March/April 2004
VOLUME 20
NUMBER 2

Facilities Manager

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

Renewing & Modernizing Educational Facilities

Educational Facilities Leadership Forum

PROGRAM INSIDE

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

Volume 20 Number 2 March/April 2004

THIS ISSUE'S TOPIC:

RENEWING & MODERNIZING EDUCATIONAL FACILITIES

FEATURE ARTICLES:

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

Volume 20 Number 2 March/April 2004

Columns

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.

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

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

Global Partner in Learning

From the Editor

by Steve Glazner

With the publication last year of *Planning and Managing the Campus Facilities Portfolio*, APPA and NACUBO (the National Association of College and University Business Officers) came together to build upon the concepts introduced at several sessions of the jointly offered Institute for Facilities Finance.

Editor Bill Daigneau, of the University of Texas M.D. Anderson Cancer Center, states that the book is based on one simple premise: "The campus and facilities of a college should be managed using the same principles as any other investment in an institution's financial portfolio." This is especially true when the value of the capital assets at U.S. colleges and universities is approximately three times the value of the institutions' financial endowments.

The features in this issue of *Facilities Manager* address that concept through discussions of the renewal and modernization of campus facilities. Art Lidsky puts into focus the attention we need to place on the teaching of our students, with technology and physical facilities coming into play as integral components that are *in service* to the teaching and research missions of the institution.

We're glad to have Richard Rush write for us again, this time on the changing face value of campus facilities. The campus design—of the facility or of the entire institution—must be unified to provide a background for "human interchange" and to "enhance the learning process."

Anton Germishuizen and Haydar Hassan contribute a timely article—coming on the heels of President Bush's call for more funding for community colleges—on how community colleges must review their building designs to enhance their stated missions to develop a valuable workforce for the future.

AME's Bob Brooks shares with us a history of the FCI, the Facility Condition Index, which is followed by David Cain and Maggie Kinnaman's "next steps" article discussing the Needs Index, a concept first introduced in APPA's Strategic Assessment Model.

Finally, Paul Tankel and Ronald Gilmore share an integrated facilities assessment tool that was developed at the University of Rochester and is responsible for providing better data as the institution plans for future facility needs.

Correction

In the short news item "Recycle Construction Materials" that appeared within APPA News in the November/December 2003 issue, an incorrect website was given. If you tried to visit that website and were unsuccessful, accept our apologizes. The correct website address is http://cwm.gsa.gov.

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D.C. is Host City for 2004 Forum

Plan to be in Washington, D.C. July 25–27, 2004, for APPA's Educational Facilities Leadership Forum. This year's conference is the perfect venue for educational facilities professionals to make sense of the seemingly conflicting demands of their profession by attending sessions taught by invited experts and leaders in the facilities field. The Forum is open to anyone with an interest in public and private education-based facilities. Registration is now open. Visit www.appa.org/education for registration information.

June Leadership Academy

Invest in your future today and register for the Leadership Academy. The Academy is designed for those individuals with a desire to lead, and APPA recognizes that leadership belongs to everyone regardless of their position in the organizational chart. In a changing environment, an organization's success depends on the staff's ability to embrace new roles, new ways of doing things, and new skills.

This year's Academy will be held June 20–24 in Fort Lauderdale, FL. Registration is now open; visit www.appa.org/education for more information.

To support peer relationship development, registration will be reduced $90 per person when three or more individuals from the same institution attend.

Business Partners Up the Ante on Commitment

Are you a Business Partner who would like to become more involved? Would you like to receive a few more APPA benefits? If so, consider becoming a Strategic Business Partner and receive the following benefits:

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Renewable annually, the Strategic Business Partner designation is based on a point system, with points awarded for Forum presentations, teaching, speaking, or writing at APPA programs, advertising in *Facilities Manager* and/or the Membership Directory, participation in special projects, involvement in CFaR, or activity in the regional or chapter levels.

Compilation of points ends July 1, 2004, and the 2004 Strategic Business Partners will be announced at the Forum July 25-27 in Washington, D.C. Contact Suzanne Healy at suzanne@ appa.org for more information on this exciting new program.

Community Colleges Get a Presidential Boost

During the 2004 State of the Union address, President Bush, in just a few brief moments, placed community colleges in the spotlight. Saying "I propose increasing support to America's fine community colleges," Bush proposed a program where workers can be trained for industries that are currently creating the most jobs. Both Democratic and Republican lawmakers gave the President a standing ovation for his comments. [See p. 36 for more information on workforce development at community colleges.]

According to an article in *The Chronicle of Higher Education* (January 30, 2004), the details of the President's plan became clearer when he began a campaign trip through Ohio and the Southwest the day after the State of the Union address. With stops at Owens Community College in Toledo and at Mesa Community College in Phoenix, Bush called for $250 million from Congress for this job-proposal training. During his stops at both schools, Bush praised two-year institutions as being flexible and accessible, particularly for unemployed workers.

"No worker should be left behind because we haven't created a flexible system in order to get skills," President Bush said in Ohio, alluding to the name of his 2001 education law "No Child Left Behind" intended to reform elementary and secondary schools.

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Freshman Survey Results

In a survey administered either during freshman orientations or the first week of classes, 276,449 first-year students at 413 colleges and universities were asked a number of questions. The survey was coordinated by UCLA's Higher Education Research Institute and provides a national snapshot of entering freshmen as well as an essential baseline that participating campuses can use to measure the impact of their programs.

Politics

The answers in this category indicated that students are becoming more interested in politics and that their views are shifting to the right.

- 33.9 percent felt that keeping up to date with political affairs was a very important or essential life goal.
- 20.1 percent considered influencing the political structure an essential life goal.
- 24.2 percent identified themselves as liberal this year.
- 21.1 percent saying they were conservative.
- 50.3 percent said their views were middle of the road.

Grades

- 59.4 percent of the students expected to get at least a B average.

Financial

- 33.6 percent said they chose their college because they were offered financial aid.
- 47 percent said there was a very good chance that they would work to help pay for college.
- 13 percent of **all** students had major concerns about paying for college.
- 22.9 percent of Latinos and 23.2 percent of African-Americans had these same concerns.

Social Activities

- 44.8 percent of the students surveyed said they drank beer frequently or occasionally.
- 6.3 percent said they smoked cigarettes frequently.
- 24.1 percent partied six or more hours a week.

College Visits

This was the only new question on the survey this year.

- 57.9 percent of the students visited the campuses before they applied.
- 12 percent visited the campus after they applied but before hearing a decision.
- 15.1 percent visited after they were accepted but before deciding on whether to attend or not.
- 15 percent chose their colleges sight unseen—setting foot on campus only after accepting the college's offer of admission.

What do these numbers mean? According to the survey, fewer students these days even bother to ask. Only 39.3 percent of the students said that developing a meaningful phi-

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losophy of life was essential or a very important goal this year.

"I'm not sure how students today interpret this item, 'meaningful philosophy of life,'" says Linda Sax, an associate professor of education at UCLA and director of the freshman survey. In the 1970s, she says, college was a time for focusing on developing a philosophy of life, whereas now, "there's a focus not necessarily on what is my meaning, but more on how do I get on to the next level. That does not necessarily suggest that this generation is never going to care about meaning and purpose."

To obtain a copy of the complete survey, visit www.gseis.ucla.edu/news/?id=32.

—From *The Chronicle of Higher Education* (January 30, 2004)

OSHA Guide Tackles Mold

As a maintenance manager, if you are concerned about mold in your facility, look to OSHA's new bulletin, *A Brief Guide to Mold in the Workplace* for more information.

This bulletin provides recommendations on how to prevent mold growth and how to clean up damage caused by moisture and mold. The release of this bulletin comes at a time of growing concern about indoor exposure to mold and its adverse health effects. Some molds can cause asthma attacks in people who are allergic.

Currently, no federal standards or recommendations exist for airborne concentrations of mold or mold spores. However, the OSHA bulletin released in October provides checklists on mold prevention tips to determine if a mold problem exists, as well as mold remediation guidelines.

According to the bulletin, moisture control is the key to controlling mold. Since mold requires water to grow, it is important to prevent excessive moisture in buildings. The guideline provides advice on controlling indoor moisture and humidity.

To obtain a free copy of *A Brief Guide to Mold in the Workplace*, visit OSHA's website at www.osha.gov.

—From *Maintenance Solutions* (December 2003)

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A Dedicated Mentor Introduced Mackel to APPA

by Francine Moore

Over the past 90 years, APPA has faced numerous challenges and opportunities. As leaders, we embrace change and view this as a means to move forward in key areas essential to our future as educational facilities professionals. Throughout 2004, we are asking members to reflect on why they joined APPA and why they continue to remain engaged members today.

Donald L. Mackel, former APPA President and Emeritus member, was selected for the March/April issue.

FM: *How did you become involved in APPA?*

DM: While working on my Master's of Business Administration degree, I took a campus job at the University of New Mexico in the physical plant department's engineering section. While working there, department director M.F. Fifield (APPA President, 1958) became aware of and took interest in some of the projects I had been assigned. It wasn't long before I was meeting with him on a regular basis. Fifield took note of the rather rare degree I was pursuing and expressed sincere interest in my career plans.

Donald L. Mackel

During the 1960s and '70s, higher education was experiencing tremendous growth driven by the baby boom. There were new facilities including community colleges, vocational schools, two-year, and four-year schools coming on line at the phenomenal rate of one every two weeks. There simply were not enough trained facilities professionals to meet the demand of this level of growth and expansion.

Eventually, as our relations developed, he said to me, "Son, come along with me. I have something for you to do." Fifield got me involved. I had worked in the physical plant less than a year when he had me make a presentation at the Rocky Mountain regional annual meeting, and following that, at the APPA annual meeting.

The point here is that I became involved in APPA through the efforts of a very dedicated mentor who was highly regarded by his colleagues. He was personally committed to mentoring and to the value of APPA as a professional association dedicated to the development of people in the facilities management field. I was most fortunate. And I cannot stress enough how important his mentoring, networking, and example was to the development of my own network and career.

FM: *What impact did APPA have on your career?*

DM: Although my early participation in APPA was limited because of available departmental resources, my involvement continued to increase, albeit at the regional level. In all regions of APPA, there are many jobs that are going undone, and expectations unmet due to a lack of interest, time, or level of commitment. In my region, one of the jobs that no one wanted to do was membership development. I volunteered for that job in the RMA region, and that provided me access to APPA at the national committee level, and I had the opportunity to network with members of other APPA committees. Five of the six years during which I served, I was awarded the Pacesetter award for achieving the highest percentage of regional membership growth.

These successes and my networking efforts resulted in my being elected to the position of APPA Vice President for Membership. During my three consecutive terms, APPA's overall membership increased by 24 percent. The addition of the Australasia region to our association was our greatest accomplishment. In 1991-92, I was elected APPA President and followed that up with the traditional APPA Board and committee assignments. It is impossible in this brief interview to describe how much the

If you would like to share your reflections for joining APPA during our 90th anniversary year, please e-mail Francine Moore, director of marketing and outreach for APPA at francine@appa.org.

Get involved! Membership in any organization is only as valuable as the participant wants to make it.

APPA experiences have had on my personal growth, development, and advancement.

FM: *What would you say to a new member joining APPA?*

DM: That's easy. Get involved! Membership in any organization is only as valuable as the participant wants to make it. Value-added growth and development for the individual or for the organization will only come from vigorous participation. You can join, attend the annual meetings, attend the Institutes, and maybe try some of the special focus programs. Or, you can be a member who gets involved at the state, regional, or national level.

Remember what I said about all those volunteer jobs that are not getting done for lack of interest. There are many opportunities to become involved, especially at the regional level. You can become part of the solution. I can tell you, in all honesty, that I never entertained any ambitions, even remotely, of becoming APPA President. Having said that, I can also tell you that because of my active participation and involvement with APPA, I have been blessed with and enjoyed a very rich and rewarding professional career and personal growth.

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A Return to the Tree of Hippocrates

by Brooks H. Baker III

Last weekend I was driving on a two-lane road winding through the flatlands of LA (no, not Los Angeles, Lower Alabama). This area of our state is called the Black Belt because of that rich dark soil that enabled farmers to consistently produce high yields of cotton, corn, and hay. As I drove along, I saw a stately old colonial home with huge columns rising to the full height of the two-story house. Perhaps this house was once the home of a well-to-do cotton farmer, but now it has a sagging roof and peeling paint. There are no longer laughing children playing in the yard while the parents sit in rockers on the front porch. This scene is repeated over and over throughout Alabama where "King Cotton" is now just a memory replaced by slash pine trees.

Sometime in the late 1980s, I saw my first copy of *The Decaying American Campus*, a book published by APPA and NACUBO that described the state of facilities on our American campuses. This book provided me and many others in facilities management a framework that we could use to approach our administration(s) about funding that was needed for facilities renewal and modernization in higher education. When this book was published, the term "deferred maintenance" was the buzzword that we used to describe our facilities renewal needs. I believe that I still have the carousels of slides, with the cover of

The Decaying American Campus as the introductory slide that I used like a traveling salesman moving through offices and conference rooms around campus, talking to administrators, deans, and others about the facilities renewal needs for our campus.

Because of its significance to medicine, one of our former university presidents brought a cutting of the original Tree of Hippocrates from the island of Kos in Greece and had it planted next to our medical school. Hippocrates, known as the "Father of Medicine" and author of the Hippocratic Oath of ethics for physicians, taught his students of medicine under the shade of this tree around 400 B.C. Amazingly, the tree still stands today after two-and-a-half millennia.

As I went around campus talking about our deferred maintenance needs, one of the consistent phrases that I used was, "If we do not put money back into our campus facilities we will be returning to the tradition of Hippocrates who taught his students under a tree." The presentations were effective and the illustration, trite as it was, seemed to strike home with our administrators. We raised the level of awareness of deferred maintenance and actually received increased funding. Unfortunately, 15 years later, we still have to talk about facilities renewal and upgrading our facilities in order to increase funding.

What's the connection between an old Southern farmhouse falling down and higher education? Well, I bet most of you have already made the connection. Without the care and funding that is required to maintain our facilities, deterioration and irreversible damage can take place at an astonishing pace. It did not take generations for that old farmhouse to lose its paint and for the roof to start leaking. It only took a few years after the owners stopped taking care of the house for it to deteriorate.

The deterioration of that stately old home can be an example for us as we consider facility renewal and modernization of our institutions. We must be passionate about preserving those physical plants for which we have accepted the role of guardian. We need to be bold and resourceful in our efforts to find funding for facility renewal, deferred maintenance, and plant modernization, so that we won't be part of the "decaying American campus."

Fifteen years after the publication of *The Decaying American Campus*, APPA remains a valuable resource providing publications, educational programs, and networking with our peers.

Invite someone to join APPA today! This is a great time to recruit new members, associate members, and business partners because they can get member rates on the Institute, the Academy, and the Forum, all within the next few months. Spread the word, APPA is a great value for its member institutions and individual members!

Brooks H. Baker is the associate vice president for facilities at the University of Alabama at Birmingham and the 2003-04 APPA President. He can be reached at bbaker@fab.uab.edu.

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How Are You Living Your Life?

by E. Lander Medlin

Springtime—you can see it, feel it, hear it, and sense it. New life is peeking its head through the buds on the trees. The yellow jonquils have sprouted through the cold and crusty ground. The Little League team has begun practice and people are shedding their coats, sweaters, and hats. Everything is coming to life as spring is nature's time to renew itself.

As our thoughts turn to spring with a focus on renewal, restoration, and rejuvenation, how do we personally prepare for the opportunity of renewal in our own lives? What choices will we make and what actions will we take to enrich our lives to the fullest extent possible?

Too often, we spend our most valuable resource—time, waiting while life passes us by. Are we really content to wait for retirement to start living? Or are we waiting until the kids are grown? Why are we waiting, and what are we waiting for? Frankly, the greatest gift we have is life, and one of life's gifts is our memories. What choices are you making now, and what actions are you taking to build your memories?

I had an incredible experience while traveling in Alaska on a fishing trip a few years ago. Alaska is an unbelievably beautiful part of the world and has only two seasons—winter and July, according to the Alaskan residents. Soon we understood what they meant. For 11 of the 12 months of the year, Alaska is deathly cold with temperatures below freezing. Roads are ice and snow packed until July when

the ice melts to slush and the earth turns to mud. It is not surprising that the back roads form deep ruts when the mud and slush turn back to ice and snow. Signs are posted at the beginning of these back roads stating, "Pick your rut carefully; you'll be in it for the next 20 miles."

We have a tendency to create similar ruts in the patterns of our lives and then stay stuck in these patterns for the next 20 years. Why remain bound by the ruts you have created in the past? You have a choice in how you will live today.

There was a wonderful study of "high achievers" who had come from a life of severe adversity. Time and time again, the researchers found that each of these individuals had figured out a way to turn stumbling blocks into stepping stones. Ultimately, these high achievers realized that they could not determine every circumstance in life, but they could determine their "choice of attitude" toward every circumstance.

The following three recommendations on how to live life are easy to suggest but difficult to do day-in and day-out. However, if you will intensely focus on each one, you will reap great rewards.

Engage in your life to the fullest extent possible. My husband is a psychologist and has the occasion to chat with many retirees. Each time he asks them, "What was the best time of your life?" Each one responds similarly, saying it was during the years they worked the hardest, were the busiest, made countless decisions, and had to juggle their time wisely. He then asks them if they knew at the time that this would be the best time of their life. Their answer is accompanied by a silent stare, "No, I thought that retirement would be."

Do you know that you are living the best time of your life right now? Recognize it; have passion for what you do daily; and engage fully in all that you do. Be a participant in your life, not just a spectator!

Many of you have learned this by attending APPA's annual Forum and bringing your spouse and/or the children. These family members were not attending the Forum per se, but they made new friends and participated in myriad activities that created countless memories for years to come. Throughout our APPA experience, Ron and I have had the opportunity to meet many new people that we now call friends and colleagues. Besides the in-

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Why remain bound by the ruts you have created in the past? You have a choice in how you will live today.

valuable educational experience, we have priceless memories of moonlit walks on Jekyll Island; rafting down the Salt River; horseback riding in Durango; bicycle riding along the Ottawa canal locks with Don Hedrick; traversing the Riverwalk in San Antonio; flying over the Grand Canyon with pilot Bob Lashaway; and experiencing Walt Disney World with the family.

Make sure you are having fun. Let your happiness overrule happenings. Life will invariably dish out many, many problems. It is not the problems but your response to those problems that makes the difference. Although it is important to be serious about what we do and the decisions we make, we should not *take ourselves* so seriously that we forget the importance of service to others and of just having plain fun.

In addition, people spend too much time worrying. The statistics on worrying are fascinating and illustrative. About 80 percent of the time, we worry about things out of our control. Another 15 percent of the time is spent worrying about things we cannot do anything to change. Finally, about 5 percent of our time is spent on worrying about things we could actually influence and change. Unfortunately, we have expended so much energy focusing on what we have no control of and what we can't change, that we have no time left to worry about the things we **can** influence and change.

It is amazing how effective humor really is. Smiles and laughter serve to breakdown many barriers in both personal and professional situations. The physical effects of humor and laughter are widely recognized as a key to good health. A good example can be found in *The Anatomy of an Illness* by Norman Cousins, where he laughed himself well. It is important to understand the mechanism of endorphins that are created by guffaw laughter, as endorphins are the body's endogenous morphine. Think of the last time you diffused a difficult or intense situation with a humorous anecdote or comeback. Choose the lighter side of life for a change and see the response. You might be pleasantly surprised.

Realize the value of relationships. Do we invite others in or do our actions tend to close them out? It is a fact that we cannot get our jobs accomplished successfully without others. Do we really value those around us? If so, do we tell them at opportune moments along the way? The following poem is from *FISH* by Stephen C. Lundin.

"The past is history.
The future is a mystery.
Today is a gift.
That's why we call it the Present."

What are you doing in your "present" to remember, care for, and value others? Relationships are built over time through small actions and interactions. How do yours stack up in the "value quotient?"

Our culture seems to claim that, "He who dies with the most toys wins." In my opinion, that focus is askew. It is not the number of toys we have, but the number of meaningful relationships we create. It is not the number of toys we have, but the number of people we touch. It is not the number of toys we have, but the impact you have on others. These things come from realizing and intensely focusing on the value of relationships.

Take a moment and think of some famous people throughout time. Can you remember the last five Pulitzer or Nobel prize winners, or the last five Heisman Trophy winners, or the last five Academy Award actors or actresses? It's difficult for most if not all of us, as these memories fade over time. Now, take a moment and think of three teachers that aided your journey through school; three friends who helped you in a difficult time; or three colleagues you enjoy spending time with or make you feel appreciated. This is so much easier.

The people we remember in life are those who made a difference; those who touched our lives; those who really cared in small, meaningful ways. These people help us create the memorable experiences in our lives. Take each present moment to touch others' lives and see how fully engaged your life will become and how much fun you will have doing it! It's Spring—a time for rejuvenation.

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Why Perform an FMEP?

by David A. Cain, Ph.D.

The FMEP can stimulate institutions to improve quality and productivity, and produce pride by recognizing organizational achievement.
—Jack Hug
APPA Past President and Member Emeritus

We are extremely pleased with the team's professionalism and effort. We especially appreciate the recommendations that we can immediately begin to use to improve the level of facilities management.
—Brian S. White, Superintendent, Plant Operations & Maintenance, The Ohio State University/ Mansfield and North Central State College.

One of the most successful and beneficial programs provided by APPA is the Facilities Management Evaluation Program or FMEP. An FMEP is simply an evaluation of the capital asset and facilities management program at your institution. The FMEP program is sponsored and coordinated by APPA but is conducted by peer institutional members. Its sole purpose is to assess your organization's current performance and provide you with practical to tactical information, ideas, and strategies for continuous improvement.

Why Do an FMEP?

Institutions conduct FMEPs for various reasons, such as:

- To establish performance indicators/ benchmarks (note that APPA's Strategic Assessment Model [SAM] is incorporated)
- To change direction or culture
- To assist its journey toward continuous improvement and show customers its commitment to this improvement
- To activate involvement and participation
- To conduct an external check-up prior to an accreditation review
- To ensure high-quality performance and customer satisfaction
- To improve internally before others make them
- To allow current facilities management leadership to take a fresh look at its performance
- To start new facilities management leadership out on the right foot
- To face the challenges and opportunities first hand and avoid potential outsourcing.

Who Makes the Decision for an FMEP?

In many cases the request for an FMEP comes from the leadership of the facilities management department (executive director or directors), but not always. Sometimes the request comes from the institution's administration providing oversight to the facilities agency (vice presidents, chief financial officers, president, or chancellor). In any case, the rationale for an FMEP is motivated by the need to:

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- Review current practices;
- Make adjustments/changes for overall effectiveness and improvement; and
- Make sure the department is using its resources effectively and efficiently.

Accurate Reviews and Knowledge Evaluators

Having a formal FMEP is much like going for your annual physical examination—you know that it is good for you, but you fear that the results may discover something unpleasant. Therefore, you want to be sure that your doctor is experienced, competent, thorough, and professional. Likewise, the individuals entrusted to evaluate your facilities program must also be respected, knowledgeable, and have all the virtues you expect.

For this reason, the FMEP uses a peer-review process. FMEP team members are seasoned facilities professionals who understand the operations and practice of the facilities management environment. Each FMEP team member is selected by the team leader and approved by the institution. For example, an FMEP team for a community college would provide members from other community colleges. Likewise, if an institution has a medical center or hospital, the FMEP team would have peer members from similar environments. The commitment to customize FMEP teams ensures a high-level evaluation and a thorough and balanced review.

What is the FMEP Process?

The FMEP process can take approximately 10 to 12 weeks or longer from the initial site visit to final printed reports. Institutions work closely with the APPA office and the team leader to determine the schedule based on the specific needs and requirements of the institution. The basic critical path for the FMEP process is outlined below.

Self-Evaluation ▸ Site Visit ▸ Oral Report ▸ Written Report

Is an FMEP Right for My Institution?

Whether you are trying to baseline your facilities management profile, assess where you currently are, measure the performance of a well-established operation, prepare for an administrative review or institutional accreditation, or just want to find out how your operation fits with the mission and vision of the institution, an FMEP may be right for your needs. The objective of every FMEP is to achieve the following:

- Assess facilities operations performance in relationship to your institutional and departmental mission, goals, and objectives.
- Enhance the continuous improvement process.
- Strengthen the ability of your institution to serve the customer's needs.

Top 10 FMEP Benefits

The benefits of having an FMEP at your facility are that it will allow your department to

1. Receive a customized evaluation report with recommendations for each performance category.
2. Receive a review by peers who understand your resources, constraints, and issues.
3. Show leadership and vision by requesting the evaluation.
4. Obtain a first-hand understanding of the relevant issues facing your department.
5. Obtain credible data to make and monitor necessary changes.
6. Evaluate information to become the buy-in catalyst for the department.
7. Engage your stakeholders in your continuous improvement process through evaluation knowledge.
8. Illustrate to your senior administration the willingness to improve, change, and align with the mission.
9. Understand and serve your customer better.
10. Show that in-house resources can be utilized effectively, therefore avoiding outsousrcing.

- Assist in developing a planning tool for strategic and long-range purposes.
- Emphasize department staff participation to create immense buy-in to change.
- Focus on the most important, cogent issues.
- Develop a menu of realistic recommendations for improvement.
- Improve the understanding for facilities management issues in your department and throughout the institution.
- Obtain conclusions based on data.
- Provide an FMEP team to tailor specific needs to the facilities management department.

Recent FMEP Improvements

In 2003, a task force commissioned by APPA aligned the annual Award for Excellence criteria with the FMEP criteria. The group was composed of Val Peterson, Doug Christensen, Rich Bowen, Ron Hicks, Jim Christenson, Jack Hug, Ward Simpson, and myself and we met several times in Phoenix to align the FMEP criteria to the new APPA standards. This task force had experience in conducting over 40 total FMEPs.

Currently, under the leadership of Alan Bigger, APPA's Vice President for Professional Affairs, this committee is developing and refining an electronic FMEP manual to be used to train APPA members who are willing to become FMEP team members. The first APPA training of future FMEP members is scheduled to take place during the Forum this July, in Washington, D.C. Stay tuned for your opportunity to get involved.

THE EVER CHANGING CAMPUS:

by Arthur J. Lidsky, AICP

Pedagogy (the art and science of teaching), technology, and facilities are intricately intertwined. They each affect the other—and each has changed dramatically in recent years. Over the past 30 years, research on how people learn has made great strides. Moving beyond theory, this research is beginning to have a significant impact on teaching, the approach to student learning, and the facility resources required.

Even more than pedagogical change, technology has, is, and will continue to be a rapidly evolving tool used for teaching and learning. Colleges and universities need to have a strategy for providing facilities that will respond to and support this continuously changing resource, as well as the changes that are occurring in learning.

This article will explore the characteristics and types of facilities that will be required to support these new pedagogical and technological initiatives.

Pedagogy

Research has shown that there are more effective ways to facilitate learning than the traditional teaching. Lecturing to passive students who are busy taking notes is less effective than actively engaging students in their own education. Engaged, active, hands-on, problem-based, and project-oriented are all current terms used to describe an approach that recognizes that students learn by doing. The goal is to encourage critical thinking and the understanding of concepts—not the memorization of facts, dates, and figures.

Two examples of current active learning initiatives at the undergraduate level are Workshop Physics at Dickinson College and project-based learning at the College of Wooster. There is growing support for undergraduate research at many institutions, and dramatic changes are taking place in introductory courses, particularly in the sciences.

Colleges and universities are supporting these programmatic initiatives in many ways. One is a more appropriate and sophisticated approach to faculty development. Formerly cast in remedial undertones, faculty development centers are becoming laboratories for faculty experimentation and learning, staffed by professional educators and information technology specialists. The Anderson Center of Undergraduate Education at Rensselaer Polytechnic Institute is an example of this evolution.

Academic fields are also changing. The scope of classic and familiar disciplines is expanding, and new disciplines are being created. Thirty years ago, none of the following departments existed: bioinformatics, biomedical engineering, cinema and comparative literature, earth and space science, ecology and evolutionary biology, genome sciences, information infrastructure, management science and engineering, and molecular technology.

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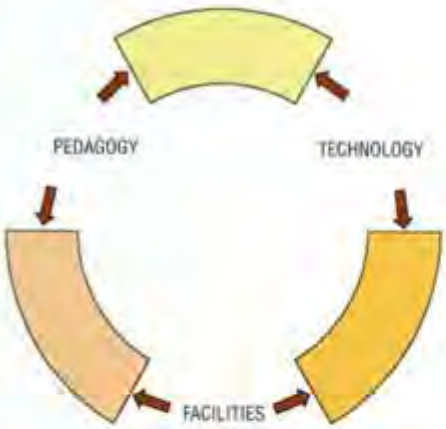

Today, these and other such departments are becoming commonplace. With them comes the need for new types of research space, located to advance interaction among faculty, students, and staff with relevant interests.

The number and complexity of centers and institutes, the interdisciplinary organizations common to universities, has increased significantly since the early 1970s—from about 6,000 to about 13,000. Most have facility needs ranging from simple office space to major buildings.

In the recent past, changes in facilities were being driven more by technological and programmatic change than by changes in enrollment. Over the next 15 years, however, enrollments are expected to increase by 15 percent as the Baby Boomers' baby boom moves through the primary and secondary school system.

Technology

The most startling changes are in technology. It was only 27 years ago (1977) that the Apple and Tandy computers were first introduced, and 23 years (1981) since the IBM PC reached the market. Ten years ago Netscape was introduced and the Internet became an incredible resource linking institutions, corporations, individuals, and information in ways that were inconceivable just shortly before. Only nine years ago, Microsoft entered the so-called browser war with Internet Explorer.

In this relatively short period, the way we work, teach, communicate, interact, and do research has changed. So, too, has the way we design and construct individual buildings and whole campuses.

The average age of college or university students today is between 22 to 24. For these students there never was a time when computers didn't exist. Having grown-up with Game Boys, cell phones, PDAs, and the Internet, they expect their educational experience will be technologically advanced and accessible.

Computers, laptops, and handhelds will become faster, cheaper, more complex, and more pervasive. They will continue to change and evolve and be integrated into the learning environment. Colleges and universities should expect to continuously upgrade these "edge" tools. Because a greater proportion of students will bring their own devices, institutions will have to decide what they will provide to supplement student machines and to support the academic program.

The rapid advances in wireless technology—increasing speed and security—will mean students can use their computers anywhere on the campus. Students will be able to create instant, networked, learning environments wherever and whenever they wish. A group of students might meet in the campus center, dorm, or outdoor quad and create a small networked community focused on an assignment, project, or laboratory experiment. It might be serendipitous, but there certainly is a coming together of the opportunities created by a wireless network and the pedagogic initiative of collaboration and community learning environments.

There continue to be exciting developments in display technology. Digital projectors are no longer the province of the so-called "smart classroom," as they are becoming a mandatory and expected resource in all classrooms. The SMART Board is also no longer cutting-edge, combining whiteboard, computer, and projector with a touch-sensitive display that can save text and graphics to a computer file for printing, e-mailing, or Web display.

The CAVE (Cave Automatic Virtual Environment) is a new technology that will find its way onto many campuses in the next few years. It is typically an eight- to ten-foot cubicle where high-resolution graphics are displayed on three walls and the floor creating a three-dimensional virtual environment. Hardware and software can keep track of a person moving in this virtual environment and change the image accordingly. Do you want to walk through the arteries of a virtual heart or be in the center of a virtual space station? How about walking into a room that you are designing?

One of the most interesting new technologies involves the use of haptic devices. A haptic device allows a user to see and reach into a virtual three-dimensional environment and seemingly touch, feel, and manipulate an object created by a computer. A student wearing haptic gloves can pick up and hold a virtual three-dimensional molecule. The student can pull the molecule apart and reassemble it in various ways, and in pulling it apart can feel the "tug" of atomic attraction much they way one feels the force between two magnets being pulled apart.

Online communication, either through the campus network or the Internet, has led to online academic programs, electronic office hours, interactive assignments, Web-based projects, and formal and informal communities of learners. It is not uncommon for faculty from several institutions to jointly teach a course over the Internet to students. Nor is it uncommon for one professor to teach a course over the Internet to students at several colleges or universities.

Sharing expensive and sophisticated scientific instrumentation over the Internet is becoming more prevalent

as their costs increase and the need for specialized technicians grow.

Facilities

The design and construction of academic buildings has shifted dramatically over the past 30 years. This shift is in response to changes in pedagogy and technology and the need to ensure that academic buildings can accommodate current and future initiatives. These facilities must allow change to occur at minimum cost and with little disruption. In the past, they were designed for specific faculty and programs. It has become clear that the more a design caters to individuals, the more inflexible and the quickly dated it will become. At Middlebury College, at least one third of the laboratory space in their new science building was designed as generic, division-owned space.

Students will be able to create instant, networked, learning environments wherever and whenever they wish.

Classroom

Fifteen or 20 years ago, the typical classroom looked similar to the way classrooms have looked for the previous 50 years. Many new and renovated classrooms today are the result of pedagogical shifts and technological advances. They are different in size, configuration, furnishings, and technological equipment.

To differentiate between traditional classrooms and the newer, technology-rich classrooms, many colleges and universities use the term "smart classroom." That distinction will disappear as most classrooms are brought up to current standards.

Reflecting the shift toward engaged, interactive student learning, some faculty are moving away from the lecture style of teaching to a seminar or discussion format. This format requires a flexible classroom where students face each other around a table, in a circle, or a U-shape design, requiring more space.

Laboratory

Nowhere have the changes in facility design been more dramatic than in science, technology, engineering, and math departments (STEM). From a teaching standpoint, these fields require a lab-rich, hands-on, experiential, project-oriented collaboration of students and faculty learning and doing research together. Research used to be at the graduate level only, but today is a component of programs at undergraduate institutions and secondary schools.

The new style of teaching, learning, and collaboration requires a physical environment with flexible, movable benches designed for groups of two, four, or six students working together. In addition, some labs are being designed for both a discussion area with movable seating as well as a lab bench environment with small group benches, enabling faculty and students to move back and forth between discussion and experimentation. Labs of this nature require more space per student than traditional labs.

STEM spaces are also affected by the increasing number of computers and by the specialized, complex, and sophisticated equipment required for contemporary teaching, learning, and research. Much of the equipment now occupying floor and bench top space didn't even exist 30 years ago.

Office

Under the misguided notion of efficiency, a number of states have guidelines for the size of faculty offices based on a misunderstanding of the purpose of these spaces. Unlike offices used by industry, faculty offices are multipurpose teaching, research, and administrative spaces. There is growing pressure to increase the size of faculty offices to respond to changes in pedagogy and technology. Whereas 100- to 120-square feet per office used to be a typical guideline, faculty offices are now more likely to be in the 140- to 160-square foot range.

Library

Librarians as professionals and libraries as places are going through the greatest transition—and are still in the process of becoming. Becoming what, however, is still unclear as soul searching and experimentation continue to define and redefine the library. A library is no longer viewed as a passive depository for books and solitary scholars, but as an active, service-oriented, technology-based resource for collaboration and learning.

Computers in libraries have increased radically and the creation of "information commons" such as at the University of Arizona, are becoming important centers for learning and interaction. The information commons integrates information specialists, technology specialists, multimedia specialists, library resources, and technology resources, in an individual and group learning environment.

Some libraries are trying to make the library more comfortable and inviting. Clemson has introduced a small cafe, for instance. Other libraries, such as at Worcester Polytechnic, are moving some books off-site to make room for technology and small group study and collaboration spaces.

In the world of education, as in life, change is constant. A significant difference with the past is the speed with which change is occurring. Today, campus buildings must be designed to anticipate change through thoughtful decisions about building systems, building materials, structural bay size, room configuration, sight lines, room locations, and careful consideration about furniture and equipment.

Colleges and universities must continuously strive to reinvent themselves to become or continue as preeminent places for vibrant, interactive, transformative programs for teaching and learning. Flexible and adaptable facilities will play a pivotal role in creating environments to attain that goal.

Institute for Facilities Management

Tampa Wrap-Up

The most recent session of the Institute for Facilities Management concluded February 5, 2004, in Tampa, Florida. APPA graduated 75 participants from the program and welcomed 110 new attendees. This session's attendees had the chance to network not only with other Institute classmates but also with attendees of the Supervisor's Toolkit training, which once again was offered in the same location as the Institute training.

Special Programs debuted in Tampa and welcomed back the first group of past graduates to attend sessions on Information and Technology. Special Programs topics will change with each Institute session, with Planning, Design, and Construction for the Facilities Professional being offered in Montreal in September.

Mohammad H. Qayoumi announced his retirement as dean of energy and utilities after the Tampa session. Cheryl Gomez of the University of Virginia, and an active faculty member of the Energy & Utilities core group, will become the new dean. Many thanks to Mo, and congratulations to Cheryl!

Congratulations to the Class of February 2004!

Amr Abdel-Azim	*Rensselaer Polytechnic Institute*
Laura Barry	*Cornell University*
Andrew Best	*University of Texas*
Bruce Bonham	*Lee University*
Dann Braid	*Cornell University*
Norman Brooks	*University of Virginia*
Thomas Buning	*United States Military Academy*
Dean A. Burke	*Embry-Riddle Aeronautical University*
Bill Ciha	*University of Iowa*
John Clark	*University of Central Florida*
Miguel Coello	*Universidad de Monterrey*
Gregory Coen	*Ohio University*
Duane W. Colegrove	*Michigan State University*
Henry Crans	*Cornell University*
Velton Daves	*University of Central Arkansas*
Kenneth Davis	*University of Missouri/Columbia*
Armando DeLeon	*University of California*
Dennis Dench	*Highland Associates*
Joaquin Diaz	*New York University*
Jeff Donahue	*Whitman College*
Linda Dvorak	*University of Iowa*
David Ebsen	*Oregon Institute of Technology*
John Farmer	*University of Arizona*
Kenneth Farrell	*St. Francis Xavier University*
Caron Findlay	*Des Moines University*
Randolph Fink	*University of Michigan*
Lorne Fisher	*Simon Fraser University*
Mark Flanagan	*Old Dominion University*
Dan Gavin	*Old Dominion University*
Lukeland Gentles	*University of Michigan*
Jerry J. Haba	*University of Dallas*
Janet Hanna	*Carleton University*
Julie Hardin-Stauter	*Stanford University*
Robert Harper	*Haverford College*
David Harris	*Dartmouth Medical School*
Stanley M. Hartman	*Virginia Commonwealth University*
Glen Haubold	*University of North Texas*
Robert Hockey	*Stanford University*
Al Jankovsky	*Joliet Junior College*
Johnny Killings	*Rochester Institute of Technology*
Carie Kloack	*University of Michigan*
Christopher M. Kopach	*University of Arizona*
Ray Kowalski	*Syracuse University*

David M. Lageson	*Lewis & Clark University*
Steven Lee	*University of Iowa*
Neal A. Lespasio	*Emerson College*
Scott Longacre	*Richland College*
William Lucksted	*Grand Valley State University*
Rick Magere	*University of Rochester*
Alfonso A. Mages Jr.	*Fort Lewis College*
Thomas May	*Cal Poly State University/ San Luis Obispo*
Phillip R. Melnick	*Pennsylvania State University*
William McCoy	*Indiana University*
Alfred McKie	*Groton School*
Steve Miszuk	*University of Toronto*
Dennis Nielsen	*Lawrence Berkeley National Lab*
Bob Notary	*University of New Mexico*
Nicholas Nozza	*University of Miami*
Mike O'Grady	*Illinois State University*
Roger Parsons	*Iowa State University*
Leo R. Pedigo	*University of Tennessee*
Hoyte D. Phifer Jr.	*University of North Carolina/ Greensboro*
Cody Powell	*Miami University of Ohio*
Siva Prakash	*University of South Florida*
Luis H. Rocha	*University of Arizona*
Mark Salemi	*Florida International University*
Michael Searle-Spratt	*Phillips Exeter Academy*
Patti Stilson	*State University of West Georgia*
Stony Sullivan	*University of Missouri/Columbia*
Randy Sutherlin	*Indiana University*
Alan Thibeault	*University of New England*
Jeff Tuttle	*Bowdoin College*
Joseph Verbiar	*Cleveland State University*
Brian Watts	*University of Alaska*
Ralph K. Zia	*Northeastern Illinois University*

Photo by Rhonda Hole

Tampa Institute Faculty

Our faculty and their employers deserve our thanks for their commitment to the success of the Institute. Without them, it just wouldn't work. Many thanks also to those individuals who coordinate the Institute:

Jim Roberts, Vice President for Educational Programs
Jay Klingel, Institute Chair & Dean of Operations & Maintenance
Don Guckert, Dean of Planning, Design, & Construction
Mo Qayoumi, Dean of Energy & Utilities
Mary Vosevich, Dean of General Administration
Suzanne Healy, APPA's Director of Meetings, Conventions, and Education

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Changing Face Value:
Design Decisions and the Campus Image

by Richard D. Rush

Educational buildings have a much more valuable role to play in the educational process than just serving as a background for daily human interchange. In a very real sense, they are designed to substantially enhance the learning process. One real test of a continuing campus design process is, therefore, whether a vision has been successfully enunciated, executed, and preserved. In a vision, all of the ingredients of the design can be unified into a single composition.

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When effectively realized, the vision becomes a physical manifestation of an idea. Since an educational institution is a purveyor of ideas, a vision is always appropriate. Conversely, a good vision causes ideas to happen. When it stimulates the imagination, the physical manifestation and the educational purpose of the buildings achieve a single significant resonance. Most of the time, however, facilities management takes place at a very different level.

Educational institutions take a beating. Hundreds of shoes beat on the floors. Furniture is regularly mistreated. Doors, windows, and locking devices are banged shut. Mechanical systems and boilers move great quantities of air and eventually simply wear out.

Upgrades are another frequent cause of changes. Recently, the most dramatic influence to impact school interiors has been the insertion of high-tech equipment and wiring into low-tech space. Other upgrades to comply with revised health, safety, security, energy, or accessibility standards take their toll on entryways, pedestrian circulation, and the general construction of the building envelope.

All of these reasons can be the cause of the renovation or renewal of a building. However, the most difficult circumstance, from a design point of view, often centers around revising the building façade. That is where the "vision" can be most profoundly and publicly stated. More precisely, both campuses and individual educational buildings wrestle constantly with trying to achieve a sense of campus unity from one building to the next—continually reconciling the old or aging with the new.

Too often, an either/or choice is made. First, cost reduction is the reason frequently given for choosing to ignore existing contextual or historic circumstances. When the choice to respond is made, it is quite common to let the exterior of an educational building reflect a 19th or 20th century inspiration while the interior is firmly planted in the new 21st century. The other choice, of course, is to try to mix the new with the old.

The basic palette of design possibilities for revising and responding to an existing façade is a simple one.

- *Materials:* Repeating, recreating, or simulating the materials already present on the building.
- *Colors:* Attempting to duplicate a color from one building material to another.
- *Proportions:* Most commonly, the relationship of the short side to the long side of a rectangle.
- *Geometries:* This usually means reusing a non-rectangular, two-dimensional geometrical theme.

Materials

The material most typically repeated between buildings on a campus is a specific clay brick. If the campus is in fact over 100 years old, finding replacement bricks exactly the same size, shape, and color can be a challenge. To complicate the issue, the color of the mortar and thickness of the mortar joint can substantially change the overall perceived color of a

Recently, the most dramatic influence to impact school interiors has been the insertion of high-tech equipment and wiring into low-tech space.

brick wall—even when identical historic bricks are used. If a mortar joint is finished with a half round tool, the shadow cast by the brick in the course above it is different than when the full joint is "scraped" or "v" shaped. More dark shadows in the joints darken the entire brick wall.

Colors

Material colors from another historic building period are difficult to match. Even glass tints or coatings are problematic. No two glass companies use the same colors even today. Paint colors change with atmospheric variation like acid rain or bleaching by the sun. Different sides of the same building can therefore vary in color due to exposure to the sun. Nevertheless, quantities of the same color paint can be stored on campus, and once a good match is found, color can be successfully preserved.

Proportions

The existing proportions of façades, column spacings, doors, and windows set a proportional standard for a building. The rectangular bays and gaps are both openings for views out of the building and a way to look (through a colonnade perhaps) into the building. Since buildings always have windows and doors, proportions are usually the easiest and least expensive architectural element to emulate.

The façade of the Haggerty School, Cambridge, Massachusetts, shown here, is actually a replica of the historic front façade of the previous building. The image of the building was too important to lose. Identical materials, proportions, geometries, and colors were used.

Geometries

Non-rectangular geometries (circular and/or triangular geometries) are often found in plan and elevation of educational buildings. Circles in plan tend to focus a spatial event. Angles are often used to change direction, whether it is a pedestrian walkway or reflected light. Precise curved lines are often labor intensive both in the shop and on the site, and they are usually worth the trouble when done well.

There is a more subtle set of secondary design elements to preserve from an existing building façade to a new addition.

- *Textures:* The texture of a surface is most elegantly revealed when light falls across it and shadow patterns are formed.
- *Rhythms:* The repetition of contrasting sizes or shapes can set up the equivalent of a musical beat on the façade of a building. Two buildings can share the same rhythm and be from different historic settings.
- *Stylistic Detailing:* A combination of materials and geometries that have been inherited from other buildings or other times.
- *Human Scale:* Scale usually refers to proportional relationships that create comfort levels between human dimensions and a building. A building is a satisfactory human scale when the building size does not intentionally intimidate its occupants.

Textures

The richest textures come from the use of natural materials and usually pertain to walls.

In order to avoid detracting from the classical precedent of the campus, the new Visual Arts Center at the Salisbury School, Salisbury, Connecticut, was lowered into the side of the hill. The vocabulary of colors and proportions is maintained while the geometry of the new building varies. The neighboring library building is also new but literally reflects the classical campus style.

Split-faced stone masonry, for example, is notorious for single-handedly enriching an otherwise plain façade.

Rhythms

Architecture of the Italian Renaissance gave birth to a rich spectrum of rhythmical façade possibilities. A campus building that is Italianesque may therefore contain a variety of rhythms. However, even the simplest building from the period of the Revolutionary War consciously alternates angled stone lintels above windows and creates an effective rhythm.

Stylistic Detailing

The most common stylistic historical reference used on American buildings originated in Colonial England—which in turn comes from ancient Greece. It is fascinating that carved wood forms were converted to stone by the Greeks and then converted back to wood by later generations, especially the British. What Americans have done in recent years have converted the wood-reference forms into fiberglass.

The texture of the historic stone wall of St. Thomas Church, New Haven, Connecticut, remains the highlight of the building even after a more modern glass and metal day school addition is added adjacent to it. The colors and proportions are preserved from new to old. Lowering the lintel height of the addition changes the scale of the building for children's use. Repeating the roof seams and windows causes the new building to offer a supporting rhythm for the older building.

Human Scale

In 19th century America a variety of new building uses and forms emerged—along with the technologies to serve them. Steel was invented, as was the elevator. The classical orders were ill-suited to serve the new building forms. Generally speaking, the precedent for college campuses frequently remained classical following Oxford, Cambridge, and even Jefferson's work at the University of Virginia. The use of walls of ivy as a stylistic bridge between buildings became synonymous with the college campus. However, a modern college campus is frequently the aesthetic descendent of the transformation to a rectangular geometry with little ornament that occurred in the 20th century. A result of that lineage can also be the gradual disappearance of the evidence of the human scale in the making of a building. An inhuman campus also has a cost.

Cost and value performance of a building façade may actually present itself as the act of parents and prospective students walking through a campus (or viewing a virtual website tour) and appreciating the quality of what they see.

Cost and value performance of a building façade may actually present itself as the act of parents and prospective students walking through a campus (or viewing a virtual website tour) and appreciating the quality of what they see. It is not a far-fetched notion. A private school campus that recently transformed itself architecturally has tripled its number of applications for admission in five years. Alumni also love to return to a school that has been cared for and memories have been preserved.

The cost of simulated materials is intended to compete successfully with the real thing and reduce the initial expenditure. Where full-size bricks were used in original buildings, thinner facing bricks adhered with epoxy can achieve a similar visual result. Fiberglass fluted columns and column capitals, especially remote from immediate face-to-face contact, can perform reasonably well as visual reminders of historic detailing. Precast concrete units instead of stone offers the possibility of a stone appearance with a cost benefit. Glass fiber reinforced concrete (GFRC) products can further simulate precast concrete or

Continued on page 34

Building Our Children's Future One School At A Time

APPA WASHINGTON, DC 2004 Educational Facilities LEADERSHIP FORUM JULY 25-27

APPA

PRELIMINARY PROGRAM

July 25-27, 2004
Marriott Wardman Park Hotel
Washington, D.C.

- Innovative educational sessions highlighting trends in the educational facilities profession
- More than 130 exhibitors showcasing the latest in products and services
- A wide array of networking opportunities with peers

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THE CONFERENCE OF CHOICE

for Educational Facilities Professionals

The educational facilities profession is changing, and now it is even more important for facilities professionals to recognize their role as leaders strategically plan and prepare their organization to meet the challenges of the future. Facilities organizations are facing greater demands for accountability and performance improvements than ever before. Trustees are interested in ensuring that resources are efficiently and effectively utilized for the greatest needs of the institution. Customers demand the delivery of cost-effective, high quality services that meet their own mission requirements. Employees have greater expectations of their leaders and have personal needs that must be accommodated within the workplace environment. The federal government is a driving force to improve security and to implement code compliancy for educational institutions. And of course, facilities professionals have their own values that drive them to seek improvements.

This year's conference, which will be hosted in Washington, D.C., is the perfect venue for educational facilities professionals to make sense of the seemingly conflicting demands of their profession and provide them with a holistic understanding of how to:

- Meet the demanding challenges of an increasingly competitive environment.
- Continuously assess your organization's financial performance.
- Understand complicated, but necessary regulatory issues.
- Ensure the effectiveness of the facilities department's primary processes.
- Ready your employees to embrace the challenges of the future.
- Delight your customers.
- Realize the benefits of developing a high performance organization.

Who Should Attend

APPA's Educational Facilities Leadership Forum is open to anyone with an interest in public and private education-based facilities, including:

- Directors, Vice Presidents, Business Officers for education institutions.
- Director of museums, government/ public buildings, and facilities suppliers to educational institutions.

Program Structure

The Forum offers a tightly focused program taught by invited experts and leaders in the educational facilities field. The program is structured into experience exchange sessions and areas of concentration. Each area of concentration will focus on a critical area within the educational facilities organization and will include:

- Environmental Regulatory Issues;
- Safety and Security on our Campuses;
- Code Compliance (i.e. fire safety, security, and energy issues);
- Planning, Design, & Construction;
- Facilities Finance; and
- Customer Service.

General Sessions

Everyday decisions are made in Washington, D.C. that affect every facet of life on a school campus. With that in mind, APPA will present general sessions with speakers from both the government sector and the private sector.

APPA WASHINGTON DC 2004 Educational Facilities LEADERSHIP FORUM JULY 25-27

SCHEDULE At-A-Glance

THURSDAY July 22	1:00 p.m. - 5:00 p.m.	APPA Executive Committee Meeting
FRIDAY July 23	8:00 a.m. - 5:00 p.m.	APPA 2003 - 04 Board Meeting
SATURDAY July 24	8:00 a.m. - 1:00 p.m.	APPA Committee Meetings
	8:00 a.m. - 8:00 p.m.	APPA Exhibit Registration & Hall Set Up
	11:00 a.m. - 5:00 p.m.	APPA Registration & Welcome Desk
	7:00 p.m. - 9:00 p.m.	APPA Welcome Party *Sponsored by Johnson Controls Inc.*
SUNDAY July 25	7:00 a.m. - 5:00 p.m.	APPA Registration & Welcome Desk
	7:30 a.m. - 8:45 a.m.	APPA Welcome Breakfast
	9:00 a.m. - 10:15 a.m.	Opening Keynote *Sponsored by SIEMENS*
	10:30 a.m. - 11:30 a.m.	Experience Exchange Sessions
	11:45 a.m. - 2:30 p.m.	Hall of Resources (Exhibits & Lunch) Lunch *Sponsored by Spirotherm*
	2:45 p.m. - 4:00 p.m.	Educational Sessions
	5:00 p.m. - 6:30 p.m.	Business Partner Reception - **(By Invitation Only)**
MONDAY July 26	7:00 a.m. - 5:00 p.m.	APPA Registration & Welcome Desk
	7:30 a.m. - 8:45 a.m.	APPA Town Meeting & Breakfast *Sponsored by SDI, Inc.*
	9:00 a.m. - 10:15 a.m.	General Session
	10:30 a.m. - 11:30 a.m.	Educational Sessions
	11:45 a.m. - 1:45 p.m.	Hall of Resources (Exhibits & Lunch) Lunch *Sponsored by Marcis & Associates*
	2:00 p.m. - 3:15 p.m.	Educational Sessions
	5:15 p.m. - 6:00 p.m.	APPA Regional Meetings
TUESDAY July 27	5:00 a.m. - 7:00 a.m.	APPA Fun Run *Sponsored by TMA Systems, Inc.*
	7:00 a.m. - 4:00 p.m.	APPA Registration & Welcome Desk
	7:30 a.m. - 8:45 a.m.	APPA Awards Breakfast
	9:00 a.m. - 10:15 a.m.	Educational Sessions
	10:30 a.m. - 11:30 a.m	Educational Sessions
	11:45 a.m. - 2:00 p.m.	Hall of Resources (Exhibits & Lunch)
	2:15 p.m. - 4:00 p.m.	Closing General Session
	5:45 p.m. - 6:30 p.m.	APPA Awards Banquet Reception
	6:30 p.m.- 9:00 p.m.	APPA Awards Banquet
WEDNESDAY July 28	8:00 a.m. - 1:00 p.m.	2004 - 05 APPA Board Meeting

Sunday, July 25

9:00 a.m.- 10:15 a.m.

Opening Keynote

Sponsored by SIEMENS

10:30 a.m. - 11:30 a.m.

Experience Exchange Sessions

Topic: Parking

Facilitator:
Anita Bailey, Phillips Exeter Academy

Parking on an educational campus can be challenging at times. Come listen to your peers discuss their innovative approaches to solving the parking dilemma.

Area of Concentration:
Planning, Design & Construction

Topic: Lighting

Facilitator:
Mark Hunter,
California Polytechnic State University

Is it too dim? Too Bright? Are you looking for more cost-effective ways to light your educational campus? Come listen to how your peers have solved the lighting issue.

Area of Concentration:
Security

Topic: Town & Gown

Facilitator:
Jim Roberts , Campbell University

The relationship between the citizens living in a town with a college and university can cause challenges for the facilities professional. This session will offer insight into how a town and college/university can live in harmony.

Area of Concentration:
Customer Service

Topic: Wireless

Facilitator:
Ralph Zia, Northeastern Illinois University

We are moving into an age where we want information immediately, no matter where we may be. Come listen to your peers discuss the benefits of being a wireless community for students, faculty and staff.

Area of Concentration:
Information & Technology

Topic: Codes

Facilitator:
Polly Pinney, Arizona State University

Staying up to code can be costly for an educational facility. However, it is also necessary to be vigilant about code compliancy. Come listen and discuss what codes are important to the facilities professional as well as learn more about APPA's new code advocacy initiative.

Areas of Concentration:
Environmental, Compliance

Topic: Performance in Contracting

Facilitator:
Jay Klingel, University of Virginia

The decision to contract services can find you in the middle of a great choice or a nightmare. This session will offer insight into basic contracting principles, various types of procurement methods, and contract administration techniques.

Area of Concentration:
Finance, Utilities

11:45 a.m. - 2:30 p.m.

Exhibits and Lunch

Lunch Sponsored by Spirotherm

2:45 p.m. - 4:00 p.m.

Security Master Plan

Presenter:
Bob Cizmadia, GageBabcock & Associates, Inc.

The implementation of a written Security Master Plan is essential to the management of an effective and efficient campus security program. A master plan outlines the strategic direction, operations, and technology goals and objectives, both short term and long term. Key elements and components, regarding the framework, preparation, and implementation of such a plan are discussed, especially pertaining to challenges and threats to our homeland security.

Areas of Concentration:
Safety, Security, Planning,
Design & Construction

Facilitating the Initial Stages of LEED

Presenters:
Tia Heneghan, Sebesta Blomberg & Associates, Inc.
Daniel Davies, The Smithsonian Institution

The Smithsonian Institution, in an attempt to improve the energy efficiency and environmental impacts of their Victor Building, has committed to developing a plan to achieve a LEED-Existing Buildings (LEED-EB) certification for the facility. The first step in achieving this goal is the development of both a LEED-EB program and a Retrocommissioning Plan – two documents that will be prepared with the help of Sebesta Blomberg during a one-day, pre-conference 'Discovery Process' that is open to conference attendees on a pre-arranged basis. The results of this process will be presented in a panel discussion during the conference.

Areas of Concentration:
Environmental Compliance, Planning,
Design & Construction

Financing Energy Efficient Projects – Doing More With Less

Presenters:
Melissa Payne,
Energy Star National Manager (EPA)
Neil Zobler, Catalyst Financial Group

Looking to save money on energy costs, but don't know where to start? Two online tools can help. The ENERGY STAR energy performance rating tool will score your buildings on their energy performance. Then use the Cash Flow Opportunity Calculator to estimate how much new energy efficient equipment can be purchased from the anticipated savings. The Calculator also provides answers to questions of whether to finance the equipment purchase now, or with cash from a future budget, and if it really is smarter to wait for a lower interest rate. Come and learn how these tools work from a university that has used them.

Areas of Concentration:
Finance, Utilities

Utilizing GIS for Improved Ground Maintenance

Presenters:
George Ina, Davey Resource Group
Mark Niemczyk, College of Wooster

In November 2003, a tornado touched down in Wooster, Ohio, cutting a devastating path through the College of Wooster. The college's tree geodatabase and Geographic Information Systems (GIS) application was able to help the grounds department capture the landscaping losses for insurance purposes. The purpose of this session is to present the original objectives and intent for a grounds maintenance GIS at the College of Wooster, discuss the data collection process, and outline software customization implementation at Wooster.

Areas of Concentration:
Information & Technology

Is Your Entire Campus a No Parking Zone?

Presenters:
Michael Bass,
Cutler Associates, Inc.
John Shenette, Bentley College

Congratulations! Your enrollment has increased, but so has your vehicle traffic. One of your students' loudest complaints is "there's no place to park!" It's difficult to offer them an education when you can't offer parking. This panel discussion will explore how much parking a campus should provide, whether appropriate campus policies toward parking are in place, if your offcampus parking is making the neighbors grumpy, and much more.

Area of Concentration:
Customer Service

Implementation of a Campus Lighting Master Plan

Presenters:
Scott Robinson, Affiliated Engineers, Inc.
Nicholas Vellis, University of Florida

Proper application of outdoor illumination is critical in enhancing campus security, pedestrian safety, and public image. At its best, lighting can unify a campus into an inviting array of structures interconnected by a logical progression of pathways where students, faculty, and visitors feel at ease. Unfortunately, poor or improper lighting can turn the most attractive and friendly daytime campus into a confusing nighttime patchwork riddled with threatening unsafe areas. Come and hear how one campus made the plunge and continually reviews its lighting plan as each year passes.

Areas of Concentration:
Safety, Security, Code Compliance

Monday, July 26

9:00 a.m. - 10:15 a.m.
General Session

Successful Strategies Through Turbulence

Howard Putnam
Former CEO of Southwest Airlines

As the former CEO of the highly successful Southwest Airlines, Putnam led the airline through deregulation and implementation of the "vision" that has guided Southwest to revered heights over the past twenty years. Putnam will apply these same strategies to the educational facilities profession.

10:30 a.m. - 11:30 a.m.
Educational Sessions

Making the Town N' Gown Relationship Work Through NPI

Presenter:
Jerry Black, Duke University (Retired)

Duke University, as part of its mission statement, is committed to play a constructive role as a corporate citizen working to enrich and improve the conditions of the larger community around the campus where many of the students, faculty, staff, and employees live. This commitment involves building new community housing, renovating century old historic tobacco warehouses, working with schools and community centers to improve the safety and appearances of building and grounds, and donating the time and expertise of Duke University's Facilities Management Department staff for these projects. While there is an ongoing demand for support to the local community, the Facilities Management Department has found a way not to be involved in the local neighborhoods but has excelled in making the commitment successful.

Areas of Concentration:
Customer Service

Improving Campus Safety & Security Through Unified Command

Presenters:
Tim Dueck, Mazzetti & Associates
Ron Miner, Northrop Grumman

You can dramatically improve campus safety and security by implementing seven key unified communication strategies. These strategies are based on lessons learned from recent high profile events, such as 9/11/2001 and the sniper attacks in Virginia, Maryland, and Washington, D.C. Never before have America's campus environments faced risks that threaten every student and faculty member. These seven steps of action will not only improve disaster readiness and response times, but will also instill a greater sense of safety and security on our campuses.

Areas of Concentration:
Safety, Security, Planning, Design & Construction

The Changing Landscape of Building Codes & Fire Codes in the U.S.

Presenters:
Thomas Jaeger
GageBabcock & Associates, Inc.
Brooks Baker, University of Alabama, Birmingham

This presentation provides a complete review of the current state of building codes and fire codes in the United States. This session presentation will provide an overview of what Performance Based Design is and how to use it in the design of all new buildings. In addition, there will be discussions on some of the latest engineering tools and how staff from higher educational facilities can become involved in the development of these building and fire codes as part of a "Code Advocacy" program.

Areas of Concentration:
Environmental, Code Compliance, Safety, Security

Stabilization Repairs to Historic Masonry Structure at Harvard University

Presenters:
Jon Lindberg, Gale Associates
Michael Cahill, Harvard University

In 2002, Harvard Planning and Real Estate undertook a large and complex project to stabilize 17 historically significant masonry buildings in the city of Cambridge, Massachusetts. The buildings were suffering from water infiltration and continued deterioration could have posed a safety threat. This presentation will focus on the steps taken to repair these historic buildings and the challenges that were encountered during the project. Participants will gain a better understanding of the sequence of events, pre-planning, and coordination required to complete a successful exterior building renovation program while under full occupancy.

Areas of Concentration:
Planning, Design & Construction

Natural Gas - Can't Live With Prices, but Can't Live Without It

Presenters:
Phyllis Martin, Energy Information Administration
Lucinda Andreani, Salas & O'Brien Engineers
Scott Burns, San Diego State University

Natural gas prices have risen dramatically and have become vastly more volatile over the past five years, significantly affecting campuses' utility budgets. The Energy Information Administration, the nation's leading independent authority on energy, will present their natural gas price projections and discuss their recently released study on the impact on LNG on future gas and electricity prices.

Areas of Concentration:
Utilities, Finance

Using APPA Staffing Guidelines to Rebalance an Out of Balance Budget

Presenter:
Martha May, Purdue University

Recent budget reductions, coupled with significant construction, have forced facilities leaders at Purdue to find creative solutions to staffing and a new approach to budgeting. By implementing the APPA staffing guidelines and developing additional levels of service for other physical facilities areas, learn how Purdue prioritized their needs and realigned their funding to support critical stewardship functions.

Areas of Concentration:
Finance

11:45 a.m. - 1:45 p.m.

Exhibits and Lunch

Lunch Sponsored by Marcis & Associates

2:00 p.m. - 3:00 p.m.

Educational Sessions

Mold Remediation in an Occupied Academic Facility

Presenters:
Vincent Brennan, University of Vermont
Thomas Broido, ATC Associates Inc.

This session will present a case study of an estimated where 17,000 gallons of water loss event which caused fungal contamination and resulted in a fungi remediation project. The project scope included four levels and approximately 15,000 square feet. In addition to reviewing the remediation and project monitoring procedures, the session will focus on the management issues related to coordinating and perfuming the project in a university setting. Technical issues to be discussed include determination of remediation scope; remediation design; hazardous materials abatement within fungal work areas; and building structural issues.

Areas of Concentration:
Environmental, Customer Service

Emerging Technologies and the 21st Century

Presenter:
Mark Valenti, Sextant Group

This course is an overview of emerging information and communications technologies: networks, personal computers, information appliances, digital video, audio, and graphics, virtual reality and skills simulation and the role they will play on the campus of the 21st century.

Areas of Concentration:
Information & Technology

Do You Want to be Part of an FMEP Team?

Presenter:
Jack Hug, Retired
David Cain, Northern Arizona University

The Facilities Management Evaluation Program (FMEP) is a highly customized, personally tailored evaluation process that can help school campuses assess their organization's current performance levels. FMEP's are conducted by APPA volunteer members. Come listen and learn how to become either a team leader or a team member from individuals who have conducted numerous evaluations at campuses around the country.

Area of Concentration:
Customer Service

Integrating Security Planning in Capital Project Delivery

Presenters:
Bob Rawski, The University of Texas System
Sid Sanders, The University of Texas System

The events of September 11, 2001, and other related threats since that date have raised public awareness regarding security issues, as well as expectations that those entrusted with planning and designing public facilities are making adequate and rationally calibrated provisions to mitigate security risks. Public sector owners need to find a way to consistently meet those expectations within their capital project delivery processes. One approach is to develop and implement standard security planning and design guidelines. To be successful, the guidelines would need to be sufficiently generic in nature to allow for their flexible application to all potential project types in the capital construction program. This presentation will focus on how security guidelines have been developed and implemented to meet the needs of The University of Texas System.

Areas of Concentration:
Security, Safety, Planning, Design & Construction

Professional and Personal Well-Being: What Works, What Doesn't

Presenters:
Ron Medlin, Ph.D., Institute of Life and Health

From heart to hair, liver to libido, and vision to vitality - pick up new insights that will keep you productive and give you an edge. Improve your health, reduce your risk to major illness, and learn new ways to prrotect yourself. Come learn some simple, low-tech, cost effective ways to add years to your life and life to your years.

Open Systems and the Campus Enterprise

Presenter:
Ron Bernstein, Echelon Corporation

Learn how open systems is changing the contracting world and how major institutions are responding. Several case studies will be presented including the US Army Corps of Engineers, NYC Schools, and NASA. We will explore how these large campus facilities are working to improve their return on investment of their system upgrades and new construction projects. Learn the basics of integration of campus control systems into the campus IT infrastructure. This session will focus on the benefits of choosing open systems for campus controls for systems such as physical plant, HVAC, lighting, energy management, metering, etc. Learn how integration of these subsystems into a common, cohesive campus architecture can improve overall maintenance costs and provide flexible systems. The advantages of competitive bids on projects and long term service contracts will be explored and how a good set of open systems specifications can set the foundation for expansion of systems for years to come, without the fear of being locked in to a single supplier.

Areas of Concentration:
Information & Technology

Tuesday, July 27

9:00 a.m. - 10:15 a.m.
Educational Sessions

Implementing Open Systems For Facility Controls Panel Discussion

Presenter:
Ron Bernstein, Echelon Corporation

Quiz the experts during this panel discussion on the implementation of open systems. Learn how the manufacturers and integrators are delivering on the promise of flexible, interoperable system design. Panel members will share success stories from projects across the country and what they learned in the process of delivering these systems. We will hear from the people directly involved in engineering, specifying, and delivery of multi-vendor systems that adhere to open systems standards set forth by LonMark International - the standards association defining interoperability guidelines for control systems. Panel members will include manufacturers, engineers, and integrators of building control systems. Learn about the building automation systems market direction and the rapid changes that are occurring.

Areas of Concentration:
Information & Technology

Implementing a Wireless Handheld System

Presenters:
John Johnson, TMA Systems
Trent Pearsal, Tulane University

Come and discover the tremendous impact of a wireless work order management system. This will be valuable time for you to gather information on this powerful technology from a university with firsthand knowledge. This focused session will show how Tulane University implemented a portable digital work order system through the use of wireless-enabled PDA's (Personal Digital Assistant) and the TMA CMMS application.

Areas of Concentration:
Information & Technology, Customer Service

Making Buildings Work Harder: Ways to Create Student Centered Facilities

Presenters:
Randy Moskop, Christner, Inc.
Pat Apel, Maryville University

A new science building for Westminster College and a university center for Maryville University demonstrate how the thoughtful combination of program elements and design create facilities that support communities of learning. It has been shown that up to 70 percent of learning on campuses occurs outside the classroom. Buildings work harder when they serve a variety of functions and support diverse uses during the day and evening hours. In this session, you will learn how facilities can promote vibrant, socially rich campus communities where the learning environment adapts to changing campus demands.

Areas of Concentration:
Planning, Design & Construction

Sustainable Campus LEEDers

Presenters:
Lee Taper, Holabird & Root
Mike Lubberden, Central College

In September 2003, Central College opened the Vermeer Science Center, a LEED Silver Certified building. One of the goals of the project was to demonstrate that the study of the natural sciences renders a respect for the environment. This commitment was to be reflected in the addition and renovation of the facility. This presentation is a case study from the initial design phases to the present day, reflecting on the challenges and rewards that are encountered in balancing program, budget, and environmental stewardship using the LEED green building rating system.

Areas of Concentration:
Environmental Compliance, Finance

A Review of APPA's New Core Data Survey

Presenter:

Vickie Younger, Kansas State University and APPA's Vice President for Information & Research
APPA's Information and Research Committee

After nearly 40 years of data collection, APPA's Comparative Costs & Staffing report is not going anywhere—but it will be improving. Beginning in late 2004, APPA will conduct an annual Web-based survey collecting core facilities data in several modules. From this data APPA will extract the key facilities performance indicators for the CCAS report, for the Strategic Assessment Model (SAM) report, and for other research projects within CFaR or in collaboration with other associations such as the National Association of College and University Business Officers. The members of the Information & Research Committee will take you through a sample survey to show you what has changed and how to prepare for the next data collection effort.

Areas of Concentration:

Information & Technology, Finance, Customer Service

10:30a.m. - 11:30 a.m.

Educational Sessions

Maintaining Employee Safety and Regulatory Compliance in Lean Times

Presenters:

Chris Ahoy, Iowa University
David Ballard, Iowa State University

Maintaining a safe and healthy workplace and ensuring regulatory compliance in lean times challenges many facilities planning and management organizations. Quite frequently, training and safety programs are one of the first areas to be adversely affected by budget reductions. The impact of budgetary reductions can, however, be reduced if facilities planning and management organizations establish a focused and results-oriented safety program through the use of team-driven safety management, information management and technology, and continuous quality improvements.

Areas of Concentration:

Code Compliance, Finance, Customer Service

Maximizing the ROI of Your FM Technology Through a Technology Optimization

Presenters:

James Whittaker, Facility Engineering Associates
Steve Kriesten, American University

Facilities officers are faced with the challenging tasks of managing FM technology or implementing new technology. The process of implementing technology is time consuming and costly. In addition, once implemented, the technology often does not perform as expected. In many cases, new or existing software has tremendous capabilities that go unused. Typically, these unused features can actually save time and money if they are being used properly. American University and Facility Engineering Associates developed a streamlined and innovative process to evaluate existing technologies and increase the ROI of American University's technology investment.

Areas of Concentration:

Information & Technology, Finance, Customer Service

Redefining the Convocation Center: The Cornerstone of the New University Village

Presenters:

George Nasis, Moseley Architects
Robert Fenning, Old Dominion University

In 1997, Old Dominion University embarked on an ambitious plan to create the new University Village-a mixture of student housing, office research, and retail space, with the proposed new Convocation Center becoming the town hall center and bridge between the new and existing campuses. The intended audience includes administrations searching for creative funding partnerships, creating mixed used developments on campus or seeking catalysts to expand campus boundaries and building support for major projects that will have a positive impact on the surrounding community.

Areas of Concentration:

Finance, Planning, Design & Construction

Effective & Innovative Practice Best Practices

Sponsored by Sodexho

Both recipients and nominees for the 2004 Effective & Innovative Practices Award will showcase their unique campus programs. If you are looking for innovative ways to save substantial money for your campus, then this the perfect place to glean information and tips from your peers.

11:45 a.m. - 2:00 p.m.

Exhibits and Lunch

2:15 p.m. - 4:00 p.m.

Closing Session

Welcome Committee

Chair: Willy Suter
American University

Chander Bahn
Howard University

Dennis Bohlayer
Towson University

Dan Branigan
St. Marys College of Maryland

Phillip Brown
American University

Bob Burhenn
Catholic University

Michelle Estep
American University

Don Hedrick
Allegheny College

Sarah High
University of Maryland

Vassie Hollamon
University of Maryland, Baltimore

John Jensen
Towson University

Kevin Mann
Salisbury University

Richard Payant
Georgetown University

Kevin Petersen
Catholic University

Kathleen Ralls
American University

Mike Sofield
Smithsonian Institution

Gary Viola
University of Maryland, Baltimore

Sheri Vucci
Smithsonian Institution

Dave Wartel
American University

Richard Weil
Catholic University

EXPERIENCE WASHINGTON, D.C.

When Pierre Charles L'Enfant gazed northward along the banks of the Potomac River in 1791, he envisioned a "pedestal waiting for a monument." Since that day, Washington, D.C. has evolved into a fascinating, lively city combining grand, neo-classical government buildings, monuments, memorials, and museums with colorful neighborhoods, art, theater, music and culture.

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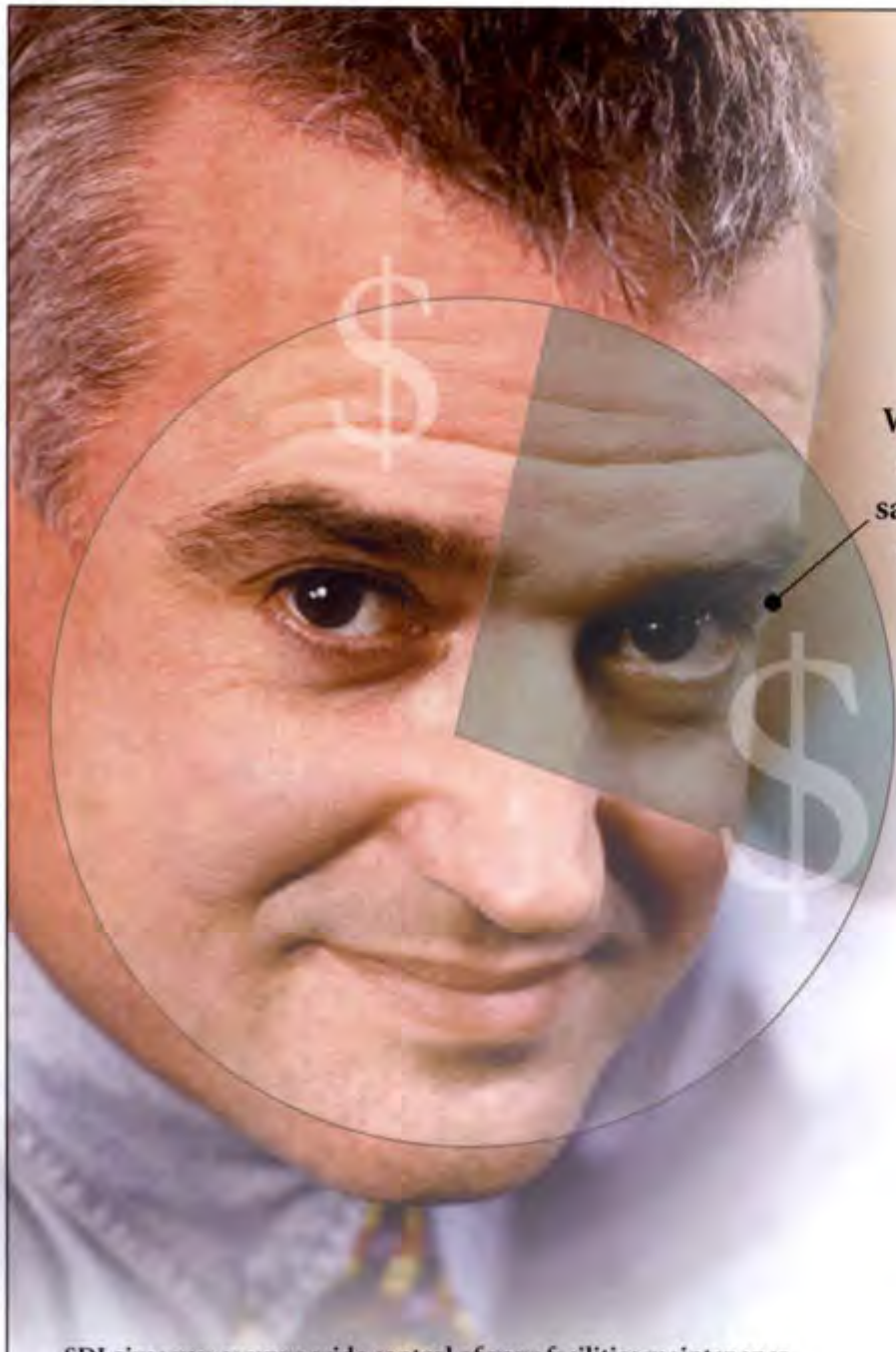

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Continued from page 32

The new entry to the Fay School, Southborough, Massachusetts shown here reoriented the flow of circulation in the building. The new brick matched the original brick but the curvilinear geometry was used to soften the sawtooth geometry of the roofs.

stone members. Because they are sprayed into a form, such products are much lighter and easier to make into curved surfaces.

It is important to note, however, that matching existing concrete colors with that of a new GFRC unit can be difficult. Similarly, using a fiberglass column next to an original wood column may produce different surface results. When simulated materials are used, they are often factory produced. What this means is that, like computer-produced music, there is a certain precision that never occurs when the human hand is involved. For example, identical bricks that are epoxied into place can look too perfect.

Image

The ultimate result, in more common parlance, is the "image" that the building, and therefore the educational institution presents to its students and the public at large. The term is not unrelated to a similar purpose in scenery in a stage set. Within a short period of time, the appearance of the building can convey a broad range of values. In the case of a dramatic production, an audience uses the scenery to key into both the given historic period and emotional atmosphere even before the characters arrive on stage. Once they do arrive on stage, their activities are supported by effective scenery. If there are famous alumni, students get a buzz from walking in their footprints, in a sense performing on the same stage.

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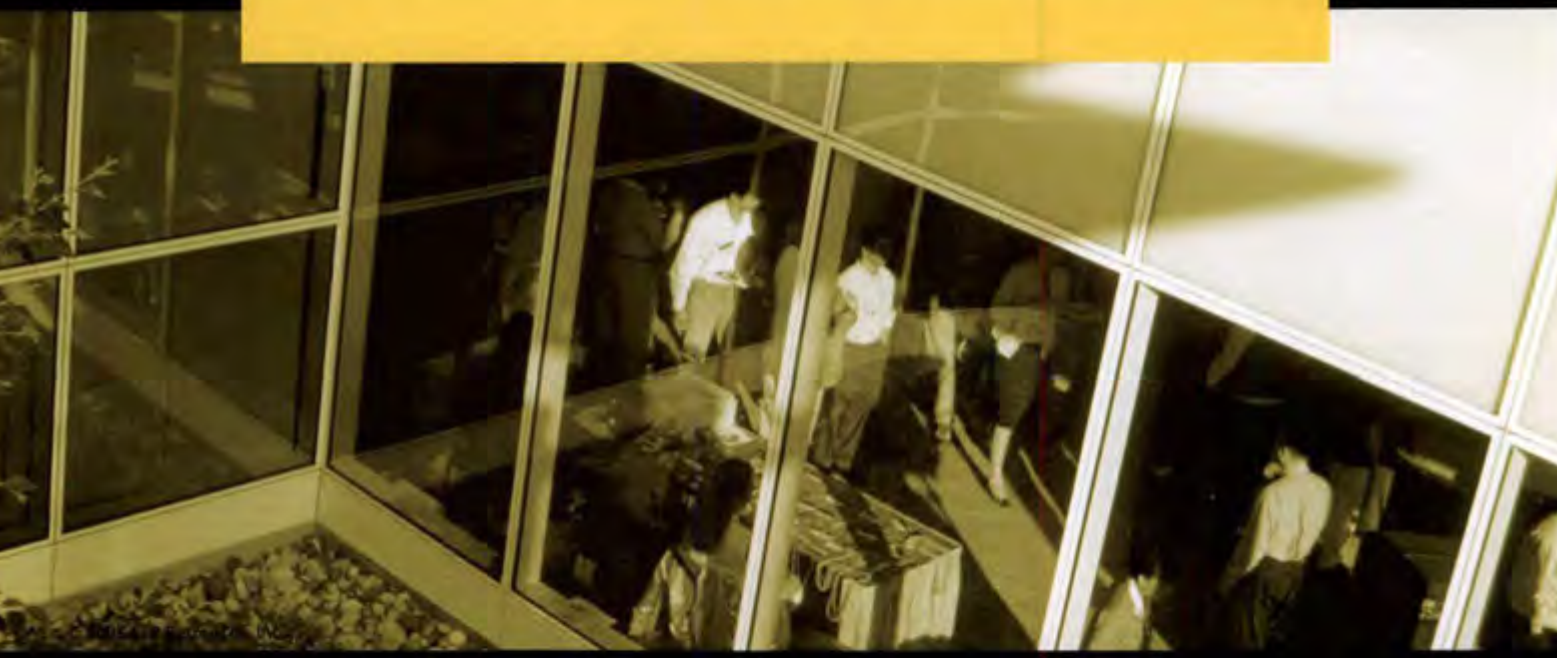

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Rethinking Community College Space Planning to Accommodate Workforce Development

by Anton Germishuizen and Haydar Hassan

Businesses, government agencies, healthcare institutions, and nonprofit organizations are increasingly turning to community colleges to teach the skills that workers need for today's technology-driven professions such as electrician, medical/lab technician, mechanic, and computer technician. Meeting the needs of vocational students, which are fundamentally different from those of a community college's traditional students, requires facilities managers to rethink space planning, expansion, classroom, and amenity design.

The graying of the Baby Boom generation and the need for lifelong learning has made workforce development an important and growing market niche for community colleges. The United States is facing a critical long-term shortage of skilled workers that transcends the ups and downs of the economy. The average skilled construction worker is 49 years old; the average plumber, in their early 50s; the average machine tool operator, 57.

***Anton Germishuizen (anton.germishuizen@burthill.com) and Haydar Hassan (haydar.hassan@burthill.com) are architects with the national architecture firm Burt Hill Kosar Rittelmann Associates, Pittsburgh, Pennsylvania. This is their first article for* Facilities Manager.**

Meanwhile, American society is sending more students to four-year colleges than there are jobs for people with baccalaureate degrees. Seventy percent of jobs require skills not related to college study.

To fill those jobs community colleges are partnering with local employers, government agencies, redevelopment corporations, and nonprofit organizations to offer professional training, either as part of their standard for-credit curricula or in customized non-credit programs.

The growth in workforce development programs does, however, create planning challenges for community college facility managers, such as:

- Students in workforce development programs need different kinds of amenities and services than do those in traditional academic programs.
- The diversity of kinds of job training programs requires flexible, multipurpose facilities that can be quickly reconfigured as needs change.
- The growing percentage of immigrants in vocational programs may influence the design of individual buildings and of the entire campus.

The traditional student spends more hours per day on campus and needs a wider variety of services and amenities than do students taking vocational and job skills training.

Amenities and Services

The traditional student spends more hours per day on campus and needs a wider variety of services and amenities than do students taking vocational and job skills training. Full-time students have a greater sense of connectedness to the campus and to the student body. They need comfortable, well-equipped facilities in which to study or socialize between classes. They tend to gravitate toward the student center and patronize neighborhood businesses.

Vocational students, by contrast, may be on campus for only a one-day seminar, a few hours a week for a semester or eight weeks a year. They are more often married and older than the average full-time student and struggling to balance skills development with work and family life. They need a much narrower range of services, but easier access to them, in or adjacent to the training area.

Full-time students want a variety of affordable, freshly prepared food available all the time. Students coming for evening classes may bring food with them or gravitate toward vending machines or fast food outlets for a quick snack before class or during a break. Vending machines with beverages, soups, and sandwiches may suffice for a small facility. A larger body of evening students may justify investing in staffed food and beverage carts or a grill for preparing hot sandwiches. Whatever the choice, facilities managers will need to provide a bright, cheerful space with tables and chairs where students can sit and eat or just relax for a few minutes before class.

By contrast, all-day corporate training programs require fairly elaborate lunch facilities, including a warming and preparation area for food catered from off campus and space for a buffet. If the training facilities are heavily used, it may be cost effective to set up a full kitchen to prepare food on site. The community college can usually recover these costs in the cost of its seminars.

Some other examples:

- Full-time students with children may need all-day daycare; workforce development students may need a couple of hours of babysitting in the evening or on a weekend. Surveys of student needs can help facilities managers gauge demand for these services and determine if a childcare center in the workforce training facility is justifiable.
- Workforce development students are less likely than full-time students to have a computer at home and can benefit from a business center where they can prepare a resume, search for jobs and conduct research on the Internet.
- Workforce development programs typically include a higher proportion of students with disabilities than is found in the full-time student body. While educational institutions routinely comply with the Americans with Disabilities Act, facilities managers may need to inspect buildings designated for workforce development programs for easy-to-overlook details such as counter heights and the tension on door closers.

Space Planning and Design

The diversity in workforce development programs and the pace at which those programs are growing can often catch facilities managers off guard. A facilities manager may not be aware how much the programs have grown until the point

when they can no longer fit into random empty slots in the schedule, but require dedicated spaces.

While colleges can accommodate many workforce development courses in conventional classrooms, the diversity of programs requires a certain percentage of classrooms with increased space flexibility. Unlike academic curricula, based on the lecture-recitation-examination model, vocational training programs focus on acquiring or enhancing practical skills, often using specific kinds of equipment. These programs and the kinds of facilities they require can vary widely from year to year. A facilities manager may have to equip rooms with workspace simulators for an electrician program one semester, nurse's aide training the next, and computer repair the next.

This diversity of uses requires rooms that can be quickly reconfigured, on a weekly, monthly, and semester basis, yet meet the power supply, water, heat, ventilation, and lighting requirements for each course. Voice and data cabling, wired and wireless classrooms, and multimedia and audiovisual instruction equipment must all be well planned and seamlessly integrated into the learning environment. The college may also have to install or expand Webcasting studios to accommodate distance learning programs or lease and equip facilities off campus.

Traditional curricula, corporate training, vocational instruction, and "welfare to work" programs have different space needs and create different consumer expectations of the institution.

Modular spaces with mechanical, electrical, and plumbing systems and movable partitions allow for flexibility and ease of reconfiguration. Raised floors and overhead utility troughs make it possible to efficiently modify engineering services for the next training program.

In many instances, flexibility comes at a cost. The facilities manager's challenges are to understand how much flexibility is required and to provide the maximum flexibility in the minimum area feasible.

Facilities managers must therefore take the time to thoroughly understand the nature of workforce development programs offered and the demographics of prospective students to determine what kind of spaces can best support them. This approach takes more time during the planning stage, but it usually results in lower costs, preventing the tendency to overdesign.

Traditional curricula, corporate training, vocational instruction, and "welfare to work" programs have different space needs and create different consumer expectations of the institution. At times these may be mutually exclusive, and facilities managers need to take this incompatibility into consideration in planning.

Photo: Dennis Mitchell of the Mesa Legend/Mesa Community College

President Bush Stumps for Workforce Development

THE DAY AFTER THE STATE OF THE UNION ADDRESS IN JANUARY, President Bush visited two community colleges to discuss further his proposal for more funding for workforce development and job training within community colleges. The excerpts below are from his speech at Owens Community College in Toledo, Ohio, and the photo above is reprinted with permission from his visit to Mesa Community College in Mesa, Arizona.

"We'd better have a system which is able to be flexible enough to help people who want to find a job, to match willing worker with willing employer... There's no better place to do that than the community college system. The community college system is flexible. The community college system is local."

"It's important for us to encourage scientists and mathematicians to teach part-time, and to make sure our teachers are properly trained in math and the sciences, so they can impart knowledge that is necessary for kids to have a bright future."

"Most of the [funding for community colleges] is local money, but the federal government can help, particularly when it comes to job training."

For example, dependence on part-time and adjunct instructors, compounded by the ebb and flow of grant funding and workplace demands, influences space planning and design for workforce development facilities. While full-time faculty requires dedicated permanent offices, workforce development instructors need meeting space and workspace a few hours a day only when their classes are offered. Facilities managers can cost-effectively accommodate a fairly large number of these instructors in a relatively small "office hotel" arrangement.

Cultural Assimilation

In light of the projected domestic labor supply, immigrants will play a growing role in the U.S. workforce. In 1999 and 2000, immigrants accounted for 80 percent of young males entering the workforce for the first time. A recent government study showed that one in five workers in the Baltimore-Washington metropolitan area were born outside the United States. Immigrants enrolled in workforce development programs—increasingly from Africa, Southeast Asia, the Middle East, and the Indian subcontinent—may not be fully literate in English or functional in American culture. This situation raises a number of issues that facilities managers must consider in planning facilities.

- *Wayfinding:* Colleges may have to rethink campus signage and directional cues that are obvious to a native, but incomprehensible to a newcomer. Multilingual signage may be appropriate.
- *Facility location:* Facilities managers must be sensitive to the cultural or religious taboos of prospective students when they allocate spaces.
- *Language:* Colleges may have to build additional language labs to accommodate English as Second Language students.
- *Cultural, community, and workplace assimilation:* There is a growing demand for language courses for employees of businesses and public service providers who deal with immigrants, such as Spanish for healthcare, law enforcement, and service industries.

Workforce development programs offer community colleges opportunities and challenges that require facilities managers to look at building planning and design in new ways. Taking the time to thoroughly understand the distinct features of these programs will help facilities managers provide the kinds of learning environments the programs require at the lowest cost and improve the community college's revenues from workforce development.

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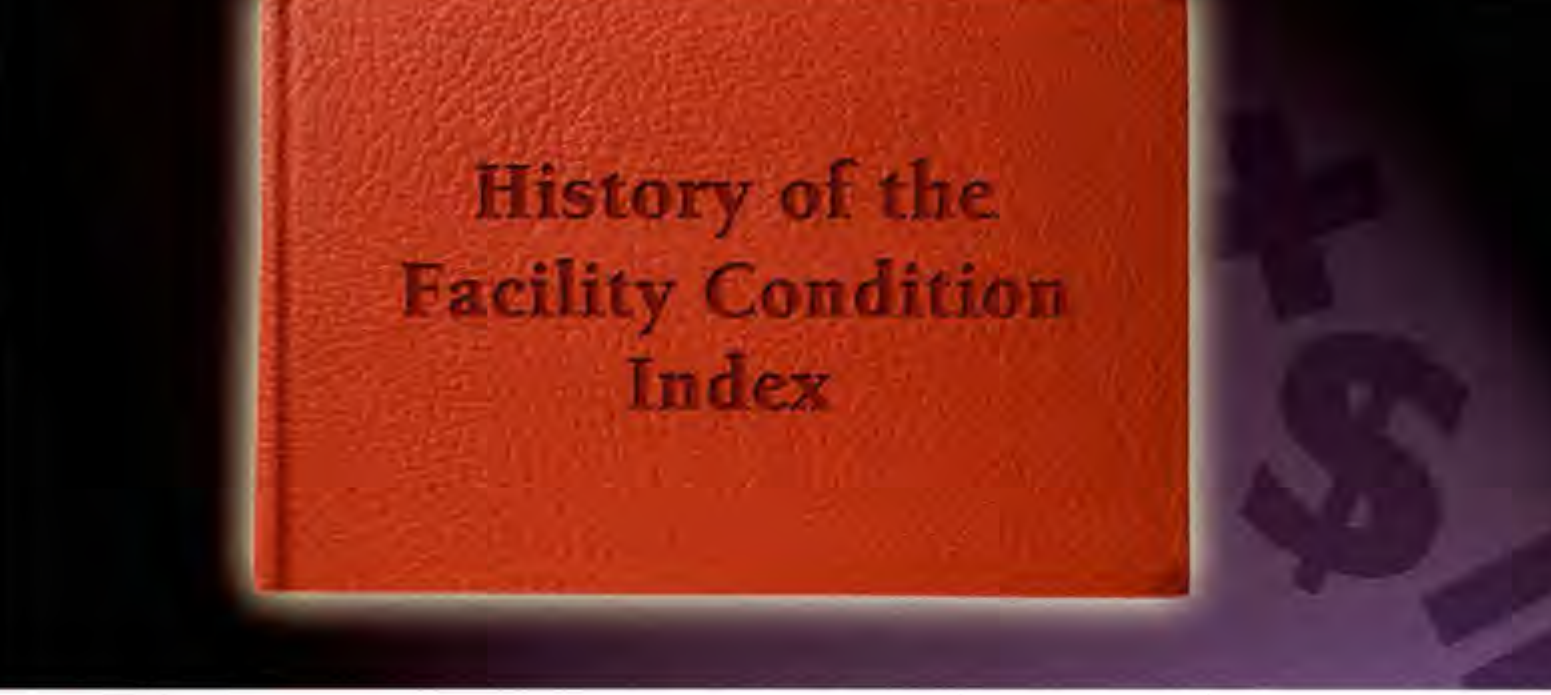

by Robert G. Brooks, P.E.

Over the last several years the subject of the history of the Facility Condition Index (FCI) has been raised in several settings. It was brought up again at APPA's July 2003 Educational Facilities Leadership Forum in Nashville, Tennessee, and I was asked to prepare a brief article, as I have a somewhat unique perspective on the topic.

The FCI history roughly parallels the establishment of Applied Management Engineering, Inc. (AME), and our first publication, *Managing the Facilities Portfolio* (MFP), published in 1991 with NACUBO.

AME was formed in 1980, and by the late 1980s, we had completed a significant amount of assessment work—at least 50 million square feet. We were becoming recognized for that specialty, because at that time the national need and service level for condition assessment firms that we know today did not exist.

At the same time, we were approached by a research group working on a project that was sponsored by the National Association of College and University Business Officers (NACUBO). They were specifically working on a follow-up phase to a 1989 book called *Financial Planning Guidelines for Facility Renewal and Adaption*, published by the Society for College and University Planning (SCUP) as a joint project of SCUP, NACUBO, and APPA. The group had arrived at the subject of facility condition assessments and reached a dead-end. Through a series of chance encounters, they met us and heard about our condition assessment work. The group asked for a written description of our assessment work, and any related data analysis we had prepared.

We responded with a series of white papers and project writeups, and NACUBO asked for more. We responded several times, and finally NACUBO announced that it had enough material for a book; the result was *Managing the Facilities Portfolio*.

As the material was being prepared, it became clear that there were many "authors" and "contributors," demonstrating a true collaborative effort. Technically, 11 people from AME's staff and five from the higher education community either authored or contributed to the book. As it was being written, edited, and revised by this group, several concepts were considered; some were used and some were discarded. We were looking for correlation, significance, validation, and application techniques from our assessment work.

It eventually made sense to introduce the Facility Condition Index concept and term, to the NACUBO effort. The FCI at that point was strictly an informal tool that the AME staff developed—sound in basis and easy to follow, simply the effect of a ratio of two numbers based on a lot of experience. The NACUBO group had never heard of the FCI concept, so when that effort became a book, an official benchmark was

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Bob Brooks is a founding member and past president of Applied Management Engineering, Inc., Virginia Beach, Virginia. He currently serves as AME's business development manager and can be reached at bob@ameinc.biz. AME is a founding contributor to APPA's Center for Facilities Research (CFaR). ***This article is adapted from a more detailed history first published in the online newsletter by* Campus Facilities News*; the author wishes to acknowledge CFN's editor Kathleen Sampson for her interest and assistance.***

$$FCI = \frac{\text{Cost of maintenance and repair deficiencies}}{\text{Current replacement value of the facility(s)}}$$

born. It is safe to say that no one in that group could have anticipated the impact that the FCI has had in the intervening years.

Still, what about the FCI itself? First, for the record, the FCI is a mathematical formula and is shown at the top of this page.

When *Managing the Facilities Portfolio* was completed, we searched for a published reference or source for the FCI and found none. Not being able to cite any previous official published source for the basis of the FCI, it was defined for the first time in *Managing the Facilities Portfolio*.

I've seen the FCI referenced in numerous books, articles, GAO (Government Accounting Office) documents, and special reports. It is often reported as a "common industry benchmark/standard," or it is cited from *Managing the Facilities Portfolio* or from a book that references *Managing*.

When *Managing the Facilities Portfolio* was completed, the original NACUBO group's role had diminished considerably. Therefore, while authorship is credited to AME and Sean Rush (from the NACUBO research group), the copyright is jointly held between AME and NACUBO.

Was AME the first organization to use it in a higher education setting? I've never seen it referenced, used, or defined prior to our work of 1982–90, but I continue to research old books, articles, etc., for some earlier application.

What I am now fairly sure of is that we were the first to define it in a copyrighted publication that was disseminated to a broad general audience of executives with facilities responsibility.

One thing is certain: the "Good, Fair, Poor," ranges originated from AME's exclusive work on assessments. The AME president in the 1980s, the late John Reavis, should be credit-

ed for establishing the initial condition assessment skills at AME that provided the foundation for those ranges. Without our assessment work to build on these ratings, the index would still be just an index. To be of value, it must be tied to quality. Specifically, without the data to define quality ranges as benchmarks, the entire index concept is somewhat academic.

I have had numerous inquires about the original FCI ratings, with some people telling me they are too high, others think they are too low. Some think they are too narrowly defined, and others think they are too broadly defined. Thankfully, no one ever asked me to define good, fair, and poor! But the passing of time has shown that they are basically okay and are a terrific starting point from which to measure success. Which, incidentally, is all that the ratings were ever meant to be in the first place.

As an analogy, you can determine relative deficiencies by taking a look at 1,000 cars and asking a group of professional mechanics to judge their good, fair, or poor condition. They could then prepare a list of repair requirements and costs for each of the subject cars. Next, a comparison between repair costs and retail value would be made. A $1,000 repair for a ten-year-old, $2,000 Chevy is definitely different than a $1,000 repair for a two-year-old, $30,000 BMW. By listing the cars in ascending order of the comparison costs (your condition 'index'), along with the condition judgment assessments, a trend should emerge with natural 'breakpoints.' If you look at 1,000 vehicles, you can also sort them out by age, make, use, etc., compare your condition judgments, and you have your condition rating ranges.

Today the original FCI is used across the broad spectrum of institutional facilities: federal and state governments, higher ed, and K–12. It is both praised and criticized within this larger institutional community—praised in its strength and simplicity, and criticized for being too narrow. But the criticisms miss the point of the FCI concept. The FCI was designed to be a quantitative method of uniformly comparing and monitoring groups of comparable facilities over time, and to merely assist the facilities professional in the ongoing decision process of facilities management.

At AME, we have moved beyond the simple Facility Condition Index of 1990-91 and have led the expansion of new "FCIs" and related development of numerous other concepts. We hope that these capabilities and concepts will become part of APPA's new Center for Facilities Research (CFaR) effort.

A NEW AND IMPROVED FCI

by David A. Cain, Ph.D. and Maggie Kinnaman

"If today's man of science could find the time and courage to reflect calmly and critically about his plight and the tasks before him, and he would then act accordingly, then the possibilities for reasonable and satisfactory solutions would be considerably improved."
—Albert Einstein, in a message to the Italian Society and Science, 1950

Listen closely; do you hear the subtle winds of change? The facilities profession has long embraced the metric of the Facility Condition Index, better known as the FCI. The FCI is considered an international metric with universal acceptance from facilities professional from all disciplines, K–12, higher education, private sector, and the federal government. The Facility Condition Index is a comparative indicator of the relative condition of facilities. The FCI is expressed as a ratio of the cost of remedying maintenance deficiencies to the current replacement value (see figure 1).

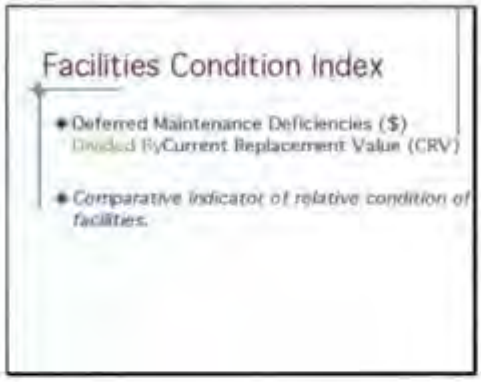
The FCI provides the facilities professional with one method of measurement to determine the relative condition of a single building, a group of buildings, or the entire portfolio or collection of buildings. The ratio is expressed as a percentage and provides a corresponding rule of thumb for annual reinvestment rates to prevent further accumulation of deferred maintenance deficiencies.

The FCI can also be used to indicate the readiness of a facility to support its mission. The FCI truly represents a moment in time, a digital instant of all the deferred maintenance activities necessary to keep an inventory of facilities in good working order.

It does not, however, represent all of the collective needs to keep existing facilities modern and relevant in an environment of changing standards and missions. The Needs Index represents more of a motion video of all the facility condition elements that need to be accounted for. A picture may say a thousands words, but a video image provides a million words of the total vision.

David Cain is assistant vice president for capital assets and services at Northern Arizona University, Flagstaff, Arizona; he is an assistant director of APPA's Center for Facilities Research (CFaR) and can be reached at david.cain@nau.edu. Maggie Kinnaman is a past APPA President and is director of business administration for facilities management at the University of Maryland, Baltimore. She is a CFaR codirector and can be reached at mkinnama@fm.umaryland.edu.

Figure 1. Facilities Condition Index



Recent studies and research suggest that there is a direct relationship between the condition of facilities and its ability to serve a changing mission. Much of this study has been summarized by the National Research Council (NRC) in a 1998 publication titled *Stewardship of Federal Facilities: A Proactive Strategy for Managing the Nation's Public Assets*. More broadly, the results reflect a new construct for analyzing and budgeting facilities sustainability, restoration, and modernization.

If we were a faculty member or a researcher, the concerns that would keep us awake at night would probably revolve around the issue of competitiveness.

- How do I attract the best and brightest student?
- How do I successfully apply for the state or federal grant?
- How will my institution be successful in attracting the most sought-after researcher?

Our ability to compete in these arenas is directly affected by the quality of the facilities that we have at our disposal.

- Are they flexible?
- Do they incorporate the latest technology?
- Do they support current state-of-the-art classroom?
- Is there a sufficient mix of lecture hall and breakout rooms?
- Are the laboratories designed in such a way that they foster collaboration across interdisciplinary functions?
- Are the spaces in compliance with current code issues such as ADA requirements (the Americans with Disabilities Act) and indoor air quality?
- Basically, is the quality of the facilities in alignment with the vision and mission for excellence?

In order for us to determine how important the FCI is as a quality indicator, we must determine the factors that contribute to the quality of educational facilities. One of the primary concepts that must be embraced is that a building without a purpose is much like a body without a spirit. Quality of space only has meaning within a particular context and for us that context is higher education. In the words of the authors of *Planning and Managing the Campus Facilities Portfolio* (published in 2003 by APPA and NACUBO), in order to define quality, a number of questions must be answered.

- First is the sufficiency question: Do you have enough space to support the mission?
- Next is the suitability question: Do you have the type of space available to support the function?
- Finally is the condition question: Is the condition of the space such that it will support the function intended?

Of the three questions posed above, the first two must be answered with input from the customer—basically, the students, faculty, and researchers. It is only the third question, which addresses the facility condition, that is the domain of the facilities manager.

When the quality of space is being determined, has the facilities focus been on only a portion of the need? If so, perhaps this is part of the reason that we've not been able to

In today's competitive world, our colleges, universities, and schools are focused on the provision of quality education, research, and community service. Students, faculty, and researchers fully understand that in order to succeed in their areas of focus, they must ensure (and be assured) that their space is adequate and suitable for the purpose intended.

make a great deal of headway in reducing the deferred maintenance backlog affecting our institutions' capital assets. We have single handedly carried the deferred maintenance banner, when in reality our message addressed only a part of the needs equation.

In today's competitive world, our colleges, universities, and schools are focused on the provision of quality education, research, and community service. Students, faculty, and researchers fully understand that in order to succeed in their areas of focus, they must ensure (and be assured) that their space is adequate and suitable for the purpose intended. The condition question, which often addresses building infrastructure, is left up to the facilities managers. Maybe, by embracing a new paradigm that attempts to look at the total need—sufficiency, suitability and condition—we can paint a more comprehensive picture of how the building and infrastructure enhance an institution's ability to meet its mission and vision. Additionally, by telling the entire story of building and infrastructure need, we will certainly gain the support of the students, faculty, and researchers and perhaps be more effective in gaining the attention of legislators and funding authorities.

We must resist the temptation to describe our need for capital assets in a fragmented fashion that mimics the way in which our public institutions provide funding. The law of capital assets is true regardless of funding source. Capital assets are either procured or constructed, they must be maintained, and they must be renewed within predictable cycles and at the end of their useful life the asset must be disposed of. These capital asset needs are realities.

When the realities are ignored due to either a lack of priority or a lack of funding, the ability of the asset to meet the intended purpose is diminished. In our institutions of higher education where we strive to create a sense of place, investment in our capital assets is essential in ensuring our continued ability to sell the higher education place beyond the educational experience.

So how do we identify the complete picture, the complete need, and at the same time gain the attention of the faculty members and researchers? Facilities professionals need to be talking in terms

Continued on page 48

Comparing the Needs Index to the FCI

TABLES 1 AND 2 illustrate the comparative difference in the FCI and the Needs Index. In the Strategic Assessment Model, APPA sponsored a national survey (1998–99 & 2000) conducted by an independent outside research firm. Data was collected from 165 institutions representing K–12, community colleges, and higher education. We strongly feel that the results can be applied to the private sector as well as the federal government, because no matter what the agency, or facility type, a direct correlation exists among all facilities.

- Twenty-six percent (26%) of the responses came from private institutions, while
- Seventy-four percent (74%) came from public institutions.

The data was also sorted by Carnegie classification expressed in the statements below which show that there is good representation from the comprehensive universities offering baccalaureate or higher degrees.

- One percent (1%) was drawn from the K–12 category.
- Three percent (3%) from specialized institutions.
- Five percent (5%) from associate of arts institutions.
- Eleven percent (11%) from doctoral institutions.
- Thirteen percent (13%) from baccalaureate institutions.
- Thirty-seven percent (37%) from master's degree granting institutions.

The data was also grouped by enrollment range, which concluded that there was a fairly equal distribution among four enrollment categories.

- Less than 5,000 (29%)
- 5,000 to 12,000 (24%)
- 12,000 to 20,000 (19%)
- 20,000 or more (28%)

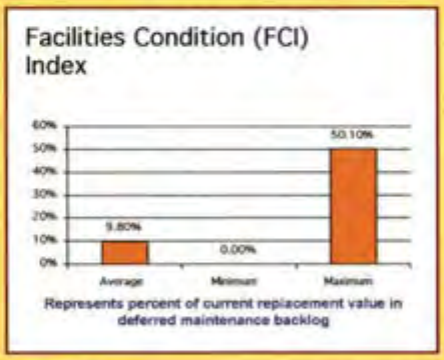
After analyzing the comparative data from the FCI and Needs Index in figures 1 and 2, one can interpret the results to conclude that:

1. There is a 2.5 times difference between the averages of the FCI and the Needs Index.
2. The FCI is a less powerful metric because its only uses a single element of deferred maintenance.
3. The Needs Index is more robust and significant due to the combined effects of comprehensive elements.

National Average for Facilities Condition Index

The descriptive statistics (data) illustrates that on the average approximately ten percent (9.8%) of the current replacement value (CRV) represents the deferred maintenance backlog value.

Table 1



Conclusions

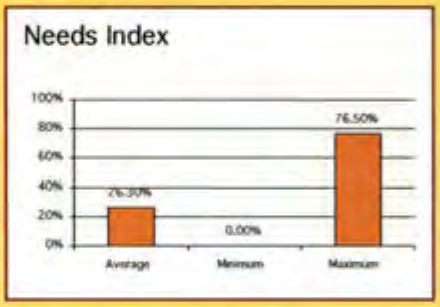
- The FCI depicts only deferred maintenance issues related to CRV.
- The FCI represents a point (snapshot) on a continuum.
- The FCI is useful in showing a portion of the total need for facility condition.

FCI equation

National average of the Needs Index

The descriptive statistics (data) illustrates that on the average approximately twenty six percent (26.38%) of the current replacement value (CRV) represents the full funding model to take care of Deferred maintenance + Capital Renewal + Renovation/moderation + Compliance Regulations.

Table 2



Conclusions

- A linear relationship exists between the FCI and the Needs Index.
- There is positive correlation between the FCI and the Needs Index.
- The national average of the Needs Index is approximately 2.5 times greater than the FCI.
- The Needs Index represents a fully funded cost model perspective.

Needs Index equation

Continued from page 46

of what is your *entire* need, not merely singing the one-note "Deferred Maintenance Backlog Blues."

We don't know about you, but we're tired of being ignored. The mark of insanity is doing the same thing over and over while expecting a different result. This is the concern with the deferred-maintenance-only theory. It represents a too-narrow perspective of the entire story.

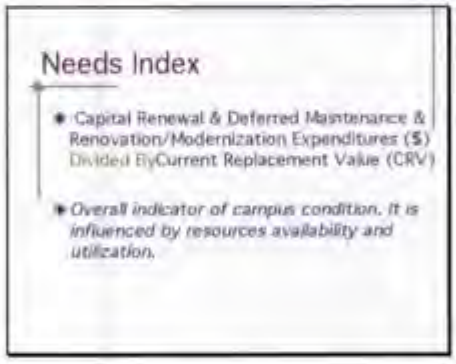
Alternatives and Options

What are the options and alternatives to using the FCI?

This obviously depends on what you need to accomplish in terms of assessing the condition of your facilities. Using the FCI is a first logical step; however, there is no single tool within the facilities profession that provides comprehensive data for fully funded solutions. We recommend that the Needs Index is worthy of consideration. The Needs Index was first introduced to the facilities management profession in APPA's 1999 publication of *The Strategic Assessment Model*, second edition.

The Needs Index represents a holistic performance indicator expressed as a percentage of the entire needs of the facility. The Needs Index illustrates the overall condition assessment. The index is influenced by resource and utilization and is a ratio of needed deferred maintenance + capital renewal + renovation/moderation + compliance regulations, divided by the current replacement value. (see figure 2).

Figure 2. Needs Index



The Needs Index is a relatively new construct for the profession. It combines the elements of sustainment and recapitalization to provide a holistic metric creating a business case for fully funded facilities. The concept of sustainment includes regularly scheduled maintenance as well as anticipated repairs or replacement of components that occur periodically over an expected service life of the facilities.

Recapitalization includes keeping the existing facilities modern and relevant in an environment of changing needs such as code compliance issues and capital renewal needs. It should be noted that the Needs Index does not include any need that is not yet part of an institution's physical structure. In other words, the capital planning process is not part of the performance indicator, because the future needs of the institution are not yet part of the institution's current replacement value.

Summary and Conclusion

The facilities management professional must continue to develop and utilize new tools that provide "value free" information while providing credible data to develop its financial case. The overall goal for the facilities profession is to illustrate an objective, supportive, and comprehensive analysis so the right decisions can be made regarding facilities.

We believe that our responsibility as facilities professionals is one of stewardship. We need to honor and take care of the building(s) and infrastructure, while at the same time ensuring that our facilities truly add value to the vision and mission of the institution. We cannot perform this important role alone, but must engage the support of the entire community in order to properly communicate to campus decision makers the strategic role that facilities and infrastructure play. This is especially true if our goal is to achieve world-class recognition for our institution and its facilities.

The facilities management profession needs to take the lead by embracing a more comprehensive approach and helping to disseminate a fully funded model so that the entire facilities and infrastructure story can be told in a holistic fashion. The facilities professional should recognize that a two-step method of tracking metrics (FCI and Needs Index) is a more uniform evaluation that better supports the fully funded model for condition assessment of facilities. We need to drive the theme that facilities play a significant strategic role in the institution's mission.

The challenge is now for those in facilities management leadership positions to understand the value in a fully funded model that represents a sustainment and recapitalization effect. The fully funded model is applying the concepts of total cost of ownership and life cycle cost principles. In this article we suggest that both the FCI and Needs Index need to be fully applied before presenting the final condition assessment.

In closing, we feel that the FCI alone, in its single state, does not provide the most comprehensive data that provides the whole story. The FCI should be used in conjunction with the Needs Index to paint that picture.

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Integrated Facilities Assessment:

A POSITIVE APPROACH TO MAKING THE BUSINESS CASE FOR FACILITY NEEDS

by Paul Tankel and Ronald P. Gilmore

The dean needs a new academic building; the residence halls need renovation and, to continue to attract quality students, you need improved student life and athletic facilities; the research programs are expanding; and additional patient care space and equipment modernization must be funded in the medical center. And all of the above must be supported with improved information management technology.

Sound familiar?

Most of us operate in a world of scarce resources. Over the past few years the stock market has suppressed endowment growth, gifts and pledges have slowed, and government support has diminished. At the same time competition for available (and scarce) resources has been increasing. The natural result is that one of the age-old challenges faced by educational facilities officers—"How do you make the case for spending on your facilities in a positive and realistic way?"—has intensified significantly.

At the University of Rochester, that question is answered with a communications tool we call the Integrated Facilities Assessment (IFA). This is a single document that provides a holistic, long-term view of the entire physical plant, while also identifying the specific and immediate needs of each program. This document goes far beyond deferred maintenance; it quantifies all of the major infrastructure categories that comprise an overall facility need. The IFA identifies the demands for such issues as deferred maintenance, life safety, code compliance, accessibility, hazardous material, information technology, and security, along with the integration of current and future program requirements.

Complex times demand more sophisticated analyses of demands for facilities improvements. Having seen considerable growth over the past 50 years, our university is a good example of the current environment for most institutions. Approximately 68 percent of the university's 10.4-million gross square feet has been constructed since1950. Governance of the university is significantly decentralized, with the Facilities Group remaining as one of the few service organizations that span our academic campus, medical center, music school, and art gallery. We continue to be challenged to maintain our facilities, while keeping pace with the infrastructure needs of new programs.

Funding for major maintenance and capital renewal often competes for the same funds used to construct space for new programs, and, of course, a "new building" boom can produce an increased backlog of deferred maintenance elsewhere. To compound this situation we, like everyone, are experiencing higher utility costs, increased government regulation, and the need to accommodate the ever changing and ever increasing needs for information technology. There is also pressure to compromise quality during design throughout the "value engineering" process. Additionally, some of the innovative materials and construction techniques, which were hailed as improvements during the 1960s and 1970s, are now showing signs of systems failure.

The Integrated Facility Assessment spreadsheet on page 52 has proved its worth in these times. What most profoundly differentiates the IFA from the traditional facilities matrixes is the expansion of the "program" category. Within the realm of program requirements the range of need varies. From office renovations to the revitalization of the student activities center or a major renovation of a science and technology facility, the changing "program vision" impacts the usage and efficiency of a facility as well as how its space is managed. By reviewing facilities in this way the split between facilities and the mission of the institution is removed and the "total need" of the university can be reviewed in order to develop a more comprehensive long-range plan.

The natural result is that one of the age-old challenges faced by educational facilities officers—"How do you make the case for spending on your facilities in a positive and realistic way?"—has intensified significantly.

In 1995, the university contracted for an assessment of its academic campus and medical center. We then established a deferred maintenance program to manage our facility information and assist with capital planning. Two years ago, we decided that in order to adequately evaluate our physical plant and incorporate program needs we needed to expand the scope of our assessment program. At the same time, the university architect was beginning to work with the College of Arts, Sciences, and Engineering—the principal division on our academic campus—to develop a list of needs that would shape its impending capital campaign. The assessment program was then placed under the direction of the university architect, and the IFA was first implemented.

Since then, the IFA has evolved into a series of Excel spreadsheets that begins with a summary of each campus' facilities as the primary display, providing a snapshot view of one's entire facility and program requirements on a single matrix. A second, and sometimes third layer of worksheets are linked to the summary matrix so that in-depth facility infrastructure and systems information that exists in multiple databases may be reviewed. Conducting facility assessments

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The University of Rochester Integrated Facility Assessment

ESTIMATED NEW CONSTRUCTION COST FOR REPLACEMENT (CRV)
FACILITY'S PRIMARY FUNCTION (USAGE)
TRADITIONAL DEFERRED MAINTENANCE VALUE (TOTAL CR/DM)
HARDWARE, INFRASTRUCTURE AND SOFTWARE COSTS TO SUPPORT IT TYPICALLY OUTSIDE FACILITIES (ITS)
ISSUES TO MAKE AN EXISTING FACILITY ACCESSIBLE (ADA)
ESTIMATE FOR FULL ABATEMENT (ASBESTOS)
LAB DECOMMISSIONING AND HAZ MAT ABATEMENT (HAZ MAT)
INCLUSIVE OF FIRE ALARM & FIRE SUPPRESSION SYSTEM UPGRADES (LIFE SAFETY)
EXTERIOR CARD ACCESS (SECURITY)
OFTEN A CHANGE OF USE OR SIGNIFICANT UPGRADE TO THE EXISTING USE (PROGRAM)
YEARS 1-5 IN THE MID-RANGE PLAN (PHASE I)
YEARS 6-15 IN THE LONG RANGE PLAN (PHASE II)

FACILITY NAME	GROSS SF	ASSIGNABLE SF	LAB SPACE SF	YEAR BUILT	CRV	USAGE	# OF FLOORS	INSP DATE	TOTAL CR/DM	ITS	ADA	ASBESTOS	HAZ MAT	LIFE SAFETY	SECURITY	PROGRAM	CONTINGENCY	IDENTIFIED TOTAL NEED	PHASE I TOTAL COST	PHASE II TOTAL COST
BURTON HALL	33,403	27,250	0	1930		DORMITORY	4	1/26/2002												
COMPUTER STUDIES	121,264	99,124	7,909	1987		ACADEMIC	4	6/18/1998												
DANFORTH DINING	34,305	25,437	0	1955		AUXILIARY	2	10/16/1995												
DRAMA HOUSE	10,221	8,094	0	1929		DORMITORY	4	4/19/2002												
FAUVER STADIUM	81,935	42,965	0	1930		GYMNASIUM	4	6/18/1997												
FREDERICK DOUGLASS BUILDING	71,596	47,195	0	1955		AUXILIARY	4	6/18/1998												
GAVETT HALL	139,831	89,572	13,880	1930		LABORATORY	5	1/28/2000												
GOERGEN SPORTS COMPLEX	218,449	152,210	0	1930		GYMNASIUM	4	9/7/2001												
GILBERT HALL	61,386	54,161	0	1955		DORMITORY	4	4/17/2002												
HOPEMAN HALL	97,338	68,137	13,751	1962		LABORATORY	6	7/12/1998												
HOYT HALL	16,903	9,665	0	1962		ACADEMIC	3	12/8/1997												
HUTCHISON	129,789	94,098	34,408	1972		LABORATORY	6	6/17/1999												
HYLAN	39,821	22,644	559	1971		ACADEMIC	11	9/16/1999												
INTERFAITH CHAPEL	11,465	10,575	0	1980		CHAPEL	3	6/26/1998												
LATTIMORE HALL	71,345	41,864	582	1930		ACADEMIC	6	8/1/2000												
LOVEJOY	42,422	31,833	0	1954		DORMITORY	4	4/17/2002												
MEES OBSERVATORY	343	343	0	1965		ACADEMIC	2	9/25/2000												
MOREY HALL	48,897	29,275	0	1930		ACADEMIC	6	12/3/1998												
MUNRO	18,077	13,670	0	1989		DORMITORY	3	4/4/2002												
RUSH RHEES LIBRARY	370,187	241,996	0	1930		LIBRARY	4	7/27/1998												
SAGE ARTS CENTER	44,759	34,524	0	1962		ACADEMIC	3	6/1/1999												
SLATER HALL	24,997	21,158	0	1989		DORMITORY	5	4/4/2002												
STRONG AUDITORIUM	59,058	48,534	0	1929		AUDITORIUM	3	8/8/1998												
SUSAN B. ANTHONY	179,821	112,553	0	1957		DORMITORY	7	2/27/2002												
TODD UNION	29,856	19,476	0	1929		AUXILIARY	3	7/17/1998												
WILSON COMMONS	95,000	67,193	0	1976		AUXILIARY	4	11/2/2000												
TOTAL	2,383,677	1,511,234	132,199	NA		NA	NA	NA												

that incorporate inspections, consultant studies, and interaction with the operations staff refreshes the information. We are currently developing an in-house software package to further consolidate facility data so that the IFA can become an even more effective tool.

The key to making this document truly useful is frequent and detailed communication between the senior facilities staff and program administrators, which results in a joint understanding of how the facilities and program requirements are linked and why the issues must be addressed simultaneously. This may appear relatively simple, straightforward, and easy to understand, yet it is quite a challenge to execute.

In the case of our College, the university architect met this challenge through a series of meetings with department chairs to review immediate and short-term (five-year) needs, followed by discussion with the College's dean to envision total requirements for the College and to extend the planning horizon to the 10- to 15-year range. This dialogue supported the development of a strategic planning document that in turn provided information to assist in structuring the College's capital campaign.

The Integrated Facility Assessment has been adaptable for use on all of our diverse campuses and continues to be a useful operational and strategic communications tool for facilities managers and administrators at all levels. This document is increasingly used to assess and prioritize facilities in light of program requirements, prioritize deferred maintenance, identify project options, and develop short-range and long-range capital budgets.

Additionally, the IFA is being used to provide background information in support of capital campaigns, structure for program growth discussions, and more widespread recognition that facilities needs are an integral part of strategic planning.

Finally, the true success has been our ability to maintain, or in some cases increase, funding for building infrastructure needs shown in the context of supporting program growth.

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Leadership and Management—You Gotta Have Both

by James E. Christenson

The best executive is the one who has enough sense to pick good people to do what he wants done, and self-restraint enough to keep from meddling with them while they do it.
—Theodore Roosevelt

Leaders are in demand as never before. When we think of history's outstanding leaders, what names do you think of? Take a pause and list the first dozen that come to mind. Now, who stands out as the world's greatest manager? Interesting, isn't it, that we can easily make a long list of the first, but are hard-pressed to come up with one name for the second.

Distinctions

Those of us in the facilities profession have probably heard more about management than leadership until recently. What are the differences between orientation and actions? The lists below are from Stephen Covey, Burt Nanus, and others:

MANAGER	LEADER
Present oriented	Future-oriented, eye on the horizon
Problem solver	Problem finder
Paradigm maintainer	Paradigm changer
Program	Programmer
Expense	Investment
Techniques	Principles
Asks how?/when?	Asks what?/why?
Transaction	Transformation
Deploys/controls people	Serves, empowers people
Facts	Motivation
Left brain	Right brain
Scarcity mentality	Abundance mentality
Continuous improvement	Re-engineering
Efficiency (=doing things right)	Effectiveness (=doing the right things)

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Leadership

If these are the respective characteristics, what does it take to be a *great* leader? I suggest these as starters:

- *A person of principle:* The leader's values are aligned with universal "true north" principles, as Stephen Covey calls them.
- *Integrity:* The leader "walks the talk." It was once said about Mahatma Gandhi that "what he thinks, what he feels, what he says, and what he does are all the same." That is total integrity.
- *Competence:* Sufficient skill and ability to lead the organization.
- *Trustworthiness:* A leader's integrity and competence are prerequisites for trustworthiness. No one will trust a person who does not walk the talk or who has not demonstrated basic abilities and skills related to the leadership role.
- *Honesty:* Speaks and lives uncompromising truth. Does not touch dishonest money.
- *A comprehensive understanding of purpose or mission:* A leader must know why the organization exists, what value it is expected to add to the enterprise or to society.
- *Passion about the importance of the mission:* One who doesn't exude enthusiasm for the organization's mission cannot be its leader. That person needs to find a different type of organization to lead.
- *Vision:* That is, where exactly do we want the organization to be at a specified time? The leader visualizes not what is, but what might be. Vision is the most important characteristic distinguishing great leaders from good leaders.
- *Ability to meaningfully communicate the mission, vision, and their importance to every person in the organization:* We often hear that poor communications is the problem in organizations. Each person in the organization responds in different degrees to different types of communications. So, to get the message across, many types of communications are necessary. The ultimate objective is an organization where the vision and the values are shared by every person. Then everyone can be a leader. And everyone can make their own decisions affecting their work life and the services they provide.
- *Decision maker:* The leader should make only a few basic decisions. In a well-run organization, decision making takes place at the level where the best information exists, preferably on the front line.
- *Ability to influence others to grow, to act, and to become self-directed:* Larry Dobbs says "The only inheritance that a man will leave that has eternal value is his influence."
- *Comfortable with—even enthusiastic about—change:* If change were not required, leaders would not be necessary. Leaders exist to change the paradigms of the organization and the paradigms of the people in it. Beyond initiating change, it is nearly as important that the leader be skillful in leading others

through the *transitions* that make the change successful.

Management

I think we all realize that no person is exclusively a leader or a manager. As different as the tasks may be, and even though one requires right-brain activity and the other heavily depends on the left brain, many people somehow manage to perform in both realms. This is especially true for those of you in small schools, where out of necessity, you must be both leaders and managers. In fact, at very small institutions, you may also be the supervisor. In our private lives, we are also both leaders and managers. If you remember Covey's seven habits, number two (Begin with the end in mind) is a leadership habit and number three (Put first things first) is a management habit. Both habits are essential in getting the right things done. So we can't let either side of the brain atrophy. Let's look at what makes a competent manager:

- Sets goals to get to the leader's vision
- Establishes milestones to be sure progress is being made in getting to the goals
- Establishes key performance measures tied to the goals
- Creates processes for tracking, reporting on, and taking follow-up action on performance indicators
- Organizes and adjusts the organizational structure from time to time to ensure accountability for goals and tasks
- Supports the use of standard work management systems and invites continuous improvements to such systems
- Develops flow charts to streamline work processes
- Benchmarks against outstanding organizations
- Evaluates new technology to determine potential payback
- Decentralizes budget authority and accountability
- Supports and fine-tunes orientation and skills training
- Monitors and seeks reductions in lost time, including that due to accidents

As you can see, these are no trivial tasks. Once the direction is set, these management tasks make the vision attainable. An organization with a great leader and no one with management skills resembles a well-programmed interstellar rocket with no fuel. An organization with no leader, but excellent managers resembles a completely fueled rocket with remarkably efficient engines, but no guidance system. The best leaders know that without excellent managers their special abilities will be wasted. The organization will go nowhere. Both skills are required.

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Mold Control

Why has there been a sudden upsurge during the last few years in reports about buildings contaminated with mold and research linking negative health effects of people in these buildings to mold contamination?

The cause of the microbiological problems from mold today can be blamed on economics. The increased amount of insulation used in homes and various other buildings save money on heating and cooling of a facility or home. But the environment that is created by eliminating the flow of fresh air promotes the growth of bacteria and fungi. Most of our dwellings today are built with paper products, which hold moisture and grow mold.

Mold is a term used to describe a category of fungi, which is a large group of unique living organisms, that is neither plant nor animal, but rather a kingdom unto itself. Although all molds are fungi, all fungi are not molds. Mold is a type of fungi, found both indoors and outdoors, that produces spores that migrate through the air. These spores are smaller than the width of a human hair. When spores land in the right environment they grow rapidly. Moldy smells from damp materials indicate fungi are present. As the spores grow they actually fight their competition for space and survival.

Health effects and symptoms vary from mild to severe depending on the individual and the exposure levels. Many fungi such as stachybotrus chartarum, aspergillus, penicillium, fusarium, memnoniella and trichoderma can produce harmful potent mycotoxins. There are thousands of possible mold allergens that can trigger allergic reactions, asthma and other respiratory complaints, irritation to the eyes, throat and skin infections, fatigue, cough and flu-like symptoms. Individuals who suspect their persistent health problems are related to mold exposure should have their physician refer them to a practitioner who is trained in occupational and/or environmental medicine and who is knowledgeable about these types of exposures. However, mold spores do not negatively affect everyone, and typically a person's health improves after the exposure to mold is eliminated.

Costly building damage will occur if mold is not removed with speed and expertise. Porous materials such as ceiling tiles, carpeting, upholstered furniture and wallboard that have sustained extensive microbial growth usually have to be removed. Mold growth is abated from non-porous surfaces by vacuuming with a high efficiency particulate air filter vacuum and washing with a solution of biocide and detergent. Other, often unnoticed, reservoirs become breeding grounds for mold and must be addressed. It is important that humidity levels be controlled in workplaces and residences to help avoid mold growth.

Potential liability from workers compensation claims and other lawsuits has increased against landlords, municipalities and employers. Claims similar to those arising from the asbestos and lead paint health hazards are surfacing and some insurance companies have excluded mold damage from their general liability insurance policies. This exclusion leaves builders, contractors and building owners without coverage.

A certified industrial hygiene firm that has certified trained hygienists in mold remediation should be consulted when looking for a solution to mold related problems. Air sampling for fungi should not be part of a routine assessment, because air tests are prone to produce false negative results. Bulk or surface samples may be collected to identify specific fungal contaminants. A laboratory specializing in mycology should be consulted for specific sampling. Decisions about the appropriate remediation strategies will usually be made on the basis of a visual inspection.

A professional environmental contractor should be chosen to do mold remediation. The contractor should have the following qualifications, and resources:

- Experience with similar projects that involve containment and demolition.
- Licensed as an environmental contractor.
- Environmental general liability insurance and bonding.
- On-staff certified safety professional and/or certified industrial hygienist.
- Employees trained in respiratory and personal protection.
- Provision of a customized plan of action.

When is "Run-to-Failure" Appropriate?

by Matt Adams, P.E.

For most of us in this industry, the holy grail of maintenance is the transition from reactive to planned maintenance. This short statement of purpose incorporates what thousands of our peers are preoccupied with every day. The achievement of this goal is now within reach of our maintenance departments. How they got there involves more specific scrutiny of maintenance assets. Clearly, the proactive maintenance of primary and critical systems is a part of any plan. However, what is the "floor" of the plan? That is to say, at what level of building system/component does it become practical to let it "run-to-failure?" A decision tree analysis of building systems provides a logical and practical cut-off point.

Regulatory and Code Compliance

Initially, the vast inventory of systems and sub-components contained in our institutional facilities seems daunting. There are thousands of assets and they all have a cost to install, a life cycle, a cost to maintain, and then, ultimately, a cost to replace. In order to implement or make the transition to planned preventive maintenance, this universe of assets must be characterized in more detail. In a step-by-step application of business rules a maintenance planner can gradually stratify the pool of assets in qualitative groups. The business rules are generated from the planning process and are best kept simple and easily defined. For example, a short and simple business rule test is whether maintenance of an asset is required by code. If NFPA code requires testing of a system, run-to-failure is not an option. On our campuses, we start with a list of thousands of assets. With each test of a business rule in sequence, the list becomes smaller and more meaningful.

Maintainability

The previous example of regulatory and code compliance is straightforward. Another business rule test is even simpler. Can the asset be maintained? Many building assets are not serviceable. Other items are not constructed to allow maintenance and these components are being utilized in construction in increasing numbers. These items are considered "throw-away" components. Finally, some components are not accessible to maintenance staff without great cost. These too may be disqualified for inclusion of the planned maintenance asset inventory.

Return on Maintenance Investment

The financial consideration of asset maintenance has multidimensional value. Consistent with the goal of creating a proactive or planned maintenance program, the return on the investment (ROI) of maintenance is an important consideration. This ROI is realized in two primary forms—reduced operating cost and reduction in unplanned maintenance.

Utility costs are one of the largest costs to any operating and maintenance budget. The systems that drive these budgets have a sliding demand curve that relates to the performance of the same system. Over time, improper maintenance of these systems will drive utility costs up in a cumulative manner. These increases present an easy justification for proper maintenance. Conversely, transition from reactive to planned suggests that assets that do not pass the previous business rule tests, and do not impact utility charges may be disqualified from the primary maintainable asset pool.

Matt Adams is president of The Adams Consulting Group, Atlanta, Georgia. He can be reached at matt@adams-grp.com.

Directly related to the goal of planning maintenance versus reacting to maintenance is reduction of unplanned maintenance (UPM). This is the primary contributor to maintenance programs that are out of control. In its final form, the UPM becomes so pervasive on a campus that virtually no planned maintenance takes place. Consistent with the goal of increased planned maintenance is maintenance of assets that can potentially drive up UPM demand. In other words, the business rule is a test of the ability of an asset to positively respond to planned maintenance. If maintenance does not significantly improve the asset life and reliability of a system, it may be disqualified form the list. The best way to make this determination is to review the work order records from recent years. In the absence of such records, interviews with each of the trades provide anecdotal evidence. The basic challenge is to apply limited maintenance resources where they will provide ROI in the form of reduced UPM and thus, increased planned maintenance capacity. Items that do not meet this test are run-to-failure.

Utility costs are one of the largest costs to any operating and maintenance budget. The systems that drive these budgets have a sliding demand curve that relates to the performance of the same system.

A sub-set of the UPM test is that of collateral damage. Cost avoidance is a very real ROI for maintenance. This business rule tests components for their impact on other systems. One of the best examples is weather tightness of the building envelope. It has been demonstrated that maintaining the systems that repel water from a building's interior provide real ROI by avoiding collateral damage. These systems include roofs, fenestration, etc. This business rule tests components for their impact on other systems. Systems whose failure does not directly affect the performance of other related systems would not pass this test.

Rationalization of the planned maintenance inventory focuses maintenance resources. With the realization that there is never enough money to do all maintenance, application of simple business rules to the asset inventory creates a prioritization process that is accountable and defensible. This rationalization ultimately validates the famous 80/20 rule. Some components will not make the cut and be allowed to run-to-failure.

The Bookshelf

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

This month brings reviews of two books that will be helpful for planners, analysts, and those concerned with efficiency. These books tackle difficult subjects but ones that it seems we always need help with—planning and energy. Sure, I've stretched the boundaries a little to bring the two together, but that's what makes this column so interesting to write and I hope interesting to read.

* * *

Connecting the Dots... the Essence of Planning, edited by Rod Rose, Ann Arbor, Michigan: Society for College and University Planning, 2003. 250 pages, softcover.

There is a wide variety of issues that affect higher education facilities—physical, spatial, academic, and financial issues to name just four. *Connecting the Dots ... the Essence of Planning*, edited by Rod Rose, looks at these four issues and others in a collection of articles that originally appeared in *Planning for Higher Education*, SCUP's quarterly journal.

I received SCUP's journal during the time the articles were first published. I don't know why but I recall reading only one of the articles then; this time I enjoyed reading almost every one. Not every article has a direct application to facility operations; for instance, the article on faculty productivity is interesting and well written but I don't think it relates heavily to facilities. On the other hand, reading the articles that are not directly related to facilities provides opportunities to look at our profession from a different perspective.

Articles of greater interest to facility managers in the book include: the entire section titled "Preserving the Campus as Place," an article on sustainability, and for the forward lookers, articles on organizational structures, strategic planning, performance indicators, and cost modeling.

As with many SCUP publications, these articles are somewhat scholarly. Many of them have terrific references. Although the book is a great resource, don't plan on using it as a quick reference. It should be read in preparation for a major planning effort since it will get you in the right frame of mind and broaden your horizons. For the planners in the audience, *Connect the Dots* is a must-have for your bookshelf. But you might want to get a colleague who's a member of SCUP to purchase it for you at 20 percent off.

* * *

Investment Grade Energy Audit: Making Smart Energy Choices, by Shirley Hansen and James W. Brown. Lilburn, Georgia: Fairmont Press, 2004. 194 pages, hardcover.

Energy audits were formally developed in the 1970s in response to the petroleum embargo imposed on western nations by Middle East oil-producing countries. The resultant methodology was designed to predict potential energy savings available when building systems were changed or modified to reduce energy consumption. Such audits treated the cost of changes and modifications as an investment, and projected when the value of these energy savings would offset this expenditure.

Energy audits were often used to prioritize renovation projects, based on the assumption that these audits reflected reality and were accurate predictors of future savings. Many of these early energy audits, unfortunately, proved to be inaccurate. In fact, many projects funded by the federal government, educational institutions, and third-party entrepreneurs failed to produce any substantial energy savings in spite of the apparent validity of the audits and the fact that they had been performed by competent designers. Since energy audits, if reliable, have been demonstrated to be an important and necessary tool for use by facilities managers, the need for more accuracy and dependability in these audits has become evident.

Investment Grade Energy Audit attempts to correct this problem. Dr. Shirley Hansen and James Brown have developed a book that systematizes much of the chaos surrounding one of the root causes of today's energy "problem." They consider the traditional energy audit as the starting

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Ted Weidner is president of Facility Asset Consulting, Amherst, Massachusetts. He can be reached at tweidner@charter.net.

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point for developing an investment grade audit that supports multi-year projects and provides quality investment guidelines based on forward looking risk assessment principles.

Unlike traditional audits, they stress *energy efficiency* not *energy conservation*. Dr. Hansen indicates that her early work for the federal government included developing guidelines for energy grants using her term Energy Conservation Measure (ECM); she wishes that she had used the term Energy Efficiency Measure (EEM) instead. Both authors indicate that the term conservation is too narrowly focused to incorporate human elements, risk avoidance, and forward thinking into an energy audit, while efficiency can involve all these concepts. They hope to promote audits that go beyond technical validity to become an art form resulting in predictive consistency, based on the auditors' ability to understand risks and the "people factor" in these projects.

The authors discuss many factors, based on their considerable experience and expertise in the field that energy auditors must face to be successful. Dr. Hansen has written extensively on performance contracting, and energy and indoor air quality factors concerning facilities. James Brown is a registered engineer who has spent years specializing in energy audits. Chapters included in this book cover the relationship between indoor air quality and an investment grade energy audit, financing and structuring energy contracts, risk assessment performance contracts, mitigating strategies to reduce risks, and energy master planning. Special emphasis is given to protocols developed recently regarding accurate measurement and verification (M&V) methodology in current use. Finally, appendices include more information on M&V options and a sample energy policy.

My only problem with this book, aside from the use of the term "chauffage," which is defined as the provision of supply-and-demand services by the same prime contractor, is the title. I would have reversed it to read *Make Smart Energy Choices: Investment Grade Energy Audits* to gain the attention of readers. Otherwise, this book is excellent and should be used by everyone facing energy choices.

Reviewed by
Dr. John M. Casey, P.E.
Director,
Engineering Department (Retired)
University of Georgia Physical Plant
Athens, Georgia

The look of a historic campus can be a real draw for a college student. The smell is another story. Yes, students today expect a lot from a school. They love your ivy covered walls, but the technology inside those walls factors into their decision, too. Technology that creates environments that are comfortable, well-ventilated and safe. Thing is, more and more administrators face a serious backlog of deferred maintenance that hinders efforts to attract the best and brightest. Johnson Controls can help. We have the experience and know-how to create the finest, most advanced environments for learning and living. And we have innovative financial solutions that make improvements and new facilities possible. Best of all, you end up with the kind of campus today's students have a real nose for. For details, call us at 1-888-214-0916.

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Technical Glass Products announces the availability of fire-rated glass doors that carry safety ratings for up to 90 minutes. Listed with Underwriters Laboratories and fabricated in the United States, the doors are available in sizes up to 48" x 96." The doors combine Fireframes® narrow profile steel framing with clear, wireless glazing such as FireLite Plus® or Pilkington Pyrostom™. As a result, the doors offer outstanding fire protection as well as high-impact safety ratings. For additional information, please call Technical Glass Products at 888-397-FIRE.

Avery Dennison Graphics Division North America has introduced MARKS-A-LOT® Whiteboard Dry Erase Film, a pressure sensitive film that is designed to refurbish or replace existing chalkboards and dry erase boards. This easily installed piece of film fits over an existing chalkboard or dry erase board and creates a new area to write and wipe messages. It lasts up to five years and eliminates chalk dust to create a mess-free environment. Request more information at the Avery Dennison Answer Line at 800-443-9380.

AERCO International, Inc. introduces a new low NOx (Nitrogen oxide) burner for use with its KC1000 high-efficiency, gas-fired boilers and water heaters. With the new low NOx burner, the KC1000 models produce >30 ppm of NOx corrected to 3 percent of excess air. AERCO can also retrofit the low NOx burner into already installed KC1000 Models. For more information, call AERCO International, Inc. at 800-526-0288 ext. 242.

American Seating presents Viva, the newest addition to their offering of fixed seating products. Viva is an economically priced, aesthetically pleasing alternative to bleacher and bench seating. With a contemporary appearance, Viva offers a contoured polypropylene seat and back with ergonomic lumbar support, welded steel support frames, gravity lift seat, and advanced assembly technology resulting in ease of installation and low maintenance. For additional details, call American Seating at 616-732-6600.

American Concrete Institute offers valuable "how-to" documents for five commonly used concrete repairs. Structural Crack Repair by Epoxy Injection, Crack Repair by Gravity Feed with Resin, Spall Repair by Low-Pressure Spraying, Surface Repair Using Form-and-Pour Techniques, and Surface Repair Using Form-and-Pump Techniques. Bulletins with descriptions, methods, equipment from ACI are now available. These documents can be found free of charge for a limited time on the American Concrete Institute's website at www.concrete.org.

The Gamewell Company announces its new Flex 400 Series of conventional panels. The new line of conventional panels offers solutions for any size building. All four panels in the Flex series can be easily configured for new installations, retrofits, or combination installations. The entire Flex series provides all the necessary features expected in a conventional fire alarm panel including compatibility with a wide range of two- and four-wire initiating devices as well as ease of installation and programming and the reliability required in a life safety system. For full details, call The Gamewell Company at 203-484-6167.

Coming Events

Coming Events

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

APPA Events - 2004

Jun 20-24—*The Leadership Academy.* Fort Lauderdale, FL.

Jul 25-27—*Educational Facilities Leadership Forum.* Washington, D.C.

Sep 12-16—*Institute for Facilities Management.* Montreal, Canada.

APPA Regional Meetings - 2004

Sep 18-21—*RMA Regional Meeting.* Jackson Hole, WY. Contact Mark Shively, 307-766-2537 or e-mail mshively@uwyo.edu.

Sep 22-25—*PCAPPA Regional Meeting.* San Diego, CA. Contact Scott Burns, 619-594-6001 or e-mail sburns@mail.sdsu.edu.

Sep 26-29—*ERAPPA Regional Meeting.* Syracuse, NY. Contact Robert Britton, 315-443-3529 or e-mail rkbritto@syr.edu.

Oct 8-13—*CAPPA Regional Meeting.* Kansas City, MO. Contact Darrel Meyer, 816-759-1061 or e-mail meyerda@ac.kcmetro.cc.mo.us.

Oct 28-Nov 2—*SRAPPA Regional Meeting.* New Orleans, LA. Contact Marion Bracy, 504-483-7507 or e-mail mbracy@xula.edu.

Oct 31-Nov 3—*MAPPA Regional Meeting.* Cleveland, OH. Contact James Cesen, 216-368-6537 or e-mail jac5@po.cwru.edu.

Other Events

April 14—*Developing a Strategic Process: The Lighthouse in the Storm.* Teleconference. Contact Bernie Castillo at 210-567-2700, castillob@uthscsa.edu.

April 15—*Windows and Daylighting.* Arlington, VA. Contact John Morrill at 703-228-4426, jmorrill@co.arlington.va.us.

April 18–21—*ARCHIBUS/FM Users' Conference.* Boston, MA. Contact leith calabrese-eck at 617-227-2508, leigh_calabreseeck@archibus.com.

April 19–23—*Lighting Design & Application.* Somerset, NJ. Contact Philips Lighting Company at 732-562-3600, www.lighting.philips.com/nam/ltc.

May 3–5—*Fundamentals of Lighting.* Somerset, NJ. Contact Philips Lighting Company at 732-562-3600, www.lighting.philips.com/nam/ltc.

May 11-14—*Energy Smart America 2004: Tools and Solutions for States and Communities.* Minneapolis, MN. Contact US Department of Energy at info@energysmartamerica.org.

May 12—*Performance Management/Performance Improvement.* Teleconference. Contact Bernie Castillo at 210-567-2700, castillob@uthscsa.edu.

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