement."

In defining his goals as APPA President, Cox accepts financial concerns as a reality and sees diversity as his personal issue. "As the theme for his 2001-02 APPA Presidency, Gary Reynolds chose 'Leadership is Personal'; my hope is to springboard from that theme, recognizing that diversity choices are personal responsibilities," he said. "As leaders, we have the additional responsibility of setting the example for how everyone in our organization should support a more diverse and inclusive workplace and society in general. We must lead the effort toward greater diversity by example. It is up to the APPA leadership to make personal choices that foster greater diversity and inclusiveness in our association. I hope to raise awareness and inclusion."

APPA's vision is to become a "global partner in learning," noted Cox, and that perspective has great appeal for him as well. "The *global* part of the vision is coming true in a number of ways, such as our Australasian membership and our strategic alliance with the Association of University Directors of Estates (AUDE) in the United Kingdom. APPA is in the process of forming a relationship with higher education facilities professionals from several southern African countries and from Mexico. Another U.K. association and a German association have expressed interest in forming ties to APPA. For the first time ever, a member from the AAPPA region ran for president-elect in the last election. All these advances toward greater globalization have increased the urgency of determining how we can better connect with our global members and how we will collaborate with other international associations in the future."

These steps have created an opportunity for APPA that works well with his commitment to diversity, according to Cox. "I believe the time is right for our association to take a look at itself and examine the lifeblood of our organization—the membership," he said. "Not only do I hope that our membership base can grow and be strengthened by this growth, I also hope that we can increase our diversity. In the areas where our differences may be limited, I want to remove barriers to inclusion in APPA and in the facilities profession

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that we serve. As we move to increase the diversity of our membership, I believe we should pay particular attention to gender, race, age and, in the interest of our globalization movement, nationality. By building on our many strengths, I am convinced we can broaden our diversity to more closely reflect the inclusiveness that is so highly valued by our constituent institutions."

Accomplishing this lofty goal may take time, but Cox has a specific approach to start the ball rolling. "Because so many of the APPA services and offerings are guided by a committee structure, I am asking each committee to do what it can to weave diversity issues throughout the entire fabric of our organization," he explained. "I am confident the committee members will come up with ideas around diversity that I might never imagine."

Cox envisions having APPA offer more services in training and education that focus on the value of being diverse; publishing material about the topic; and looking at the criteria of APPA awards of excellence to see where diversity could be recognized and rewarded, which would encourage others to make similar efforts. He also plans to work with historically black colleges and universities (HBCUs) to encourage more members from those institutions. "There are a lot of little things that collectively could make a big difference," he said. "It also is important to remember that diversity is not only about obvious things like ethnicity and gender; it's also about differences in life experiences, philosophies, employment perspectives, and nationalities.

Individual members have a role to play in this process as well; it is not only APPA leaders who can show the way and make a difference. "Our members can learn more about why diversification is not only the right thing to do from a moral point of view, but that it also makes good business sense," said Cox. "Then, as each of us faces personal choices, we can make the right ones."

In addition to increasing APPA's diversity, enhancing its efforts around globalization, and matching its service delivery to the needs of international members, a priority for Cox during his term as president will be to support the Center for Facilities Research (CFaR). "Established during Gary Reynolds' term as President, CFaR has the potential for discovering all sorts of new knowledge that will support our profession while tapping into the talents of and involving more members in the activities of APPA," Cox said. "I will do all I can to help CFaR get well-established and mature as a valuable APPA asset."

Cox also plans to focus on efforts to carry out the desired outcomes of APPA's strategic plan—*competency, credibility, and collaborative relationship-building*—in part through building coalitions with peer associations and participating in organizations that share APPA's focus on such outcomes. "One important way in which we pursue these outcomes is through participation in CHEMA," he said. "I had the good fortune to take part in updating CHEMA's strategic plan and to examine the trends, challenges, and opportunities facing all of us in higher education. CHEMA is a perfect example of how professional associations can team up to do more for their constituents than they could ever hope to do alone."

Words of Advice

Thanks to his long-time involvement on the job and his strong commitment to the association, Cox has some good advice for both students

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and professionals in the field of facilities management for higher education.

Today's students of facilities management are, of course, the future lifeblood of both the profession and its leading association. Now that he has been in the field for more than 20 years and an active APPA member for almost as long, Cox sees the path for students a little differently than he did in the past. "My advice for students in facilities management is about 180 degrees from the one I would have offered as an engineering student many years ago," he said. "Technical skills and experiences are essential to careers; they are the cost of getting into the game. However, what separates the extraordinary from the ordinary are people skills. What will eventually lead toward success in any career is the ability to get along with people and form effective relationships. I would urge today's students to seek all the learning they can about what it takes to work harmoniously with other human beings."

To make the most of their careers, he also would advise facilities-management students to join and be actively involved in campus chapters of APPA, learn as much about current technology as possible, and learn not only to network for their own advancement and advantage, but to give back in the process—to treat networking as a two-way process.

Cox has one key nugget of advice for colleagues in educational facilities management, whether a newcomer or an experienced member of the profession: "Get involved in APPA. Whether your role is at the local chapter level, at the regional level, or at the international level, your time and efforts will be well-spent. As with most volunteer efforts, you get out of the organization what you put into it. In fact, I am convinced you will get more from your APPA involvement than you will put into it. You and your institution will enjoy a major net gain from your involvement."

Looking to the Future

The immediate future for Cox involves APPA and his responsibilities at Cornell, and he has not yet decided how his long-term future will look, although he expects to remain active both professionally and in the association for a good while to come. "My crystal ball is a little hazy, so I am not entirely sure of my future," he said. "I would hope to finish out my career at Cornell and I like to think I have several more years of service to offer, but, hey, you never know. After my term as APPA President, I plan to get more involved in local civic volunteering, which I must admit has suffered somewhat in the past few years. Of one thing I am certain, though: As long as I am in higher education, I will remain active in APPA."

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Who PAYS for the Architect's MISTAKES

by Donald Guckert and Jeri Ripley King

Designing a new or renovated facility within a campus environment is a difficult and challenging undertaking. Despite the best efforts of talented professionals, mistakes will occur. No architect or engineer in the business can guarantee perfection. If they did, no insurance policy would back it. The question is who pays for these inevitable and unavoidable design errors and omissions.

In managing the design and construction efforts of the University of Missouri–Columbia, one of the most common challenges we face is coaching administrators and internal customers on realistic expectations for our design consultants. The argument inevitably centers on accountability, with our customers asking, "If the architect is not responsible for their mistakes, then who is?" To their surprise, the answer to this question is often, "As the owner, we are."

Why Me?

Our customers are befuddled when they are asked to pay for change orders resulting from mistakes made by our contracted service provider. They assume, in the absence of any other information, that the services provided will be free of mistakes; and if mistakes are made, those making the mistakes will pay them for them. The tendency is to view architectural and engineering services no differently than lawn care services that guarantee weed-free results. This is especially true in this age of consumer rights and protections, where "satisfaction guaranteed" rules the day. However, before our customers can understand what financial recovery from errors and omissions may be possible, they need to understand the nature of the relationship between an owner and a designer, and the standard of care expected of licensed professionals exercising their craft.

In most states, to market architectural and engineering services a professional license is required. Practicing architects and engineers provide a professional service based on years of education and experience. By entering into a contract with an owner, the designer implies that they possess the "ordinary skill and ability" necessary to serve the owner's needs. Architects and engineers (A/Es) advise that when owners engage the services of a licensed professional designer, they should hire someone who is well versed in that type of project. In the early stages of a project, owners are not always in a position to describe in detail what they need their agent, the designer, to perform or produce. Instead, they look to the designer to provide professional guidance throughout the ensuing phases of the project, culminating in a project that meets their needs.

Supporting this notion of possessing ordinary skill and ability, a 1960 Pennsylvania court decided in *Bloomsbug Mills, Inc. v. Sordoni Construction Co.*:

> "An architect is bound to perform with reasonable care the duties for which he contracts. His owner has the right to regard him as skilled in the science of the construction of buildings and to expect that he will use reasonable and ordinary care and diligence in the application of his

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professional knowledge to accomplish the purpose for which he is retained. While he does not guarantee a perfect plan or a satisfactory result, he does by his contract imply that he enjoys ordinary skill and ability in his profession and that he will exercise these attributes without neglect and with a certain exactness of performance to effectuate work properly done. While an architect is not an absolute insurer of perfect plans, he is called upon to prepare plans and specifications which will give the structure so designed a reasonable fitness for its intended use, and he impliedly warrants their sufficiency for that purpose."

The Standard of Care

There is no guarantee of a perfect plan or even satisfactory results. Instead, architects and engineers are expected to use "reasonable and ordinary care" in the practice of their profession. The courts know it; designers know it; contractors know it. But somehow this information is not always conveyed to the owners. As facilities managers charged with managing the project, our challenge is to educate our customers and align their expectations with those of the A/Es.

A good starting point is to draw comparisons to other professions that apply a "standard of care." For more than a century, the law has viewed architectural and engineering services similar to professional services provided by physicians and attorneys. In the1896 landmark case Coombs v. Beede, the Supreme Court of Maine held that "The responsibility resting on an architect is essentially the same as that which rests upon a lawyer to his owner, or upon a physician to his patient…"

It is generally accepted that a surgeon cannot guarantee a perfect procedure or a complete recovery, and an attorney cannot guarantee a favorable judgment or verdict. Instead, the expectation is that they will apply their professional knowledge and experience in a competent manner that best serves the interest of their patients or clients, regardless of the ultimate outcome. Architects and engineers, like physicians and attorneys, cannot guarantee the results of their service. Their liability for errors and omissions will be determined by whether they have performed their services with the standard of care consistent with other professional designers in their community. If they have complied with the prevailing standard of care, the courts generally will find the designers are not liable for any resulting errors and omissions. On the other hand, if A/Es do not perform at the level generally accepted in the community, they will be liable for their mistakes.

Helping our customers understand that the "standard of care" exists is a good start; defining the standard of care is more difficult. In our society, we want to be able to measure things. We have an ingrained desire to take a concept such as "standard of care" and slap it on a yardstick. Owners want a more defined and definitive measurement system for identifying breaches in the standard of care. Unfortunately, it is not that simple. The threshold is left to the courts and competing expert witnesses. This leaves project owners frustrated and often they abandon pursuit of compensation to which they may be legally entitled.

Errors and Omissions

Even when the standard of care is agreed upon, financial recovery may hinge on whether the mistake was an error or an omission. Omissions usually add value to a project. Instead of being included at the time of contract award, the building improvement that was "omitted" from the bid package is picked up by a change order. Architects and engineers will normally argue that the owner should pay for omissions since the owner would have paid a higher contract amount at the time of award. Owners may counter that because the omission was not in the project budget, funds may not be available now. They will also maintain that a higher cost for the omitted item results from adding it by change order versus competitive bidding. Generally, however, recovering the cost of omissions is an uphill battle for the owners.

Design errors, on the other hand, are mistakes made by the designer that, when corrected, do not add to the greater value of the project. While a design error may be recoverable, we should be aware of the industry and legal acceptance that there is no such thing as error-free design. Even a modest building design effort requires scores of individuals acting on hundreds of major decisions to coordinate the design of thousands of building components. A design effort is a unique, one-time creative endeavor that does not have the benefit of product testing. To expect a perfect design would be like believing software will function faultlessly without beta testing.

Buildings are becoming increasingly complex, and we want them designed on ever-shortening timelines. When we, as owners, seek to minimize change orders resulting from errors and omissions, we must recognize that we are often contributing more to the problem, than the solution. The demands we place on A/Es to lower their fees, while at the same time fast-tracking their services, increases the risk that errors will result.

Communication

Communication throughout the project can help owners and designers align their expectations. When the designer and the owner agree that an error fell below the standard of care, many design professionals, governed by pride and reputation, will work with the owner on reaching an amicable settlement, as long as the owner has fair and reasonable expectations. Owner expectations are more apt to be fair, if the owner is well informed.

Unlike the medical and legal fields, where owner expectations are aligned before the work is underway, design professionals often wait to discuss expectations after the owner reaches the breaking point with change orders. Our customers are generally well coached by designers about establishing a project budget contingency for the changes, unknowns and unforeseen conditions that will surely arise during the course of the project. The breakdown in commu-

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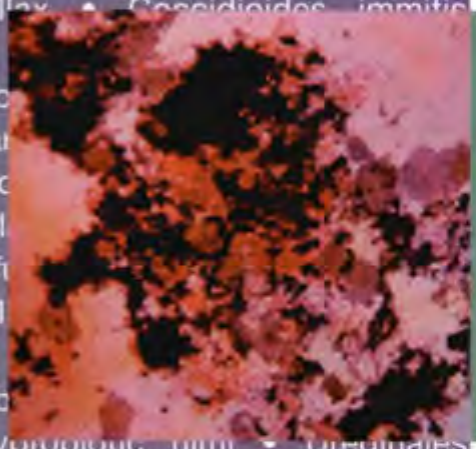

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nication occurs when designers have not explained that, despite their best efforts, many of the change orders will result from errors and omissions.

Risk Management

It is possible, however, to manage the risk of errors and omissions. The first step is to budget adequate project contingencies. Owners also need to be aware that there are other methods available to manage the risks of errors and omissions. These include securing liability insurance, employing third-party review services, using the design/build delivery approach, and modifying contractual language. Each option comes with related costs and benefits.

Professional liability insurance

Owners must keep in mind that, even when it is clear that the A/E is negligent, financial recovery is not guaranteed unless there are sufficient assets or insurance to pay for the mistakes. Professional liability insurance provides third-party financial resources to cover the cost of negligent design errors.

Professional liability insurance does not alter the definition of negligence. Recovery from a professional liability policy will still hinge on the standard of care test. However, requiring this insurance does raise the bar of performance. By requiring the coverage, the owner and architect agree that the standard of care will apply and that the owner is hiring a competent design firm that is willing and able to back up its potential negligence.

If the A/E firm already has coverage, then the cost of professional liability insurance is typically built into design fees, and that cost is passed through to the owner. If the firm does not have professional liability coverage, then the owner has the option of purchasing a project insurance policy that typically provides a higher level of coverage, but at a correspondingly higher cost to the owner.

Third-party review

The owner also has the option to employ a specialty firm to review the documents prepared by the design team. In the past decade, there has been an emergence of specialty firms offering interdisciplinary plan review services to review drawings and specifications for coordination and constructability. While some owners argue that this should be a basic service already provided by the designer, the reality is that the architect and engineer are usually too close to their work and driven by other forces, to step back and review their work. This is especially true during the waning days of the construction document phase when the architect and subconsultants are racing to complete their work and wrap it together in a bid package.

The cost of a plan review team can run $20,000 or more for multimillion-dollar projects. This investment will often pay for itself many times over in cost-avoidance savings. It is a "pay a little now" instead of "pay more later" proposition. Rather than create another project budget line item for these services, funding for these cost-avoidance services can come from the project contingency budget, based on the premise that it will reduce exposure to change orders.

Design/build

Because of the level of frustration that many owners had with designer accountability, there was a dramatic trend in the 1990s toward using the design/build delivery approach. This approach puts the designer and builder on the same team, thereby virtually eliminating the owner's financial exposure to design errors.

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While the design/build approach appears on the surface to be the ultimate solution for eliminating design errors and omissions, the reality is that the errors and omissions still exist, and the owner still pays for them in the price of the design/build contract. The difference is that the contractor, instead of the owner, manages this risk. While contractors recognize that errors and omissions are inevitable, as a team participant with the designer, they can work hand-in-hand with the designer to mitigate, though not eliminate, exposure to errors and omissions.

Although an owner seeking the maximum protection from errors and omissions exposures is well advised to consider design/build, it is important to recognize that the design/build approach shifts the designer's role from the owner's agent to the contractor's partner. This changes the dynamic of the design process and often results in the owner losing control over design content. The change orders that might have been written for errors and omissions are often replaced by change orders for scope and quality adjustments.

Modified contract language

As mentioned earlier, the courts are usually the battleground for determining the standard of care expected from designers. However, owners can use the terms of the A/E contract to establish a "contractual" standard of care. While A/E firms and insurance carriers will run from a warranty clause, contractual language outlining reasonable expectations is usually acceptable to both.

An example of a contractually defined standard of care clause is a provision that requires the designer to design in compliance with the owner's set of design standards, written instructions, and/or marked-up project document review sets. If the designer fails to meet this reasonable and contractually established expectation, there is little room for the A/E to argue that the standard of care was met. Some of our most successful error recovery efforts have been where the designer did not incorporate our review comments into the design or failed to design to our published design standards.

Aligning Expectations

As facilities managers charged with the management of campus design and construction projects, we must partner with architects and engineers and take time at the onset of their services to explain to our customers that errors and omissions are an inevitable part of any creative endeavor. This provides an opportunity to align A/E and customer expectations, give the project team some options for managing the risks, and define how architects and engineers can meet or exceed those expectations in order to have a satisfied customer and a successful project outcome.

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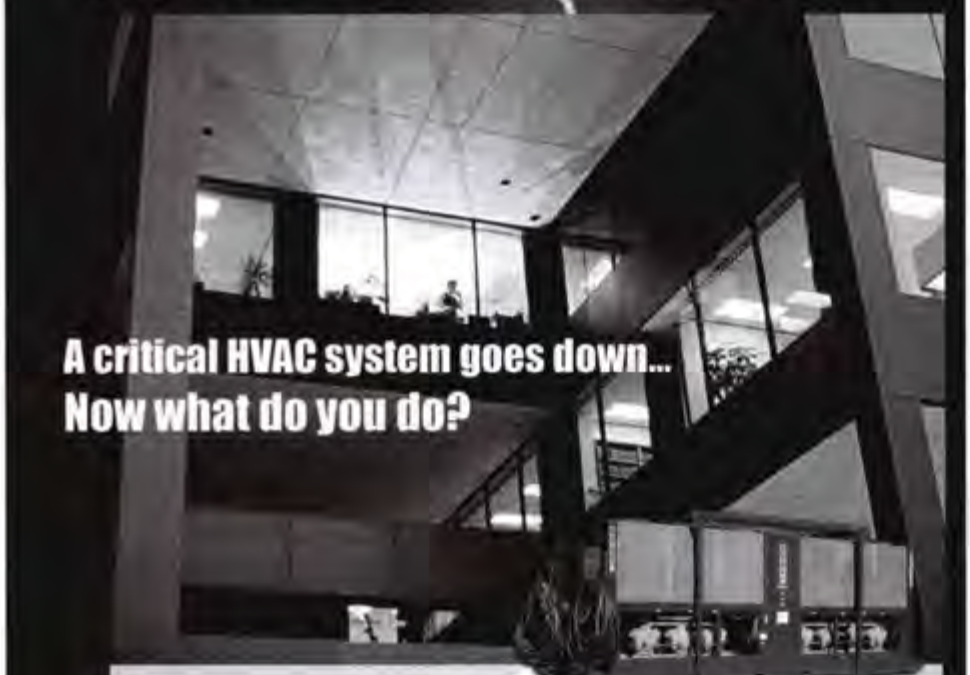

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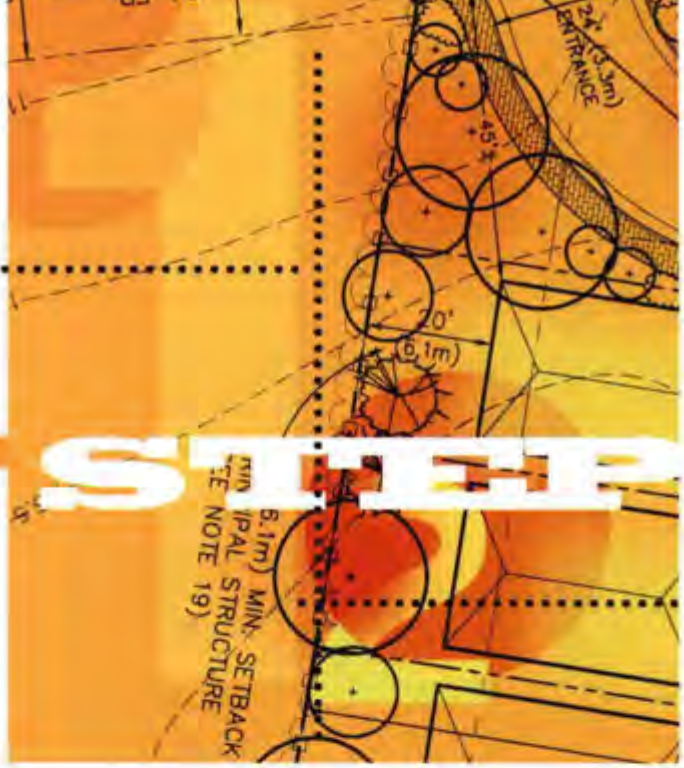

by Wendell E. Wickerham, AIA

Despite an economic environment that has recently shelved or delayed many design and building projects in the public sector, project planning and execution continue to be a mainstay of the world of higher education. Demographics and the surge of college-age students anticipated to descend on campuses in the coming years continue to drive an ongoing effort to upgrade and expand college and university facilities nationwide.

Traditionally, the development of these projects has begun with a "wish list"—a program statement often conceived by the primary facility users, with or without outside help. It is then passed on to an architect to begin designing a building. Usually, this handoff is accompanied by a mandate from the institution to stick to the budget that has been identified outside this process. This budget is often determined by fiscal or development personnel who are uninformed about the actual functional needs or objectives of the particular facility.

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This rather loosely developed process has served many institutions well, and for many straightforward and simple projects, it continues to do so. However, as the complexities of multiple stakeholders, budgets, and building delivery options increase, so do the risks of costly delays or unexpected diversions. To complicate matters even more, many legitimate programming consultants are experts in their areas but often try to "play architect" and inadvertently create difficult situations for their clients and the consultants who follow in the process. All too often, the architects arrive on a campus and are presented with program expectations, budgets, and timelines that are inappropriate and therefore destined for costly delays. At worst, this scenario ends in major disappointment and frustration for the client and failure of the project.

An Essential Checkup

To avert such problems, a carefully thought-out facility master plan (FMP) is the essential first step in validating or responsibly challenging the work of the programming consultants. Perhaps more importantly, the FMP assists clients and institutions in accurately defining the project scope and/or issues before beginning the traditional building design and construction services that architects and builders provide. For relatively small fees ($50,000 to $300,000) compared to architectural services and additional costs that might be incurred due to delays and extra services, a facility master

plan checkup before finalizing budgets and initializing the actual project design helps to clarify the project's mission and definition. It also allows the opportunity to uncover potential incongruities and landmines prior to launching a design process involving more significant funds, stakeholders, and commitments. A viable facility master planning exercise will establish professionally calculated budgets and ensure that these projected costs are in line with a facility program statement and a realistic conceptual assessment of how the facility will actually be constructed on site.

Using a Facility Master Plan to Predefine a Project: Case Study One

The following example suggests how a facility master plan, undertaken in advance of traditional architectural design services, would have averted an awkward and costly experience for this client. A small East Coast liberal arts college with a modest endowment and alumni development base had engaged a library consultant (not an architect) who competently developed a program for a new facility. The library consultant's plans suggested an assignable square footage (asf) of approximately 62,000 square feet. Up to this point, his expertise served the college very well. The consultant had developed a basic summary of their needs that met their vision and clearly formed the basis for the architect's design and subsequent construction.

However, this consultant went beyond his expertise and informed the college that they could expect a building efficiency of 80 percent. (Building efficiency is defined as the ratio of the asf to the gross square footage [gsf], the latter being the final size of the building when mechanical spaces, circulation, toilets, support spaces, etc., are included as in the project design.) On the basis of this, the college administration was led to believe that they needed to build a facility of about 78,000 gsf. The consultant also told the client that they should expect to build such a facility for about $110 per gsf, or about $8.6 million for the construction. The college took this information to its trustees; they approved the facility based upon this budget—the largest capital project in the history of the school.

Potential Problems Averted

Upon closer examination it appeared that the library consultant had incorrectly estimated the cost and efficiency of this building. At best, even the most efficient academic library would achieve a 75 percent efficiency rating, and more than likely it would be about 70 percent. A library of the quality that the client expected would cost at least $150 per gsf in late 1990s dollars—$40 per gsf more than the library consultant had estimated. The college faced two choices: 1) with an approved construction budget of $8.6 million, they could build a facility of about 57,300 gsf or

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46,000 asf [assignable square feet]—a 26 percent reduction in scope; or 2) they could build their approved program scope (62,000 asf) at about 75 percent efficiency for $12.4 million, representing a $3.8 million (44%) increase in cost.

This created a significant problem for the school, which already had approved a budget and had in place a fundraising campaign based on the financial recommendations of the library consultant. Had an FMP been undertaken after the library consultant had completed his work and the design phase begun, this client would have "discovered" the problem and would have avoided a delayed completion of the project as well as frustrated administrators and trustees. The happy ending to this story is that a highly successful facility, albeit slightly reduced in scope, was ultimately designed and constructed for this college with the approval of additional funds by the trustees and a donor's generous financial gift.

An FMP Offers Unanticipated Potential Benefits: Case Study Two

A second benefit of using a facility master plan is that it can enable the client and architect to explore alternatives that greatly enhance the building project in ways that had not been originally anticipated. The following example explores the rich potential that a facility master plan, provided by an architect with a broad breadth of knowledge in academic learning facilities, can bring to an institution.

The undergraduate library of a major, mid-sized, private university needed a FMP for a major renovation. The library had been built in the 1960s and, like others of its vintage, had fallen into a state of functional disorganization. This was partly due to the understandable ad hoc nature of how libraries have had to adapt to the changing academic and informational technology landscape while remaining operational year round. By the late 1990s, the university's president recognized the importance of re-establishing the central role of the undergraduate library in the institution's academic vision and needed to have a well-defined project to seek his trustees' approval and funding.

Using the FMP process, the facility was reprogrammed and a set of conceptual plans and budgets defining the renovation project was developed. This process brought to light the following issues that needed to be addressed:

1. Significantly more program was required than could be housed in the existing facility, even with complete renovation, yet an addition was both impractical and an unjustifiable expense.
2. The university's special collections, housed in the original library building directly across a beautiful, tree-lined boulevard, shared space with a potpourri of other offices and classrooms that were far from "user friendly" in their accessibility and disposition.
3. A potential "clean" building site was adjacent to both the old library and the university's main student center (which was about to undergo renovation and expansion).

Campus planners saw a huge untapped potential in the larger context of the undergraduate library that had, until now, been the primary focus. The college also recognized that there was an increased blurring of the line between the learning that takes place in the library and the learning that occurs amid the social activity in student centers. Any FMP would have to take into account that the library needed to house all the special collections libraries in one place and to provide the campus with a more defined media/learning resources center—something that could not have possibly been created in the existing university undergraduate library.

Consequently, as a postscript to the FMP for the library, the university began to consider the long-term development of an information/learning resources precinct. This would be the focal point of the campus and would unify a number of facilities and contiguous outdoor spaces: the undergraduate library, the special collections in the old library, an outdoor "room" between the entrances of these two facilities, and the potential site adjacent to the student center for a media/learning resources center. Ultimately, if it were integrated with the student center, this new precinct would create a dynamic entity—a whole that was greater than the sum of its parts. As a distinctively innovative approach to library and learning place planning, the center would position the university at the forefront of its peer institutions.

Planning for the Future

The notion of creating an "information/learning resources precinct" piqued the interest of the university administration. As the various stakeholders began to see the user benefits and the potential for themselves, the idea took on a life of its own and has now become a compelling aspect of the university president's vision as the school moves forward. What has emerged from this process is a new localized master plan for this area of the campus that has further defined this concept, including projected cost estimates. With this in place, the university president can now take the plan to the trustees and initiate more specific actions that may well make the precinct a reality in the future.

Thus, a facility master plan can examine facility-specific issues and provide a perspective of the facility in its larger institutional context. The FMP can also serve as a very versatile tool by which to explore new or different ideas without necessarily embarking on a long or cumbersome campus master plan or visioning exercise. Additionally, the FMP can also be an extremely useful instrument in developing a broader campus or academic visioning plan.

Successful MFP Spawns Major University Learning Center: Case Study Three

Several years ago, Emory University in Atlanta wanted to create a facility master plan that would program and explore options for the expansion of Candler Library—the undergraduate library located on the university's old campus quadrangle. One of the drivers of this planning exercise was

Figure A. Center for Learning and Information Resources (elevation)

Figure B. Center for Learning and Information Resources (exterior)

the school's decision to combine the administration of the library with both media and academic computing. This decision was a response to the ongoing evolution of the library precipitated by the increasing impact of emerging information and media technologies upon learning and information access.

While the FMP set out to examine these issues around Candler Library, and while several conceptual expansion options emerged from this thinking, the process allowed some broader thinking to take place similar to Case Study Two. Another possible issue in this plan was the location of the Woodruff Library for graduate research, which was separated from Candler Library by a heavily vegetated ravine and connected to the undergraduate facility by a pedestrian bridge. Although it was located only 100 yards away, Woodruff Library had not originally been considered a part of the long-term visioning of the Candler project.

Consolidation Offers the Creative Solution

The master planning process allowed campus planners to look beyond the original charge of the FMP and suggest that perhaps the more far-reaching vision ought to be a unification of the graduate and undergraduate libraries—a segregation that was being questioned at several major universities across the country. In this case, the advantage for Emory was the adjacency of two related facilities that were ultimately unified by a new structure as the Center for Learning and Information Resources (CLAIR), similar to the information/learning resources precinct in the previous case study.

As the elevation (Figure A) and exterior photograph (Figure B) of the finished design show, the CLAIR project became the literal and conceptual bridge between the Candler undergraduate library and the Woodruff research library. The new structure is now seamlessly integrated with the podium of the Woodruff building serving as the entrance to the entire complex. Among other public services and collections, it houses the library's Information Commons and the new Marian K. Heilbrun Music and Media Library.

Since the new CLAIR/Woodruff/Candler opened its doors, it has been an unqualified success and one of the academic focal points of Emory University. The complex has spawned an array of new ways of using traditional library materials as well as digital resources and continues to evolve to meet the changing needs of this university community.

Lessons Learned

Had Emory University proceeded with the traditional means of building development without a facility master plan, it is quite possible that an important resource center like CLAIR might not have emerged. Because the FMP focused on concept and program rather than on bricks and mortar, it encouraged thoughtful analysis and opened the minds of all of the players to new possibilities beyond their original preconceptions.

Although the FMP may be initially dismissed by many institutions due to schedule or perceived cost implications, its value to the client in the end is incomparable. As a first step in advance of a traditional project development path, the FMP, at the very least, may simply confirm the initial assumptions. However, it almost always results in smoother, more satisfactory project development. At best, the FMP checkup may expose flawed assumptions, help avoid very messy conflicts later in the actual building process, and/or bring options to the fore that have not been previously considered. Most importantly, the successfully implemented facility master plan almost always results in happier clients and more successful facilities!

A Systematic Approach to Evaluating the Building Envelope

by Jon F. Lindberg, P.E., Edward J. Stewart, RRC, and David A. Morand, P.E.

A major responsibility of a facility manager is to ensure that their building is as water-tight, energy-efficient, and safe as possible. This often means investigating and evaluating the building envelope (roof, walls, windows, waterproofing, and structure) to define and resolve existing problems as well as to eliminate future problems, thereby extending the service life of the building.

Whether an owner is investigating a leakage problem themselves or they have hired a consultant for a larger-scale investigation, the following approach can serve as a guide to determining and repairing problems with the building envelope.

Research a Building's History Before Determining its Future

Collect historical data

Historical data will assist the facility manager in determining the original design intent, possible construction variations, and recurring problem areas in the building.

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Historical information includes:

- Design documents, specifications, plans, or any information that helps define how the building was designed or constructed
- Codes and standards that were applicable at the time of the building's construction
- Test reports on materials or systems, such as window systems, masonry components, or roofing systems, etc., to compare with the original design documents
- Construction documents (i.e., change orders, inspection reports, shop drawings, and as-built drawings)
- Local practices or what was normally installed by contractors at that time and in that region.

Determine the original design intent and effectiveness

The original design intent needs to be considered to determine what could be causing the problems with a building envelope. For example, investigating problems with the roof system would include reviewing the structural, thermal, drainage, and vapor drive to understand performance requirements. For windows, the infiltration requirements, the thermal-resistant levels needed, and the structural capabilities of the window opening (to keep that window in place and under specific wind loads) would need to be considered. When examining walls, the required thermal resistance, structural requirements, anticipated moisture infiltration, and the drainage system is critical to understand.

One of the most important aspects of performing an evaluation of the building envelope is the field inspection. After compiling the available design documentation and researching the building's service history, it is then necessary to examine the existing conditions.

In addition to the design intent, the original design effectiveness should be considered. Was this design appropriate for the location of the building? Can it perform as intended? Is the building in a high-exposure area or protected from a harsh environment?

Examine your building's service history

A full understanding of how the building is servicing its occupants is important for all facility managers to know. Occupant interviews regarding active leaks, where drafts are detected, etc., is valuable information to have during a building evaluation. Maintenance reports will provide useful information regarding where the building has been repaired and where the problem areas still exist. This information helps the investigator better understand the condition of the building and determine the areas that need to be more closely reviewed.

The next step is to perform a thorough leak audit of the building to determine where leaks are occurring and under what conditions. The leaks can be affected by weather. If the leaks occur only after a wind-driven rain, then it could indicate a wall-leakage problem as opposed to a roof-leakage problem. If they are affected by temperature, then it could be a condensation/HVAC issue.

Perform a Field Inspection

One of the most important aspects of performing an evaluation of the building envelope is the field inspection. After compiling the available design documentation and researching the building's service history, it is then necessary to examine the existing conditions. The field inspection operations will serve to complement and expand the data obtained from the previous service history and design documentation, as well as indicate variations between original design and construction.

The scope of the field inspection will establish the types of field procedures that will be required to obtain the necessary information for a complete building envelope evaluation. Based on the information compiled to this point, the areas for inspection can be carefully selected to obtain a broad, thorough sample of potential building deficiencies.

Access Methods

There are several access methods that may be utilized to reach difficult wall or building areas to gather data:

- Two-man ground lifts—Two-man ground or rolling lifts can double as an observation and a testing platform with the ability to relocate quickly and conform to irregular building geometry. Accessible land adjacent to the building is necessary for rolling lifts.
- *Swing staging*—Swing staging, like the two-man ground lift, offers a suitable platform for observation and testing but is more suitable for the straight vertical drops of a flat building geometry. Roof access is required to set up and move the swing staging (Figure 1).
- *Rappelling*—Rappelling, or industrial rope access, is a method borrowed from mountain climbers that allows the investigator to safely access structures by descending and ascending suspended ropes. It is an inexpensive, useful method of vertical building

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Figure 1. Inspection of wall using swing staging

access to perform evaluation and light test procedures, with the ability to relocate quickly.

- *Ground observation*—Ground observation with the use of binoculars is very useful to spot potential problem areas, or simply to verify or acquire quantities of components. High- powered binoculars and vantage points such as adjacent buildings or roof levels will help to improve the field data collected.

Figure 2. Performing a Rilem tube test to determine porosity of a masonry wall

Identifying the Defects

Proper defect identification will help determine the repair needed, aid in proper repair material selection, and reveal the influences that are contributing to the deterioration. It is important to acknowledge which factors have caused degradation of the building and its components and how one deficiency and its intended repair may influence or amplify another. Careful and thorough defect identification is critical to obtain long-lasting, quality repairs. It is necessary to eliminate the cause of the defect and not solely treat the symptom.

Correlating the interior leak audit with exterior defects assists in determining the cause and origin of various problems as it narrows down the exterior testing areas. It also helps managers prioritize repairs and implement a replacement sequence of work. Quite often, due to budget limitations, managers cannot rectify all of the building's problems. Knowing the cause and origin of the problems and the extent of moisture infiltration can assist in prioritizing the repairs to fit a particular budget.

Testing Methods

The objective of field testing is to correlate paths of moisture infiltration with the observed damages. Anyone can observe moisture coming into a building during harsh weather events but the most reliable way to test for moisture is to actually recreate the leakage in a controlled manner so the path of the leak can be traced. Testing also allows verification of the hypothesis for the cause of leakage.

There are many different types of testing that can be used during the investigation to suit a particular building's needs. These testing categories include:

- Non-destructive testing
- Destructive testing
- Laboratory testing

Non-Destructive Testing

Non-destructive testing uses a variety of non-invasive tools. This type of testing causes little or no damage or interference to the building envelope. The various methods of non-destructive testing include:

- *Rilem tube*—This calibrated device is adhered to exterior masonry walls to determine the porosity and condition of brick masonry units, mortar joints, head joints, and embedment joints (Figure 2).
- *Water spray rack*—This test simulates a wind-driven rain condition on a facility. It can assist in determining the specific cause and origin of moisture infiltration when used to test independent components of the envelope. Spraying water over a large area in an uncontrolled fashion will not reveal specific causes of moisture infiltration.
- *Hose spray test*—This test method also simulates wind-driven rain in small segmented areas using a standard garden hose in which a calibrated nozzle is attached with a pressure gauge. The spray is directed at a specific joint, crack, or defect to reveal potential moisture intrusion (Figure 3).
- *Differential pressure test*—A pressure chamber is typically constructed on the interior of the facility at a specific location to test moisture driven through an assembly or component. The assembly or component is subjected to a negative force while simultaneously a spray rack test is directed at the assembly to draw the moisture into the facility to simulate a negative pressure under a wind-driven rain condition.
- *Infrared thermography*—Infrared thermography photographs the building exterior to determine the locations of wet components. Components, such as

Figure 3. Water spray test used to locate source of leak

insulation and sheathing, etc., will act as heat sinks if they are contaminated with high levels of moisture. During the day, moist and dry components absorb heat. At night, the moist areas release the heat much slower than the dry areas. By reading the heat signature, infrared thermography will help expose the moist, problem areas. Small test cuts are required to verify moisture-contaminated areas.

- *Soundings*—There are different ways to perform sounding tests including the hammer tap test. In this test, a 16 oz. hammer is tapped against concrete for sound. A hollow sound indicates areas where the concrete has separated from the reinforcing steel, typically due to exfoliation or corrosion of the steel. Another method of sounding is to chain drag a heavy 15-foot link chain along a concrete surface to listen for hollow sounds, indicating defective concrete. This method can cover larger areas effectively and is commonly used on parking garages and loading docks.
- *Pachometer survey*—This test uses a magnetic device to locate embedded steel reinforcement and help determine the concrete cover over the reinforcement. Generally, the pachometer is fairly accurate when measuring a 1/4-inch to 3-inch-thick concrete cover and when reinforcing placement is not too congested.
- *Polysheet tapedown*—This test determines the presence of moisture coming through a concrete surface, typically a slab-on-grade type of assembly where the typical problem is tile or membrane separation from the floor. A 2' x 2' section of polyethylene is sealed to the concrete with duct tape and removed 24 hours later. If there is moisture beneath the polyethylene, it is a good indication that there is a vapor drive through the concrete section.
- *Glass-slide epoxy or crackometer*—This device is sealed in place over a crack and periodically checked to determine if any movement has occurred. If movement has occurred, the glass will crack or the meter will record movement.
- *Optical illuminated boroscope*—A boroscope is inserted into a 5/8-inch diameter pilot hole through an exterior wall system and allows the cavity walls of brick veneer, stud wall backup of exterior insulated finish systems (EIFS), or other types of constructions to be observed without large-scale destructive testing (Figure 4).

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Figure 4. Performing a boroscope analysis to view wall cavity and related back-up wall

- *Smoke/dust tracer*—A simple and useful test, the smoke/dust tracer helps find air infiltration. It is moved across the interior face of a window to observe smoke and dust particles coming through the assembly.
- *Moisture meter*—A Delmhorst meter is a simple digital device that detects the presence of moisture in various building components. This test is typically accompanied by a gravimetric analysis (oven-drying of samples), which is used to confirm the results of the Delmhorst meter.
- *Flashlight and mirror*—These everyday, simple tools can be very useful to detect problem areas. Placing the mirror into the plenum or behind difficult-to-access areas with the flashlight will allow observation of concealed conditions.

When the main objective is to determine the existing composition and configuration of concealed assembly conditions, destructive testing is warranted. The most common methods of destructive testing are test cuts and borings.

Destructive testing

When the main objective is to determine the existing composition and configuration of concealed assembly conditions, destructive testing is warranted. The most common methods of destructive testing are test cuts and borings.

Roofs. Test cuts in the roof assembly are necessary to determine the condition of the underlying insulation and substrate. Cutting into the system will help verify if roofing problems are causing a corroded steel deck, or a spalled and cracked concrete deck, etc. Test cuts will also expose the as-built configurations of your flashing components, roof-to-wall locations, and curb locations, etc. This information is

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critical to the appropriate remedial design in order to specify appropriate flashing details.

Exterior walls. Test cuts on exterior walls are a useful tool to identify the origin of moisture infiltration. For masonry walls, it is most effective to make test cuts at window heads and sills, and at any through-wall flashing locations that may be suspected of allowing moisture intrusion. Masonry test cuts can expose defective through-wall flashing that is allowing moisture intrusion. Test cuts will also help determine the underlying conditions of the steel components in wall systems, including wall ties, reinforcing steel, and sub-steel columns, etc.

Gathering samples. Destructive testing is also used to obtain samples for lab analysis. Samples of sealants, coatings, painted finishes, and roofing materials, etc., can sent to a laboratory to determine the presence of lead or asbestos. Samples of masonry or concrete can also be tested to help identify causes of moisture/air infiltration (descriptions of these analyses follow).

Laboratory testing. Laboratory testing will help obtain a better understanding of existing material types, presence of contaminants, and the possibility of hazardous components. This type of testing can also provide valuable information concerning proper surface preparation, material selection, and implementation of repairs. The following laboratory tests are the most useful when performing building envelope evaluations:

- *Gravimetric analysis*—This test will determine moisture content. After weighing and recording the in-situ existing sample, completely dry the sample in an oven and re-weigh it. The weight difference indicates moisture content and is particularly useful for insulating materials. Testing moisture contents of samples is critical to verify results from non-destructive moisture scans.
- *Asbestos and lead*—By testing the paint, sealants, plasters, and roofing materials, etc., it can be determined if asbestos or lead is a component of the existing materials. This is helpful to provide an accurate cost estimate for removal of hazardous materials. This simple test is inexpensive at any testing lab and allows the proper remediation methods to be specified to avoid costly change orders.
- *Petrography*—Petrography determines the "make-up" of concrete. This test will indicate the size and type of aggregate, air/void ratio, type of cement, and general mix design data of the concrete. Any materials testing lab will perform this test, however, it is expensive and time consuming.
- *Compression/tension*—By determining the actual compressive strength and modulus of rupture for the concrete, a similar strength characteristic of new repair material may be selected to maintain appropriate section behavior and extend repair life.

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A thorough investigation also promotes an efficient design specification, thereby reducing the possibility of increased costs, via change orders, due to unforeseen conditions.

- *Air entrainment*—This test provides an indication of the existing concrete's durability and freeze-thaw resistance. Air entrainment is generally indicated by petrography.
- *Presence of carbonization*—This test is completed by spraying a solution of phenothelene on the concrete substrate and recording the depth of the solution's color change. It will indicate to what depth carbon dioxide has progressed into theconcrete. If not repaired, carbon dioxide will degrade the cement matrix of the concrete and lowerthe pH level of it. The passivation layer surrounding the reinforcement is then destroyed, allowing corrosion of the reinforcing steel. Corrosion by carbonization usually occurs over a broad area.
- *Chloride ion content*—Chlorides from marine atmospheres or mists from road salts entering the concrete substrate, and salts originally introduced to the concrete via admixtures or aggregates will allow an accelerated corrosion of reinforcing steel, usually at concentrated or specific locations. The chlorides are not consumed in the corrosion process but rather act as catalysts in this process. The corrosion will progress along the reinforcing bars causing concrete debonding, cracking, and spalling.
- *Reinforcement placement, depth, quantity, and type*—This information may be established with the use of a pachometer or similar electronic metal detector. It is useful in determining the required steel replacement and structural capacities during engineering analysis phases.

Engineering Analysis

Using information obtained from the field, laboratory results, and collected data from service history and the original documentation, a comprehensive engineering analysis should be performed. The engineering analysis should include an assessment of field and laboratory data and structural analysis as well as the following:

- Thermal analysis
- Drainage analysis
- Vapor drive analysis
- Fire rating requirements
- Cost estimations

General considerations for the repair of defects and replacement of components should include the following:

- Determine the effect, if any, the repairs might have on the structure, surroundings, and operations of the building
- Ensure proper preparation of surfaces to be repaired and provide chemical and mechanical bonds for new materials
- Material selection should include an understanding of performance limitations and should rely on the products past acceptable performance. Material selections should include consideration of the following:
  - Compatibility
  - Maintenance
  - Life cycle

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contractor bidding, that will also be used during construction. The quality of the initial field evaluation reflects directly on the quality and performance of repairs, as outlined in the specification documents. A thorough investigation also promotes an efficient design specification, thereby reducing the possibility of increased costs, via change orders, due to unforeseen conditions.

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Building a BETTER CAMPUS

An Update on Building Codes

by Michael J. Madden, P.E.

Over the past few years, there have been many changes made in the construction code arena that have impacted the development and adoption of building codes within the United States. The movement from regionally developed model-building codes such as the Building Officials and Code Administration (BOCA) National Building Code, the Southern Building Code Congress International (SBCCI) Standard Building Code, and the International Conference of Building Officials (ICBO) Uniform Building Code to two international sets of codes may prove to have a significant effect on higher education institutions in terms of planning, design, construction, and renovation of facilities.

A Tale of Two Codes

In 1994, the International Code Council (ICC) was established as a nonprofit organization dedicated to developing a single set of comprehensive and coordinated national model construction codes. The ICC was formed as a joint venture from the three existing model building code development organizations—the BOCA, the SBCCI, and the ICBO. The goal of the ICC was to create a consistent, unified system that would stimulate the building community, improve safety, and create safer and more efficient and durable buildings and homes. The ICC achieved this goal with the publishing of the International Building Code (IBC) in the year 2000. ICC is now working on the development of the 2003 edition of the IBC. To support their code adoption efforts, the ICC has signed an agreement with the American National Standards Institute (ANSI) to distribute the ICC's International Codes via the ANSI Online Electronic Standards Store (http://webstore.ansi.org).

The nonprofit National Fire Protection Association (NFPA) has also developed a set of building codes, NFPA 5000 Building Code, which were accepted by the NFPA membership at the World Safety Conference and Exposition in May 2002. At its July 2002 meeting, the NFPA Standards Council approved the NFPA Building Code for release. The NFPA has been involved in the development of codes and standards for fire protection and safety for over 100 years, but the new NFPA 5000 is the first comprehensive building code document that the organization has developed. The new NFPA Building Code will have a similar format to many of the current model building codes that deal with safety from fire, structural failure, safety during building use, and safety from unwanted entry and exposure to hazardous materials. NFPA 5000 also has many new provisions involving performance-based design and new concepts regarding construction type and height per area requirements. Since August 2002, the NFPA has been offering both the NFPA 5000 and NFPA 1 (Fire Prevention Code) for review and purchase on their website (www.nfpa.org). NFPA also offers training, free of charge, for code enforcement personnel in jurisdictions that adopt the NFPA Building Code.

The primary difference between the NFPA Building Code and the ICC Building Code is their approach to organization. The IBC is a "systems oriented" publication with chapters structured around specific systems such as fire resistant construction, means of egress, fire protection systems, interior environment systems, structural design concerns, etc. The NFPA 5000 Building Code is an "occupancy oriented" publication based on occupancy types (i.e., assembly, healthcare,

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and residential occupancies). The NFPA document, like the NFPA Life Safety Code, includes a chapter that addresses these specific occupancy requirements.

Another differentiation between the two building codes is the manner in which they were developed. The NFPA codes and standards development process is an ANSI-accredited consensus code development process, that is based upon the openness of the process, the balance of participant interests in the process, and consensus. Both the NFPA and ICC processes are open to public input and involvement, but the difference between the two processes is the manner in which the two bodies actually approve the documents.

In the NFPA process, all NFPA members, regardless of affiliation or interest, have an opportunity to vote on document approval. In the ICC process, only code enforcement officials currently have voting privileges in the approval of the ICC Codes. This distinction may be a topic of discussion when state and local jurisdictions look at adopting one code over the other.

For over 40 years, the design community has been pushing for a single set of model construction codes for use throughout the country. With the development of the IBC and NFPA 5000, the reality of two new and separate sets of codes is upon us. Although not completely successful in reaching one set of codes, the development of two codes does result in the likelihood that the various jurisdictions will adopt one set or the other. The hope is that the adoption of one set of codes will bring about efficiencies in research and development within the manufacturing sector; result in uniform education and certification programs on an international basis; and reduce the number of states and localities that currently write their own codes or amend the model codes. More uniform adoption will lead to more consistent code enforcement, higher quality construction, and the ability of code organizations to better focus their energies in the areas of code adoption, code enforcement, and enhanced membership services.

The next few years, however, will be ones of continuous flux as jurisdictions look at adopting the new codes and replacing existing ones. In the long term, there will be two coordinated model construction code sets being used in this country. In the short term, there will be two new documents, three previously existing model code documents, and numerous state and local codes and model amendments. Higher education facility personnel will need to keep abreast of state and local code development activities to stay informed as to the status of current building codes in their jurisdictions, and the status of code development and code adoption processes.

Continued on page 68

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Continued from page 66

Performance Based Design (PBD) Option

Within the IBC 2003 edition, the NFPA 5000 set of codes, and the 2000 edition of the NFPA 101 Life Safety Code, there is a new approach to the design of buildings called the performance-based design (PBD) option. The PBD option is an alternative design method to the traditional application of prescriptive code requirements found in these codes. Performance-based design represents a choice between adhering to the prescriptive requirements of the traditional building code, or developing performance-based engineering solutions that comply with the intent of the building code and meet the goals and objectives of the building users, owners, and other stakeholders.

Prior to the two new code documents, none of the previous model building or fire codes provided comprehensive guidance on PBD, even though the concept has been around for some time. In fact, performance-based design has been used successfully in other countries, including Australia, New Zealand, and Great Britain. And in this country, the development and justification of code compliance alternatives, under the alternate methods and materials provisions of the building code, has often been labeled as performance-based design.

The development of engineering solutions for performance-based fire safety designs may use advanced fire modeling techniques to assess a variety of fire scenarios. With recent advancements, our understanding of the chemical and physical processes involved in building fires and the availability of faster processing speeds, computer fire modeling is now a commonly used tool for performance-based design. It is used in evaluating the level of safety of atria, the analysis of building egress systems, and the design of fire suppression and alarm systems. What was unthinkable only ten years ago is now an affordable engineering tool.

The performance-based option can be used on both new and retrofit design projects and provides greater flexibility for the design community. It also requires a higher level of engineering expertise and a greater understanding of acceptable levels of safety and protection. This results in the likelihood that performance-based designs will be reserved for more complex higher education design or retrofit projects, such as historic facilities, assembly buildings, and stadiums. In order to successfully implement an alternative method using the performance-based approach, the designer must prove to the Authority Having Jurisdiction (AHJ) that the building's design meets the intent of the applicable prescriptive codes.

Within the higher education community, this may be a representative of the campus community or a person with local jurisdiction (fire marshal, city code official, etc.). It is important to note that the NFPA 5000 does allow the AHJ to require an independent, third-party review of PBD plans at the owner's expense. Due to the higher level of expertise required for a PBD option, it is important that the educational community choose designers with the proper level of expertise, either within their organization or as part of their team of subconsultants.

How Am I Affected?

It is extremely important that all decision makers within the higher education community be aware of the new building codes, the effect they will have on their campus, and the status of code development and adoption efforts within their own jurisdiction. An understanding of the new codes will help the higher education professional perform better long-term planning, ensure more cost effective implementation of campus upgrades and new construction projects, and facilitate more flexibility and creativity in the design process. In some cases, adoption of either the IBC or NFPA 5000 will result in the elimination of multiple building codes. This should make the design and construction process more straightforward and cost effective, and allow for better use of national, high profile design firms. With the current trend toward the design of signature buildings on campuses, the adoption of one set of codes should result in improved efficiency, more innovative designs, and better resolution of difficult retrofit issues.

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Financing Solutions for FISCAL STRESS: PUBLIC-PRIVATE PARTNERSHIPS

by Greg Eden

Thirty-three states and growing numbers of colleges and universities currently face budget shortfalls, especially for capital expenditures involving the renovation of existing structures and construction of new student housing, classrooms, and parking facilities. Although state governments, colleges, and universities are usually the last to experience a recession due to their reliance on the direct or indirect receipt of tax revenues, they are also the last to recover from economic downturns.

This experience is particularly interesting in today's environment because of the historic low rates of interest associated with any borrowing for a capital project. The issue that many institutions face is how to stretch existing funding and still accomplish long-term facilities goals for higher education.

A Structural Solution—Public-Private Partnerships

Public-private partnerships have existed as a concept for a number of years. By involving the private sector, risk allocation can be extended from public institutions to the private sector for designing, building, financing, and owning a facility. The goal of any public-private partnership is to recognize what each party does best and then develop a format to achieve the desired result at the lowest cost and in the shortest amount of time.

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The Commonwealth of Virginia is one of the first states to specifically adopt legislation for this purpose. The intent of The Public-Private Education Facilities and Infrastructure Act of 2002 is to bring together the creativity and innovation of the private sector to help accomplish public needs in education. The Act is drafted to deliver infrastructure projects in a more timely and cost-effective manner.

Many states currently have legislation that addresses some or all of the issues addressed by the Virginia statute and, to the extent that similar legislation does not exist in other jurisdictions, the Virginia Act can serve as model legislation. A review of the relevant provisions of the Act highlights what many jurisdictions have done in part and what still may be necessary to fully implement the public-private partnership concept for education throughout the United States.

If a particular jurisdiction does not incorporate all or most of the legislative guidelines outlined in the Virginia Public-Private Educational Facilities and Infrastructure Act of 2002, it is important to realize that most, if not all, higher educational facilities can utilize their existing foundations as participants in this process. By doing so, many of the procurement restrictions are avoided and the foundation can facilitate the creation of public-private partnerships employing tax-exempt finance.

Provisions of the Virginia Public-Private Partnership Legislation

The Virginia Act defines a "qualifying project" as any educational facility, including, but not limited to:

- a school building,
- Any functionally related and subordinate facility and land adjacent to a school building (including stadiums and other facilities primarily used for school events), and
- Any depreciable property provided for use in a school

facility that is operated as part of the public school system or as an institution of higher education. This broad definition includes new construction and the renovation, expansion, operation, and maintenance of a qualifying project.

A proposal can either be solicited by an educational entity or delivered by a private developer, architect, engineer, contractor, or investment banker on an unsolicited basis. This gives the college, university, or school system the option to highlight specific needs for which proposals from the private sector are welcomed. The private sector also has the freedom to develop a proposal based on one or more innovative methods for solving infrastructure problems. Once a proposal is submitted, it must be advertised by the recipient for at least 45 days to allow competing proposals to be filed.

Proposals submitted under the Act are exempt from Virginia's public procurement act (including the design-build/construction management review board) in an effort to eliminate time and expense and to ensure the success of the process. Any guidelines, regulations, and interpretations of the state's division of engineering and buildings—as well as the actual proposal—can be kept confidential to the extent that only the outline of the proposal needs to be disclosed to other interested participants. Finally, in reviewing proposals, the public entities are not required to accept the low bid proposal.

Proposals may rely on multiple funding sources, including government appropriations, grants and loans, user fees, lease payments, and service contracts. The private developer may issue debt (equity or other securities or obligations), enter into sale and leaseback transactions, and secure financing with a pledge of, security interest in, or lien on, any or all of its property.

The Virginia Act is structured to reduce the time and money spent by the submission of projects to extended boards of review, encourage entrepreneurial activity on the part of the private sector, tailor a project to the particular needs of the user, and encourage the innovative use of tax-exempt and taxable project financing.

Until recently, colleges and universities accepted the risks of construction, ownership, operation, and maintenance of student housing. Today, the trend is toward public-private partnerships where one or more of the risks associated with student housing is assumed by the private sector.

Tax-Exempt Leasing

Public-private partnerships enable the contracting parties to allocate ownership risks for a given project. A basic risk for evaluation is the decision to own or lease a facility. Until recently, colleges and universities accepted the risks of construction, ownership, operation, and maintenance of student housing. Today, the trend is toward public-private partnerships where one or more of the risks associated with student housing is assumed by the private sector. The same criteria that is applicable to student housing is relevant in the consideration whether colleges and universities should own or lease parking facilities, classrooms, and steam plants.

The lease-versus-own decision requires the educational institution to decide how to allocate funds. If the decision is to conserve financial resources, the college or university must then decide whether to enter into an operating lease or a tax-exempt lease purchase arrangement.

In an operating lease, the private owner finances a facility at commercial interest rates. It is deemed to be a current expense but does not build equity in the project. A tax-exempt lease purchase is structured so that each payment includes an interest and principal component. At the completion of the financing term, title is transferred to the college or university for a dollar.

If the decision is made by the college or university to own the facility, tax-exempt leasing offers a favorable option to the issuance of general obligation bonds. The tax-exempt lease is not technically defined as debt and therefore does not impact the ability of the state or university to borrow funds. Tax-exempt leases typically contain language that requires the obligation to be renewed at each fiscal cycle during the term of the financing, which can extend as long as 30 years.

In the public-private partnership, the college or university can enter into a tax-exempt lease without the need for a voter referendum, thus saving the time and expense associated with that requirement. Although the tax-exempt lease is not defined as a full faith and credit obligation, the pricing is similar to general obligation bonds given the essential use of the project to the university or college.

Tax-exempt leases can also be employed when the college or university has made the decision to purchase a facility that is currently structured as an operating lease. The total amount

of the purchase price of the facility can be financed with the tax-exempt lease structure.

There is also the option of utilizing the tax-exempt lease for a sale-leaseback of an existing facility where the goal is to achieve liquidity or to renovate an existing facility. In this instance (where sanctioned by state statutes), the university or college can sell or lease the facility with a leaseback arrangement that provides immediate cash proceeds as well as the funds for structural improvements.

An Example of a Public-Private Partnership and Tax-Exempt Leasing

The University of Georgia is an example of public-private partnerships utilizing tax-exempt leasing (or non-general obligations such as tax-exempt revenue bonds) as a source of funding. Funds have been borrowed for terms as long as 30 years at low-cost tax-exempt interest rates. Given the cost of funds in today's markets, this borrowing is viewed as a bargain for colleges and universities. It also avoids the process of receiving approval and funding for new construction when the University has to compete against 33 other public colleges for limited public funds.

By engaging the University of Georgia Real Estate Foundation, the University avoids the typical procurement process. When coupled with a conduit issuer such as the Athens Georgia Housing Authority, the university can receive the benefits of tax-exempt funding that is retired with parking fees, research overhead dollars, housing fees or donations. In the case of the University of Georgia, the foundation leases the properties from the Georgia State Board of Regents, which receives title to the facility once the tax-exempt obligations are fully paid.

A Comprehensive Financing Approach

Public-private partnerships offer colleges and universities a range of solutions to ensure the most cost efficient and timely delivery of new, renovated, and expanded facilities. Coupled with this concept of risk allocation and responsibility between the public and private sectors is the recognition that tax-exempt leasing can provide a comprehensive financing approach to this sector.

It is important to note that public-private partnerships to finance and develop higher education facilities succeed because of the enormous flexibility and creativity inherent in the approach. Higher education officers and facilities managers retain control of the risk allocation process and can determine the design and location as well as whether operations and maintenance are retained or contracted to third parties. If the decision is made to contract out services, then standards can be imposed on the contracting parties in the documentation. Ideally, the situation will result in a public-private-partnership that can be implemented and sustained at the lowest possible cost and with the greatest efficiency for all parties to the transaction.

Leadership and the Issue of Trust

by James E. Christenson

The leader shows that style is no substitute for substance—that creating an impression is not more potent than acting from one's center.

—*Lao-tzu, c. 550 B. C.*

I recall a story of a man in the desert and the life-or-death decision he faced. The man had not anticipated the extreme heat or the distance he had to travel to cross the waterless wasteland. His food had run out three days before. His water was gone. He was dehydrated beyond belief.

But he could now see a pump a quarter mile ahead. He put all his remaining strength into crawling the distance to the pump. He used the pump to pull himself up to his feet. He lifted the rusted handle and pushed it down to raise the water. Nothing. He raised it again and pushed it down again. And again. And again. Nothing. Not even the sound of water. As he sank back to the ground, resigned to the death he must face, his eyes fell on a glass jar half buried in the drifted sand. There was water in the jar! Attached to the jar was a note that read, "This is a good pump, but it must be primed. Use this water to prime the pump and you will be able to pump all the water you need. Just be sure to fill the jar again before you stop pumping."

The water in the jar could prolong the man's life for a day. But he knew that he had at least three days to go. Should he drink the precious water that he held in his hands and hope that he could make it? Or should he use the water to prime the pump and

fill his canteens ensuring that he had plenty of water for the rest of the journey? The decision rested on one thing. Could he trust the words on the note? How long ago were they written? Even though the pump worked then, does it work now? And worst of all, could this be some cruel joke by the person who left the note? His life depended on the trustworthiness of those words.

Trust. Webster defines it as "assured reliance on the character, ability, strength, or truth of someone or something." Trust is a powerful word. If people really trust a leader, they are willing to put their jobs and sometimes their lives at risk to support that leader, confident she or he is leading them in the right direction and supporting their efforts. In combat situations, trust is the bond that people bet their lives on. As recent stories of corporate mismanagement show us, though, the quality of life for thousands of ordinary workers and stockholders can also be dramatically diminished when trust is given but not warranted.

Trust is not quickly earned. As Stephen Covey would say, trust in a leader can be earned only by the leader making many "deposits" over time—deposits such as always keeping promises. This is part of the process of assuring others that you are really trustworthy. Unfortunately, as many of us have witnessed, trust that takes many years to develop can be lost in an instant.

Thirty years ago, a leader made a comment to his extended staff that impressed me enough to record it verbatim. Rear Admiral E. T. (Tom) Westfall said, "A man's personal philosophy—his way of looking at the world and the men and women around him—determines his success as a manager of things and people more than any single factor. His basic attitudes are far more significant than the techniques he uses. As we look ahead, we have reason to believe this is increasingly so. In short, the time may come in which an evil man or one who has no clear sense of values simply cannot be effective."

Reflecting on the fates of Enron, Tyco, WorldCom, and other recent corporate fatalities, one might amplify this statement today to say that, although such persons may be effective temporarily, their tower of success will probably crumble earlier than they think. As indicated in the lead quotation, Lao-tzu saw that truism 2500 years ago. But some are still learning it.

In Henrik Ibsen's play, *Peer Gynt*, the title character in one of his rare moments of reflection, finally realizes there is no more core to his being than there is in the wild onion he is idly dissecting. He has wasted his life. He is a person so selfish that he is actually devoid of any center one might call "character."

In his book, *Leading Without Power*, Max DePree, chairman emeritus of Herman Miller, Inc., lists seven essential beliefs and initiatives necessary for trust in an organization:

Jim Christenson is an APPA member emeritus and can be reached at jchriste@jackelec.com.

1. Trust begins with a personal commitment to respect others, to take everyone seriously.
2. Trust grows when people see leaders translate their personal integrity into organizational fidelity.
3. The moral purpose of our organizations and of our personal commitments is the soil in which trust can take root and grow.
4. Trust is built on kept promises.
5. Trust in organizations depends on the reasonable assumption by followers that leaders can be depended on to do the right thing.
6. The building of trust in organizations requires leaders to hold the group accountable.
7. For trust to be maintained over time, leaders must demonstrate competence in their jobs—just like everyone else.

Nearly all agree. To be worthy of trust, a leader must, as a minimum, have integrity and competence. Integrity in its highest form follows this simple, but difficult-to-execute formula: What I think = what I say = what I do. For most of us, we do very well if we get the doing equal to the saying—to "walk the talk," to "practice what we preach." Our *thoughts* are much more difficult to control. But that's where integrity must begin. The thoughts that create our character must be based on "true north" principles, as Covey calls them—time-tested principles such as justice, fairness, equity, and honesty.

A quotation that you have seen in this column before speaks of trust this way. "If I say to you, 'Follow me into this land of uncertainty as we try to learn our way to a new level of performance,' the first thing you do is look at my feet…the followers trust the leader and the leader holds the trust through integrity and role modeling" (Robert Quinn in his book, *Deep Change*).

Much is expected of a leader. A leader must have a vision for the organization; no one can dispute that a clear vision is critical to organizational viability. A leader must have competence; any incompetencies are communicated throughout the organization at the speed of light. But the bottom line of leadership is that a leader must be trustworthy. There is nothing so elusive, yet nothing so important as that.

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Facilities Management in Lebanon

by Matt Adams

APPA has had a strong focus on international membership for many years. Many of us have met members from the Caribbean, Hong Kong, and even Australia at the annual meetings. Interestingly, we also have members from the Middle East. The American University of Beirut (AUB) has been a member of APPA for many years. Mr. Ziad Yamut, the director of the Physical Plant, has traveled to the United States for a number of APPA seminars and events. Mr. Samer Maamari, of the Facility Planning and Development Unit also participates in APPA Institutes and Forums. These two gentlemen are typical of the Lebanese culture; they are extremely polite, professional, soft spoken, and respectful. If you missed meeting them at one of APPA's functions, look for them next time. The profession of facilities management in Beirut, Lebanon, is as unique and fascinating as the country itself. Facilities professionals have many interesting experiences to share.

The trying times of Lebanon's recent history are well known. After fifteen years of civil war, it is truly a testament to the determination of the Lebanese people that the country is so quickly rebuilding. I visit AUB about once every three months, and I can see dramatic changes in the city each time. The AUB campus is in West Beirut, an area that suffered considerable hostilities. Dr. Tomey, the senior vice president of AUB and a graduate, experienced it all and more. He remembers that exactly 89 mortar shells hit the campus during those years. Nevertheless, the university remained open. In fact, it is still one of the most prestigious colleges in the Middle East. Despite the very difficult times, the University Plant Operations staff not only came to work, but they fixed windows, filled craters, and patched bullet holes in roofs and exterior walls. In addition, during that time, the AUB power plant was the only consistently operating source of electricity in the city. Many of the staff from those years still work at the University. They are proud of having persevered during those times as they should be.

While not forgetting the lessons of the civil war, most Lebanese prefer to discuss the future and not the past. Not unlike the city's rebuilding efforts, AUB is in the beginning of a 10- to 15-year period of expansion, renovations, and retirement of deferred maintenance. This work is all guided by a recently completed master plan. The master plan also serves as the foundation for a new capital campaign to assist in funding some of the campus improvements. Typical of any good master plan, the natural strengths of the campus are preserved and accentuated. For AUB this is imperative. Located on the shore of the Mediterranean Sea, AUB has a hilltop location that rolls down to the sea (Figure 1). Having visited over 180 college campuses, I can say that it is the most beautiful campus I have ever visited. From sea level looking up to the College Hall Administration

Figure 1. The American University of Beirut

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Figure 2. Preserve zone within the American University of Beirut

building, or from almost any location on campus looking to sea, the view is dramatic. Sunsets every evening over the Mediterranean are breathtaking.

In the middle of the campus is a preserve zone with local and exotic plants (Figure 2). This large strip of green space provides a very quiet and secluded sanctuary for study or relaxation. It also forms a natural border between the upper and lower sections of campus. The natural preserve area, as well as the many views around campus, are all protected by the master plan. In fact, I attended meetings where the focus was on the exact placement and angle of new structure facades in order to ensure that no angle or individual view of the sea was obstructed.

Realization of rapid facility change in Beirut is more difficult than in the West. AUB finds itself in a difficult conundrum. On the one hand, AUB insists on construction standards that are equal to those of their western university peers. On the other hand, the local market of designers, contractors, and trades staff do not adhere to the same standards. In Beirut, the highest standard of construction is found in the four- and five-star hotels. However, these large corporations have their own international designers, project managers, and support from the worlds largest architectural and engineering firms. AUB is forced to develop talent within or attempt to "partner" with local firms. Partnering is very new and has not yet produced results. When I look over the plans and visit job sites with Ziad and Samer, I am reminded how much the professional and code standards provide for us in the West. In Beirut, nothing can be assumed just because it is a code requirement or specified in the designs. Contractors and even designers require much more supervision.

Despite a recent focus on ambitious growth plans, AUB has a very capable plant operations department. Once again, delivering services by western standards while working in Beirut is difficult. The demands of the faculty are as high as any other university, yet the ability to find skilled trade staff is difficult. There are no major industries in the country that generate trades workers as in the West. In addition, there are very few resources to provide training. It is simply too expensive to have trainers travel to Lebanon for many trade specific classes. However, execution of maintenance services is accomplished by shear determination. The trades staff share knowledge and mentor newer hires. Many of the processes and practices promoted by groups like APPA are utilized wherever possible. Technology is also used to improve productivity. However, this too can prove allusive. Not all manufacturers do business in Lebanon. Those companies that do have sales in the country often do not have local support for the AUB staff.

The staff of the physical plant department are a loyal group, many have worked there for several years. In one case, a father employed in the department for 45 years introduced his son to the business. He too worked at the AUB physical plant department for 45 years. Other shop staff were actually born in the AUB medical center. By all accounts it is one of the best jobs to have in the city. Some travel over two hours from the mountains to get to work each day. The AUB plant staff is illustrative of the fascinating Lebanese culture. They are proud but understated. They are very culturally diversified yet loyal to their individual beliefs. Most importantly, they are a warm and friendly bunch that are ready to get AUB back into tip-top shape.

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The Bookshelf

Book Review Editor: Theodore J. Weidner, Ph.D., P.E., AIA

The environment is always an important issue. Two books appear this month that address environmental concerns and may also offer insight for members of APPA regarding the environment. The first book is a highly analytical and detailed account that challenges the gloom and doom mantra of some environmentalists. The second is an introduction for designers of sustainable buildings. Both will challenge, either will enlighten.

The Skeptical Environmentalist, by Bjorn Lomborg. New York: Cambridge University Press, 1998. 505 pps. softcover.

Recently I was invited to participate on a faculty senate committee to study the issue of sustainability. I am familiar with this topic as it pertains to the economical operation of facilities and as it tries to ensure the earth's future by protecting the environment through recycling, using environmentally sensitive products, and considering the life cycle of products and facilities rather than the first cost. Participation in this committee allowed me to play the role of an educator in a different arena and it exposed me to the academic perspective that included a debate about *The Skeptical Environmentalist.*

This is fact-filled book and is not an easy read. The notes comprise nearly 80 pages and the bibliography nearly 70 pages; it is an excellent reference. The author draws on his references with detail atypical of a popular book to demonstrate that we have succeeded in improving our environment. While he does not say that we should stop cleaning up the environment and start polluting again, he does show that the dire warnings of environmentalists should be evaluated and considered carefully before enacting more draconian measures.

This book is disturbing to the more hardcore students of the environment. I have seen some become irrational in their arguments over environmental concerns both in and outside our sustainability committee meetings. They are threatened by the book's attention to detail and its environmental message that the environment is *not* getting worse. Fortunately, they are on campus to learn and not to enact policy. Facility officers can learn from *The Skeptical Environmentalist*—what works, what doesn't, and more importantly, that efforts to improve the environment occur slowly, in subtle ways, but when done well, will have far-reaching effects. Our sustainability efforts on campus must now be focused on teaching the fundamentals of sustainable design and

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Sustainable Design, Washington, D.C.: National Council of Architectural Registration Boards, 2001. 147 pps, softcover.

The push is on for sustainable design. If you missed the March/April 2001 issue of *Facilities Manager*, go back and read it again. Then if you are an architect or engineer, pick up *Sustainable Design*. This book is produced by the National Council of Architectural Registration Boards—the organization that most states use to verify architectural qualifications for licensure. The organization's professional development program has produced several monographs (including this book) that are coordinated with quizzes to assist with continuing education requirements for architects.

This is not a cookbook. You need to be involved in the design field and understand the elements of sustainable design in order to truly benefit from this book.

Sustainable Design focuses on how the design process is changed to address long-term systems. It also provides an overview of different tools and techniques to meet various sustainable criteria. This is not a cookbook. You need to be involved in the design field and understand the elements of sustainable design in order to truly benefit from this book. The book contains some interesting facts that provide answers to the challenging measures imposed upon facilities professionals by regulators. An example of one of these facts is the amount of CO_2 emitted by various energy sources.

Those familiar with energy-conscious design, passive solar, and life-cycle cost techniques will find the elements of sustainable design a natural next step. APPA members who utilize building construction and design standards and who use benchmarking and goal-setting tools for new construction will also be comfortable with the focus of this book. It articulates another approach that addresses the frequent focus of campuses that must build structures for long-term use.

If you are not interested in this book for internal design purposes, you should be interested in it the next time you hire a design consultant for a new building. A design consultant should be familiar with this book and be prepared to utilize the techniques it presents. The multiple value of the book, for internal design, personal development, and external management systems, make it a valued reference for most facility officers.

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Staefa Control System has just released the all new Staefa Control System product catalog CD. The catalog includes the TALON open protocol building management system, MS1800 Building management system, and Siemens HVAC control products, including valves, actuators, and sensors. The user-friendly CD also contains keyword and part number search functions. For detailed information, log onto the Staefa Control System website www.staefa.com.

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MADVAC Inc. introduces a new feature, the high-side dump, to the PS300 pedestrian sweeper. This amazingly simple to use feature saves time and money for the operator. With the touch of a button, the litter container basket simply lifts and by tipping the container over to one side of the vehicle, the operator dumps the debris into a regular trash bag. Moreover, this safe and simple feature eliminates the strain of lifting heavy bags and ensures very little handling of trash. For complete details, call MADVAC Inc. 800-8MADVAC.

Armstrong World Industries, Inc. offers its line of Serpentina 3-dimensional suspended ceiling systems for signature ceilings in high visibility spaces. Serpentina features a dramatic undulating ceiling visual that offers a myriad of unique design possibilities to customize a space. The system consists of standard length extruded aluminum curved and straight main beams, straight Prelude XL cross tees, the new pre-engineered perimeter trim, and flexible infill panels. The panels are offered both perforated and non-perforated and come in twelve standard colors. For further information, call Armstrong World Industries, Inc. 877-276-7876.

3M Consumer Safety and Light Management introduces a new line of window films to help combat the damage caused by graffiti (etching, scratching, painting, and marking of glass). Scotchgard Anti-Graffiti Window Film is an optically clear, distortion-free film for windows, mirrors, and other surfaces. Designed for interior or exterior usage, the film comes in two levels of thickness for graffiti abatement in low-risk or high-risk situations. Scotchgard film also offers the extra benefits of blocking heat, glare, and 99 percent of the damaging ultraviolet rays. For additional information, call 3M 800-480-1704.

Metabo Corporation announces a unique 1/2-inch hammer drill for heavy duty drilling applications. The SBE750 offers 3/4-inch capacity in concrete, 1/2-inch capacity in steel, and 1-1/2-inch capacity in softwood with a maximum tightening torque of 159-pounds. Equipped with Metabo's "goose neck" depth gauge, the SBE750 allows maximum accuracy of drilling depth by enabling the gauge tip to be positioned extremely close to the drill bit. For greater detail, call Metabo Corporation 800-638-2264.

APPA Events

For more information on APPA seminars and programs, visit our website's interactive calendar of events at www.appa.org.

Nov 17-20, 2002—*ACUHO-I/APPA 2002 Facilities Workshop.* Nashville, TN.

Jan 26-30, 2003—*Institute for Facilities Management.* Ft. Worth, TX.

Jun 8-12, 2003—*Professional Leadership Academy.* Rancho Mirage, CA.

Jul 27-29, 2003—*Educational Facilities Forum.* Nashville, TN.

APPA Regional Meetings

Sep 28-Oct 3—ERAPPA Regional Meeting. St. John's, NF, Canada. Contact Cynthia Whelan, 709-737-3491 or cwhelan@mun.ca or www.housing.mun.ca/conf/erappa.

Sep 28-Oct 1—PCAPPA Regional Meeting. Reno, Nevada. Contact Buzz Nelson, 775-784-6514 or buzz_nelson@vpaf.unr.edu.

Sep 29-Oct 2—CAPPA Regional Meeting. Spearfish, SD. Contact Art Jones, 605-642-6245 or artjones@bhsu.edu.

Sep 29-Oct 2—MAPPA Regional Meeting. Ames, IA. Contact Chris Ahoy, 515-294-8079 or ckahoy@iastate.edu.

Sep 29-Oct 2—AAPPA Regional Meeting. Brisbane, Queensland, Australia. Contact Brian Fenn, 61-07-3864-3778 or b.fenn@qut.edu.au.

Oct 12-15—SRAPPA Regional Meeting. Atlanta, GA. Contact Rita Tyler, 404-727-7487 or rtyler@fmd.emory.edu.

Other Events

Sep 23-27—Boiler Plants for Central & District Heating Systems. Madison, WI. Contact Harold Olsen or Mary Danielson, 800-462-0876 or 608-262-1299 or custserv@epd.engr.wisc.edu or www.epdweb.engr.wisc.edu/courses.

Sep 25-27—Facilities/Infrastructure Certification Program. Boston, MA. Contact Peter Cholakis, 617-451-5100 or pcholakis@vfa.com or www.vfa.com.

Oct 7-9—Labs21 2002 Annual Conference & Technology Fair. Durham, NC. Contact EPA/Labs21, 781-674-7374 or www.epa.gov/labs21century/conf/conf2002/prelim index.html.

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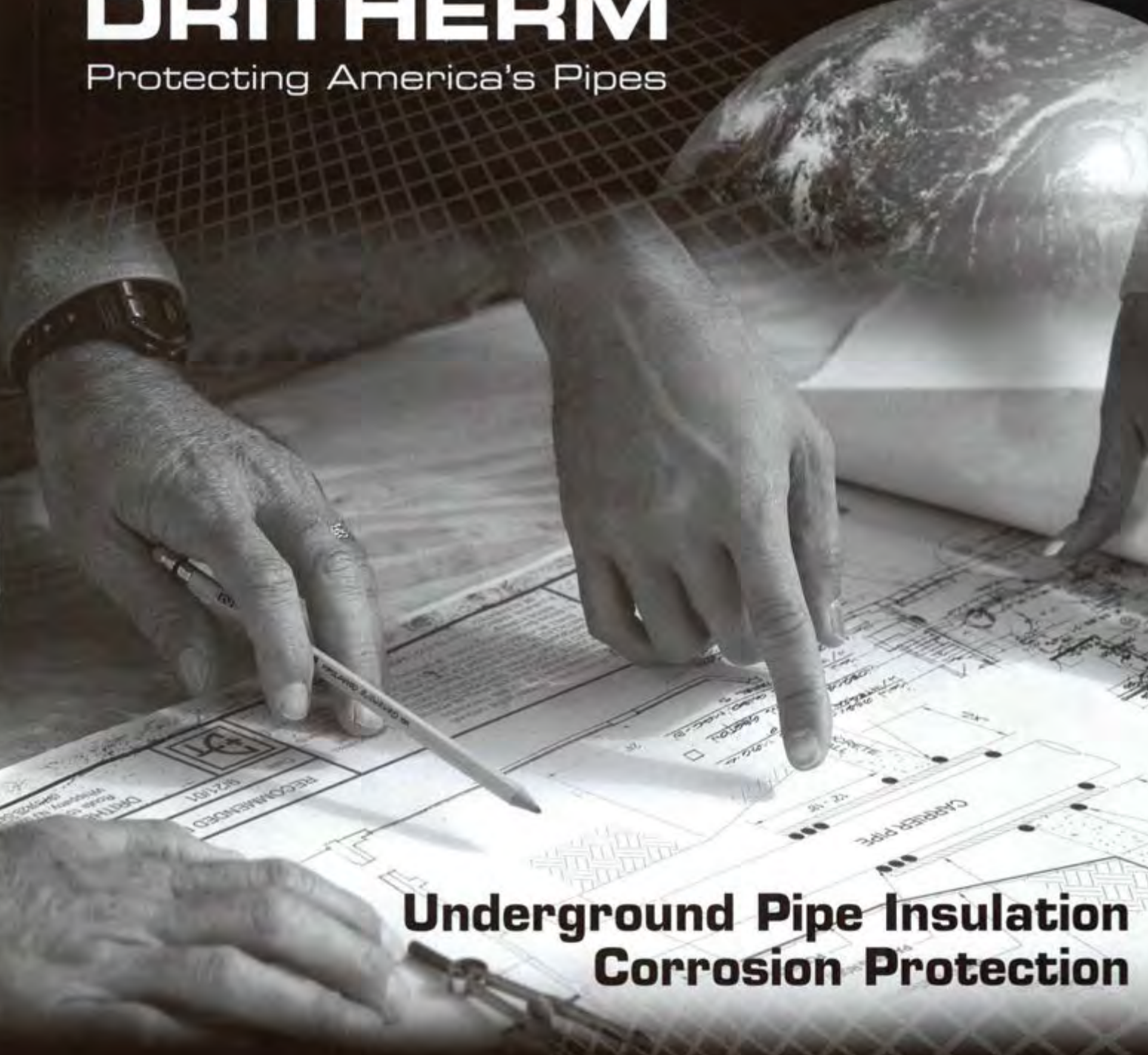

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