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

SECURITY

ALSO IN THIS ISSUE:

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Global Partner in Learning

From the Editor

by Steve Glazner

According to our recent readership

survey, the typical reader of *Facilities Manager* is male (91.6 percent), 45 to 54 years old (50.6 percent), well educated (51.5 percent have done post-graduate study), and have been involved in facilities management for more than ten years (78.1 percent, nearly half of whom have worked in facilities management more than 20 years).

These are just some of the findings of the final report to APPA by an independent research firm commissioned to assess the value of *Facilities Manager* to our members and other readers.

The researchers took a stratified sampling of our member/reader types, for a total of 1,000 surveys, and the response rate was 38.7 percent. Congratulations to the following readers for winning the m125 Handheld Palm Pilots in our random drawing of survey respondents: Luis Campos, Albuquerque TVI Community College; Donald Drost Jr., Middlesex County College; and Wayne Holly, University of Illinois College of Medicine.

Four out of ten readers (42.3 percent) have director titles, while another 8.6 percent listed titles such as assistant or associate vice president or vice chancellor for facilities, senior vice president, dean, or executive director of facilities. The other half of our readers are managers, associate or assistant directors, supervisors, and specialists in various areas.

More than eight of ten (83.3 percent) survey respondents have read through *Facilities Manager* in at least three of the last four issues. The average time spent reading the last issue of the magazine was 31 minutes. Nearly 80 percent saved the issue

when finished reading it, placed it in a library or waiting room, or passed it along to a campus associate. Almost nine out of ten readers found that the technical level of *Facilities Manager* is appropriate and not too basic or advanced.

According to the survey report, the departments you read most regularly are APPA News, New Products, Facility Asset Management, Coming Events, and Executive Summary. You also stated that you wanted to see more coverage in the Facility Asset Management column, as well as in the Field Notes column. These findings are most helpful as we continually assess the content of the magazine and work to improve it.

Regarding the coverage of feature topics, more than half of our readers would like to see more coverage of best practices (62.5 percent), new technologies (58.5 percent), maintenance management (55.5 percent), and staffing guidelines (51.0 percent). Topics that you are not as interested in reading about in *Facilities Manager* are privatization/outsourcing, human resource issues, certification, organizational structure, and facilities financing/funding.

Finally, we had asked readers to rate *Facilities Manager* in comparison to other regularly read industry publications. These publications included such stalwarts as *Building Operating Management*, *American School & University*, *College Planning and Management*, and *Buildings*, among several others. We were pleased to see that 76.9 percent of you ranked *Facilities Manager* as the best or one of the top three professional publications. We thank all of you for your continued support of APPA and of *Facilities Manager*, and we look forward to serving you further as your association of choice. 📌

The Institute and Leadership Academy Continue on a Path of Success

The Education Department has recently returned from the January Institute for Facilities Management in Tampa, where 494 attendees joined them. The staff, represented by Andria Krug, Deirdre Bourke, Suzanne Healy, and Cotrenia Aytch, had the pleasure of welcoming 182 new students and watching 96 attendees graduate. Cotrenia also provided a wonderful display of APPA's publications and introduced APPA's newest release, *From Concept to Commissioning: Planning, Design, and Construction of Campus Facilities*, which was edited by Don Guckert, the

dean of the PD&C track at the Institute.

A special thanks goes to the entire Institute faculty. Year after year the number of participants grows, and we know that this is made possible by the quality of the program. This quality can only be achieved by the dedication and commitment that is shown by our faculty.

For those attendees who have graduated (please see the listing on page 29), we remind you that your next step is the Leadership Academy. Registration for this program is currently available at www.appa.org/education. The Leadership Academy is designed for individuals with a desire to lead. Leadership belongs to everyone regardless of the position in the orga-

nizational chart. In our changing environment, an organization's success depends on the entire staff's ability to embrace new roles, new ways of doing things, and new skills. Please join us June 9-13 in Scottsdale, Arizona for the Leadership Academy.

For those who are working toward graduation, mark your calendars. The September Institute will be held in Norfolk, Virginia, September 8-12. Registration will open online at www.appa.org/education on June 1. Join us for another great program in the Tidewater region, which is rich with Colonial History and beautiful beaches.

—Suzanne Healy

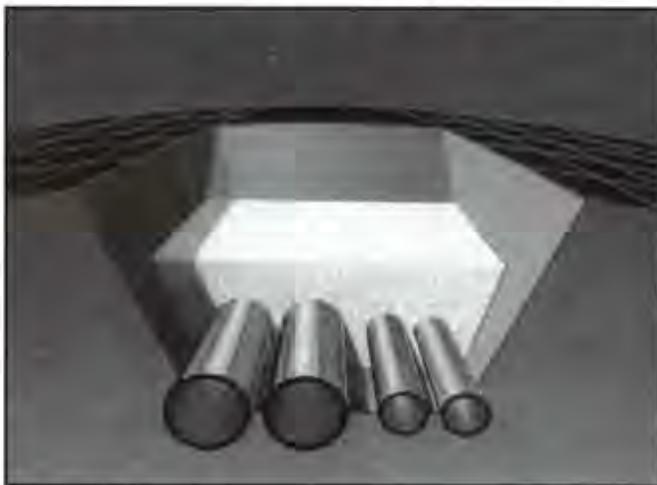
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APPA Provides Resume Service

In an effort to provide more interactive job-listing services, APPA has expanded Job Express, the on-line job placement website, to include the Resume Bank, as well. The Resume Bank is for both job seekers and employers. Those who are looking for positions in the facilities arena may post their resume on the Resume Bank, while employers can access the Resume Bank for six weeks at no additional charge when they post a listing on Job Express. For more information on these services and fees, please visit our website at www.appa.org/jobs.

Recession Could Equal Construction Boom

For public universities and colleges, the recession could mean more funds for construction projects on campuses around the country. While large budget cuts are looming for some states, other states are already seeing cuts in their budgets. As this trickles down to higher education, each state must make decisions on which education programs to fund or cut.

Construction projects seem the most likely candidates for funding, according to an article in the January 22, 2002 issue of *The Chronicle of Higher Education*. There are two major reasons for this possible trend. Enrollment is increasing, and education institutions are concerned that there will not be enough space for students to learn or live. The authors of the

Chronicle article write: "Institutions in some states worry that lawmakers will not be able to provide the money for faculty members, computer equipment, or buildings that colleges need to accommodate the influx." This creates a situation where states may be more likely to fund construction projects over scholarship programs.

The second major reason for funding construction projects is that they are more likely to stimulate a state's economy overall. Institutions in several states plan to use this angle to ensure state funds for their construction projects. The article also explains that this approach has worked in the past. A decade ago, "institutions were able to enlist lobbyists for architects, construction companies, and building-trades workers in the effort, and nearly every campus received funds for at least one major project." 🏢

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Meet Me at the Forum!

by E. Lander Medlin

Meeet me at the Forum?! That's right. APPA's new Educational Facilities Leadership Forum now formally replaces our Educational Conference and Annual Meeting. Why? Because it is no longer business as usual for any of us or for our organizations. In survey after survey, you asked for a stronger, more solidified annual meeting educational program. APPA's Educational Programs Committee and staff are poised to deliver on your request.

What you will experience at the Forum (to be held this July 21-23, 2002 in Phoenix, Arizona) can best be described as a "conference within a conference." In essence, by your focused attendance within one perspective or track, you will have the opportunity to create a small but strong cohort group. You will supplement those connections with the opportunity to meet additional colleagues and business partners at the larger group meal functions, hall of resources, and separately focused roundtable discussions. Hence, a conference within a conference!

By selecting one track or perspective you will enhance your ability to establish a more meaningful connection with a smaller group of cohorts or colleagues than you were ever able to do in the past format. Secondly, by sticking with one perspective or track throughout the three days (consisting of six, two-hour sessions each), you will get the full range of learning gained from the treatment of a particular perspective from a "big picture,

future trends" view through the "how-to, practical skills" application.

Further, the perspectives we have chosen as individual tracks align seamlessly with today's institutional strategic imperatives. The need to be more educated and informed in these imperatives or perspectives is essential in a society that is continuously moving toward a knowledge-based economy, an economy in which the application of knowledge replaces capital, raw materials, and labor as the means of production. The potential contribution that an individual can make in acquiring and applying knowledge for improving processes, products, and services is becoming more important than the physical labor itself.

Higher education facilities is a \$17 billion a year business—but it is also so much more. We serve a diverse and demanding clientele: the governing bodies that oversee the institution; the students who come to learn; the parents who entrust those students to our hands; nostalgic alumni who want to retain the campus of their youth; the community that surrounds and embraces our institution; and the thousands of faculty and staff members who carry out our institution's vision. But in order to serve, even exceed the expectations of this demanding clientele, we must be better professionals able to adapt, able to intellectually engage, able to effectively transform our organization's service delivery systems to meet the newly emerging demands of a knowledge-based society.

Facilities professionals must recognize their role as leaders to strategically plan and prepare their organization to meet the challenges of the future. New realities are heaping new challenges on top of old ones,

ratcheting up the uncertainty of the future. Leadership matters like never before—especially when it comes to keeping organizations, institutions, and their people moving forward. It is in this reality that we offer the Educational Facilities Leadership Forum.

How will you update your knowledge base? How will you hone your professional skills in a world that is increasingly technologically complex and demands sophisticated work skills? How will you renew your energies to take on these new realities and challenges? How will our organization improve its capacity to change and to grow in a world that now demands continuous learning, flexibility, and adaptation? How will you keep pace? The answer is in your attendance at APPA's new Educational Facilities Leadership Forum in July.

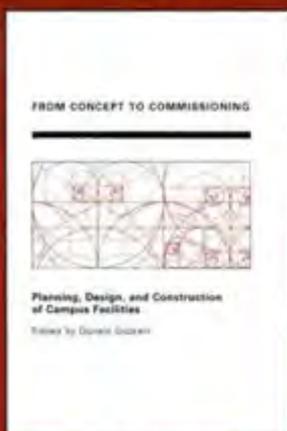
Let me reiterate. We have not just changed the name. We have not slightly modified the format. We have not just tweaked around the edges. We have *totally* transformed the educational experience into a tightly focused program taught by insightful experts and leaders both inside and outside the educational facilities field. The program is structured in six perspectives, each examining a different, critically important, strategic issue impacting the educational facilities organization. Each perspective is dissected through a framework of different insights to help participants understand the full breadth of issues, from a visionary trends-alert level through a hands-on, practical application level. A description of each of the six perspectives and the expected learning outcomes you should gain as a participant are further delineated in the preliminary program brochure that is "stitched in" the middle of this

Continued on page 44

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

FROM CONCEPT TO COMMISSIONING

Planning, Design, and Construction of Campus Facilities



From Concept to Commissioning is your guide to planning, design, and construction of any campus facility. Whether you are constructing a new sports complex or renovating a dormitory, let this book show you the way.

Based on articles previously published in *Facilities Manager* and written by professionals with years of architecture, engineering, building management, and

commissioning expertise, this book will help you understand the entire PD&C process, including campus architecture, master plans, budgets, project and construction management, and commissioning.

From Concept to Commissioning is edited by Don Guckert, the dean of the Planning, Design & Construction track at APPA's Institute for Facilities Management, and the director of planning, design, and construction at the University of Missouri-Columbia. His expertise in the field is folded into this carefully chosen and edited volume to give facilities professionals a broad blueprint of the process, potential problems, solutions, and ideas.

Excerpts from the Preface:

Planning, design, and construction activities represent the most high-profile work performed by facilities managers on a college campus. Unlike other facilities activities, such as maintenance, grounds, custodial services, and utilities, design and construction activities are usually outside the normal routine of operation. As such, they command more attention and interest from students, faculty, staff, alumni, and the public than any other activity within the facilities management organization.

The most successful campus projects are the ones that benefit from the scrutiny, review, and contributions of the interdisciplinary and diverse talents found in facilities management organizations. Members of our profession, regardless of the roles they perform for their campuses, are recognizing the opportunity they have to influence the outcome of a planned, designed, and constructed facility.



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Membership Matters

The Value of Your APPA Membership

by Dina Murray

APPA's new fiscal year is April 1, 2002 through March 31, 2003 and renewals for membership have already started streaming in at a formative pace. The APPA office processes the largest number of renewals during the first quarter, which is April 1 through June 30. While APPA encourages members to pay as soon as possible to avoid additional mailing fees, it also allows institutions with July fiscal years to have flexibility in making payment (if APPA is notified in writing). Most importantly, APPA wants to remain your association of choice in the coming year.

This year in particular, making the decision to choose APPA over other professional organizations or budgetary priorities will be an important choice for many members. Upon analysis, the overwhelming reason for members not renewing their APPA or regional membership is due to budgetary constraints. Overall economic indicators show that the United States is experiencing a recession. While the general tendency for many may be to spend finances even more conservatively, the focus according to analysts should be on the future. But as in the past, the recession will pass with certainty.

In order to stay competitive in your career, can you afford not to renew your institution's or company's mem-

bership? Many products and services that APPA offers are tangible such as, the *Facilities Manager* magazine and publications like *Benchmarking and Organizational Change or Operational Guidelines for Grounds Management*, but what about those benefits that are not tangible? Unfortunately, there is no measurement tool to measure the power of networking or the endorsement of professional credibility.

Whether you are a Business Partner, Institutional, or Affiliate member the power of networking, gaining trust, and solidifying a working relationship is invaluable in securing new business or forming a peer group. APPA gives its members many opportunities to establish this rapport on the trade show floor, educational sessions, and receptions at the Educational Facilities Leadership Forum, as well as at the Institute for Facilities Management and the Leadership Academy. The expanse of your contacts can be on the international, regional or chapter level.

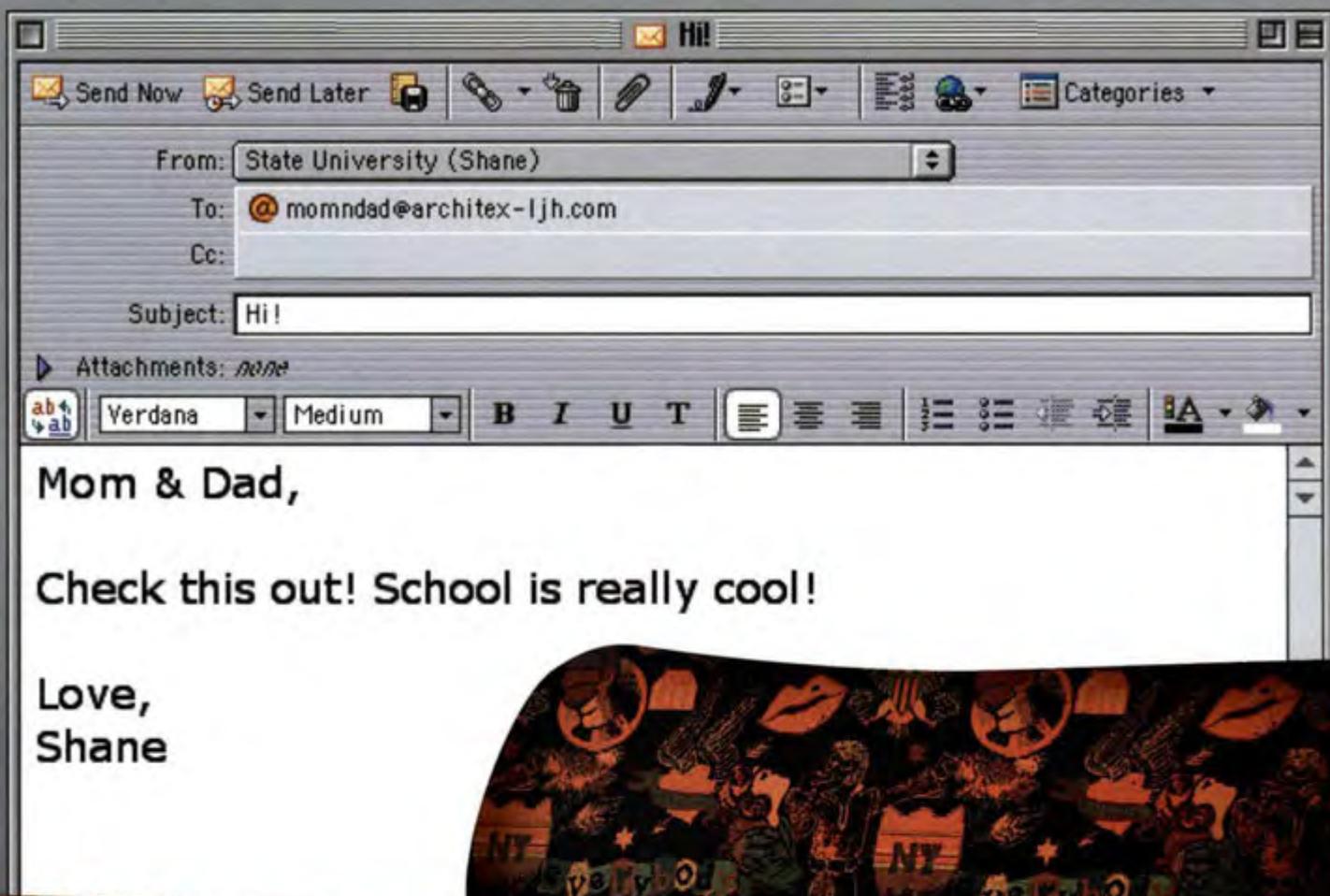
Especially for Business Partners, if you're looking for ROI (return on investment) APPA offers many opportunities to reach out to the educational facilities market. For examples of ways to highlight your company, product, or services at APPA's 2002 Educational Facilities Leadership Forum in Phoenix, Arizona, July 21-23, visit our website or call the Education Department. The Membership Directory and Resource Guide is an excellent tool to draw attention to your message with a 50-word listing on your company or product. If you need further budget justification in order to renew your Business Partner membership in APPA, ask for a copy of the brochure *Reinventing Today's Facilities for*

Tomorrow's Needs. This relevant material shows the purchasing power and influence of educational facilities managers. If you're not taking advantage of these membership benefits, call Member Services to get more mileage for your membership dollar.

Other membership services and benefits reflect current buzzwords of measurement and achievement including benchmarking, best practices, and performance matrices. APPA offers a means to accomplish these components through publications such as *The Strategic Assessment Model* and the *Comparative Costs and Staffing Report*. Another APPA service is the Facilities Management Evaluation Program, which helps institutions rate performance levels and in turn recommends areas of improvements for reflection, as well as strategies for continuous improvement. If you're not familiar with this program or the criteria for the evaluations visit the APPA website at www.appa.org/FMEP.

What other membership programs, benefits, and services are you not taking advantage of? Call Member Services for a benefits check-up. APPA wants to make sure you're getting the greatest value for your membership dollar. Warren Buffett, considered by many to be the greatest investor of all time, said "Price is what you pay. Value is what you get." When making the decision to renew your APPA membership our wish is that it is done without hesitation, knowing that you get value from your professional membership in APPA. By replying with your invoice and payment, you have made a statement that APPA continues to be your association of choice. 🏠

This article was written by our former director of member services, Dina Murray. For information on membership, please contact APPA's new director of member services, Randel Edwards. He can be reached at randel@appa.org.



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Construction Projects—Managing From “Outside The Frame”

by James E. Christenson

You can't see the big picture if you are inside the frame.

—Dennis Bortolus

For most people, especially those of us who were trained as civil engineers, having a part of the action in constructing a new building is fun. It always has been—especially if someone else does the less desirable parts of the work. The Luxor-Karnak temple complex of ancient Egypt, built by Herod the Great, Stonehenge, the Taj Mahal, Neuschwanstein, and any one of three castles built by “mad” King Ludwig II, are but a few examples of impressive construction. One might argue that the pharaohs and kings, at least, were most interested in leaving a legacy. But I think they also enjoyed seeing a structure grow out of the ground into a thing of beauty.

When I wander through such structures, I am impressed with the architectural and engineering skills demonstrated, but even more by the effort involved in managing such projects. According to construction records, 81,322 people worked on the temple complex at Luxor 3,400 years ago. The Karnak temple alone is large enough to hold both St. Peter's and St. Paul's cathedrals, with room left over. A forest of 134 stone columns, 15 feet in diameter and 75 feet high, supported a partial stone roof. One-piece obelisks or spires of stone 75 to 214 feet high, weighing up to 200 tons, were quarried 250 miles away, moved down the Nile during spring floods



with as many as 32 boats supporting a single stone, and erected to stand vertically for millennia. Ignoring the unsavory fact that many of the workers were slaves, the organizing of such a project had to be one of the more challenging jobs of the time.

We aren't lacking challenging projects today. The successful voyages to the moon and back required detailed planning and project management. Rebuilding the World Trade Center area appropriately is a challenge that awaits us. And, more to the point, most chief facilities officers become involved in constructing something for their institution. If that something is to serve the customer well and exceed the users' expectations, the project must be managed well.

What are the tasks of a construction project manager? I suggest these:

- Listen intently to the customer/user to be sure there is complete understanding of requirements.
- Offer alternative solutions that may meet the stated objectives with less cost or better results.
- Coordinate the translation of expressed or negotiated needs into facilities components.

- Assure adequate funding, and serve as the steward of the funds provided.
- Keep the project within the bounds of scope, money, and time.
- Facilitate the movement of the project from concept through all stages to full operation.

This is a tall order. Some institutions divide the work among several people and sometimes several organizations. While a few of the tasks listed can be done by others effectively, it is important that each customer have a project manager who is able to answer questions and get things done. So the project manager has to at least take part in the activities listed. There should be *one* person handling all the projects for each customer, although one project manager may have many customers. The customer should be able to depend on that one person to totally understand the culture and needs of the school or department and to be that customer's liaison and advocate to the service providers.

Unfortunately, project managers are only human, so a facilities organization needs to arrange for another project manager to back up the first during sickness, vacations, etc. But I want to emphasize what is so often ignored: customers do not like to deal with a different person for each phase of a project. It wastes their time, communications become flawed, and the final product is sometimes an unpleasant surprise to the users.

Listening

As most of us have been told, listening is one skill that is vital, yet is rarely taught. Since there is no room here to provide a course in listening skills, I'll only refer to Stephen R.

Jim Christenson is an APPA member emeritus and can be reached at jchrste@umich.edu.

Covey's recommended fifth habit in *The Seven Habits of Highly Effective People*: "Seek first to understand. ... Then to be understood." The order of action is especially important. Architects and engineers often exhibit a bad habit of assuming they know what the customer wants. The project manager must make sure there are no assumptions, that there is a full understanding of the *function* the facility is to perform and of all the expectations of the users. A standard list of detailed questions can help provide assurance that nothing critical is missed in developing the concept.

Listening to the dean or department head's staff is not enough. If the facility is to function, those who maintain and operate building systems must be heard. Although standard specifications for mechanical, electrical, and other systems can help prevent future problems, the maintenance folks must be given a chance to voice their needs and concerns on each project.

Suggesting Alternatives

The customer usually can describe the function the building is to perform. Unfortunately, customers are often much like the pharaohs. They go beyond describing the desired function and try to become directly involved in the design process. They may work out some of the floor plans and materials. So, after extracting all the functional requirements from the customer, the project manager's task is to tactfully lead the customer to believe that the architects and engineers can do an effective job of translating the requirements into efficient space and maintainable systems. Of course, that assurance can only be given if the institution has a history of selecting architects and engineers who seek to satisfy the customers' requirements more than to earn a design award from their professional organizations.

Translation

Design guidelines and standard specs are important. But they should

Listening to the dean or department head's staff is not enough. If the facility is to function, those who maintain and operate building systems must be heard.

not be allowed to stand in the way of creative thinking. There are always alternative ways to satisfy a need. The design fee negotiated should be high enough to permit the designers to explore the functional effectiveness and life cycle cost effectiveness of alternative space arrangements and building systems. If high quality professionals are selected, the funds spent on design will return the investment many times

over in functionality and energy savings.

Funding

Institutions usually get this backwards. Too early in the process, someone determines that the facility will cost \$10 million. The trustees or regents approve this figure before enough work is done to make a realistic cost estimate of the facility that is envisioned. Once that is done, the administration is loath to return to the governing body or, even worse, to the state legislature, to have the allocation changed. So a facility is built that fails to meet the expectations of the users and/or employs inexpensive, outdated systems that will forever burden the operating budget.

A better way is to persuade the governing body to permit the expenditure of a limited amount of money to per-

Continued on page 13

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Continued from page 11

form "preliminary engineering" or concept development before fixing the budget on any significant project. This frees the user and designer to decide the scope of the work that represents the best convergence between user needs and potential funding resources.

But that is only the beginning. As the steward of the funds provided, the project manager may need to represent the interests of the taxpayer; the donors; the architects, engineers and contractors; the users; and the university administration simultaneously throughout the project. The taxpayer and donor are interested in minimizing the cost. The architects, engineers, and contractors are interested in having real money available at the right time to pay for their services. The users want the best quality and greatest quantity they can get. The university administration has all of these objectives, as well as a responsibility to be sure contractual matters are properly handled and fraud prevented. So although computer programs make it relatively easy to stay on top of project balances, being a good project manager is not a task to be taken lightly.

Tracking and Facilitation

The project manager is held responsible for making sure the approved scope is not exceeded, that the budget stays in the black through to the end of the project, and that all dates are met. Exceeding the scope—"scope creep"—is the subtlest of these. The scope must be carefully and synergistically crafted before seeking approval and, once approved, enforced in the face of untimely customer requests for adding this or changing that.

The user wants the facility today. The legislature asks for a ten-year projection of needs and certainly doesn't want to see projects walked in at the last minute. The students don't want construction activities while they are on campus. The professors don't want

noise during finals. How can you reconcile these conflicting desires? You can't. But the project manager has the challenge of trying.

For four decades, PERT (program evaluation review technique) and CPM (construction program method) have been common tools used to manage projects. PERT and similar tracking techniques provide a mechanism for identifying critical decision points in advance so unhappy surprises are avoided. CPM is especially useful in identifying potential interferences, the timing of resource needs, and the optimum schedule. The value of such techniques has not disappeared. Whatever the method used, the project manager is expected to find ways to speed up funding, design, and construction.

Once a decision to go is made, impatience rules the day. The most difficult task for a project manager,

though, is to shepherd the project to successful completion in the absence of direct authority over any of the people doing the work. A project manager must be a master of communication and persuasion.

Finally, the project manager needs to coordinate commissioning, move-in, and evaluation. The users' impression of a wonderful facility can evaporate if the end of the show is not well orchestrated. And the next customer will benefit from analysis of the process and the feedback from users six months into their occupancy of the new facility.

Managing a project today is as much of a challenge as it was in ancient times. It requires daily attention to detail. Lapses in coordination cost time and money. With the burdens, though, comes the satisfaction of being in the unique position of knowing the details of the project while still understanding the big picture. ■



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Creating and Maintaining

SECURITY ON CAMPUS

by David W. Polensky

When defining security programs on college, university, and school campuses, many aspects of an effective security program must be blended into a service-oriented law enforcement function. Campus security programs are incorporated into a comprehensive safety program that addresses both the protection of students, faculty, and staff and the safeguarding of campus property and facilities from damage or loss. This article describes the various components of an effective campus security program.

Master Plan/Needs Assessment

A proven method for creating and maintaining security and safety within a campus environment is to develop a master plan or perform an assessment that addresses the law enforcement, security technology, and emergency planning needs of the campus community.

A campus protection master plan or needs assessment outlines strategic direction and vision, addresses operational, administrative programs, and quality performance issues, and focuses on short- and long-term protection management objectives. The planning process should include plans involving the campus police operations and effectiveness, security technology upgrades, and the development and maintenance of emergency plans and procedures.

To be effective, the protection plan should first examine existing campus security and safety conditions and analyze future needs based on a review of potential threats, vulnerabilities, and other risk variables. Second, the overall campus infrastructure should be evaluated as to its impact on security and safety policies, procedures, operations, systems,

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resources, and budgets. Third, the nature of any constraints or limitations should be identified. This may be related to unavailable data, code requirements, impact on day-to-day operations, building architectural design features, etc. Fourth, findings and recommendations should be presented in a priority format to include follow-up options; action plans, and related cost estimates for administration consideration. This portion of the plan content can be presented in a phased format over a three- to five-year period and can serve as a blueprint to support short- or long-term program management goals and objectives.

Law Enforcement Staffing

In most instances, campus protection programs fall under the jurisdiction of a police function that is responsible for providing full law enforcement services within the institution they serve. Oftentimes these personnel undergo the same training as local city and county police personnel and carry firearms. Campus police are sometimes supplemented with unarmed security officers or student patrol persons who are responsible for a school building or residence hall.

Campus police are charged with the responsibility of enforcing laws and campus regulations as they apply to all persons within the institution's jurisdiction. These enforcement duties include responding to criminal, fire, disaster, or civil incident. Detailed crime statistics must also be maintained in order to be in compliance with the Student Right-to-Know and Campus Security Act of 1990 and the Higher Education Technical Amendments of 1991 and 1998. This act and the supporting amendments provide for accessibility to accurate criminal statistics as they relate to a particular campus. *(More information on these acts*

and other campus safety information can be found at www.campusafety.org.)

In addition to law enforcement duties, campus police functions provide a variety of service and support programs. These programs include crime prevention awareness, drug and alcohol abuse awareness, sexual health programs, and sexual assault services. Also included are information publications and websites on crime deterrence and personal protection, victim witness services, escort services, call box response, and fire and emergency evacuation drills. These "campus police departments" function as full-service protection programs and must be geared toward the sensitive needs of an academic community.

Security Technology

With the service and law enforcement functions provided by the campus police department, security technology, alarm systems, access control systems, closed circuit television systems, locks, and key control generally are provided and maintained by campus facilities personnel. The basic building block of the campus security system is the campus key control function. Key control inventories should be maintained on key control software that allows for fast and easy tracking of all keys. Removable key blanks should be used on interior doors with high security locks having restricted key blanks used to control exterior doors. Campus police/security patrols should check building exterior door closers and locks to ensure proper operation.

Intrusion alarm systems should be provided to monitor all campus buildings. These alarm systems can be part of a larger campuswide access control/alarm monitoring system or by standard alarm panels with digital dialers that can call out to a central station alarm monitoring company or be monitored directly via central station software at the police station radio room. Buildings that are to be secured during non-use periods should have magnetic contact door position switches provided on all exterior doors and any doors leading to rooms that protect high value items such as computer rooms, laboratories, television/radio studios, etc. These systems should be supplemented with strategically placed interior motion sensors to detect persons who enter the building via windows or are stay-behinds after the building is secured.

Access Control

An electronic access control system provides many benefits over the older approach of physical locks and keys. Key-based systems generally rely on less organized tracking systems for determining who actually has possession of the key. Once keys become compromised, the physical cylinders on the locks must be changed. Electronic card access systems overcome these drawbacks. Current technology card access

"Shaping a security and safety protection response for education institutions requires a strategic plan and systems integration management approach. This includes addressing programming enhancement opportunities such as risk assessments, and application of current physical, operational, and technology based solutions."

—Bob Cizmadia,
CPP, director of corporate
security services at
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systems rely on a simple number encoded on the card. This number is tracked back to a central computer database to determine whether the user is authorized entry through the door at the day/time. This means that merely adjusting the computer file can change the card's access privileges. No changes need to be made to the lock.

The central database contains many different files, each with its own purpose in the system. The primary file is the cardholder file, containing information on the people who have

possession of the cards. Other files define the doors that are to be controlled and the various day/time periods during which access is to be granted. Properly maintaining these files requires the operator to be well trained in the relationships between the various files and in how to properly update the files. Improperly programmed files can have a serious effect on operation of the system.

The central computer does not directly unlock doors. It communicates with electrical panels located near the controlled door(s). These panels in turn communicate with the card reader, monitor the status of the door (open or closed), and control the electric locking device. The central computer communicates with these panels using a variety of communication protocols. Today the most common protocol used is RS-485, a standard computer communications format used in educational applications.

The central computer communicates with intelligent panels that are located within the building and/or at remote building locations. The intelligent panels contain a computer processing chip and memory. In this arrangement, the central computer identifies all cardholders having access to the doors controlled by a given local panel and downloads all of the information necessary to the local panel where it is stored. When a cardholder passes a card through the reader, the request goes to the local panel where the final decision to grant or deny access is made. When access is granted the transaction is processed, the door unlocked, and then the local panel sends an activity message to the central processor for reporting and long-term storage. This approach is called "distributed processing" and today is the most common form of architecture for access control systems.

File maintenance is critical to the proper operation of any access control system. Access control systems are generally viewed as a whole, and the public's perception of how good the system is depends upon how reliably the doors unlock when a card is presented. Systems are frequently blamed for failing to operate properly, when the real reason is an incorrect setting in one of the controlling files. For this reason, only well-trained individuals should be allowed to update the system.

Camera systems are typically monitored by the campus police department in radio room consoles.

How specific the access permissions are will determine how difficult the system will be to maintain. Most campus buildings are unlocked during normal daytime hours. Therefore, access cards are not needed for most class sessions. Access control is typically used only after hours at classroom facilities. Laboratories, residential halls, and other restricted buildings may employ controls all of the time.

The method of communication between the host processor and the local panels is an important consideration. Many systems must download the entire file of cardholders and all of the other control information when only a single cardholder record is changed at a given door. This means that instead of the process of updating a single cardholder at a door taking milliseconds, the download may involve thousands of records and require a significant amount of time.

Typical systems today use four wire copper circuits branching out from the central computer. The generally employed RS-485 protocol can be used on circuits up to 4,000 feet over this medium. Longer distances can be achieved using modems. Since it is dedicated to the single application, the lines are relatively secure from tampering and are not subject to data overloads and communication delays due to heavy use by other systems.

The second communications network associated with access control systems connects the host processor with additional control and monitoring terminals and with other computer systems to receive data used to automatically update the files. Current technology systems typically utilize common local area network (LAN) protocols such as Ethernet TCP/IP or Token Ring for this purpose.

A few access control system manufacturers today are unveiling local control panels which have built-in Ethernet boards to allow direct connection to LANs. Some of these systems encrypt the data being sent between the host and the local panels to prevent unauthorized users from viewing the data. The security industry has a bias against using this approach since it relies on only password protection to prevent unauthorized access and control of the local panel.

Most educational institutions issue faculty, staff, and student photograph identification cards that are also used in the processing of food service access or in stand-alone access control systems located at residence halls. In many cases this card is a smartcard technology card that is used for campus financial transactions. The cards are integrated into a

network debit system or can be manually loaded with monetary amounts for use in purchasing items at vending machines or stores. These cards can be easily integrated into access control systems via the use of smartcard readers linked to local intelligent panels.

Most all access control systems provide alarm-monitoring capabilities and run on a Windows NT platform and can provide multiple tasking operations. These systems work well on a network platform and can easily provide multiple workstation sites for system administration and alarm monitoring functions. The key to alarm monitoring is the reliability of the networks or communications lines to the host processor. If these communication paths are reliable on the 24-hour, seven days a week basis, then alarm monitoring via the access control system can be accomplished and will allow for flexibility in administration of this system.

Closed Circuit Television Systems

Closed circuit television systems (CCTV) are another resource used on campuses to monitor buildings and parking facilities. Current technology speed dome camera systems allow for up to 16x magnification of camera images and virtual 360° pan and 180° tilt fingertip control. These systems allow for visual surveillance of large open areas common in the campus setting. Speed dome cameras can be programmed to view pre-set locations triggered by alarm annunciation or perform a predetermined viewing tour of the campus. The camera technology available in speed domes and fixed position cameras can allow for viewing virtually in the dark.

Camera systems are typically monitored by the campus police department in radio room consoles. Multiple cameras systems are usually operated via the use of a computerized matrix switcher that allows for ease in camera selection and control of camera speed domes. Cameras are typically recorded via camera multiplexers to time lapse videotape recorders. Camera recordings have proven to be very useful in the investigation of incidents that occur on every campus. The current trend in CCTV recordings is toward the use of digital recorders that send camera images directly to computer hard drives for digital recording. Digital recorders can be supplemented with tape drives or RAD drives for unlimited recording capacities.

The key to digital recorder selection is to ensure that the system has enough hard drive space available to provide the

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level of desired camera resolution, the frames of recorded information per camera per minute, and the length of time being recorded such as 48 hours or as much as 30 days. Digital recorders also allow for network access to camera images in both real-time and recorded formats. This capability provides for flexibility in activity review and remote monitoring scenarios. Most digital recorders use motion detection to turn on and off camera recording to save hard drive space. Digital Systems in most instances eliminate tape changing and provide improved recorded images.

Emergency Planning

The events of September 11, 2001 make it clear that we cannot prepare for every conceivable contingency possible; however, planning and resource allocations are feasible. Campus emergency plans will require considerable effort and strong coordination between the administration, faculty, staff, and students alike. Your plans should address the "how to" of resuming normal operations as quickly as possible after disaster strikes.

The objective of the plan will be to first minimize the probability of a threat or emergency. The second is to mitigate the impact if the event occurs so that the resulting loss of operations is limited and damage minimized. The third objective is to recover from the emergency and resume normal operations as quickly as possible. Plans should address the following types of contingencies:

- Fire
- Medical emergency
- Bomb incident
- Severe weather
- Workplace violence/trauma
- Barricade/hostage
- Hazmat response
- Utility outage
- Telecommunications failure
- Major disaster/full campus evacuation

Emergency evacuation plans should be developed for each campus building and be included as sections of the campus police response plan or life safety plan. Evacuation procedures and directions to floor and building exits should be conspicuously posted in classrooms. It is imperative that plans be maintained and updated to reflect changes in personnel and procedures. Typical emergency plans address the following items:

- Purpose
- Priorities
- Planning assumptions
- Impact
- Operational tasks and procedures (pre-event, during-event, and post-event)
- Command/management
- External liaisons and coordination

- Public affairs/media relations
- Family victim support
- Medical services
- Emergency evacuation
- Emergency shut-down and restoration
- Resources and logistics
- Notifications and communications
- Records and reports
- Training and testing

It is important that a command and management control team be identified to administer plans and make decisions during the emergency. In a college or university setting this group would include representatives from the administration and deans from each of the schools within the university, operations personnel, public affairs, facility engineering, police, safety, legal, and representatives from each housing unit.

This team must designate a position to be responsible for coordinating external liaison with the local police and fire department, and the local city mayor's office. This position shall be charged with ensuring that coordination and response is accomplished via the appropriate city function. Most major cities, counties, and states have developed and maintain a crisis management plan that is administered and maintained by local government emergency agencies or the U.S. Federal Emergency Management Agency (FEMA). Your institution's anticipated plans and actions should be submitted to this group for review and coordination purposes. It is imperative that you know what services can be counted upon being provided by the local government in an emergency or disaster. Coordination with local hospitals' disaster management planning is an important aspect of a campus security plan; this typically is included in the local government contingency planning process.

Emergency planning must respond to new threats brought about by recent terrorist incidents, such as anthrax mailings. Plans must address mailroom procedures for handling and safeguarding mail as well as communicating awareness to the campus community. Mail should be screened by personnel trained in identifying suspicious mail and parcels. Precautions should be considered for isolating mail and providing separate ventilation and x-ray screening technology in the main campus mailrooms. Food service personnel should be directed to protect food deliveries and monitor serving lines to protect food from outside contamination. Institutions with technological research laboratories should consider increasing security and protection air intake vents that may be located at ground level.

The focus on campus security requires an overall integrated management approach, one that is vision oriented and considers future campus security requirements. Finally, the overall protection plan, in order to maintain its vitality and purpose, should be periodically reviewed and updated. 📌



People Before Buildings

by John P. Harrod Jr. and Sarah Bieck

Facility professionals face various challenges in their career, but maybe none as important as acquiring and maintaining a healthy, happy workforce. This article strives to determine what effective leaders can do to foster satisfied employees and a progressive work environment.

The concept of a facilities manager being a leader is universal. But what does being a leader really mean? First, a leader creates the right environment...on purpose. Just hoping to stumble along the right answer some day is obviously not the most effective strategy. A leader reduces complex issues to something each person can understand and learn to handle. A leader further concentrates on the objectives of the operation while relating to people at all times.

So what makes leaders effective? The following is a general checklist to answer that question:

- ◆ Critically evaluate themselves
- ◆ Critically evaluate others
- ◆ Prepare extremely well for their position
- ◆ Initiate change and are change masters

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- ◆ Serve as role models
- ◆ Effective communicators and teachers
- ◆ Provide opportunities for their team members.

Change is everywhere. There are certain paradigm shifts that affect the field of facilities management and are interesting to note. First, the shift from managing to leading is crucial. The workplace is now an environment that fosters the entire path instead of the end result. Therefore, in many cases, it is no longer appropriate to simply dictate the process and desired deliverable, but rather to provide support to the employee during all stages of the project.

Another important shift is that from control to coaching, which ties in fairly nicely with the previous change. The movement from quantity to quality is also a prominent shift in the microenvironment, prevalent almost everywhere these days. People are moving from being treated as commodities to being treated as resources. This concept is huge, and the mindset is even more crucial.

The shift from opinion to data is evidence of the importance of objective facts. Subjective opinions are no longer enough to base essential decisions upon. A few more changes to briefly mention are compliance to commitment, internal focus to customer focus, individual to team, and detection to prevention.

Teams. That's a word that seems to be coming from everywhere lately. But the benefits from pooled talent can be tremendous. Proactive organizations don't wait for situations

to arise before they deal with them, and this alone can be a large contributor to sustained competitive advantage. These paradigm shifts affect the field of facilities management every day; a conscious awareness of them is vital to organization effectiveness.

The most critical mindset component of leaders lies in how they view their workforce. The organization's most important resource is its people, not funding or physical infrastructure. Employees add value to the organization in a variety of ways, some obvious and some not as obvious. To begin, employees add value by doing an effective and efficient job. Further, networking off the job, making effective connections, continually learning new processes and information, offering new ideas, and promoting company loyalty all enhance the organization.

Although technology is effectively replacing certain functions, there is still an incredible need for dedicated and able workers. First, addressing the issue of finding these employees is often a complicated and exhausting process due to the limited number of candidates that encompass the necessary knowledge and skills needed to maintain a "lean and mean" organization. To expand on this, if the organization could hire a separate person to perform each function, the recruiting process would be significantly smoother. But in an effort to obtain efficiency, a qualified candidate must often demonstrate competencies in performing multiple tasks. While finding these employees is difficult enough, after you find them, how do you keep them? This question boils down to figuring out what it is that employees want. Two related studies to finding the answer are Maslow's Hierarchy of Needs and Herzberg's Hygiene-Motivator Theory.

Maslow's Hierarchy of Needs, as shown in the diagram below, demonstrates the Satisfaction-Progression Principle; the concept that needs at one level must be satisfied before needs at the next become motivating forces.



Starting at the bottom, Physiological needs must be met. These refer to the very basic survival needs: air, water, and food. Following are the Safety needs, which deal with establishing stability and consistency in a sometimes chaotic

world. These are mostly psychological in nature, such as the need for security of home and family.

Humans have a desire to belong to groups, to feel loved and accepted by others. The Love/Belongingness level addresses these. The fourth level, Esteem needs, comes in two types. The first is the self-esteem that results from competence or mastery of a task. The second is the attention and recognition that comes from others, which is similar to belongingness but different in the sense that esteem deals more with the need for power. The final level, Self-Actualization, refers to "the desire to become more and more what one is, to become everything that one is capable of becoming." Knowledge, peace, self-fulfillment, and meaningful experiences are sought in this level.

Herzberg's Hygiene and Motivator Factor Approach divides the factors affecting employee satisfaction into two categories. The first category, the hygiene factors, refer to such things as department policy and administration, supervision, interpersonal relationships, working conditions, salary, status, and security. Some key concepts to take away are that when hygiene factors are poor, workers will be dissatisfied, but when hygiene factors are good, workers will *not* be dissatisfied, but will not be satisfied either.

The Motivator factors are achievement, recognition, the work itself, responsibility, and growth or advancement opportunities. Now when motivator factors are poor, workers will be dissatisfied, but when motivator factors are good, workers will be satisfied. Therefore, more emphasis is placed upon the importance of motivator factors versus the hygiene factors, as hygiene factors may lead to compliance, but motivator factors lead to commitment. To further convey this concept, the following table shows the different levels of employee satisfaction in relation to which factors are being met.

	Good Hygiene Factors	Good Motivator Factors
Employees are satisfied	NO	YES
Employees are dissatisfied	NO	NO

Another way of attempting to decipher what employees want is by looking into various generation differences. Needs and wants differ between generations, and it is critical as a leader to recognize this. Teenagers today have far different demands than seniors do, in many regards. An accurate understanding of these differences will allow the organization to better design its work assignment and compensation strategy

around workforce desires. Although studies vary as to the exact age breakdown of the various generations, the following is a summarization of research conclusions regarding Matures, Boomers, Generation X, and Generation Y.

Matures, born 1909-1945, value the following:

- ◆ Hard work
- ◆ Teamwork
- ◆ Cooperation
- ◆ Mutual support
- ◆ Conformity
- ◆ Loyalty
- ◆ Deference
- ◆ Financial discipline
- ◆ Doing something on behalf of others (especially within the family)
- ◆ The abandonment of new technology for novelty sake alone (i.e., "show me why this is better")

The Baby Boomers, born 1946-1964, are generalized by the following:

- ◆ Used to limitless horizons before them
- ◆ Value instant gratification (vs. Mature's delayed gratification)
- ◆ Have a strong sense of entitlement and expectation
- ◆ Value individualism vs. conformity
- ◆ Value personal authority—want to be on top and in charge
- ◆ Rule breakers—consistently like to do it differently than it was done before
- ◆ Nostalgic
- ◆ Increasing priority for family and family activities, especially those outside the home
- ◆ Most stressed generation in history => CONFLICT: reduce stress without reducing status
- ◆ Value youth
- ◆ Most will not retire for three reasons:
 1. Won't have the financial wherewithal to retire (spent it all!)
 2. Boomers are work-centered and will continue to focus on this
 3. Looking for meaning and fulfillment

Members of Generation X, born 1965-1978, are characterized by the following:

- ◆ Uncertainty—generational debris left behind by the Baby Boomers
- ◆ Value determination
- ◆ Value detachment from surrounding forces
- ◆ Value their support of one another
- ◆ Understand that risks are involved in every decision (not just black and white as in previous generations)
- ◆ Value diversity
- ◆ Skeptical
- ◆ Irreverent
- ◆ Value choices
- ◆ Value technology, multimedia
- ◆ Value the truth, can see through the lies

- ◆ Value fun
- ◆ Value attitude
- ◆ Value practicality
- ◆ "Protect thyself" mindset

Finally, Generation Y, born 1979-1995, display the following characteristics:

- ◆ Independent
- ◆ Unsupervised, "latch-key" kids
- ◆ Extremely computer savvy (computer = pencil/paper)
- ◆ Shorter attention spans
- ◆ Less creative
- ◆ Pressed for time
- ◆ Green activists
- ◆ Anxious to be accepted
- ◆ Optimistic
- ◆ Confident
- ◆ Strong communication ties
- ◆ Overwhelming desire to spend
- ◆ Knowledgeable on job insecurity
- ◆ Disdain for corporate paths

To summarize, certain attitudes and/or behaviors characterize each generation. But in general, across generations, workers most want the opportunity to do what they do best, to know their opinions count, a sense that others in their workplace are committed to quality, and a direct connection between their work and the organizations mission.

In conclusion, as Frederick Herzberg put it, "If you want someone to do a good job, give them a good job to do." The focus of leaders today should revolve around knowing their people, in terms of their needs, wants, competencies, and capabilities, and then both encouraging and assisting them in expanding their horizons.

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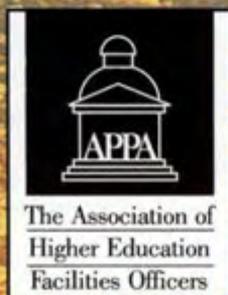
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Facilities professionals must recognize their role as leaders to strategically plan and prepare their organization to meet the challenges of the future.

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 focused on the greatest needs of the institution. Customers demand the delivery of cost-effective, high quality services to meet their own mission requirements. Employees have greater expectations of their leaders and have personal needs that must be accommodated within the workplace. And of course, facilities professionals have their own values that drive them to seek improvements.

APPA's Educational Facilities Leadership Forum is designed to make sense of the seemingly conflicting demands placed on the facilities organization and give you a holistic understanding of how you can:

- ◆ Meet the demanding challenges of an increasingly competitive environment.
- ◆ Continuously assess your organization's financial performance.
- ◆ Ensure the effectiveness of your facilities department.
- ◆ Ready your employees to embrace the challenges of the future.
- ◆ Delight your customers.
- ◆ Develop 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:

- ◆ Assistant Directors and Managers of facilities and related functions.
- ◆ Directors, Vice Presidents, Business Officers for higher education institutions.
- ◆ Directors of museums, government/public building facilities.
- ◆ Suppliers of services and products.

Program Structure

The Educational Facilities Leadership Forum offers a tightly focused program taught by invited experts and leaders in the educational facilities field. The program is structured in six Perspectives, each examining a different critical area within the educational facilities organization. Each Perspective is broken down through a framework of different insights to help participants

understand the full breadth of issues, from a visionary level through a hands-on, practical application level.

The Six Perspectives of Facilities Management:

1. Customer Service
2. Innovation & Learning
3. Internal Process Management
4. Financial Stewardship
5. Technology Management
6. Knowledge Management

Recognized industry experts will examine each Perspective within the following framework:

- 1. Vision** — Understanding the big picture and current and future trends.
- 2. State of the Industry** — A recognized expert will provide background information and address the current status of the perspective.
- 3. Effective Practice** — A case study from an educational facilities organization or institution that has excelled in that perspective.
- 4. Critical Issues Panel** — A discussion of why a Perspective is important to you, your institution, and to the educational arena.
- 5. Industry Best-In-Class** — A look at effective practices from a proven organization or industry leader from outside of educational facilities.
- 6. How To** — Practical skills training and/or application tools to improve practices at your institution.

A complete listing of specific topics and speakers for each Perspective can be found by logging onto APPA's website at www.appa.org/education.

1. CUSTOMER SERVICE

Learn how an organization determines customer requirements, expectations, and preferences to ensure relevance of current services and to develop new opportunities, build relationships with customers, and measure customer satisfaction and service performance.

Learning Outcomes:

- ◆ Determine how a facilities management organizational structure promotes responsiveness and timely service delivery, obtains customer feedback, and communicates results.
- ◆ Understand how to identify customer groups, define service levels, and establish shared performance metrics.
- ◆ Gain valuable information from recognized experts on how to delight the customer.
- ◆ Explore the importance of establishing effective, long-term relationships with key stakeholders.

2. INNOVATION & LEARNING

Learn how to create a high-performance workplace and a learning organization. In a learning organization, people at all levels, individually and collectively, are continually increasing their knowledge and capacity to produce the best practices and possible results. This perspective considers how the organizational culture, work environment, employee support climate, and systems enable and encourage employees to contribute effectively.

Learning Outcomes:

- ◆ Understand both the theory and application of self-directed work teams and their impact on increasing organizational productivity and enhancing the workplace climate.
- ◆ Understand both the theory and practice of organizational design for process improvement and employee commitment and involvement.
- ◆ Explore how to create a learning organization to promote and lead change.
- ◆ Learn how other industries have instilled a culture of innovation.

3. INTERNAL PROCESS MANAGEMENT

This Perspective focuses on the key aspects of the organization's process evaluation for the delivery of primary services. These services include operations and maintenance, energy and utilities, and planning, design, and construction. This Perspective emphasizes identifying opportunities for improvement and measuring results.

Learning Outcomes:

- ◆ Learn about new systems and standards that are changing the nature of our business.
- ◆ Identify the impact of process changes on the profession and which skill sets will be required in the future.
- ◆ Gain methods and approaches for systemic process improvements.

4. FINANCIAL STEWARDSHIP

Learn how an organization's financial performance ensures financial integrity, and how stewardship responsibility for capital and financial resources relates to the operation and preservation of physical assets throughout the campus.

Learning Outcomes:

- ◆ Understand methods and criteria for measuring assets productivity and utilization.
- ◆ Gain insights from seasoned industry professionals who will share their experiences and Perspectives on effective performance accountability.
- ◆ Understand the major issues and trends affecting the economy, education as an industry, and, correspondingly, the facilities organization.

5. TECHNOLOGY MANAGEMENT

Reflects the organization's ability to adapt to the ever-changing technological environment. This Perspective addresses how the facilities organization can or should use technology to optimize limited resources and how to identify and apply the appropriate technology.

Learning Outcomes:

- ◆ Identify the emerging trends in technology and their impact on education and the built environment.
- ◆ Learn various applications that can/should be used to improve performance productivity and service delivery.

6. KNOWLEDGE MANAGEMENT

Learn ways to identify, store, access, and integrate information at the right time to assist in the decision-making processes. Understand how to leverage data and information that will lead to knowledge, understanding, and wisdom.

Learning Outcomes:

- ◆ Explore what knowledge management is and ways in which the organization can utilize all forms of information for increased communication and productivity.
- ◆ Explore alternative approaches to the collection of data and information.

A complete listing of specific topics and speakers for each Perspective can be found on APPA's website at www.appa.org/education.



SCHEDULE AT A GLANCE

Thursday, July 18

- ◆ 1:00-5:00pm: Executive Committee Meeting

Friday, July 19

- ◆ 8:00am-5:00pm: APPA Board Meeting
- ◆ 8:00am-5:00pm: Exhibit Registration & Set-up

Saturday, July 20

- ◆ 8:00am-12:00n: APPA Committee Meetings
- ◆ 8:00am-5:00pm: Exhibit Registration & Set-up
- ◆ 11:00am-5:00pm: APPA Registration/Welcome Desk
- ◆ 7:00-9:00pm: Welcome Party – Sponsored by Johnson Controls, Inc.

Sunday, July 21

- ◆ 7:00am-5:00pm: APPA Registration/Welcome Desk
- ◆ 8:00-10:00am: Welcome Breakfast & Keynote Breakfast with Daniel Pink
- ◆ 10:10-12:00n: Education Perspectives
- ◆ 12:00-3:00pm: Hall of Resources (Exhibits) & Lunch
- ◆ 3:00-5:00pm: Education Perspectives
- ◆ 6:00-7:30pm: Business Partner Reception

EXHIBITORS

Monday, July 22

- ◆ 8:00am-4:30pm: APPA Registration/Welcome Desk
- ◆ 8:00-9:30am: Town Meeting Breakfast
- ◆ 9:40-11:30: Education Perspectives
- ◆ 11:30am-2:30pm: Hall of Resources & Lunch
- ◆ 2:40-4:30pm: Education Perspectives
- ◆ 4:30-5:30pm: Regional Meetings

Tuesday, July 23

- ◆ 8:00am-4:00pm: APPA Registration/Welcome Desk
- ◆ 8:00-9:30am: Awards Breakfast
- ◆ 9:30-10:30am: Exhibitor Breakfast
- ◆ 9:40-11:30: Education Perspectives
- ◆ 11:30am-2:30pm: Hall of Resources & Lunch
- ◆ 2:30-8:00pm: Exhibit Teardown
- ◆ 2:30-4:20pm: Education Perspectives
- ◆ 5:45-6:30pm: Awards Banquet Reception
- ◆ 6:30-9:00pm: Awards Banquet & Entertainment

Wednesday, July 23

- ◆ 8:00am-1:00pm: 2002-03 APPA Board Meeting

WELCOME BREAKFAST KEYNOTE SPEAKER— SPONSORED BY SIEMENS, INC.

SIEMENS

Daniel H. Pink, Chief speechwriter to Vice President Al Gore from 1995-97, is presently contributing editor to *Fast Company*, editor-at-large for *FreeAgent.Com*, columnist for *Guru.Com* and author of *Free Agent Nation*. His pieces have appeared in dozens of national newspapers and magazines.



HALL OF RESOURCES

More than a tradeshow, the Hall of Resources is an integral part of APPA's Educational Facilities Leadership Forum experience. Visit our Business Partners to learn about the newest products and services that can help you do your job. The Hall also features on-site demonstrations, games, food, and giveaways.

(AS OF FEBRUARY 25, 2002)

- 3DInternational
- Advanced Technologies Group Inc.
- American School & University Magazine
- APCO Graphics, Inc.
- Applied Management Engineering
- Aramark ServiceMaster
- Avian Flyaway Inc.
- Ayers/Saint/Gross
- Best Access Systems
- BLAZEMASTER-FIRE SPRINKLER SYS
- BlazeMaster/ Grice Engineering
- Bobrick Washroom Equipment
- Breeze Software
- C&A Floorcoverings
- Carter & Burgess, Inc.
- Centimark Corporation
- Clarín, Dirot Greenwich Ind.
- CMS Viron Energy Services
- College Planning & Management
- Davey Tree Resource Group
- Designweave Commerical Carpet
- Diversified Intelligence
- Dow Chemical Company
- DriTherm, Inc.
- Edwards Engineering Corp.
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- Facility Engineering Associate
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- Prism Computer Corporation
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- REDICHECK Associates
- Reliability Management Group
- Roesel, Kent & Associates
- Roof Products, Inc.
- Royanco Piping Systems
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- Siemens Building Technologies
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LOCATION

Phoenix has garnered well-earned praise as one of the world's top five golf destinations. As the sixth-largest city in the United States, with nearly 1.3 million residents, Phoenix offers a multitude of cultural and recreational activities.

Greater Phoenix gives visitors the opportunity to enjoy countless activities ranging from outstanding museums, galleries, performing arts, fine dining, horseback riding and cowboy shoot-outs. The climate makes outdoor activities, such as desert jeep tours, hot-air ballooning, and water recreation, a way of life.

Phoenix is also a great launching point for day trips to scenic Arizona destinations like the Grand Canyon and Sedona. For more information on Phoenix log onto www.phoenixcvb.com.

APPA's Educational Facilities Leadership Forum will be based at the Hyatt Regency Phoenix and the Phoenix Civic Plaza. All educational sessions and exhibits will take place at The Phoenix Civic Plaza, located directly across the street from the Hyatt.

SPOUSE/GUEST PROGRAM

The people who are important to you are important to us, too, so please bring them! The 2002 Welcome Committee has designed a great program for companions from a day trip to Sedona to an afternoon at the Camelback Inn Spa. Detailed information on the companion program can be found on APPA's website at www.appa.org/education/annual_meeting/2002/spouseguest.html.

TRANSPORTATION

Association Travel Concepts (ATC) has been selected as the official travel agency for APPA's Educational Facilities Leadership Forum in Phoenix, Arizona July 21-23, 2002. As the official agency, ATC has negotiated discounts with United, Continental, and Alamo Rental Car to bring you special airfares and car rental rates that are lower than those available to the public. When calling ATC, you will save 10% to 15% off on United and Continental Airline tickets purchased more than 60 days prior to the meeting. For tickets purchased less than 60 days prior, the discounts will be 5% to 10% off of the lowest available fares. Some restrictions may

apply and a service fee may apply. ATC will also search for the lowest available fare on any airline serving Phoenix.

ATC provides personalized service, advance seat assignments, special meal requests on airline flights, frequent flier programs, electronic ticketing, e-mail access for convenient booking of your tickets, and more.

Take advantage of these new services offered by ATC Power Pricing—a computer software search for the best fare on all airlines. RESFAX—fax-back service with 36 options and prices for your requested travel times.

To take advantage of these great rates and personalized service, call:

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www.atcmeetings.com
Fax: 858-581-3988

Above discounts apply for travel July 17 through 26, 2002. ATC is available for reservations from 9:00 am until 7:30 pm Eastern Time, Monday through Friday.

You may also call your own agency or the vendors directly and refer to the following I.D. numbers listed:

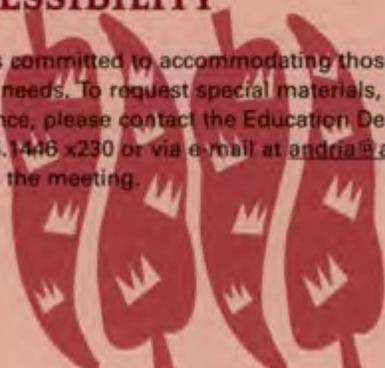
United: 556EG 800-521-4041
Continental: UZHPLR 800-468-7022
Alamo: 72620 GR 800-732-3232

GROUND TRANSPORTATION

The Hyatt Regency Phoenix is located in downtown Phoenix. Taxi fares are approximately \$15 to the Hyatt. APPA has also arranged discounted shuttle service with SuperShuttle with pick-up outside the baggage claim area. Valet parking is available at the Hyatt for \$18 per night.

ACCESSIBILITY

APPA is committed to accommodating those with special needs. To request special materials, services, or assistance, please contact the Education Department at 703.684.1446 x230 or via e-mail at andria@appa.org prior to the meeting.



REGISTRATION

All registration is first-come, first-served.

Register by May 24, 2002 save \$100 on the Early Bird Registration!

	On or Before May 24 (Pre-payment Required)	After May 24
Members:	\$495	\$595
Non-Member:	\$695	\$795
Spouse/Guest:	\$200	\$300
Emeritus:	\$200	\$300

The registration fee includes tuition, course materials, welcome party, continental breakfast from Sunday through Tuesday, lunch from Sunday through Tuesday, and banquet dinner and entertainment on Tuesday. Daily use of the hospitality suite located at the Hyatt Regency Phoenix. All other meals are at the attendee's discretion and expense. Registration does not include travel, accommodations, additional meals or optional activities.

HOW TO REGISTER

The fastest, easiest way to register is on-line with our secure server at www.appa.org. On-line registration is now in real time— you will know instantly which sessions are still available and get your schedule immediately.

**On-line at www.appa.org
Early Bird Ends May 24, 2002**



Don't forget to make your hotel reservations separately. More details are available on APPA's website at www.appa.org.

CANCELLATION POLICY

APPA will refund the full cost of registration for cancellations received on or before **July 1, 2002**. Absolutely no refunds will be issued for cancellations received after **July 1, 2002**. All cancellations must be made in writing either via fax or e-mail. APPA is not responsible for any travel or lodging charges incurred.

In the event APPA must cancel the Educational Facilities Leadership Forum, attendees will be notified via the web, phone, and e-mail. APPA is not responsible for any expenses that attendees incur as a result of cancellation.

Questions? Call APPA's Education department at 703.684.1446 x228 or e-mail dbourke@appa.org or andria@appa.org.

HOTEL RESERVATION FORM

Use this form to reserve your hotel space for APPA's Educational Facilities Leadership Forum. A one-night deposit must accompany this form to guarantee your reservation. Reservations must be received no later than **June 21, 2002**, to guarantee the APPA special rate. Reservations are on a first-come, space-available basis. **The room block may sell out prior to June 21, 2002, so make your reservation as soon as possible.**

Please mail or fax this form, along with your deposit or credit card information to:

Headquarters Hotel:
Hyatt Regency Phoenix at Civic Plaza
122 North Second Street
Phoenix, AZ 85004-2379
Telephone: 602-252-1234
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800-233-1234

Rates:

Single/Double Occupancy: \$125 + 11.07% tax
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I will be attending the APPA Educational Facilities Leadership Forum July 21-23, 2002. Please reserve a room for me as indicated below. A one-night deposit is included.

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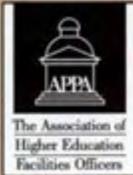
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Lessons Learned

From the University

of Virginia's

Balcony Collapse

by Robert P. Dillman, P.E. and Jay W. Klingel

As luck would have it, Graduation Saturday in 1997 was a glorious spring day in Charlottesville, Virginia. The university's commencement exercises are conducted outside in the area of the university known as Thomas Jefferson's Academical Village, which was built in the early 1800s. It is both an international architectural achievement and a vibrant part of our student life. Senior university administrators and faculty and their families live in nine of the ten Pavilions facing the Lawn. Fifty-six students live in the original student rooms, which connect the Pavilions. Even though these dormitories lack modern conveniences, namely bathrooms, students fiercely compete for the right to live in these small rooms inhabited by students since Jefferson's era.

This Academical Village, and particularly the Lawn, has been the site of many prestigious events. In addition to the annual graduation event, in recent years Mr. and Mrs. Gorbachev, the Olympic Torch run, several Presidents, the Queen of England, the Dalai Lama, Nobel Peace Prize winners, and

Bob Dillman is the chief facilities officer at the University of Virginia, Charlottesville, Virginia, and can be reached at rp2n@virginia.edu. Jay Klingel is director, business management services, in U-Va's facilities department; he can be reached at jwk8w@virginia.edu. This article is adapted from a presentation made at APPA's 2001 Educational Conference in Montreal.

the Japanese Imperial family have all walked down the Lawn, the centerpiece of Jefferson's architectural marvel.

Typically, the visits from heads of state are preceded by a thorough inspection and investigation by the U.S. Secret Service and/or the FBI. The university employs a curator and architect for the Academical Village. And, each year, the week before graduation many university managers, and facilities managers, and trades people are moving about the Lawn area, all trying to ensure we are as close to perfection as possible for graduation. So, in addition to scheduled preventive maintenance inspections, and a formal facility inspection program, this area of our university grounds is under a constant and thorough watchful eye.

During graduation, students and faculty walk down the Lawn, this long, terraced green space flanked by the historic Student Rooms and Pavilions. As many as 30,000 students, faculty, family, and guests fill this space to participate in and watch the graduation event. Just as on hundreds of college campuses across the country, this special day in May is filled with celebration, hope, pride, and anticipation.

On May 18, 1997, our special day was touched with tragedy. Without warning, a balcony on Pavilion I, one of the original Jeffersonian buildings, collapsed, killing one and injuring 24. That event, and what transpired in the following hours, days, and months have had a significant impact on the university, and more particularly, on our facilities organization.

Immediately after the collapse, the university's police department and facilities management organization teamed to control the area, provide access for rescue personnel, and

make temporary repairs to prevent further damage. The decision was made immediately to continue with graduation exercises and, in fact, the vast majority of visitors and guests at the event had no knowledge that there had been an accident. Our director of operations at the time, Dick Fowler, worked with university senior administrators and the university police to make these immediate repairs.

In the days following the event, university administrators met to determine the appropriate course of action. The University Hospital and its medical staff were able to provide emergency and long-term care for those injured in the accident. The university decided to engage a structural forensics firm to thoroughly investigate the cause of the collapse. Emergency procurements were conducted for construction services to rebuild similar balconies on the university grounds with the same structural properties. Strategies for responding to the inevitable press inquiries were established and communicated.

During the ensuing months, the university and many of its staff prepared for and eventually were involved in the legal proceedings resulting from suits filed by those injured in the accident. It was during those legal proceedings that we learned the value of a comprehensive maintenance program, an ongoing facilities assessment program, the credentials of our senior staff, and the knowledge of our trades people.

So what did exactly happen to cause the balcony, on that day of all days, to collapse at that time? How could we have known? What signs did we have?

The Balcony Structure

The balcony structure was of heart pine; it was supported by four wrought iron rods suspended from a roof overhang on one side and a hinge joint at the building. This is similar to five other pavilions on the Lawn; a total of 19 rods supported the six suspended pavilion balconies. All rods have been removed and examined. All are apparently original early 1800s wrought iron.

Only the failed rod had significant deterioration, and it had actually corroded through twice during its lifetime at points about an inch apart. Both instances were completely within an undeteriorated, apparently *original*, heart pine beam. If you carefully examine the photo in Figure 1, you can see the two rod failure points.

Until catastrophic failure there was no external indication of rod distress. Over 90 percent of the rod has been visible for 175 years and is in like-new condition. Extensive chemical, metallurgical, and stress analyses gave no clues as to why one of 19 rods failed...twice. There were high levels of potentially corrosive chemicals, but other solid rods had higher levels. Metallurgy indicated the rod was original and had no significant occlusions, pits, or abnormalities. The failure was a true anomaly; a single point metal failure concealed within a 6" x 8" solid pine beam, which showed no evidence of moisture

accumulation or damage of any kind.

To examine the failed section of rod would have required scaffolding to support the balcony, removal of tongue and groove planking deck and underside of the balcony to expose the rod end, and driving the rod from the beam which, we found from removal of the other rods, took considerable force and resulted in damage to the historic fabric. This is not something any facilities manager would normally do unless rust, rot, or other indicators were present; and there had been none.

During its most recent restoration, in 1986-88, all questionable balcony wood had been replaced; visible portions of the four metal rods supporting the balcony were examined and appeared sound; and the balcony was fastened

more securely to the brick front of the Pavilion with steel attachments. When the northernmost rod of the balcony failed, it shifted loads to the wood structure, which in turn failed, allowing about one-third of the balcony to fall about 15 feet to the paved walkway underneath. Two loud "cracks" were heard as the balcony failed; the first the rod snapping; the second, the main wood beam failing. In the seconds between the failures, two persons actually moved to the two-thirds of the balcony that remained attached. Seventeen others fell to the ground with it.

Resolutions

Where are we today? Unfortunately, we're a lot smarter about litigation. Although emotionally and professionally taxing, the litigation process taught us who we were as an organization. Originally suits were filed against the Commonwealth of Virginia, the facilities engineering firm we had hired to do a condition inspection of the Lawn facilities, and our architect and curator for the Academical Village. Later, suits

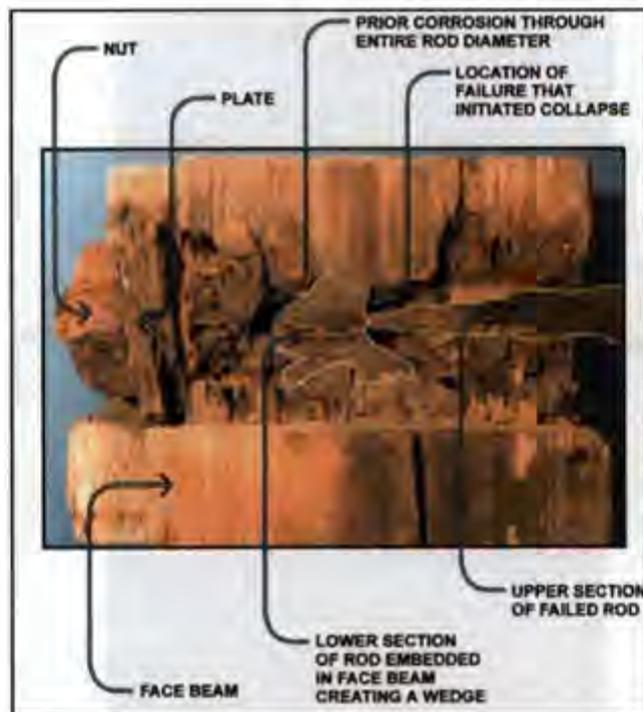


Figure 1 - Computer Enhanced Graphic Showing Upper and Lower Sections of Rod #4

were filed against three individuals involved with managing the university's facility assessment program, and suits were pending against the chief facilities officer, his predecessor, and the former deputy chief facilities officer.

The suits claimed negligence and omissions on the part of the defendants in their duties to protect the public. The legal terms that before were issues of vague familiarity—sovereign immunity, statute of limitations, personal liability limits, tolling the statute, gross negligence—became terms that had direct and significant impact on our employees named in these suits.

Many others were concerned that they might be named, and that the facilities organization's name was being sullied by something no one could have prevented.

All the suits filed against the Commonwealth and its individual employees were eventually settled without going to trial. The press release accompanying the final suits settlement indicated that "the claimants and clients all deserve final resolution of these cases...continuing this litigation is too costly, financially and emotionally, for everyone concerned."

There were some key points related to the defense that helped our position throughout the legal proceedings:

- We have a facility condition inspection program, and it has been in place for years.
- We have a formal preventive maintenance program, and it has been in place for years.
- Anyone and everyone is encouraged to report things of concern.
- Our mechanics are empowered to fix deficiencies they find and report those they can't fix.
- Our mechanics are certified journeymen.
- Our staff architects and engineers are licensed.
- We bring in consultants to review our work.
- We pay particular attention to Jefferson's buildings, and in fact, have an



preventive maintenance, training and education, and certification and licensing; and of our policies that encourage entrepreneurship and individual responsibility and accountability. We are also most appreciative of the university senior management who stood with us throughout, and the state attorney general's office that defended us with the highest possible caliber attorneys. 🏛️

ongoing program of intensive restoration.

- Funds are always found to fix potential safety concerns.

After almost two years of depositions there was no smoking gun. All of our facilities management employees deposed testified the same.

Since the Pavilion balcony accident, several facility or grounds safety issues have arisen: potential hazard trees, compromised tendons in pre-cast structural members, cracks in plaster ceilings. We never consider a course of action now without first thinking of the balcony incident.

We remain very appreciative of our programs of condition inspections,

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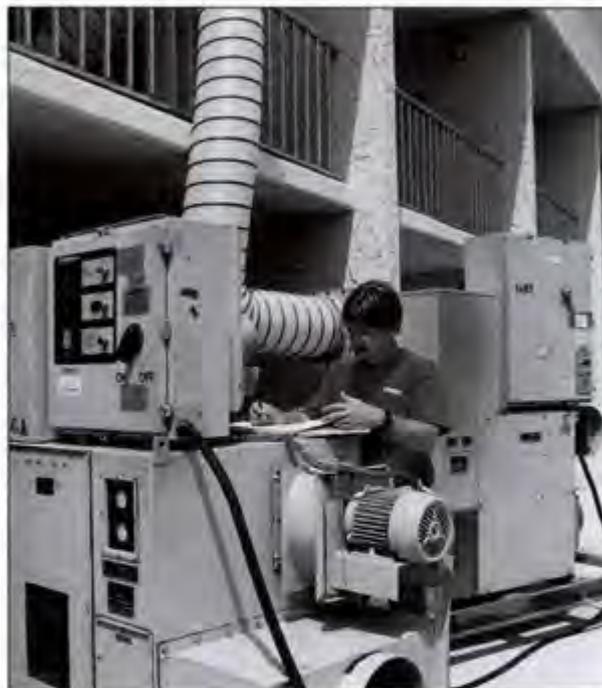
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Energy Conservation Through Upgrades in Ice Arenas

by Richard L. Walter

The University of Delaware operates two indoor ice rinks. The Gold Ice Arena was built in 1971 and has an ice surface of 16,427 square feet. The mechanical systems were the original 30-year-old equipment. The Rust Ice Arena was built in 1988 and has an ice surface of 18,732 square feet.

The mechanical systems were the original 13-year-old equipment. The design of the equipment in this arena was marginal, as it was part of a low-cost design build project. The mechanical systems in the Gold Ice Arena had reached the end of their useful life and needed immediate replacement to prevent significant maintenance outages.

The Fred Rust Ice Arena and the Gold Ice Arena are home to the university's Ice Skating Science Development Center, a year-round training facility designed to meet the needs of first-time competitors and Olympic champions alike. Its primary goal is to assist athletes and coaches in reaching their maximum potential. The center, housed in state-of-the-art facilities, provides the most complete training environment in the United States. Training facilities include two ice surfaces, strength and aerobic training rooms and a dance studio. Coaching is available from the most recognized national and international coaches in the sport of figure skating.

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The University of Delaware is also home to the University Club Hockey team, the four-time defending ECHA Champions.

The ice arenas also offer a wide range of skating and hockey programs to fit everyone's skating ability. Community Class and Basic Badge programs are designed for the beginning and intermediate skater, and the Junior Blue Hen Hockey Program offers instruction on basic skating and hockey skills.

The ice arenas also offer public skating sessions throughout the year, host national and world send-off ice skating exhibitions, and are available for rental groups.

The two ice rinks consumed in an average year 5,084,150 kilowatt hours of electricity and 10,638 thousand cubic feet of natural gas, for an annual cost of \$384,727. We realized that there would be an opportunity to greatly reduce these costs, improve the quality of the ice, and replace some outdated equipment. Unfortunately, capital was not directly available to finance this major project.

We contacted the local utility, Conectiv, and asked them to develop a proposal to provide a fixed price project with guaranteed annual energy savings for a ten-year period. Two financial alternates were considered to finance this proposal: the first would have Conectiv providing the funds and recouping their investment and interest from the guaranteed savings; the second being the university borrowing the investment and paying it back over ten years with the savings. The second alternate was chosen.

The required investment was \$1,350,000 and the guaranteed savings were 1,578,440 kilowatt hours of electricity and 3,784 thousand cubic feet of natural gas. The first full year of

Sophisticated ice temperature monitoring systems were installed to give direct feedback to the chillers through the building automation system. This allows easy changes in the ice temperature to satisfy varied client needs.

operation saw electrical consumption reduction of 1,721,400 kwh (109 percent of the guarantee) and 5,845 cubic feet of gas (154 percent of the guarantee). The savings are based on the meters that serve the buildings with no artificial adjustments. The consumption is also monitored using the ENERWISE Platform by Enerwise Global Technologies, Inc.

The project consisted of several mechanical upgrades and technological improvements. Some of these items include:

- New high-efficiency chillers specifically designed for ice arenas were installed in each facility. The waste heat from the chillers is pumped through a snow melt coil to melt the ice that the Zambonis remove from the ice rinks during the hourly resurfacing process. Previously, hot water was made to melt this ice. In the chiller rooms new ASHRAE mandated refrigerant leak detection and exhaust systems were also installed.
- Any heat that is left in the condenser water is then removed in new cooling towers, which have variable frequency drives on the fans to minimize use of electric power.
- Previously the water used for making ice initially and for the resurfacing was city water. A new RO (reverse osmosis) process was installed in each facility to create deionized water which requires less energy to freeze and creates a clearer better ice surface for skating. Hot water is used in the resurfacing process and new high-efficiency hot water generators were installed.
- The chiller controls, ice temperature settings, and building HVAC systems were previously all localized systems that were not integrated. The project combined these into one integrated direct digital control (DDC) system tied into the university building automation system via the university ethernet. These controls improve the quality of the conditions as well minimizes the use of energy. This also alerts maintenance of any equipment issues before they start to impact the quality of the ice skating surface or building environment.



- Sophisticated ice temperature monitoring systems were installed to give direct feedback to the chillers through the building automation system. This allows easy changes in the ice temperature to satisfy varied client needs. Typically figure skating is done on a different temperature ice than hockey. It also allows the temperature of the ice to be increased automatically during periods that the ice is not being used, thus reducing energy consumption.
- The larger ice arena had a dehumidification system installed to improve the environment in the arena as well as reduce the energy required to maintain the temperature in the building.
- Building heating systems were upgraded in both arenas. In the smaller arena new high-efficiency hot water generators for building heat were installed. In the larger arena the building heating system was completely changed to a series of gas-fired radiant heaters over the areas surrounding the ice. This system is required only when ambient temperature is below approximately 35 degrees Fahrenheit. It directs the heating to spectator areas, dramatically improving spectator comfort. Controls are in place to prevent the system from being used when ambient conditions do not require it to be used.
- Lighting in both arenas has been HID lighting and was not touched. All of the lighting in offices, locker rooms, restrooms, and hallways had the lighting upgraded to T8 technology, and motion sensors were installed to prevent wasting energy.
- All of these installations have been commissioned and work at least as well as the design assumptions. They have dramatically improved the physical quality of the ice surface and the environment in the building as well as reducing the consumption of energy. It also eliminated the significant un-funded deferred maintenance issue in the Gold Ice Arena.
- As a result of our upgrades, Jim Kaden, the manager of the ice arenas, is very pleased with the improvements of the ice and the environment of both ice arenas. In addition, Ron Ludington, a former Olympic medal winner who is our director of the ice skating programs, is very impressed with the improvement in the quality of the ice. 🏆

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Then, Now, and the future

by H. Val Peterson and V. Randall Turpin

At its annual educational conference in the year 2000, the Rocky Mountain Association of APPA carried the theme, Mastering the Present to Assure the Future. This theme was well chosen to help attendees better understand that success today can also mean success tomorrow, but *today* is the time to prepare for tomorrow. Surely if facilities managers are to be successful in meeting the challenges of tomorrow, they must use the lessons learned from the past, adapt this knowledge to meet current requirements, and be willing to make changes to meet the demands of the future. To achieve the greatest degree of success in the future, the process of learning, adapting, and changing must be a continual process.

*Val Peterson is a Past APPA President and is now a member emeritus based in Chandler, Arizona. He is the author of APPA's book, *Communication is the Key*, and can be reached at valpeterson@asu.edu. Randy Turpin is assistant vice president for facilities management at the University of Utah, Salt Lake City, Utah; he can be reached at rturpin@campplan.utah.edu. This article was adapted from a presentation the authors made at the 48th Annual Rocky Mountain Association educational conference.*

To better understand where we are today, it is insightful to review some of the changes that have taken place in society in general and within the field of facilities management over the past 50 years or so. While most of today's facilities managers have not been involved in facilities operations nearly that long, a few of us remember what is often referred to as the "good old days." We have spent our professional careers working in the field of facilities management. Our lifetimes have revolved around the design, construction, operation, and maintenance of educational facilities. Someone once said that a lifetime consists of a lot of yesterdays, part of today, and no tomorrows.

Then

Going back to the 1950s, a family could purchase a week's groceries for \$20 at a time when the minimum wage was around \$1. You could send a letter with a 10-cent postage stamp. Haircuts still could be had for 50 cents. A night's stay in a hotel room cost \$15, but most people could ill-afford the \$35-a-day hospital charge. Most folks figured they would never live long enough to see the day when the government would take more than a quarter of their income in taxes.

In those days gasoline for the car was 50 cents a gallon and most automobiles could be purchased for less than \$5,000. At the service station—for free and without asking—you got your windshield cleaned, oil checked, and gas pumped, and you got trading stamps to boot. Those were the days when the

current year's car looked different from last year's model and different makes of cars looked distinctively different. The prevailing mood was one of concern over losing out to foreign business if the Volkswagen Beetle ever caught on.

After Clark Gable got by with saying "damn" in the movie, *Gone With The Wind*, nearly every movie had to include a "hell" or "damn" in it. And folks wondered what the world was coming to by showing couples sleeping together in the same bed. Then when Marilyn Monroe was filmed showing her bra and panties, folks were convinced there were no standards anymore. Even though they were touted as the "good old days," things must have been pretty tough since a few married women had to work to make ends meet. And parents wondered why they should allow their daughter to attend college. After all, it would be different if she could be a doctor or lawyer.

A thing like putting a man on the moon by the end of the century was a pretty far out thought. Television was available only in the larger metropolitan cities and there were only three channels—four if you adjusted the antenna. Typewriters were of the manual variety. You did basic calculations with an adding machine, but more sophisticated computations required a slide rule. Trains were the preferred mode of across-the-country travel.

So what were the conditions within higher education? You should not be surprised to learn that they were quite different from today's institutions. Teaching was stressed above research. Presidents were closely involved with day-to-day operations of the institution, and there were only two vice presidents. Physical education classes were usually a required course for undergraduate students. Prayer and patriotism were in vogue and some places even had religious instruction. People were treated better than animals.

Security was not a major concern since in the surrounding community locks on houses and cars were rarely used. Night watchmen walked the campus, visiting all buildings on their rounds several times a shift. They carried a clock that recorded their stops in the various buildings. Tuition was well under \$100 per quarter.

The pool of available employees within the maintenance organization was a hard-working group with knowledge of machinery resulting from an agricultural background. These workers received on-the-job training. Little formal training

was available; lots of mentoring was needed. Workers' basic tools were a monkey wrench and a screwdriver—only the more skilled staff was allowed to use a hammer. There were few labor saving tools. Employees had to spend a considerable period on time-card status since salaried jobs with benefits came only after one had proven over time to be reliable and loyal to the institution. Nearly all employees with benefits "banked" significant accumulations of unused sick leave in anticipation of a possible emergency. Job security was more valuable in their eyes than their actual rate of pay. Many considered their job a lifelong commitment.

Supervisors and foremen were drawn from within the ranks of the workforce, and their jobs were typically working positions. Department heads as well were usually promoted from within and were typically "hands-on" bosses. Engineers were in high demand for the top job. There were few women in the organization except in secretarial and clerical positions. There were few, if any, pagers or two-way radios, and no cellular phones. Workers had to borrow a telephone at the job site to call their supervisor or drive back to the shop in their service vehicle.

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The reproduction standard was mimeograph, the predecessor of coated paper copiers. Work orders were all originated on manual forms. Blueprints were the standard documents for building projects. Every desk had an adding machine, complete with hand crank.

Lunch was typically carried in a pail and eaten cold, unless you had a thermos bottle. Microwave ovens were not available to cook more exotic fare. There was no formal dress-down day since every day was a dress-down day.

Budgets and bookkeeping were synonymous terms, and while budget dollars were never enough, they were adequate to do a pretty good job. The maintenance budget typically amounted to 4 to 7 percent of the institution's total budget. Most work on campus was accomplished with in-house staff. Contracted services were minimal. Most purchases of supplies and equipment were from local sources.

Buildings and building systems were much simpler. Valves to control the heat were positioned either on or off. Thermostats, where available, controlled an entire floor or building. Thermostats were mostly of the pneumatic type. Cast iron radiators were the mainstays of heating systems. Floors were bare wood, linoleum, or vinyl asbestos tiles. Asbestos was still a good thing at that time. Carpet on the floor was a status symbol. Lighting was mostly incandescent. Walls were painted an institutional green color or some other insti-

tutional standard. Windows could be opened for ventilation without disturbing the air balance. Air balance was a yet-to-be-perfected procedure (some argue it still is).

Wood venetian blinds or roller blinds were the vogue. Air conditioning was a luxury. Electrical outlets were all two-pronged—no grounded plugs. Engraved signs were the standard. Hand towels in restrooms were cloth, and soap dispensers held powdered hand soap. Roofs were coated with tar and gravel. Open high-voltage switches and fuses were used and relays (no electronics) were used for control purposes. There were no central controls or automation systems and workers had to do building-by-building monitoring. Building operators were assigned to a group of buildings to operate.

Outside the buildings, the grounds were usually flood irrigated or hoses with attached sprinklers were dragged around to water the grass and shrubs. Plant palates were quite small and provided very little variety. There was less garbage and waste material generated since the throwaway society was yet to be established. Plastic trash bags didn't exist and garbage went direct from can to the truck. Cigarette butts didn't litter the grounds since smoking was permitted in offices, meeting rooms, and elsewhere inside the buildings. Newspaper racks and other publication dispensers were non-existent.

Nearly all vehicles were gasoline fueled and there was more heavy equipment in the vehicle fleet that there are today.

Maintenance vehicles often consisted of World War II surplus equipment. Parking bumpers were used in lieu of curbs. WW II buildings were commonplace. Dormitories still had clotheslines. Large stocks of used "stuff" that might someday be needed were squirreled away in out of the way places called "boneyards." A coal pile was a campus fixture and cinder disposal a necessity. And a bit later, fallout shelters were designated in most building basements and were stocked with hard candy, rancid crackers, and empty water barrels.

Faculty actually had some respect for facilities staff, albeit as second-class citizens, and they worked much more closely with maintenance staff to make conditions better for the students. Remodeling of offices for new faculty or staff did not happen and when promotions occurred, they moved to the new office and inherited its furnishings, which typically consisted of a desk (usually metal), chair, phone, and ten-key calculator. Their secretary, if high enough up the pecking order to have one, had a typewriter and file cabinet.

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Now

Since most readers are quite familiar with current conditions, this section will merely point out some of the obvious changes that have evolved over time within the facilities management organization. While there are a multitude of things that could be written, the following listing of changes will concentrate on those that have been most dramatic or drastic.

- **Institutional.** As institutions have grown and matured, bureaucracy has increased dramatically. It is more difficult to get decisions and work accomplished on a timely basis. Institutional growth, with its inherent expansion of existing programs and creation of new programs, has reduced the level of funding allocated to operate and maintain campus facilities, grounds, and infrastructure. The result has been to greatly expand levels of deferred maintenance. Even as budgets have been reduced, there is growing pressure on plant management to justify its significant budget amount. Crime and vandalism on campus have increased significantly, much of which eats away at the decreasing operations and maintenance budget.
- **Facilities Organization.** Many workers have turned in their basic hand tools and are using laptop and personal computers to complete tasks formerly done in a more labor-intensive manner. Through the computer they adjust and calibrate controls, stop and start equipment, prepare reports, manage projects, and a host of other tasks. The computer is a basic tool of today's facilities management organization. Staff is more highly skilled and better trained in order to operate and maintain buildings that have evolved in complexity and sophistication. Women have made significant inroads into management and the workforce. The organization is more lean, and the organizational structure has been flattened. Staff turnover is higher and many of today's staff do not have the work ethic of the previous generation. Benefits and wages must be ever adjusted to attract competent employees. Staffs want it now and are not willing to wait for distant promises of raises. They expect salaries that match the outside competition. Planning for retirement is not a concern for most of the younger staff. Sick leave is viewed as "additional" vacation time by many. The mentoring of subordinates has slipped away. And while management struggles to operate in this environment, the pressure is growing for more privatization.
- **Buildings and Grounds.** As technology has changed and improved, it has been incorporated into campus facilities. Buildings and their mechanical and electrical systems are automated to save energy and other valuable resources such as water. Their components are significantly more expensive to maintain. Unfortunately for all, and especially for the facilities management organization, buildings built during the years of rapid growth within higher education were not constructed with materials and finishes that match their actual usage or expected life. Consequently, many of these facilities are drab, unattractive, and always in need of maintenance and repair. Few maintenance budgets have kept up with the

demand for closer attention resulting from more sophisticated building systems and the growing expectations of faculty, staff, and students. Students, in particular, show less respect for campus facilities and to a lesser degree the same applies to faculty and staff.

- **Government Mandates.** Local, state, and federal laws, policies, and mandates have greatly impacted the manner in which facilities organizations do their day-to-day work and the magnitude of its costs. While many of these mandates are useful in ensuring greater workplace health and safety as well as creating a more pleasant and healthful environment, they come with added costs and reduced effectiveness. A shopping list of these laws and mandates includes:
 - OSHA and EPA regulations and reporting requirements;
 - Water restrictions (low flow fixtures, sewer charges, irrigation restrictions);
 - Energy conservation and reduction of energy usage;
 - Recycling;
 - Asbestos abatement;
 - Landfill restrictions;
 - Lead-based, oil-based, and solvent-based paints;
 - Hazardous waste and sewage monitoring;
 - ADA handicapped accommodation;
 - Emission restrictions and air pollution standards;
 - Alternate fueled vehicles;
 - Employee car pooling and travel reduction requirements;
 - Aerosol and refrigerant restrictions;
 - Safety accessories on vehicles and equipment;
 - Restricted plant materials and herbicides; and
 - Political correctness policies.
- **Changes Mastered.** Facilities managers need not be overly concerned with change since they have already dealt with, and hopefully mastered, considerable change within their lifetime. Consider just a few changes that have taken place in the last couple of decades.
 - Computerization has mostly eliminated such things as typewriters, adding machines, manual accounting and record keeping systems, manual work orders, and many other functions heretofore completed utilizing manual processes.
 - Automation of functions such as building controls, boilers, chillers, irrigation systems, remote operating controls, etc., have compensated for reduced staffing levels.
 - A wide variety of equipment is now available to accomplish work formerly done by manual means. A few examples include computer-driven signage systems, computer-based motor vehicle diagnostic tools, bar coding of materials, computer-aided design and drafting systems, on-line information dissemination, and electronic mail.
 - Federal, state, and local mandates and stiffened code requirements have changed the way we build, remodel, and maintain facilities and related equipment.
 - The way we manage and work with people (our own employees and customers) has changed dramatically.

These changes didn't all happen at once, but came gradually. If change is accepted as a way of doing business and new ways of doing past tasks, functions, and procedures are incorporated into the organization in an ongoing manner, then the impact of change is minimized. Only when there is resistance to change and things are pushed to the breaking point does the trauma created by drastic change cause large ripples throughout the organization.

The Future

There are major forces of change in society today that will certainly impact the activities of all institutions of higher education in how they manage programs and resources to meet their varied commitments to teaching, research, and public service. The spin-offs for facilities managers will be just as dramatic as they are for their institutions. The most prominent changes in how institutions will meet their missions in the future will be brought about in a variety of ways.

- **New Technology.** New technology and its accompanying information explosion will continue in the future at an ever-increasing rate to demand new ways of doing old tasks as well as building upon current programs to make them better.
- **Lifelong Learning.** Higher education has promoted lifelong education for many years, but within the facilities organization, ongoing training will be necessary to keep up with changes in technology. Gone are the days when one could exclusively rely on the training received in college or a trade school.

- **Societal Demands.** Colleges and universities are experiencing increasing societal demands for accountability, efficiency, productivity, and value-added contributions. Because of its large and sometimes vulnerable budget, the organization that operates and maintains campus facilities and infrastructure will keenly feel these pressures.
- **Competitive Environment.** An increasing competitive environment for educational delivery and related fiscal and human resource support will continue the need to benchmark for best practice and explore privatization.
- **Partnering and Interdependence.** The growing interdependencies between the college and university and its various non-campus constituencies and partnering will introduce new themes and closer relationships with the private sector and other institutions that will have impact on the way the business of education is conducted throughout the institution.

Prognostications for the Future

In no particular order of importance, we have attempted to analyze some of the changes taking place today and extrapolate a few prognostications of some of the many anticipated changes that will happen or will continue to happen into the next decade or so. Beyond that time frame is anyone's guess.

- **Organizations.** Changes will affect both the manager and those being managed. Greater emphasis will be placed on teamwork and partnerships. The focus will be on the bottom line and meeting customer needs. Privatization initiatives will increase as business and industry moves to concentrate on core-functions.

More emphasis will be placed on protecting the worker by maintaining a healthful environment and the use of personal protective gear and products. As emerging technology is adapted to more workplace functions, it will decrease the number of workers. As permanent employees decrease in number as more functions are automated, the numbers of temporary staff will increase. As jobs become more technical in nature, the need for training will intensify. More staff will be certified in specific areas of expertise.

- **Work Environment.** More functions will become voice operated: computers, door openers, parking gates, appliances, and equipment. Tools, equipment, and even workstations will be redesigned so that they are more efficient and ergonomic in nature.

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Changes will be made in the way work is done to reduce the repetitive stresses that lead to carpal tunnel syndrome, bursitis, and other types of repetitive injuries. Indoor air quality will become as important as outdoor air quality, and monitoring of indoor environmental quality will likely take place.

■ **Technology.** Computers will continue to increase in storage capacity, faster speeds, and decreased power demands. Old technologies will be replaced with processes that provide better, easier, and more efficient ways of getting the job done. As tasks become more automated, less paper will be used. Products and equipment will continue to become more reliable with fewer breakdowns and less maintenance.

■ **Microwave and Internet.** Emerging microwave and satellite technology will allow the development of wireless hand-held computers with the same capability of the desktop and laptop personal computers of today. This same technology will also increase the speed of data transmission as well as lessen the need for, and in some instances eliminate cabling and wiring. Basic Internet service will be considered a utility just like telephone service and will be just as indispensable. The next generation of Internet will dramatically increase the speed of university and laboratory connections, promote experimentation with new networking technologies and demonstrate new applications.

So what does tomorrow, next year, and beyond hold for your institution, your facilities, your career, and your ability to provide the necessary leadership to your organization?

Facilities managers need to recognize that the "good old days" are gone and they will never return. We will never again be able to operate in the "old way," and we wonder why anyone would want to do so. All our jobs will change in some way, but what the heck, most have changed already. We will be required to perform tasks in different ways, but so what, most of us are already doing things differently.

It may be of some comfort to realize that the changes that take place in how we do our jobs have not come about because of any wrongdoing on our part. At least you can't be blamed for that! The bright spot in all of this is that the need for maintenance will never go away.

Buildings will wear out, pipes will break, air conditioning will be demanded, equipment will fail, and the grass will still need to be mowed. Some things never change! The demands for our profession, our experience, and our expertise can only increase in the future.

Our success on the job will be measured in how well we meet the challenges of change and use it to our advantage. Today's radical changes in technology demand that we too must change. We are confident that as a profession, facilities managers will be up to the challenges and changes of the future. 🏠



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September Institute for Facilities Management
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Biological and Chemical Impact to Educational Facilities

by Santo Manicone

The possibility of biological or chemical terrorism should not be ignored, especially in light of the events during the past several months. Preparing an educational facility to address this possible threat is an alarming challenge, but the consequences of being unprepared could be devastating. As we are well aware, all facilities managers must be prepared to prevent illness and injury that would result from biological and chemical acts to their facilities. As with emerging infectious diseases, early detection and control of biological or chemical attacks depends on a strong and well-trained staff at every level.

Combating biological and chemical terrorism will require facilities to step up in technology, information and communication systems, and medical surveillance and awareness. This preparedness will also require a reexamination of core procedures that a facility has in all activities (mail and delivery services, etc.).

Understanding the Impact

In the past, most planning for emergency response for educational facilities has been concerned with bombings, fires, and riots. According to the government, chemical terrorist acts are likely to be overt because the effects of chemical agents absorbed—through inhalation or by absorption through the skin or mucous membranes—are usually immediate and obvious. Attacks with biological agents are more likely to be covert. They present different challenges and



require an additional dimension of emergency planning that involves the public health infrastructure.

Any biological agent placed in an educational facility will not have an immediate impact because of the delay between exposure and onset of illness. Physicians or other primary healthcare providers probably will identify the first casualties of this type of attack. For example, in the event of a release of a contagious virus, patients will appear in doctors' offices, clinics, and emergency rooms during the first or second week, complaining of common flu symptoms. Only a short window of opportunity will exist between the time the first cases are identified and a second wave of the school population becomes ill. During that brief period, school directors, physicians, and public health officials will need to determine that an attack has occurred, identify the organism, and prevent more casualties through prevention strategies.

Early detection and response to biological or chemical terrorism is crucial. Without special preparation at all levels, a large-scale attack (i.e.,

with anthrax spores or a foodborne biological or chemical agent) could overwhelm the schools health clinic or infrastructure. Large numbers of patients, including both infected persons and the "worried well," will seek medical attention, with a corresponding need for medical supplies, diagnostic tests, and beds.

Being prepared for terrorist-caused outbreaks is an essential component of an educational facilities health surveillance and response system, which is designed to protect the population against any unusual public health event. The epidemiological skills, surveillance methods, diagnostic techniques, and physical resources required to detect and investigate unusual or unknown diseases and chemical accidents, are similar to those needed to identify and respond to an attack with a biological or chemical agent. Potential biological and chemical agents are numerous, and an educational facility's infrastructure must be equipped to quickly resolve crises that would arise from a biological or chemical attack.

Preparing an educational facility to address these dangers is a major challenge to the common safety response program. Early detection requires increased biological and chemical terrorism awareness among front-line employees because they are in the best position to report suspicious packages, illnesses, or unknown individuals. Also, early detection will require improved communication systems between front-line employees and public health officials. In addition, state and local health agencies must have enhanced capacity to investigate unusual events and unexplained illnesses, and diagnostic laboratories must be equipped to identify biologi-

Santo Manicone is president of Facility Support Services, Hamden, Connecticut. He can be reached at support@snet.net.

cal and chemical agents. Fundamental to these efforts is comprehensive, integrated training designed to ensure core competency in preparedness and the highest levels of scientific expertise among local, state, and federal partners.

Preparedness and detection of products, illness, and injury caused by biological and chemical terrorism is a complex process that involves numerous partners and activities. Meeting this challenge will require special emergency preparedness in all departments, including security and facilities divisions. It is the role of the campus coordinator to outline the estimated routes of contamination that would affect a campus. They must incorporate all emergency phone numbers and set up direct communications with state and local officials. It is important to include medical facilities and even rental companies in case of a massive outbreak or a dorm closing. The best way to be prepared for this type of program is to get started on designing a plan that will fit your campus and be compatible with your local emergency agencies. According to some state agencies, they will provide educational facilities with health guidelines, support, and technical assistance as a way to assist in the development of your preparedness plans and response protocols.

Detection and Surveillance

Early detection is essential for ensuring a prompt response to a biological or chemical attack. Educational facilities should integrate surveillance for illness and injury resulting from biological and chemical terrorism, while developing new mechanisms for detecting, evaluating, and reporting suspicious events that might represent covert terrorist acts. As part of this effort, state and local health agencies should be contacted to form partnerships with front-line medical personnel in hospital emergency departments, health care facilities, poison control centers, and

other offices as part of routine surveillance mechanisms.

Characterization and Diagnosis of Biological and Chemical Agents

A large number of educational facilities do not have the capabilities or certification to analyze strains of viruses that are affecting their campus. It is recommended that a joint venture with a local laboratory be established and placed into this program. Inclusion of a list of approved Center for Disease Control (CDC) laboratories is also recommended.

It is often possible, in fact, to fake PM work completion, and the truth will not be known until equipment begins to break down.

According to the CDC, they will create a multilevel laboratory response network for bioterrorism analysis. This network will link clinical labs to public health agencies in all states, districts, territories, and selected cities and counties, and to state-of-the-art facilities that can analyze biological agents. The network will also include the regional chemical laboratories for diagnosing human exposure to chemical agents and provide links with other departments.

As part of this effort, CDC will transfer diagnostic technology to state health laboratories and others who will perform initial testing. CDC will also create an in-house rapid-response and advanced technology (RRAT) laboratory. This laboratory will provide around-the-clock confirmatory and reference support for terrorism response teams.

A comprehensive and quick response to a biological or chemical terrorist attack involves epidemiological investigation, medical treatment for affected persons, and the initiation

of disease prevention or environmental decontamination measures.

Because the initial detection of a covert biological or chemical attack will probably occur at the local level, disease surveillance systems at the school and local health agencies must be capable of detecting unusual patterns of disease or injury, including those caused by unusual or unknown threat agents.

In the event of a confirmed terrorist attack, a facility should contact the CDC, which will coordinate with other federal agencies in accordance with Presidential Decision Directive (PDD) 39. PDD 39 designates the Federal Bureau of Investigation as the lead agency for the crisis plan, and charges the Federal Emergency Management Agency with ensuring that federal response management is adequate to respond to the consequences of terrorism. If requested by the facility, CDC will deploy response teams to investigate unexplained or suspicious illnesses or unusual etiologic agents, and provide on-site consultation regarding medical management and disease control.

Communication Systems

A facility's ability to mitigate the public health consequences of biological and chemical terrorism depends on the coordinated activities of a well-trained spokesperson and additional personnel throughout the school, who have access to up-to-the-minute emergency information. Effective communication with the public through the news media will also be essential to limit activities at the school and surrounding areas.

A higher education facility should develop a state-of-the-art communication system that will support disease surveillance, rapid notification, and information exchange regarding outbreaks that are possibly related to bioterrorism. The communication system should also include emergency health information and coordination of emergency response activities. Through this network of notifications,

a school should provide terrorism-related training to epidemiologists, laboratory technicians, emergency responders, emergency department personnel, front-line health-care providers, and health and safety personnel.

Implementation

Implementation of the objectives outlined in your school plan will be coordinated through state and local officials in their own procedures and policies. Assigned program personnel are responsible with a) helping build local and state preparedness, b) developing expertise regarding potential threat agents, and c) coordinating response activities during actual bioterrorist events.

Implementation will require schools to coordinate with state and local public health agencies, as well as with other persons and groups, including public health organizations, medical research centers, health-care providers, professional, medical examiners, emergency response units and responder organizations, safety and medical equipment manufacturers, CDC, and state and federal agencies.

Recommendations

Implementing a strategic preparedness and response plan will ensure the following outcomes:

- Public health agencies and healthcare providers will be prepared to mitigate illness and injuries that result from acts of biological and chemical terrorism on your campus.
- Surveillance for infectious diseases and injuries, including events that might indicate terrorist activity, and reporting of suspected terrorist events will be integrated with the evolving comprehensive networks.
- Facilities and security departments will be

The recent threats and the use of chemical agents against civilians have exposed U.S. vulnerability and highlighted the need to enhance our capacity to detect and control terrorist acts.

equipped with state-of-the-art tools for rapid epidemiological investigation and control of suspected or confirmed acts of biological or chemical terrorism.

- A staff of well-trained responders will be available in the event of a bioterrorist act or incident.

The tools that a facility must develop in response to terrorist threats

serve a dual purpose. They help detect rare or unusual events and respond to health emergencies, including naturally occurring outbreaks or industrial injuries that might resemble terrorist events in their unpredictability and ability to cause mass casualties

The recent threats and the use of chemical agents against civilians have exposed U.S. vulnerability and highlighted the need to enhance our capacity to detect and control terrorist acts. Our educational facilities must be protected from an extensive range of deadly biological and chemical agents, including some that have been developed and stockpiled for military use. Even without threat of war, investment in defense ensures preparedness and acts as a deterrent against hostile acts. ▲

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Building Planning

by Jennifer Graham

There are several considerations to make when planning a new building. While the list is endless, below are just two specific examples.

If you are looking for a more general resource on the entire planning, design, and construction process, specifically for campus facilities, APPA's new publication, *From Concept to Commissioning: Planning, Design, and Construction of Campus Facilities*, is for you. Visit our website at www.appa.org/resources/publications for more information.

Also in this column are two links to emergency preparation plans, something that everyone should establish on their campus.

Question: *An architect is specifying 2" of rigid insulation for the roof of a new concert hall (for an R=3D10). Obviously, the higher the R value the better; however, is it reasonable to expect a higher R-value for educational facilities, knowing that the facility is designed with a 50 - 100+ year life? What is the "recommended" R-value for roofs in the Washington, D.C. metro area? Any info you can provide would be helpful and appreciated.*

Response 1: The International Energy Conservation Code requires R values of R17 - 20 for roof assemblies in Alexandria, VA. I don't know which of the building codes (if any) have been adopted in the area.

Jennifer Graham was APPA's publications manager. We wish her well in her new position with a literary agency.



Response 2: We specialize in that exact type of facility (Cultural/Educational) and we recommend R=30.

Question: *We are planning to construct a multipurpose arts facility and have some conflicting ideas about lighting in classrooms. The design team is pushing for incandescent lighting in many areas including the drawing and painting studios, exhibition/gallery space, and in the recording studios. Apparently, they do not think that any other lighting will meet their needs. They do not want to use other lighting types (fluorescent) because they say it would interfere with recording (buzzing noise), dimmability, and color rendition.*

Can anyone shed some light as to the appropriate and energy saving lighting for these areas and are there any specifications for classrooms (i.e., light levels, indirect lighting, etc.).

Response 1: I have run across demands for incandescent lighting for painting areas and have to agree with them for the most part. Incandescent lighting gives them the truest color

rendition as far as I know. But what about daylight fluorescent lamps? They are very close to daylight. Would they be acceptable? Maybe a lighting expert could help you with that one.

We have a TV studio that is filled with fluorescent lights. Buzzing is not a problem because they have electronic ballast. I believe the buzzing comes from magnetic ballast.

Dimming can be accomplished with fluorescent lighting. We have some in a new \$30 million library that work great. You have to make sure you "season" the lamps before you use them though. Each lamp has to be on steady for 24 hours before being used on a dimmer or its life is dramatically reduced. We have set up a couple of fixtures the janitors can use to season lamps.

Response 2: When we set up a multimedia classroom about 8 years ago, we discovered that electronic dimmable fluorescent systems can be found that provide equivalent levels of dimmability as incandescent. What you need to watch for is the percentage output capability: 10 percent output (like the Advance Mark VII) are way too bright at the 10 percent minimum output. On the other hand, a 1 percent output (like the Lutron, if memory serves correctly) gives theatrical dimming capability.

As to hum, with electronic ballast that issue is quite effectively minimized. Color rendition with fluorescents has gotten very good in recent years.

We were fortunate enough to find a very good lighting/electrical engineer when we were going through the design/selection process, and have never regretted the money spent there.

Response 3: Lamp and ballast manufacturers have addressed your concerns with new products which can usually save 50 percent or more on your lighting bills with additional savings on cooling costs. I have installed four-foot fluorescent lamps, which mimic incandescent bulbs with a CRI of 86 and a Kelvin temperature of 3,000 degrees in the costume shop of our fine arts building. Lutron is the best ballast for dimming in my experience and noise generation is all but absent with the new electronic ballast. Be prepared, these products come at a premium cost. Check for specifications with the IES Lighting Handbook, the design light level is 50 fcs. You might find additional assistance from a more progressive lighting designer.

Response 4: The previous response is well taken. We worked together on this project, where we replaced a number of incandescent bulbs. As an

Let me just suggest that there is an "academic" resource that is available also to get over any distrust of facilities experts.

interesting note: The room had always had a problem with overheating prior to the retrofit. The day after the retrofit was completed we got a call from someone saying the room was cold.

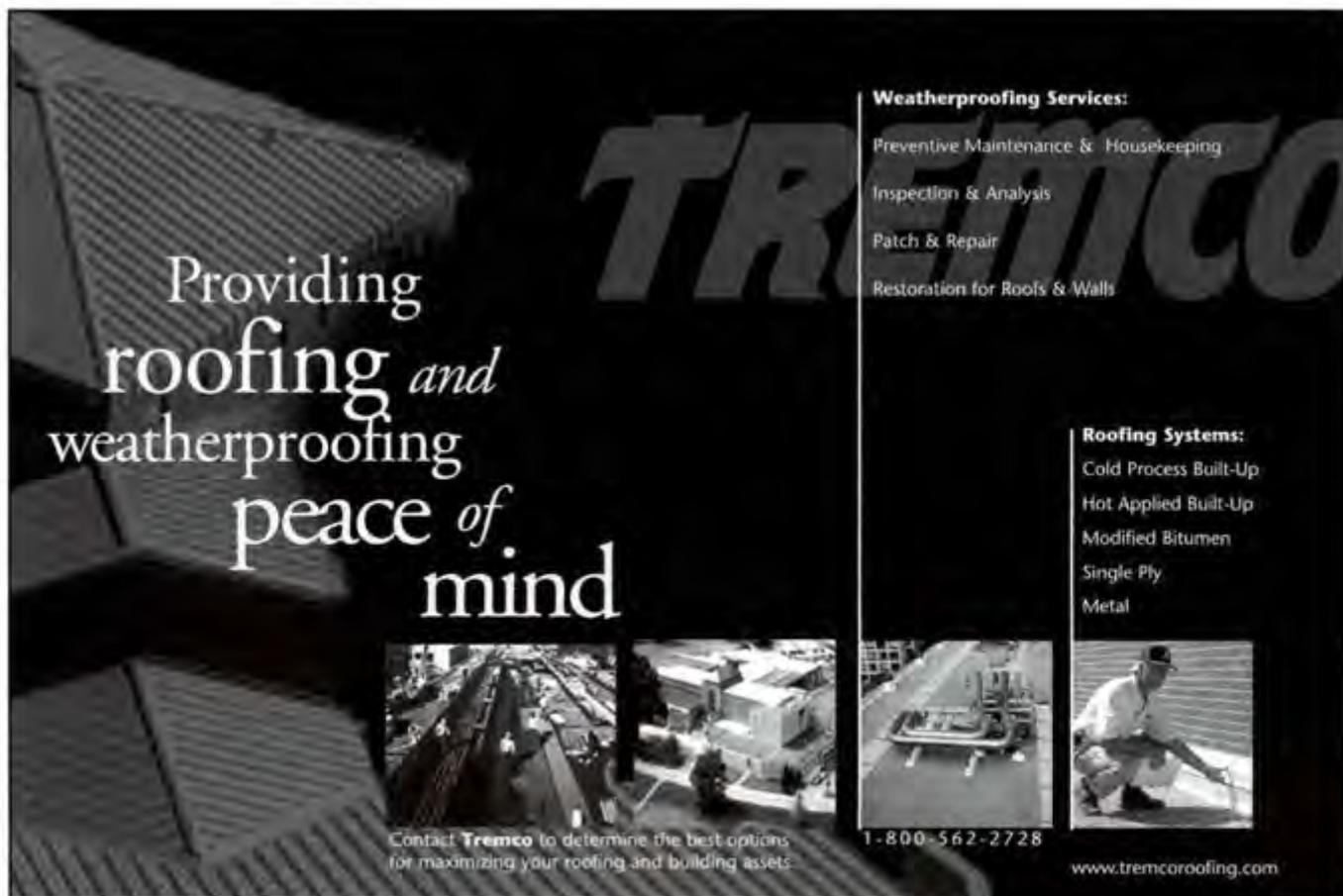
Response 5: There have been several positive suggestions that I won't bother to agree with. Let me just suggest that there is an "academic" resource that is available also to get over any distrust of facilities experts. The Lighting Research Center run by Rensselaer Polytechnic Institute looks at many different lighting issues including color rendition, dimming, energy efficiency, human perception,

etc. Their website is www.lrc.rpi.edu. They might be the appropriate resource for you to convince folks that new technologies might actually work for them, be energy efficient, and relatively easy to maintain.

Question: If possible, please respond with an attached copy of the Emergency Preparation Plan established at your location.

Response 1:
<http://facil6.facil.umass.edu/emergency/index.html>.

Response 2: The University of Western Ontario's Disaster Plan is available on the Web in Adobe Acrobat format at www.uwo.ca/emerg/plan133jan2001.pdf or check www.uwo.ca/emerg for details on our response/preparedness program. UWO has a very active program and our website has photos of many of our activities. 🏠



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The Bookshelf

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

This month brings three books, one that focuses on the traditional facilities officer and two that focus on the future and its opportunities. Despite the differences, these books are similar because they present the dynamics of our industry and the importance of keeping current, if not ahead, of the curve.

Civil Engineering Practice in the Twenty-First Century, by

Neil S. Grigg, Marvin E. Criswell, Darrell G. Fontane, and Thomas J. Siller. Reston, Virginia: ASCE Press, 2001. 248 pp, softcover

The authors of *Civil Engineering Practice* begin by describing the many ways civil engineers have helped build the society in which we now live. Bridges, roads, buildings, utility distribution systems, environmental preservation, and the management systems which facilitated the construction of all of the above were created by individuals with a civil engineering background. However, our world has changed. The civil engineering curriculum in many cases has not changed with it. The authors seek to remedy that shortfall with this book.

They present their fundamental premise: while the range of influence of civil engineers has changed over the centuries, it has remained the same and gotten more technical. Tech-

Ted Weidner is the associate vice chancellor for facilities and campus services at the University of Massachusetts/Amherst. He is also the co-chair of APPA's Trades Staffing Guidelines Task Force and can be reached at tweidner@admin.umass.edu.

nical changes are not along the lines of more complicated mathematical equations, which may be true, but are more technical in the necessary understanding of creativity, life-cycle cost accounting, management of people, critical thinking, community leadership, intricacies of the law, economics, and ethics. In short, the same things a facilities professional must know to do a good job.

There are numerous examples where civil engineers utilize more than just typical engineering duties and responsibilities. The open-minded facilities officer will recognize many similarities. With the examples come fundamental characteristics and traits that must be learned in order to perform well in the specific function. I take the education I have received in facilities management as having already prepared me for the challenges and responsibilities presented in this text. But the recent or nascent facilities officer will learn a great deal from this book.

A skeptic might read the first ten pages and put it down with the belief that it is a textbook for college students, which it may be. However, it is also a retrospective of the many things a facilities officer must know, and in some cases, master. From this reader's perspective, it is an excellent summary of the breadth of knowledge necessary to be a facilities officer in the 21st century.

Being Digital, by Nicholas Negroponte. New York: Alfred A. Knopf, 1995. 231 pp, softcover.

The Digital Economy: Promise and Peril in the Age of Networked Intelligence, by Don Tapscott. New York:

McGraw-Hill, 1995. 321 pp, softcover.

These two books

were written at the height of hype about the Internet. While the financial bubble may have burst, the use of the technology and the Internet are ever present. Frankly, I read these books several years ago, one on the recommendation of a technology salesman at a conference. But looking at these books again reminds me of their ongoing value and importance.

What is it, that you may ask, that makes these "nerdy" books of value to a facilities officer? There are probably several chapters in each book that do not apply to what it is that we do on a daily basis. However, both these books identify what is possible and that is precisely why they are of value to facilities officers. They discuss the ability to conduct business from remote locations, to exchange information between vendors and customers for mutual gain, and the value of amalgamating data of different types to reach a new understanding of one's business.

As I reflect on the problems I have faced in delivering facility services to both internal and external customers, I often come back to issues of information. Information that may be digital or analog but it should be at my fingertips; information that is current and not several months or years old; information that can be internal or external, information that moves at the speed of light rather than the speed of paper. Despite our very physical reality and constraints, we can all take advantage of *Being Digital* and focusing on *The Digital Economy*—if not for immediate application, then for an understanding of where we are headed and what we must be prepared to do if we expect to succeed. 🏠

New Products

New Products listings are provided by the manufacturers and suppliers and are selected by the editors for variety and innovation. For more information or to submit a New Products listing, contact Gerry Van Treeck, Achieve Communications, 3221 Prestwick Lane, Northbrook, IL 60062; phone 847-562-8633; e-mail gvtgvt@earthlink.net.

Access Hardware Supply stocks the complete line of electronic hardware from Sargent, which makes a wide range of products for access and egress control. Access Hardware Supply is currently featuring Sargent's Electrified Locksets and Electrified Exit Devices. With over 25 years experience, Access Hardware has an extensive inventory of locking, access, and security hardware from top manufacturers. More information on quality electronic hardware for security and access control can be obtained by calling Access Hardware Supply at 800-348-2263.



McQuay International has launched a new website featuring useful HVAC system information. The new site provides easy access to product catalogs, application information, and free design tools software. All customers can benefit from easy access to parts information, installation, maintenance manuals, and customer case studies. For additional information visit McQuay International's new website at www.mcquay.com.



Zero Surge recently introduced a "tower" version of its popular 8R15 and 8R7.5 surge suppressors. Requiring only 4" by 4" of space, the tower is an option for those with limited space. The unit can stand vertically on the desk or floor with easy access to the on/off switch. Zero Surge is a manufacturer of certified grade A, class 1, mode 1 surge removal filters. The company's patented suppressors eliminate the surge damage and downtime often experienced with MOV (metal oxide varistor) type surge suppressors. For more details call Zero Surge at 800-996-6696.



Aztec Products, Inc. offers their new Stripmaster Floor Stripper-Scrubber. The only mid-size "orbital-action" propane driven machine that strips tile floors, scrubs grouted ceramic tile and concrete. Industry professionals attest that Stripmaster brings up to 50 percent labor savings, and boosts productivity and maneuverability for floor maintenance personnel. For more information regarding Aztec Products, Inc. and Stripmaster, call for a free video at 800-331-1423.



LaCosta Facility Support Services, a minority-owned provider of high quality facility support service solutions, has unveiled a newly designed website presenting its extensive capabilities. Moving and installation, flooring and coating, supplemental labor services, painting and coating, and grounds maintenance are just a few of the subjects you'll find detailed information about at this site. Visit the LaCosta Facility Support Services' website at www.lacostaservices.com.



Spirotherm, Inc. introduces its new product brochures highlighting the Spirovent and Spirotrap High Velocity air, dirt and air/dirt eliminators. The only air and dirt eliminators developed especially for large volume fluid systems, such as central plants and district heating/cooling, the Spirovent and Spirotrap High Velocity models feature the patented Spirotube coalescing medium. Available in sizes through 36" pipe and flows exceeding 30,000 GPM, the High Velocity series is unique in design and application. For additional information call Spirotherm, Inc. at 800-323-5264. 🏠



Coming Events

APPA Events

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

Mar 17-19—Institute for Facilities Finance (held jointly with NACUBO). Dallas, TX.

Jun 10-14—Leadership Academy. Scottsdale, AZ

Jul 21-23—Educational Facilities Leadership Forum. Phoenix, AZ.

Sep 8-12—Institute for Facilities Management. Norfolk, VA.

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

APPA Regional Meetings

Sep 15-17, 2002—RMA Regional Meeting. Banff, AB, Canada. Contact Steve Baldick, 403-220-8151 or baldick@ucalgary.ca.

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

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

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

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

Sep (date yet to be determined)—AAPPA Regional Meeting. Contact Brian Fenn, 61-07-3864-3778 or b.fenn@qut.edu.au.

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

Other Events

Apr 20-23, 2002—TAPPA Annual Meeting. Bandera, TX. Contact Miles Abernathy, 512-471-1600 or miles@mail.utexas.edu or tappa.net

May 8-10—10th National Conference on Building Commissioning. Chicago IL. Contact Diane Ferington, 503-248-4636 x201 or dferington@peci.org or www.peci.org/ncbc/2002/index.html.

May 14—DFWAPPA Quarterly Meeting/Annual Awards Banquet. Dallas-Ft. Worth, TX. Contact Kevin Folsom, 214-497-7101.

Executive Summary

Continued from page 6

issue, or visit our website at www.appa.org.

The Forum is not the traditional cafeteria-style, smorgasbord approach to feeding your professional appetite. In fact, you have told us you are starving for a new learning experience, and you expect international APPA to deliver these new professional development needs and requirements. Let's face it; money is too tight to waste on poorly designed, poorly delivered educational programming. We cannot afford to fall behind in our capacity to adapt to and ultimately transform our organization and institutions to meet the new challenges of the 21st century.

There has never been a time when the questions facing leaders were more daunting. It has been said that we are all captives of our own experience! We can only break those bonds by engaging in new and different experiences that provoke new thinking, provide new skills, and prompt new actions. I challenge you to come and experience the new Educational Facilities Leadership Forum this coming July 21-23, 2002 in Phoenix, Arizona. You won't regret it. Meet me at the Forum! 🏠

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