# FUBLISHED BY APPA SEP/OCT 2015

# INSIDE

APPA Institutional and Individual Awards

Perception of Deans on the Role of Facilities APPA 2015 Highlights Thought Leaders 2015, Part 1

# ENGAGENENT AND MEMBER SERVICE A PROFILE OF PRESIDENT PETE STRAZDAS

Nonprofit Org. U.S. Postage **PAID** Permit No. 425 Southern, MD

Anthro Sites<sup>™</sup> collection multipurpose table + bench

# Turning courtyards into lecture halls since 1962.

For over 50 years, Victor Stanley has designed, engineered, and manufactured timeless site furnishings that allow you to bring communities to life. After years of development we now have the capacity to produce custom Steelsites<sup>™</sup> collection benches, with or without backs, in fixed radii, concentric radii, and even the classic moving elegance of the French curve, while maintaining the proper ergonomic pitch of a contoured seating surface with unparalleled precision, value, and flexibility.



Create a timeless moment.®

VICTORSTANLEY.COM

# features

# **ENGAGEMENT and** MEMBER SERVICE

# "Third Career" is Golden for Incoming APPA President Strazdas

# By Ruth E. Thaler-Carter

Peter Strazdas, now into his third career in facilities, brings a fierce passion for engagement and a career arc that is unusual in the field of campus facilities management to his new role as APPA President.

20

14

28

39

# APPA's Institutional Awards Recognize Overall Excellence, Sustainability

By Anita Blumenthal

Weber State University in Idaho received the APPA 2015 Award for Excellence in Facilities Management, while Slippery Rock University and San Diego Community College District won the annual Sustainability Award. Learn more about how these three institutions achieved their goals for success.

# APPA Fellow and Meritorious Service Awards Honor Contributions in the Field of Facilities Management By Mark Crawford

Meet the 2015 APPA Fellow and Meritorious Service Awards recipients. These men and women have demonstrated their dedication to facilities management by investing large amounts of time and great expertise to advance the profession.

32

61

# Facility Matters: The Perception of Academic Deans Regarding the Role of Facilities in Higher Education By Wallace L. Harris, Ed.D.

This study explored the relationship of the facility-built environment to learning in higher

CFaR Center for Facilities Research

education from the perspective of academic deans. Several key issues were identified, and the findings of this study supported inferences that learning and the facility-built environment were perceived to be interconnected.

# APPA 2015 Conference Highlights Photos by Rhonda Hole

APPA Thought Leaders Report 2015, Part 1, Facilities & Technology: The Transformation of "Campus"



# columns.

SEPTEMBER/OCTOBER 2015 Volume 31 • Number 5



Character Still Counts: Trading Self-Centeredness for Self-Respect *By Joe Whitefield* 

Code Talkers ......48

Please share your

magazine with others and recycle

when discarding.

The APPA Standards Initiative: Creating ANSI Standards for Total Cost of Ownership By Brooks Baker

Knowledge Builders	50
Start Small. Just Start Writing.	
By Jenna Elmer, SPHR	

New Products	59
Compiled by Gerry Van Treeck	

Index of Advertisers	6	(	2
----------------------	---	---	---



FSC

www.fsc.org

MIX Paper from responsible sources FSC\* C117478











1,000 JOBS. ONLY ONE

Electric models come with a retractable reel cord and issue alerts to prevent common user errors. Gasoline models feature the industry's only overhead cam engine with EFI, improve fuel efficiency and reduce emissions. Both feature rustproof aluminum frames, carry the industry's longest warranty and can replace expensive pickup trucks.

**"BANK ON CARRYALL" SALES EVENT: BUY NOW. PAY LATER.** From now through Dec. 31, 2015, qualified commercial buyers can purchase any new 2015 or 2016 Carryall<sup>®</sup> utility vehicles with no pay for six months. Or lease new 2015 or 2016 Carryall 500 and 700 utility vehicles with special financing of 2.9% APR for 36 - 48 months or 3.9% APR for 60 months. For program details or to request a demo, visit **www.clubcardealer.com/carryallpromotions**.





U.S. COMMUNITIES



# ADA TURNS 25; APPA POSTS NEW STANDARDS BLOG

# July 26, 2015 marked the

25th anniversary of the Americans with Disabilities Act (ADA) becoming law in the United States. American colleges and universities incorporated the new

guidelines and requirements into the fabric of their own facility design, construction, and renovation projects. Over the years, APPA has provided



leadership on ADA issues in educational facilities through books such as Stephen Cotler's *Removing the Barriers*, integration into the Planning, Design, and Construction section of the Institute for Facilities Management, incorporation into the *Facilities Management* manual and now the Body of Knowledge (BOK), and more.

The ADA National Network (*www. adata.org*) states that the ADA is "a civil rights law that prohibits discrimination against individuals with disabilities in all areas of public life, including jobs, schools, transportation, and all public and private places that are open to the general public." There are five sections of the ADA:

- Title I (Employment) This has been a key section for educational institutions over the years, as it requires that "reasonable accommodations" be made for qualified applicants and employees without causing the employer "undue hardship."
- Title II (State and Local Government) – Public entities, services, and programs provided by a state and local government must make sure that they are accessible to persons with disabilities.
- Title III (Public Accommodations)

   Facilities such as restaurants, sports stadiums, hotels, private schools, and other entities used by the public need to be accessible and not discriminate against patrons with disabilities.

• Title IV (Telecommunications) – This requires telephone and Internet companies to provide a nationwide system that allows individuals with speech or hearing disabilities to communicate on the telephone or over the Web.

• Title V (Miscellaneous Provisions). The current Act is available in its entirety from *www.ada.gov*. This is where you can also find archival and historical information and clips, technical assistance and resources, and events related to the 25th anniversary.

.....

In mid-September APPA posted its first *Facilities Standards* blog, published as the "premier source for standards and codes issues as they relate to the facilities sector." The new blog will serve as a portal through which readers can stay up to date on current developments from ASHRAE, ICC, ISO, NFPA, and other relevant organizations affecting educational facilities.

According to APPA's Sam Waymire, "With contributions from APPA staff members, APPA's Standards and Codes Council, and other subject matter experts, readers can rest assured that *Facilities Standards* offers a varied and professional perspective on relevant issues." Read current and recent blog posts at *www.facilitiesstandards.com.* (5)

These Glagner

# Coming in Nov/Dec 2015

- Facilities and School Security
- Testing or Teaming in Construction
   Management
- 2015 Thought Leaders Report, Part 2



President Peter Strazdas, Western Michigan University

> **Executive Vice President** E. Lander Medlin, *lander@appa.org*

**Editor** Steve Glazner, *steve@appa.org* 

Managing Editor Anita Dosik, anita@appa.org

Design & Production www.touch3.com

**Printing** Corporate Press, Inc.

Editorial Office 703-542-3837 Fax: 703-542-3782

Advertising Gerry Van Treeck, 847–347–7851 gvtgvt@earthlink.net

# www.appa.org/facilitiesmanager

Facilities Manager (ISSN 0882-7249) is published six times a year (January, March, May, July, September, and November). Send editorial submissions to *steve@appa.org*. A portion of APPA's annual membership dues (\$53) pays for the subscription to *Facilities Manager*. Additional annual subscriptions cost \$66 for APPA members, \$120 for nonmembers. Contact the editorial office for article reprints.

Copyright © 2015 by APPA. Contents may not be reprinted or reproduced in any form without written permission. The opinions expressed are those of the authors and do not necessarily reflect the views of APPA. Editorial mention of companies or products is for informational purposes only and should not be construed as an endorsement, actual or implied, by APPA.

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

### About APPA

APPA promotes leadership in educational facilities for professionals seeking to build their careers, transform their institutions, and elevate the value and recognition of facilities in education. Founded in 1914, APPA provides members the opportunity to explore trends, issues, and best practices in educational facilities through research, publications, professional development, and credentialing. Formerly the Association of Physical Plant Administrators, APPA is the association of choice for more than 13,000 educational facilities professionals at more than 1,500 learning institutions throughout the United States, Canada, and abroad. For more information, visit us at www.appa.org.



# Every day, we waste over 18 trillion lumens.

# Isn't it time to look at light in a whole new way?

At Amerlux, we understand the value of what the right light in the right place can do.

Discover the new lighting value metric at amerlux.com.

Follow us @AmerluxLighting.







**Industry News & Events** 

By Anita Dosik



# APPA 2016 ANNUAL MEETING & EXPOSITION JULY 12-14, 2016 | NASHVILLE, TENNESSEE

Mark your calendar to attend next year's meeting and exposition. You won't want to miss this exciting gathering of fellow facilities professionals and exceptional speakers! Co-located with SRAPPA 2016.

# APPA/SRAPPA 2016 CALL FOR PAPERS: SUBMISSION FINAL DEADLINE IS OCTOBER 26, 2015

APPA/SRAPPA invite you to submit a proposal that presents solutions for improvement, sharing of best practices, or innovative approaches relevant to facilities professionals throughout the educational community. The APPA/SRAPPA 2016 annual conference offers an opportunity for you to be part of the outstanding professional development program, to participate in discussions that address effective strategies to the many challenges facing facilities professionals.

The selected proposals will provide a program that offers innovative, comprehensive, and diverse treatment of issues facing facilities professionals throughout the educational community colleges, universities, community colleges, and K-12. Topical areas to be addressed are:

### **Preventive Maintenance for People**

- » Check Mate Matching the Right People for the Right Job What Are You Worth? – Recognizing Your Value
- » Do I Really Have To Use This? New Gadgets, Aging Workforce

» Invest Now – Or Pay Later .... Professional Development Your Best Investment

### **Space: The Ever Changing Frontier**

- » Your Space, My Space, Our Space Partnering With Academic Colleagues
- » It's All One Big Sandbox Best Practice In Flexible Space Usage
- » Classes Will Commence On The Quad Flipping the Classroom
- » Town & Gown Best Practices in Multiuse Facilities

### Economy

facilities

- » Where Did My Tuition Go? Funding Usage and the Impact on Facilities
- » 2016 Rollercoaster Coming In & Out of the Recession
- » Hold On Tight Best Practices In Total Cost of Ownership
- » My Piggy Bank Is Full Understanding the Benefits of Energy Credits

# **APPA'S EVP JOINS HEALTHY SCHOOLS BOARD**

Process Cleaning for Healthy Schools (PC4HS) has



appointed APPA Executive Vice President Lander Medlin to its governing board of directors. Process Cleaning for Healthy Schools is a nonprofit consortium with the mission of "schools helping schools." The process enhances efficiency, cleanliness, ease of deployment, and health factors through a carefully designed and documented system tailored for K-12 school districts. For

more information, visit www.pc4hf.com.

# 2016 AWARD NOMINATIONS APPLICATIONS DUE NOVEMBER 30, 2015

Nominations and applications are now being taken for APPA's 2015 institutional and individual awards:

- Award for Excellence
- Sustainability Award
- Effective and Innovative Practices Award
- APPA Fellow
- Meritorious Service Award
- Pacesetter Award

Awards nominations submitted after November 30, 2015 will be held and considered in the 2016 award cycle. To find out details about each award, visit http://www.appa.org/membershipawards/index.cfm or contact Christina Hills at christina@appa.org.

# Innovations & Technology: Impact of Facilities and the Student Experience

- » Click Here Technology What's Next & Are You Ready?
- » Impact of Facilities and the Student Experience
- » Be Safe Security for the Whole Campus Community

### **Future of Built Environment**

- » Changing Landscape of Renewable Energy
- » Sustainability of the Physical of Aspect
- » Staying Ahead of the Curve What's Next in Regulatory Codes?
- » Dealing with the Rising Costs of Higher Education

The slate descriptions above is provided as a guideline to those wishing to submit. APPA's goal each year is to provide topical material that is cutting edge and key to the success of all facilities professionals throughout our membership. If you have a topic that you feel is key for consideration, but may not align exactly with the proposed guidelines for this year's conference, we encourage you to submit for review.

Proposals are being accepted for 60-minute concurrent sessions. Programming will occur July 12-14 in Nashville, Tennessee. Eight to

# **EVENTS**

### APPA EVENTS

Sept 13-17, 2015 APPA U: Institute for Facilities Management and Leadership Academy, *Scottsdale*, *AZ* 

Oct 19-22, 2015 ACUHO-I/APPA Housing Facilities Conference, St. Petersburg Beach, FL

Dec 6-9, 2015 Women's Leadership Institute, Amelia Island, FL

Jan 17-21, 2016 APPA U, New Orleans, LA

Apr 4-5, 2016 Smart and Sustainable Campus Conference, Inner Harbor, Baltimore, MD

## REGION/CHAPTER EVENTS

Sept 19-23, 2015 MAPPA 2015 Conference, Milwaukee, WI Oct 4-7, 2015 ERAPPA 2015 Conference, Providence, RI Oct 9-15, 2015 PCAPPA 2015 Conference, Portland, OR Oct 10-13, 2015 SRAPPA 2015 Conference, Baton Rouge, LA Oct 11-14, 2015 CAPPA 2015 Conference, Manhattan, KS Nov 2-6, 2015 AAPPA 2015, Halifax, Nova Scotia

# OTHER EVENTS

Oct 28-30, 2015 EDspaces, New Orleans, LA

For more information or to submit your organization's event, visit www.appa.org/calendar.

ten educational sessions will run concurrently in two to three time slots per day.

Here are a few required aspects for your submission as you prepare your proposal:

- Submission of program title that is 3-5 words in length, along with your abstract that is in a format of a 5-7 sentence description;
- Submission of 4 learning outcomes;
- Submission of complete contact information for each potential presenter to include full name, title, institution or company, phone and e-mail address;
- Submissions from business partners must include partnering with an educational entity.
- Submissions can be made by e-mail to *callforprograms@appa.org*.
- Submissions will be automatically rejected if the above items are not included.

For the latest on APPA/SRAPPA 2016 Call for Programs and other programming submission offerings visit us at *http://www.appa.org/training/APPA2016/index.cfm* and click on Conference Sessions.

If you have questions, contact Suzanne Healy, director of professional development, at *suzanne@appa.org* or 703-542-3833.

# facilities

**BOK** Body of Knowledge

# WELCOME TWO NEW CONTENT COORDINATORS FOR THE BOK

APPA welcomes two new content coordinators to the APPA Body of Knowledge (BOK).

Victoria Drummond, an associate university planner at Montana State

University, will be taking over duties from Jack Hug as the new content coordinator for Part 1, General Administration and Management. Jack has been the content coordinator since the



Victoria Drummond

Christopher M. Kopach

initial online publishing of the BOK in 2009.

**Christopher M. Kopach**, assistant vice president of facilities management at the University of Arizona, will be replacing

Gary Reynolds as content coordinator for Part 2, Operations and Maintenance. Gary has been content coordinator since the initial online publishing of the BOK.

We are grateful for the time, dedication,

and hard work that Jack and Gary have contributed while shepherding the chapters into what the BOK is today. And we look forward to seeing how Victoria and Chris will shape the future BOK.

# **BECOME AN APPA OFFICER: NOMINATIONS FOR 2016 NOW OPEN**

APPA's strong and steady volunteer leadership is one of the core forces making it the association of choice for educational facilities professionals. Consider becoming a candidate for an elected APPA officer.

Elected officers gain valuable leadership skills and a chance to develop professionally in many meaningful ways, because being an officer provides a major opportunity to give back to the entire profession. Being an APPA elected official does require a personal commitment of time and energy. However, past elected officers will tell you the personal rewards and professional benefits outweigh the costs of engagement and time commitments. There are five elected officer leadership positions, one of which will be on

the 2016 ballot:

President-Elect

Consider nominating yourself—or others—for the position that best matches your passion and areas of expertise. Learn more at *www.appa.org/board/cfm*.

All applications and nominations for APPA office are due no later than **December 15, 2015**.





# **FPI SURVEY NOW OPEN FOR 2014-15 DATA INPUT**

The 2014-15 cycle of APPA's Facilities Performance Indicators (FPI) is underway! Participating in the survey yields potent peer comparison key performance indicators, making the FPI a flexible, sophisticated, and powerful tool for analyzing, planning, reporting, and managing your facilities operation. APPA is the only higher education professional organization that provides such a powerful tool to its members.

Although the deadline isn't until December 15, the earlier you start, the more time you'll have to give your operations the critical analysis that the FPI fosters, and realize the benefits of the results it generates.

Visit www.appa.org/research/fpi for more information and to register to complete the survey.



## PHOTO CREDITS

The photo on the cover of the Jul/Aug 2015 *Facilities Manager* magazine, as well as on page 21, was taken by Col. Duane Lamb, assistant vice president, facilities & grounds, at The University of Alabama. The photo depicts Foster Auditorium and the Malone Hood Plaza on the UA campus.



A Study of Mentoring within APPA, page 32 of the Jul/Aug issue MSU Infrastructure Planning and Facilities Engineering and Architectural Services.

Copyright: Keving Marquardt 2013 Michigan State University Infrastructure Planning and Facilities. All rights reserved.



APPA's Facilities Drive-In Workshop offerings are an excellent way for APPA member institutions to encourage networking and professional development among educational facilities professionals within their local vicinity. These workshops are ideal for professionals who might not normally have access to training and professional development opportunities, due to operating budget restrictions or similar constraints and are a great way to introduce these professionals to APPA, its regions, and chapters.

# How are APPA's Drive In Workshops Planned and Organized?

Each workshop is organized with the support of APPA, an APPA Business Partner, and a host educational institution.

# **Responsibilities of the Host Institution:**

- Provide adequate meeting space plus tables and chairs (conference room plus adjoining registration area, as well as separate seating in adjoining area for sponsored luncheon).
- Supply audiovisual equipment (typical requirements are a podium, one or two mics, a projection screen and LCD projector).
- Arrange for parking if needed for attendees.
- Provide menu options to the sponsor (if the host location site has a kitchen or works with required caterers). The sponsor picks up the cost of lunch and all breaks.
- The person coordinating on behalf of the host institution (typically the institution's facilities officer) is present during the workshop to welcome attendees and provide some introductory comments on APPA.

# **Responsibilities of the Sponsor:**

- Works with APPA and the host institution to identify suitable session content and speakers, and firms up the program. This also ensures that the content is fully educational in nature, i.e., does not advocate a particular product or service.
- Manages on-site registration on the day of the workshop, distributes badges and distributes/collects evaluation forms.
- Pays sponsorship fees, cost of food/beverage at the workshop.

# **Responsibilities of APPA:**

- Manages event promotions (produces flyer, email invitations and distributes these promotions).
- Creates list of prospective attendees (from both APPA member institutions and prospective institutions). Shares this targeted attendee list with the host and the sponsor.
- Creates an online registration link and sends regular attendee registration reports out to the sponsor and host prior to the event.
- Works with host institution's facility officer to prepare any comments, supporting materials, slides describing APPA, benefits of becoming involved with APPA, etc.

For more details about sponsoring or hosting an APPA Drive-In Workshop, please contact APPA's Professional Development Manager, Corey Newman at corey@appa.org.

1643 Prince Street, Alexandria, VA 22314





By Kristin Witters

ur members are our most important asset at APPA. On a daily basis, we strive to answer the most important question posed by you, our members: "Why APPA?" Why should we continue to renew our membership? Participate in programs? Engage on an international and regional level? The answer is simply that we, as an association, believe that the quality of academic programming is directly related to the quality of the educational facility.

Over the past nine months as the new director of membership and outreach, I have asked myself, "Why APPA?" What is the value proposition for facilities staff to join? What is it that sets this organization and its regional and state chapters apart from every other association geared towards the facilities professional? It's the people. The passion, wealth of knowledge, experience, and endurance to continue day-to-day, supporting the students, other staff, and the community around you.

### **USING YOUR APPA MEMBERSHIP**

For this very reason, we have been working to provide current and potential members with a map of how to navigate the APPA international and regional membership. How to justify your engagement in an organization that can advance not only your career, but the careers of your staff and every emerging facilities professional. In addition,



the change to a fully integrated institutional membership has assisted us in reaching more facilities professionals. If you haven't already taken advantage of this, it means that your institution now holds the APPA and regional membership. Each staff at your institution may now take advantage of the benefits afforded to you with your membership.

### COMMUNICATING OUR SERVICES

After receiving the results of our 2014 membership survey, completed by you, we also did an audit of our membership material and the method of delivery, which led to the production of several brochures.

Our first new brochure focused on institutional member benefits. We

sincerely hope that this newly printed brochure will assist you, our biggest advocates, and APPA staff in welcoming and onboarding new members from all over the world. In addition, we are creating inserts for various target groups such as community colleges, K-12, and historically black colleges and universities (HBCU). We recognize that while we are all part of the facilities profession, there are certain key characteristics and challenges facing these groups.

Our second brochure was the new member guide, which is available to you at the APPA website under myAPPA. This guide highlights all of APPA's available member benefits, and why you should take advantage of each product or service. This electronic resource is an online flip book that you can download onto your desktop. You and your staff can click on the hyperlink and be directed to specific Web pages on the APPA and regional websites. In the next few months, we will also provide our business partner members with an online member guide to assist them in maximizing their membership and their return on investment.

## A PRESENCE IN SOCIAL MEDIA

APPA has also increased its presence on social media, specifically Facebook, Twitter, and LinkedIn. Since April 2015, we have been working diligently with staff and the regions to provide members and others with highlights of programs, a personal insight into staff, and information encouraging involvement. While social media can be a bit daunting, it can be the perfect outlet for you to share your campus success stories and highlight your institution. If you are not active on social media, we would encourage you to join one of APPA's services simply to use as another avenue to connect with APPA and fellow members.

# THE MEMBERSHIP COMMITTEE WORKING FOR YOU

Looking forward, it is the goal of the APPA Membership Committee to work with the members within APPA, the six regions, and new members. By utilizing the 2020 APPA Strategic Plan, this committee, comprising of representatives from each region, will work to provide the membership with tangible, relatable, and meaningful benefits to each facilities employee on your campus. We encourage you to get involved locally, regionally, and internationally.

The future is bright for APPA, but we need your support to push us forward through the next 100 years. Your wordof-mouth recruitment and grassroots efforts are what continue to make us strong, and keep us focused on the needs of our members and the facilities profession. We look forward to hearing from you, and to meeting each of you throughout the year at the various APPA, and regional professional development events.

So, take a minute to ask yourself, "Why APPA?" Or better yet, ask "Why *Not* APPA?"

Kristin Witters is director of membership and outreach at APPA, and can be reached at *kristin@appa.org*. This is her first article for *Facilities Manager*.







# 100% Women-Owned Business Celebrating 25 Years of Service (1989-2014)

G.D. Barri & Associates provides highly skilled union craft labor for facility maintenance work across the entire United States. Whether filling in for an in-house person on leave, additional support for projects, or simply augmenting on-going maintenance work,

Barri can provide any number of:

Elevator Mechanics Sheet Metal Workers Carpenters Roofers Brick Layers Boiler Makers Electricians Plumbers Painters Cement Masons Insulators Laborers

Call Irma Martinez or Rick Duff at (623)773-0410 for more information







# **Character Still Counts** Trading Self-Centeredness for Self-Respect

By Joe Whitefield

T's official—I have entered into the selfie world. As much as I have resisted it over the last couple of years, I have finally given in. While attending a Rolling Stones concert this summer with my 18-year-old son, we took a few selfies to commemorate the occasion. (On a side note, I have asked him to delete the video of us singing "You Can't Always Get What You Want" before anyone sees it, and we both regret it.)

I really don't have a problem with selfies specifically, but they have often compelled me to contemplate the underlying qualities of our culture. It seems there is an incredible emphasis on our sense of self. Everyone wants to be self-confident, self-sufficient, self-promoting, self-made, and self-improved. Although there is nothing wrong with any of these "selves," if taken to an extreme they can lead to a bad version of self, namely self-centeredness. And self-centeredness, often revealed in selfishness and pride, leads to many problems in life and in the workplace.

# SELF-CENTEREDNESS

Self-centeredness leads to problems in at least two ways. First, an inflated sense of self can distort your judgment. You may view others' ideas, actions, and motives more critically and less favorably than your own. This biased framework eventually leads to bad decisions and bad experiences. The second

CHARACTER THAT ASSIGNS REAL VALUE TO HONESTY AND HUMILITY CREATES AN ENVIRONMENT OF RESPECT. path to problems involves establishing an achievement "scorecard," in which success is determined by subjectively assigning credit and blame. This leads to judging people on a net "plus or minus" scale that is tilted in your favor.

The combination of these problems is the real killer. Think of the person who constantly takes credit for himself and passes along the blame to others, seeking only to validate a sense of importance or superiority.

David Brooks explores this condition extensively in his book *The Road to Character*: He describes the mindset and fate of the selfcentered individual as "doing things that others approve of, whether these things are right for you or not. You foolishly judge other people by their abilities, not by their worth. You do not have a strategy to build character, and without that, not only your inner life but also your external life will eventually fall to pieces."

# SELF-RESPECT

In stark contrast to the mediocre, self-centered life is the life based on character and principles. Character that assigns real value to honesty and humility creates an environment of respect. In fact, self-respect is the substitute for self-centeredness. Brooks says that selfrespect "is not earned by being better than other people at something. It is earned by being better than you used to be, being dependable in times of testing, straight in times of temptation."

If organizations are going to reach their full potential, it is especially important for their leaders to exhibit character like this. Achievement is the result of this work environment, where people unafraid of blame are free to be fully creative and committed to success.

This is reminiscent of the findings of Jim Collins in his book *Good to Great*. He states that all great companies have one factor in common—a leader of character. The great leader is one who "builds enduring greatness through a paradoxical blend of personal humility and professional will." These qualities are manifested in the leader who liberally gives credit to others for successes and takes personal responsibility for failures. The focus is on building a successful organization more than his or her reputation. Organizations with this level of leadership seem energetic and exciting, even on Mondays.

## CHARACTER-BASED LEADERSHIP

Self-centered leadership cultivates an organizational environment where achievements are hollow and often short lived. Character-based leadership cultivates an environment where achievements are solid and lasting.

In which environment do you want to work? Either way, it starts with leadership. The challenge is to develop a strategy for character. Get ready though, because character is earned. You can't simply assume it. It begins with the realization that no one has great character qualities down pat. If you think you are humble, you are probably not. The irony is that becoming a better version of yourself will probably require a greater focus on others. (1)

Joe Whitefield is assistant vice president at Middle Tennessee State University, Murfreesboro, TN. He can be reached at *joe.whitefield@mtsu.edu*.

# sustainability Harness the power of the sun



**R** ZON is The Most Affordable Solar Solution for Charging Mobile Devices.

# Charge up!<sup>™</sup>

# ZON Powersol<sup>™</sup> solar charging station

- Three (3) Universal USB charging ports for smart phones, tablets and a wide range of devices
- Innovative Solar Charged Battery hub with a powerful rechargeable Lithium-Ion battery
- Conveniently charges as fast as a wall outlet day or night
- High quality, Marine Grade canopy fabric for durability
- Works with existing Patio Tables- no special installation required



# www.zon-technology.com

# I HIRD CAREER is GOLDEN

# for Incoming APPA President Strazdas

# **By Ruth E. Thaler-Carter**

eter Strazdas, now into his third career in facilities, brings a fierce passion for engagement and a career arc that is unusual in the field of educational facilities management to his new role as APPA President.

Strazdas, associate vice president of facilities management at Western Michigan University (WMU) in Kalamazoo, came to the world of physical plant and facilities through academia. For the past several years, he also has had a concurrent career in local government as mayor of a neighboring town.

With more than 35 years at WMU, "I've had a few different careers—a trifecta," Strazdas says. "One-third of my career was in teaching, then a portion in construction, and now facilities and operations." That combination makes him unusual in APPA ranks, as well as in the higher education community as a whole, and contributes to his sense of fulfillment in his work. "It's pretty rare to find a person with this spectrum of experience," he says. "Part of my life was in academia, and that is now one of my clients."

That scope of experience may set Strazdas apart, but it is not necessarily what motivates him. "What really fulfills me is the need to see this organization improve," he said of his work at WMU. "It used to be that I had a project and finished it; being efficient gave me a great sense of fulfillment. Now, seeing every person in our department grow is what makes me feel good. Everyone has the same basic need: to be treated with respect and succeed. Knowing every day that this huge enterprise has improved, even a little bit, and that our employees are growing professionally gives me great joy." He has a similar commitment to the growth and development of APPA members, and to APPA itself.

# THE ACADEMIC YEARS

Originally from Boston and never intending to abandon his East Coast roots permanently, Strazdas



started at WMU as a graduate student, earning a master's degree in construction science and management education. He met his wife there, which established the foundation for staying put. "I had no intention of staying in Michigan," he says with a laugh. "My dream was of going back to Boston to teach construction management."

With that degree in hand, Strazdas felt that "I had to teach," and he did, even if it was not back home in Boston. From 1980– 90, he was an assistant professor at the university. As the school "saw the opportunity to build, build, build," he moved from academia into his second career, working in campus construction as an owner. Having worked in academia gives him a perspective on that aspect of facilities management that is unusual among most of his subsequent colleagues in the field and within APPA, and tends to benefit his interactions with the academic side of campus life.

Moving from construction into administration and facilities led Strazdas to 14 years in operations in physical plant and his third career, as director of maintenance.



Moving from construction into administration and facilities led Strazdas to 14 years in operations in physical plant and his third career, as director of maintenance. "I lived in construction and operations silos until 2009, when the silos merged."

The merger gave Strazdas the opportunity to expand his third career as the school's first associate vice president, presiding over a new department with "a more contemporary name" and about 500 employees. Today the department brings what he calls the traditional areas of physical plant management—architecture, engineering, and construction—together with operations. "We handle five areas—the classic big ones of maintenance, grounds and custodial, power plant, transportation, and facilities management information technology," he said.

Strazdas's turf is extensive, to say the least: WMU is home to \$200 million in construction volume: 151 buildings covering 8 million gross square feet, and 1,200 acres of land. His department has 440 full-time employees and about 100 student employees.

Overseeing such a huge operation may seem daunting, but Strazdas says he has an advantage over colleagues responsible for physical plant management at smaller schools. "Facilities managers at smaller campuses have a larger job," he says. "They have to manage everything themselves. I have directors for everything."

That doesn't mean that Strazdas isn't a hands-on manager; it's a matter of discipline and work style. "People do call me a workaholic," he admits. "I love working. This is not a job—I call it a passion." He keeps all of these balls in the air by organizing his time efficiently. "People see a lot of e-mails from me from late at night and early in the morning," he explains. "It's one of my religions—I *have* to get all e-mails done before I go to bed. Then I practice management by walking around—I do lots of walking and talking. You won't find me in my office very much. We can get honest discussions when you can talk to me one-on-one."

Strazdas is proud of his teams and their contributions to the quality of life at WMU. "We've done some special things with our team at the university in terms of energy conservation and sustainability," he says. "We reduced energy consumption by 17 percent while growing the whole campus by 15 percent."

Despite the size of the WMU campus and the wide scope of his responsibilities, work is not all work for Strazdas: "I enjoy going out with professional groups on Fridays—we get a lot done."

### **FINDING APPA**

Like many APPA colleagues, Strazdas found his niche in the professional association through a coworker; in his case, John Goes, whom he calls "a significant mentor." He encouraged me to move from construction into administration and facilities

Pete and Rick Ball discuss progress on the construction of Heritage Hall.

# PROFILE

in 1995," Strazdas says. Goes also encouraged Strazdas to be active in APPA.

Strazdas started in APPA with his state chapter. "For about 10 to 15 years, MiAPPA [Michigan chapter] *was* 'my APPA,' but the larger organization didn't resonate with me," he recalled. "I had a significant number of relationships with everyone across the state and mentors at other universities. I was heavily engaged with the chapter."

His family background came into play as Strazdas become more involved in other aspects of the association. "I grew up in a family with a commitment to community involvement, and I took those family genes as an expectation to participate and give back," he says. Once he joined APPA, "I was engaged on steroids!" He served as president of the Michigan state chapter for several years, seeing the chapter grow under his leadership from presenting one conference a year to presenting two popular annual conferences and from about 300 to 500 members.

Further engagement came from a version of peer pressure: "What got me involved at the next level—MAPPA—was that someone said they wanted me to be involved," says Strazdas. That led to another "somebody" saying he should be involved at the international level. He ran for APPA Secretary-Treasurer



A passion for conservation and sustainability are behind WMU's LEED certified buildings.



and won, then ran successfully for President-Elect, and now serves as APPA's 2015-16 President.

The influence of APPA membership has been invaluable for Strazdas, and he expects that value to continue. "Without a doubt, I have grown professionally through this APPA journey," he says. "Tools, development, opportunities to learn and to lead, to talk to my peers and have fresh perspectives from those who are walking in my shoes and understand the pressures we are all under—it has all been *huge*. APPA has helped me spread my wings."

As President, Strazdas plans to build on that value by focusing on the theme of *Advancing Our Profession through Engagement and Collaboration*. "Advancing our profession is what every APPA President is supposed to do," he notes, "but engagement stands out. The profession is changing so rapidly that we have to learn



Landscape crew on a snow closure day (January 2014—14" snowfall).

not to try to do things alone but by collaborating more with other groups. Engagement just screams as where we need to go as an association."

Strazdas sees engagement as "understanding and anticipating what our members need" and moving to fulfill those needs, perhaps even before they are clear to the membership. "My philosophy as a leader is to skate where the puck is going to be; that is, where our profession is going," he says. "I don't want to sell membership or products—those sell themselves. I want to create relationships by finding connection points."

For Strazdas, that means personalizing and enhancing APPA's ongoing commitment to its strategic plan. "We're all connected

to the strategic plan." He wants to see APPA grow and implement that plan.

### **THE VALUE OF APPA**

Being involved in APPA has had great value for Strazdas, with the most important piece being the opportunity to create relationships and meet people he can turn to for input no matter what issues arise at work. "My Rolodex is bursting at the seams," says Strazdas. "APPA makes it so easy to pick up the phone and connect. It's a secret code among colleagues who are prioritizing our responses, along with a whole catalog of stuff to do and buy for personal development and campus improvements."

Because Strazdas firmly believes that APPA programs, events, courses, publications, and related resources do not need a hard

sell—thanks to their obvious quality and value—he would take a "soft-sell approach" to encouraging continued participation by new members. For new members and first-time APPA conference attendees who are wondering how best to benefit from joining APPA, Strazdas would say, "Welcome to a unique association that you will find engaging, involving, and community-oriented. You are wanted. It is safe here, and we want you to keep coming back."

### LIFE OUTSIDE THE CAMPUS

Thanks to those family genes of service, Strazdas went another step farther and became involved in local government. Initially, he got involved with volunteer activities in the planning commission for Portage, a sister city to Kalamazoo. That led, 14 years ago, to being encouraged to run for city council and then, 10 years ago, for mayor. He now has served for five terms and is running again for another two-year term. His reason is similar to the foundation of his work for WMU and APPA: "I feel an obligation to help my city improve."

Serving as mayor has given Strazdas an opportunity to exercise his leadership skills, which he expects will enhance his role as APPA President. In fact, "there are a lot of synergistic aspects to being the leader of a city and of a department of facilities," he says.

In addition to his full plate at work and in his community, Strazdas has also enjoyed a full family life. His three children are now grown, but "I spent every spare moment watching them grow up," he recalls. "I hardly ever missed a game—they were all very involved in sports." His own sports interest is golf; he tries to get in a round of golf one day a week in the summertime. Pete is married to Sharon, who has been by his side druing his APPA journey.

# **PREPARE TO BE ENGAGED**

A big part of the APPA strategic plan under Strazdas will be "onboarding" new members as effectively as possible, he says.



Pete and Bob Andrews of California State University East Bay.

According to Lander Medlin, APPA's executive vice president, the concept of onboarding is to "create a welcoming community that is personalized for each new APPA member, and to treat the new member as a member first and a customer second." Says Strazdas, "We will, in essence, be partnering and mentoring with individuals as a relationship focus, and expanding services for new members."

Although Strazdas sees APPA's offerings in areas like building information modeling (BIM) as "way ahead of the curve with technology" and believes its educational resources are unparalleled, he would like to see the association offer yet more technology to its members. He envisions providing a massive open online course (MOOC), for instance, as well as experiential learning opportunities. "That is a huge thing you will hear about in my term," he promises. He anticipates finding and focusing on common denominators among members and their institutions, emphasizing the value of existing APPA programs and services, and relaying his passion for involvement to staff and membership alike.

APPA members can expect to be called upon for a higher level of involvement than ever before with Strazdas as President, because, as he says, "I'm incredibly passionate about anything I do—I give more than 100 percent!" (5)

Rochester, NY-based Ruth Thaler-Carter (*www.writerruth.com*) is a regular contributor to APPA publications.





# ENGINEERS & DESIGN PROFESSIONALS

Specializing in Educational Facilities since 1964

Gale Associates, Inc. 800-366-1714 ejm@gainc.com www.galeassociates.com

### **Building Envelope/Structural Services:**

- Facade, curtain wall, roof, waterproofing, and structural evaluation and design
- Construction administration (CA) and on-site monitoring
- Building enclosure commissioning (BECxP): peer review, design assistance, and CA
- LEED-certified, sustainable design, historic facilities
- Multi-facility assessments and building envelope management programs

### Athletic and Recreation Facilities Design Services:

- Comprehensive athletic campus evaluation and master planning
- Athletic facilities planning, permitting, and programming
- High-efficiency lighting, minimizing off-site impacts
- New track facilities, track renovations, and conversions
- All types of synthetic and natural turf fields

BOSTON	BALTIMORE	ORLANDO	SAN FRANCISCO	WASHINGTON, D.C.	HARTFORD

# APPA's **INSTITUTION OF CONTROL O**

# BY ANITA BLUMENTHAL

The APPA **Award for Excellence in Facilities Management** is designed to recognize and advance excellence in the field of educational facilities, and to highlight the essential role of facilities operations in the overall institutional mission and vision. Award for Excellence nominations are evaluated in the areas of: leadership; strategic and operational planning; customer focus; information and analysis; development and management of human resources; process management; and performance results.

APPA's **Sustainability Award in Facilities Management** recognizes and advances sustainability excellence in educational facilities. Institutions receiving the award possess facilities management departments that have integrated sustainable policies and environmental stewardship practices throughout all facets of the organization and embedded them within the educational institution.

# AWARD for EXCELLENCE

# Weber State University

Weber State University in Ogden, Utah (WSU), serving more than 26,000 full- and part-time students, has earned APPA's highest institutional honor, the 2015 Award for Excellence in Facilities Management, having fulfilled comprehensive and rigorous criteria. Associate Vice President for Facilities and Campus Planning Kevin Hansen credits the achievement to the department's continuous and creative dedication to three pillars: providing superior customer service, working to prevent failures, and performing at the lowest reasonable cost.

## **CUSTOMER SERVICE**

Hansen says he and his staff are always seeking to understand customer needs and to exceed expectations. "We fight for feedback," he says, with numerous surveys, with staff attending regular meetings at every level of the university, and with cash rewards for workable suggestions to save energy. Responding to customer suggestions pays dividends all around, says Hansen. For example, the Facilities Management Department (FM) used to operate during regular work hours, even though university operation extends to 10:00 p.m. No one was onsite to respond to off-hour problems, such as water leaks. "In response to requests, we put people on a swing shift, and customers immediately saw quality improvement," reports Hansen. The surprise was that the employees liked the swing shift as well. "They had more freedom to act, and were not under the supervisor's eye, but had all the resources available for themselves (and didn't have to share)." One technician who was offered a chance to get off the swing shift didn't want to change.

Another example of how WSU made life easier for customers was a building swap. The campus is built on the side of a hill, and previously the FM building, with the key shop and business office, was out of the way, on top of the hill.

ALL IMAGES USED WITH PERMISSION FROM WEBER STATE UNIVERSITY.



Over the past decade, Weber State University has made significant improvements to the exterior grounds of campus, including building a new softball complex, installing artificial turf on the frontage road, building new water features on the Bell Tower Plaza, and installing an automated irrigation system.



Left: Weber State University has the first arena in the NCAA to have LED lighting. Some of the benefits of installing these lights include the following: lower energy costs, better quality of light, instant restart, and lower noise levels.

Below: Weber State University recently replaced all of its on-campus housing buildings with three new state-of-the-art buildings.

FM's other building, containing plumbing, electrical, and HVAC shops, was in the middle of campus near the academic core. Now, the key shop and business function as well as meeting rooms are in the closer building, which has been completely renovated, and the plumbing, electrical, and HVAC shops are now on top of the hill. "Suddenly, customers can walk to us and we can do everything right here," says Hansen. "In addition, the shops at the top of the hill are configured in such a way that the employees get to know each other and work together. The synergy is remarkable."

For better customer service in custodial work, employees are assigned to teams that care for specific groups of buildings. That way, Hansen explains, staff know in detail the specific requirements of their buildings, and many have developed valuable bonds with customers they serve.

A recent initiative to eliminate gaps in service everywhere has been to add depth, organizing backup for every one-deep position, including Hansen's.

### **PREVENTING FAILURES**

Hansen describes sweeping changes over the past dozen years to reverse an attitude of "wait-and-see-until-it-breaks." He introduced a preventive maintenance department as well as a planned maintenance program, imposed scheduling, and reduced the corrective maintenance workload to a small part of the working time. The preventive maintenance shop comprises apprentice-level people from the plumbing and HVAC shops who do low-skilled but important work.



PHOTO BY KEVIN DILLEY OF KLIK PHOTO.

After these changes were implemented, says Hansen, "there was a huge improvement in maintenance, quality of work, with more work done." The preventive maintenance group "found things that had been neglected, taking time to do the work more efficiently than previous craftspeople, who might have been pressed for time with a backlog of other things," he says. "Also, the apprentices uncovered issues for more experienced staff to see to."

In keeping with his practice of delegating down to develop accountability and pride, Hansen says that the lead apprentice "owns the preventive maintenance department. Given this element of control, it's amazing what they will deliver. The result has been improved customer service and reduced failure rate."

In a similar vein, landscaping has been totally revamped and divided into zones. Under broad guidelines, staff are accountable for their own zone and have a sense of ownership.

## LOWEST REASONABLE COST

Project planning for lowest reasonable cost "is based on life cycle, on how to maintain the asset, and on investment over the longer term," Hansen says. "To give just one example, we have taken out all our old steel railing. The new standard is stainless steel handrails. There is no rust, no repeated painting, and ultimately, no danger from rusted-though railings. They are four times more expensive, but it has paid off in operation and maintenance savings. Also, it makes the campus look very good."

### ENERGY AND SUSTAINABILITY—THE HOME TEAM ADVANTAGE

WSU had no energy or sustainability program when Hansen arrived 13 years ago. He saw a good opportunity but did not have the financing vehicle. Then, when America's deep financial crisis hit, WSU started losing investment money. Where would sustainability funding come from? FM received a loan from the university endowment fund and agreed to pay 3 percent interest. With a \$5 million line of credit on a revolving fund, they executed projects themselves through their own energy and

sustainability office. They reduced carbon emissions and overall energy consumption by 30 percent, while adding several hundred-thousand square feet and more students. With the energy savings (\$1.4 million in FY14 alone), FM is now funding future projects. And they repaid the loan at above-market interest.

Hansen points to a huge energy-saving project to rebuild the lighting of Dee Events Center with light-emitting diode cloud lighting. "No lighting contractors would touch the job," he says. So WSU designed and fabricated the project themselves, and it was the first system of its kind at an NCAA university. "Now we're looking at converting the campus to a ground source heat pump system, with individual control of each room occupied," he says. "Innovation has achieved momentum and a life of its own."

WSU also is taking full advantage of tracking systems, including its computerized maintenance management system. "Every year we find more uses, more value," Hansen says. "From capital development projects down to changing light bulbs, suddenly we recognize the amount of work we need to do and are doing. Previously, work requests were all on paper; they went to the foreman and then—maybe—to the craftsperson. There was no accountability. Now we automatically track distribution of work, performance, and cost. Plus we have ability to project to the future and schedule work months in advance."

Solid, clearly presented data allow FM to communicate effectively with other parts of the university, encouraging useful mutual understanding. For example, the report on year-end maintenance and construction expenses per building used to be only for internal purposes. Now it is shared with others. One recently added chart showed the amount of work that was chargeable compared to the nonchargeable amount. "When this chart was passed on to the Business School—in a form in which we were talking their language—they were shocked to see how much money we spent out of the FM budget for their building that was not passed on to them," says Hansen. "It helps make the things we do charge for more acceptable when we are spending much more ourselves."

# KEAST&HOOD STRUCTURAL ENGINEERS

www.keasthood.com Philadelphia | Washington

Serving the structural engineering needs of institutions since 1953.

**Exceptional Service** 

# Innovative Design In

Insightful Engineering

**Creative Collaboration** 



# SUSTAINABILITY AWARDS Recognize Achievement/Initiative

APPA's 2015 Sustainability Award in Facilities Management went to **Slippery Rock University** (SRU) of Pennsylvania and the **San Diego Community College District** (SDCCD) of California. Both institutions fulfilled rigorous criteria developed by APPA from guidelines created by the Association for the Advancement of Sustainability in Higher Education. But they pursue their policies and goals in response to very different environments and with initiatives that address their own particular challenges.

# **Slippery Rock University**

At SRU, located in northwestern Pennsylvania and having an enrollment of more than 8,500 students, sustainability is a top priority embedded in the university's strategic plan. The university's Office of Sustainability, which reports directly to the president, is co-located with the Facilities and Planning Department (F&P), improving coordination. F&P staff are deeply involved in numerous campus sustainability initiatives. Since the base year, 2005, SRU has seen a 40 percent improvement in campus energy efficiency and a 25 percent reduction in energy use, despite a 10 percent increase in student enrollment and 32 percent increase in building square footage. Coal use has dropped by 63 percent and greenhouse gas emissions by 26 percent. Utility metering has spread from six buildings eight years ago to all 35 buildings today.

1000

SRU offers undergraduate and graduate sustainability-related degrees and is home to the Robert A. Macoskey Center for Sustainable Systems Education and Research. Extensive outreach programs to the community include mentoring local businesses to become more energy efficient. In 2016, the university will use an Environmental Protection Agency grant to conduct environmental education summer camps involving 20 local school districts. The program will provide seed money for campers to implement environmental projects in their home communities.

On campus, Chief Facilities Officer Scott Albert reports that F&P's scrap metal recycling program has recycled more than 1 million pounds from construction and maintenance activi-



ties, avoiding \$20,000 in landfill costs and generating \$100,000 in revenue to reinvest in grounds operations. Throughout the university, F&P not only insists on Green Seal certified cleaning products, but has also switched hand soap to Green Seal certified foaming soap, a move that has reduced soap usage and saves \$3,000-\$5,000 a year.

Over the past six years, SRU has received nearly \$300,000 in sustainability-related grants. "It's easier to sell a new concept when it doesn't impact the operating budget," says Albert. Thanks to one grant, F&P recently purchased a propanepowered zero-turn mower, which uses 13 percent less fuel than the gas-powered machines and requires

One of many green rooftop projects at SRU.



This propane powered ZTR mower requires less maintenance than the gas-powered ZTRs.

less maintenance. Another grant bought a biodiesel processor that uses cooking oil from the dining halls. "Many of our grants came from the SRU Green Fund, an internal program started via a student referendum," Albert says. "Each semester Campus Administration sets aside \$5 per student to go toward funding grant applications for sustainability projects. Students, faculty, and staff can apply for the funding. I have been fortunate to have great success submitting applications to this program."

But sometimes selling a new concept is less about budget than about attitudes. Paul Scanlon, special assistant to the president for sustainability planning and operations, explains that one major achievement was having the entire faculty and administration agree to a set-point temperature throughout the campus-75 degrees in summer and 67 degrees in winter. "It's hard for people to give up control over the temperature of their offices," he says, "but the set point...saves an estimated \$125,000 a year."

Water conservation, pollution avoidance, and smart irrigation combine at SRU, where a system of natural streams and retention ponds minimize stormwater overflows and sedimentation carryover into the stormwater system. When SRU was asked to install an irrigation system that did not use town water, the university's comprehensive response resulted in an irrigation system that uses no potable water at all. For example, runoff from a large spring on campus (which used go into the storm sewer system) is now directed into holding tanks to irrigate athletic fields. Greywater is treated and then distributed to an outdoor aquatic planting area and eventually to a meadow.

SRU has a special sustainability/stewardship challenge: Of its 600 acres, 151 are designated as Bartramian Audubon Society Wildlife Sanctuaries. One problem the university faced, says Scanlon, was that different campus groups were making



A joint project by students and the facilities planning department, the Green Bus Shelter is made up primarily of recycled materials, and has a green roof.



Residence halls typically participate in RecycleMania each year.

their own hiking and biking trails through protected wetland areas without understanding the environmental impacts of their activities. SRU took several initiatives to solve this problem and to expand understanding of the environment, while maintaining environmentally benign hiking and biking trails for recreational use.

The university created a causeway of geotextile fabric and aggregate stone to make a path just above the wetlands, so people can walk over and not through them. Also, it created a land use request form through which all uses of SRU grounds must be approved by the president. These requests are handled by the Office of Sustainability.

In addition, SRU created a series of GIS (geographic information system) map layers of the campus grounds, which allowed staff to create a "Sustainable Features Campus Map" to educate the public. Wetlands delineation maps, also showing other natural environments to be protected, are used to coordinate all on-campus land uses and avoid damaging sensitive environments.



# San Diego Community College District (SDCCD)

The SDCCD serves approximately 130,000 students annually through three separate community colleges in California—San Diego City College, San Diego Mesa College, and San Diego Miramar College—plus seven continuing education campuses. Some approaches to sustainability are unique to a particular campus, while others are district-wide. Sustainability is integrated into policies, procedures, employee participation, and educational initiatives. The district's numerous sustainability-related courses vary from solar energy use at one campus to heavy-duty advanced transportation at another.

The district received its greatest boost toward sustainability when construction bond programs were passed in 2002 and 2006, totaling more than \$1.6 billion for new state-of-the-art facilities, major renovations, and district-wide infrastructure projects. The SDCCD Board of Trustees established a green building policy to govern all construction projects; all eligible projects aim for at least a LEED Silver certification. "The district is on track to have 43 LEED-certified buildings," says SDCCD Construction Manager Ryan Murphy.

Murphy says that in one building there is a cutting-edge passive ventilation system that disengages the air conditioning system when windows are opened. Other structures, like the Social and Behavioral Science building at San Diego Mesa College, are designed so that daylight is available in up to 90 percent of the space, reducing the need for artificial lighting.

The LEED Platinum police station at San Diego Miramar College has a heat chimney to conserve energy and regulate

temperature: Louvres in the tower's upper level allow warm air to rise by convection and escape to the outside. At the same time, cooler air is drawn in through vents on the lower level, replacing warm air with cooler air even after the sun has gone down.

In addition to smart technology and elementary science, designers have used orientation of buildings to reduce energy use, particularly air conditioning. One building located on a campus several miles inland is positioned beside a canyon so the coastal breeze that runs up the canyon can enter the windows.

Up to 50 percent of project materials used in the district are obtained locally, with extensive use of recycled and natural materials. Linoleum, a natural material for flooring, has made a comeback. One building has terrazzo flooring made with 100 percent post-consumer glass. Elsewhere, countertops are made of recycled newsprint.

"A thermal energy storage unit at San Diego Miramar College is five stories tall and 50 feet in diameter and holds 1 million gallons of water," says Murphy. "It is filled with chilled water at night when energy rates are lowest and is available to the campus buildings during peak hours." The tank is equivalent to the campus's entire cooling load for six hours. The estimated energy cost savings over 30 years is approximately \$13 million.

Lots of sun and a serious scarcity of water mean that sustainability projects focus on solar energy and water conservation. The district has a solar panel system that totals 2.4 megawatts, including a district-owned vertical solar array that is the largest of its kind in the country. So far, the SDCCD's solar installations have generated 19.7 million kWh, saving about \$700,000.



Above: San Diego Mesa College Math+Science Building.

The SDCCD piloted the Calsense smart irrigation system several years ago, has aligned its landscaping (including xeriscaping) with the area's dry, Mediterranean-





Above: Thermal Energy Storage Tank at San Diego Miramar College.

Left: Photovoltaics at the San Diego Community College District Headquarters.

ALL IMAGES USED WITH PERMISSION FROM THE SAN DIEGO COMMUNITY COLLEGE DISTRICT (SDCCD)

type climate and various area microclimates, and irrigates certain sites with reclaimed water. These strategies have saved tens of millions of gallons of water a year, compared to the old days of using fescue grass. Among the district's stormwater management systems is a natural filtration basin six feet deep, covering about 6,500 square feet under a central plaza at San Diego City College. San Diego Miramar College has an underground detention basin with a 6-million-gallon capacity to filter stormwater and remove pollutants before diverting it into the local stormwater system. Systems are in place to monitor and measure all the HVAC, lighting, irrigation, alarms, security, and energy management districtwide. Many of the systems have controls that can be accessed remotely. The next step, says Murphy, is to enable the controls not only to alert facilities management when a system is out of compliance, but also to make adjustments to correct these problems. (§)

Anita Blumenthal is a freelance writer based in Potomac, MD. She can be reached at *anitablu@earthlink.net*.

# Award Application Deadline is November 30, 2015

Applications and nominations for all 2016 APPA awards, including the Award for Excellence and Sustainability Award, must be submitted online by November 30, 2015. To view eligibility requirements, criteria, and past recipients, go to *www.appa.org/membershipawards*. Good luck!

By Mark Crawford

# Fellow and Meritorious Service Awards

# Honor Contributions in the Field of Facilities Management

Very year APPA presents its Fellow and Meritorious Service Awards to leaders in educational facilities management. These men and women have demonstrated their dedication to facilities management by investing large amounts of time and great expertise to advance the profession, often as volunteers, especially through training, education, and other collaborative initiatives.

The **APPA Fellow** designation is APPA's most prestigious individual achievement honor. Candidates must be active APPA members for at least 10 years, graduate from the Institute for Facilities Management and the Leadership Academy, and complete an approved research project under APPA's Center for Facilities Research (CFaR). The Fellow Award not only recognizes past accomplishments, but also continued involvement in APPA's leadership program through research and mentoring.

The 2015 APPA Fellow Award honors **Glenn Smith**, director of facilities at Bryn Mawr College and past APPA President.

The **Meritorious Service Award** is APPA's highest award for individual service and is given to individual members who have made significant, life-long contributions to the profession of education facilities management. Candidates must be active members of APPA for at least 10 years, participate in various APPA meetings and other functions at the international level, serve as chair or member of an APPA training program or project, and demonstrate continued and distinguished service to the association.

The 2015 Meritorious Service Award recipients are:

- David Gray, retired assistant vice president of facilities services, Middle Tennessee State University, and past APPA President
- Tony Guerrero, associate vice chancellor for facilities services, University of Washington Bothell and Cascadia College
- Jeri Ripley King, assistant director of facilities management, University of Iowa, and past APPA Vice President for Information and Research

# APPA FELLOW AWARD

**Glenn Smith** Director of Facilities *Bryn Mawr College* 

Glenn Smith has been a member of APPA for more than 15 years. He graduated from APPA's Institute for Facilities Management and APPA's Leadership Academy in 2000. "Tra-



versing the Culture Continuum," his CFaR research project, examines how the power and influence of organizational culture can impact an institution's ability to deal with change. Excerpts of his work have been published by APPA and presented at several higher education and facilities management organization conferences.

The ideas behind "Traversing the Culture Continuum" were largely based on Smith's experiences as a U.S. Navy officer, where he learned about the work of W. Edwards Deming, Stephen Covey, and others as part of the Navy's Total Quality Leadership initiative. "As I moved on to higher education, the notion of a 'culture continuum' took shape, which became the basis of my research," says Smith. "It became my passion to explore what other true researchers had discovered and apply it in the form of an easily understood continuum or chart. Even though I wasn't sure where this exploration would take me, the journey has been absolutely stimulating."

Most rewarding to Smith is that his work is being used as a primary thread in all four levels of APPA's Leadership Academy. For example, Track 1, Individual Effectiveness Skills, is launched with a half-day discussion on organizational culture, the culture continuum, and the importance and value of trust-based cultures—all customized for the facilities audience.

"Glenn has generously shared his materials with all Level-1 facilitators and also collaborated with us to provide a wellrounded program," says Michelle Frederick, senior representative of regional representatives to the APPA Board of Directors and ERAPPA (Eastern region) past president. "He has recently started having Track-1 facilitator conference calls to keep all of us connected and collaborating on Track 1."

Smith acknowledges that his leadership skills have developed out of his APPA experiences—from his first role as president of his local Delaware Valley Chapter to his term as APPA President. Smith was also a member of APPA's Board of Directors, where he interacted with other Board members to help determine the future direction of the association. As a member of the Leadership Academy, Smith works with various faculty members to facilitate the learning experiences of other educational facilities professionals.

One of the best parts of his job as director of facilities services at Bryn Mawr College is the opportunity to "work every day with an outstanding group of professionals. Together we deal with a wide assortment of issues, many of which come up unexpectedly," he says. "It is always a team effort. At Bryn Mawr, we have replaced standard performance evaluations with personal coaching sessions—all to recognize the interdependent team nature of our work."

Smith is quick to point out that "none of us volunteer our time, energy, and passion with the thought of receiving an award, and none of us accomplish anything at our institutions or as part of APPA single-handedly. As I contemplate retiring from the position I have held at Bryn Mawr College for 18 years, and lay plans for pursuing opportunities that will keep me even more engaged with APPA's Leadership Academy, it is very fulfilling to know that I have left a legacy of contribution deemed worthy by those I so highly respect."

# MERITORIOUS SERVICE AWARD David W. Grav

Assistant Vice President of Facilities Services (ret.) *Middle Tennessee State University* 

After attending several APPA annual meetings early in his career, David Gray quickly realized how important APPA would be to his professional development. He started his



service in SRAPPA (Southeastern region) by serving as secretary/treasurer from 2001 to 2007. Today he serves as president of Tennessee's APPA chapter. Gray began his APPA International service in 2007 when he was elected Vice President for Professional Development, and later served as President-Elect in 2010-11, President in 2011-12, and Immediate Past President in 2012-13.

As a past president of APPA, Gray helped coordinate and conduct conference calls with other APPA past presidents, calling the group the "P3s" (Past Presidents' Projects). This group works on special projects as needed and even assembled in San Diego for a group picture of a record 14 APPA presidents. Gray has also been involved in encouraging historically black colleges and universities to join APPA and continues to reach out to various APPA members to help find ways to connect with this group and increase membership.

Gray has found the past 14 years working with APPA and its members to be a truly rewarding experience. "I have thoroughly enjoyed getting to know the countless individuals who have supported and encouraged me along the way, and have become friends and mentors," he says. "Being able to lead, shepherd, mentor, or simply say thank you to our members when needed, and collaborate on ideas and best practices, has always been rewarding, educational, and enjoyable. I've learned a lot."

Communication between APPA members, notes Gray, appears to be at an all-time high. Even as APPA volunteers have "other day jobs" and busy professional careers, APPA members seem to have an "element of understanding regarding a higher idea/virtue of abundance, rather than scarcity," says Gray. "In other words, members are willing to share important knowledge, expertise, and encouragement so that their colleagues and peers can become better at what they do. That seems to be the APPA way." Guerrero has presented 10 workshops to date. "One of the most rewarding comments we received from one of our workshops was, 'Thank you for getting us together so I could finally meet my peers from other institutions.' The impacts of connecting institutions together can be far-reaching. Getting our staff to exchange information, help each other, share parts, share knowledge, team up and purchase training together all happened because we provided a venue where they could network."

Guerrero continues to help other PCAPPA members create chapters in their areas. For example, BayAPPA in the Greater San Francisco area is one of the newest, supported in part by the Southern California APPA chapter, which Guerrero helped create.

"I have enjoyed giving back to the facilities services field because I was blessed to have mentors share their passion with me," says Guerrero. "Sometimes you feel all alone out there, thinking your campus is the only one with a particular problem or issue. When my peers have a place to connect with others like themselves, it is exciting to see them realize that they are not alone. Sometimes you find the solution by talking to your peers, or sometimes you can provide a solution to others. Either way, it has been gratifying to be that catalyst for networking and communication."

# MERITORIOUS SERVICE AWARD

**Tony Guerrero** 

Associate Vice Chancellor for Facilities Services University of Washington Bothell and Cascadia College

As an active member of APPA since 2004, Tony Guerrero continues to serve in leadership roles that promote collaboration among educational facilities managers beyond his campuses.



His enthusiasm and networking skills led to the creation of the first chapter in PCAPPA (Pacific Coast region). He is also a founding board member and current president for the Washington APPA (WAPPA), which continues to expand its range of influence by bringing together colleges, universities, and hospitals from Washington, Oregon, and Idaho for WAPPA workshops.

Helping create the first APPA chapter in Washington is one of the highlights of his career. "We recognized the need for campuses to collaborate and exchange ideas," says Guerrero. "Providing a framework and a meeting place allowed our staff to network, as well as learn. For some of our fellow institutions, universities and colleges alike, it is really tough financially to get approval to attend the PCAPPA and APPA conferences. Our chapter workshops have provided a great way to meet these needs."

# MERITORIOUS SERVICE AWARD

Jeri Ripley King Assistant Director of Facilities Management University of Iowa

Jeri Ripley King has over 30 years of university work experience, including 15 years as an organizational change consultant and 12 years in facilities management. She began her facilities management career in planning,



design, and construction at the University of Missouri. Shortly after joining APPA in 2002, she was hired by the facilities management team at the University of Iowa.

King has served APPA in multiple ways, including teaching, research, publishing, peer reviews, and peer-to-peer networking. She collaborated on a self-evaluation for the Facilities Management Evaluation Program (FMEP) and on several successful submissions for APPA's Effective and Innovative Practices Awards. Her work on the research project "Structuring In-House Construction Rates" received a CFaR Research Award in 2006. King also participated in the Thought Leaders Series that produced the APPA sustainability guide, *The Educa-tional Professional's Practical Guide to Reducing the Campus Carbon Footprint.* 

King enjoys connecting ideas in ways that simplify a complex topic so that it resonates with others, and then "watching them expand on the idea to make it better." It

is especially rewarding, she notes, to make contributions to her department and the field of educational facilities management that continue to provide value over time. "For example, Don Guckert and I coauthored a paper entitled 'The High Cost of Building a Better University' that was published in *Facilities Manager* in 2003," she says. "We still receive comments about how other facilities departments are using that article in their planning, which is very gratifying."

For King—especially in her various roles with APPA's Information and Research Committee for nine years, including serving as vice president and chair of the committee for the last three years—collaborating with others to create better outcomes is what makes APPA committee work so interesting and rewarding. She has played a key role in developing and enhancing many of APPA's products and services, including the Body of Knowledge and Facilities Performance Indicators.

"APPA is an association of people with a passion for educational facilities," says King. "They have the vision, the willingness to collaborate, and the ability to train and develop others to make any needed change or improvement in the field of educational facilities management happen. This group will not have any problems moving forward." (\$)

Mark Crawford is a freelance writer based in Madison, WI. He can be reached at *mark.crawford@charter.net*.

# 2016 Award Nominations and Applications

Nominations and applications are now being taken for APPA's 2016 APPA Fellow and Meritorious Service Awards. **The deadline for consideration for the 2016 awards is November 30, 2015.** Awards nominations submitted after November 30, 2015 will be held and considered in the 2017 award cycle. For more details, visit www.appa.org/membershipawards/index.cfm.



Get real results with Veritiv's Smart Campus initiatives. Our advisors are ISSA® CIMS and LEED® green cleaning certified, and will design and implement campus-wide facility cleaning and maintenance programs — all tailored to you.

### Your budget.

Your sustainability goals. And the expectations of your faculty and students.



Get started at veritivsmartcampus.com

© 2015 Veritiv Corporation. All rights reserved. Veritiv and the Veritiv logo are trademarks of Veritiv Corporation or its affiliates. All other trademarks are the property of the respective owners and are used herein for identification purposes only.



By Wallace L. Harris, Ed.D.

# **CFaR** | Center for Facilities Research

# **MATTERS** The Perception of Academic Deans Regarding the Role of Facilities in Higher Education

This qualitative study explored the relationship of the facility-built environment to learning in higher education from the perspective of academic deans. The study sought to expand upon the 60 years of education research conducted in K-12 and higher education that linked characteristics of the facility-built environment to learning. Key issues identified by this study included the quantity and type of deferred maintenance, reduced budgets, and distance learning.

The findings of this study supported elements of constructivist learning theory, including inferences that learning and the facility-built environment were perceived to be interconnected and that this connection created meaning for the environment's occupants; that the facility-built environment shaped the learned experience for its occupants; and that synergistic transactions occur between the facility-built environment and the learner in higher education.

A literature review revealed more than 60 years of research on the facility-built environment and its impact on learning. Table 1 lists key researchers that have added to this body of research.

Mediating Variable (Facility Environment)	Dependent Variable	Researcher	
Thermal comfort	Teacher/student reten- tion and satisfaction; occupant health; absen- teeism; dropout rate; test scores	de Dear and Brager, 2002; Earthman, 2002; Uline and Tschannen-Moran, 2008; Veltri et al., 2006	
Indoor air quality (IAQ)	Occupant health; ab- senteeism; dropout rate; test scores	Bosch, 2003; Buckley, Schneider and Shang, 2004; Schneider, 1995, 2002; Uline and Tschannen-Moran, 2008	
Noise/acoustics	Teacher/Student reten- tion and satisfaction	Bosch, 2003; Buckley et al., 2004; Earthman and Le- masters, 1998; Lyons, 1999; Schneider, 2002, 2003; Veltri et al., 2006	
Lighting	Teacher/Student reten- tion and satisfaction	Bosch, 2003; Duyar, 2010; Hill and Epps, 2009; Jago and Turner, 1999; Schnei- der, 2002; Veltri et al., 2006	
Size	Test scores	Bosch, 2003; Duyar, 2010; Earthman, 2002; Earthman and Lemasters, 1998, 2011; Schneider, 2002; Veltri et al., 2006	
Maintenance quality	Teacher/student reten- tion and satisfaction	Earthman et al, 1995; Earth- man and Lemasters, 2008, 2011	
Facility age/ quality	Teacher/student reten- tion and satisfaction; occupant health; absen- teeism; dropout rate; test scores	Duran-Narucki, 2011; Earth- man and Lemasters, 2011; Hill and Epps, 2009; Uline and Tschannen-Moran, 2008	
Aesthetics	Teacher/student reten- tion and satisfaction	Cash and Twiford, 2009; Duran-Narucki, 2011; Hill and Epps, 2009	
Technology	Student satisfaction	Hill and Epps, 2009; Veltri et al., 2006	

# Table 1: Listing of K-12/Higher Education Variables and Researchers

No hypothesis was put forth in this study. Instead, a qualitative (Q) statement/question was crafted in order to capture all of the "communication surrounding this research topic." The Q statement for this study is displayed below:

What characteristics of the facility built environment do academic deans perceive as having the greatest impact on student learning in higher education?

The instrument for this study (Q sample) was a 32-item sample. The sample was sent out to 305 academic deans in Florida. Of the 305 potential participants, 43 participants completed the sample, which resulted in a 14 percent completion rate. A common method of factor rotation (Varimax) was used to manipulate the factors. Although methodologies share analytical tools commonly utilized in quantitative research studies to manipulate raw data, once data has been factored, the analysis and discussion in Q methodology is qualitative in nature and by design.

Accordingly, McKeown and Thomas (1988) argue that the findings put forth in a Q methodology study on matters of meaning and significance "are fundamentally self-referential, and with public data others are free to examine the factor arrays and arrive at their own independent conclusions, not over the quality of the data but over the significance and implications of the meanings." A threefactor solution was selected due to statistical and practical reasons, yielding three distinct perspectives: Traditionalist, Modernist, and Abstractionist.

# FINDINGS

Key findings identified by this study are:

1) participants within this study identified both abstract and concrete characteristic of the facility-built environment that were perceived to impact learning in higher education;

2) from the rankings, it appeared that this study's participants failed to connect learning to sustainability;

3) the participants exhibited little desire to control environmental systems within learning space;

4) participants indicated that technology was considered a necessity for "digital natives" (students) to learn and considered it
essential to support current pedagogical trends;

5) participants indicated that size does matter in higher education learning space, in that it supports collaborative learning and allows for added flexibility;

6) participants appeared to express security in both abstract and concrete terms;

7) basic characteristics, prevalent in previous research, were found to be valued by all three perspectives; and

8) abstract characteristics of the facility-built environment that create individual meaning and convey purpose were also identified as key characteristics of the facility-built environment perceived to impact learning.

This study adds to a narrative found in the field of education stating that as pedagogies change, so do the space requirements in which learning occurs. There now seems to be a requirement for both educators and facilities administrators to recognize that learning space is complex, conveys meaning, requires flexibility, and requires digital enhancement to support current learning styles and emerging pedagogies. Simply put, learning space can no longer just be a structure with a roof and walls. Instead it has to compete with the digital learner's living room, the local coffee shop's décor, and the tranquility of a nature trail, for in this digital age, all now compete with the conventional brick-and-mortar learning space.

The data suggests that learning space transcends mere functionality. The three viewpoints expressed by the study's participants suggest that they share a genuine belief that the quality of space does matter in higher education. As Lackney asserts, "Many educators who work in school settings on a daily basis accept almost axiomatically that the physical setting of the school has an effect on the teaching and learning which takes place within a school." The study's findings also lend credence to a common theme identified in both K-12 and higher education literature recognizing that the environment created by facilities does impact learning ability.

A number of statements used in this study's instrument were designed to elicit perceptions of the facility-built environment that are not easily identifiable. As a result, the participants delved into more abstract and deeper meanings of the facility-built environment. Noticeably, these statements formed the focus upon which the Abstractionist perspective of the facility-built environment was identified and detailed. to be both a tool for learning and as a common marketing strategy to entice students, faculty, and staff to higher education campuses. Not so surprisingly, both the Traditionalist and Modernist saw that perception as having a benign impact on learning, and in some cases as negatively affecting learning by serving as a distraction.

Some participants within this study articulated or accepted abstract characteristics of the facility-built environment in higher education that were not emergent in K-12 research. In this study, characteristics did emerge that focused on amenities, occupant comfort or attributes, and security that conveyed concrete as well as abstract meaning and concepts. Notably, security as a characteristic of space emerged within this study in two distinct forms. One participant group, Traditionalist, articulated security as a physical status and another, Abstractionist, articulated the concept to be self-reflective as a perceived status or feeling of security.

Other participants saw space complexity in the form of specificity. Learning spaces such as labs and science buildings were spaces identified by participants as requiring unique systems and infrastructure to support specific learning activities.



#### DISCUSSION

The significance of these findings and their implication for higher education stakeholders was that a positive perspective and other abstract characteristics of the facility-built environment cannot be totally dismissed as needed characteristics of space during the planning, design, and building of new facilities and learning spaces on higher education campuses. Likewise, the Abstractionist perspective appeared to be a minority opinion among study participants, and thus could be easily drowned out during the clamor and

> THERE IS AN IMPLICIT REQUIREMENT FOR STAKEHOLDERS TO BALANCE WANTS AND NEEDS WHEN PLANNING TO ADD SPACE OR TO RENOVATE EXISTING SPACE.

conversation that routinely takes place among stakeholders when planning new space. As a counterpoint, all stakeholders need to recognize that the Abstractionist position is important, but appears to be a minority opinion and therefore should not countermand proven, common-sense characteristics of the facility-built environment that were more strongly supported by the Traditionalist and Modernist perspectives in this study.

#### **COMMON INFERENCES AMONG FACTORS**

All three perspectives identified basic inferences that would call on the facility-built environment to meet basic expectations of its users. The basic expectations that were either inferred or directly identified by participants included cleanliness, occupant comfort, lack of clutter, safety and security, noise control, wellmaintained building systems, and adequate space. The significance of these finding and their implication for higher education stakeholders is that the concrete characteristics of the facilitybuilt environment are essential for learning in higher education. The basic necessities identified above were readily accepted by Traditionalist, Modernist, and Abstractionist participants as important to learning, but even more so, they recognized that these attributes formed the reason for the facility-built environment to exist in higher education.

#### **NEED FOR FLEXIBILITY AND SIZE**

Another key finding of this study was an understanding that learning space in higher education needs to be more dynamic and flexible in order to support emerging pedagogies. Pedagogical trends and preferences articulated by study participants appeared to reject fixed classroom seating and lecture halls because of the appearance of "sage-on-the-stage" instruction. Instead, they showed a preference for collaborative learning spaces requiring comfortable and mobile furnishings, learning spaces with larger physical dimensions, and spaces supportive of interactive technologies.

The key implication of the findings above was the acknowledgment that the flexibility desired by study participants may be cost prohibitive. Accordingly, compromise among stakeholders may be required to address what appears to be a consensus among all three perspectives: namely, that there is a cost implication to build and renovate learning space that requires

> a greater space footprint. Yet dwindling budgets in higher education (GAO 12-179, 2012) continue to affect administrators' ability to address deferred maintenance needs within existing space and respond to changes in education pedagogies. Therefore, there is an implicit requirement for stakeholders to balance wants and needs when planning to add space or to renovate existing space.

#### **TECHNOLOGY AS A COMPONENT OF LEARNING**

Another key finding in this study was the acceptance and requirement of technology enhancements within the facility-built environment. Specifically, technology as a component of learning appeared to have moved from a "want" to a "basic need" in higher education learning space. Finally, a study participant referred to students in higher education as "digital natives."

This pronouncement was significant in that it identified a subject matter not found in the research literature and provided insight as to why technology was viewed by the participants as impacting learning in higher education. Explicitly, technology has become to higher education what water is to a fish. It is not a want—it is an absolute need. The study participants clearly saw technology as an important characteristic believed to impact learning. With this notion, it is evident that stakeholders in higher education need to look at technology under a new lens, a lens that requires collaboration at the onset of space planning to identify and determine technology needs; technology master planning at the institutional level to support planned growth; and the identification of a stable source of revenue to maintain technology systems.

#### **IMPLICATIONS FOR STAKEHOLDERS**

As this study reveals, there appears to be a large divergence between what deans profess as important goals and how those goals are viewed when compared to other initiatives within their academic institutions. The most striking instance identified by this study was the low ranking of sustainability as an important characteristic for learning by all three of this study's perspectives. Furthermore, this study appears to indicate that no one design or building style or type will suffice to accommodate all learning styles or offer enough flexibility to continually address changing pedagogies.

The implication previously listed was even more troubling for two specific reasons: the consistent decline in funding for higher education institutions since the 2008 economic downturn (Hurley et al., 2010) and the continued growth of deferred maintenance for higher education institutions.

#### CONCLUSION

This study used Q methodology to identify the subjective beliefs and opinions held by academic deans on the characteristics of the facility-built environment and their perceived impact on learning in higher education. Conceptually, this study showed that learning spaces within the facility-built environment were complex yet had basic requirements that were expanding in scope, function, amenities, and the required internal infrastructure to support continued changes.

This study added to the research on the impact of the facilitybuilt environment on learning in higher education from the perspective of academic deans. Their individual and collective perspectives indicated that facets of the facility-built environment were important to learning—important not because variable x or ycould be quantified, but more because the individual perspectives of the academic dean were qualitatively expressed and evaluated.

Five key perspectives emerged from the evaluation that appeared to differ in context from similar variables or characteristics found in K-12 research: 1) technology in learning space and the learning environment was articulated as a basic requirement for learning; 2) safety was conveyed as both a physical presence and a self-awareness; 3) "size does matter" in the learning environment in the context of flexibility, storage, and individual personal space; 4) sustainability ("green") was not considered a characteristic of the facility-built environment to positively impact learning; and 5) the maintenance and upkeep of the facility-built environment in higher education transcends the mere brick-and-mortar purpose of the facility to house learning activities, and was seen by many study participants as defining the value that an institution places on learning. (§)

Wallace Harris is associate director, physical facilities, at the University of North Florida, Jacksonville, FL. He can be reached at *wharris@unf.edu*. This article, his first for *Facilities Manager*, is adapted from his doctoral dissertation and research report conducted under the auspices of APPA's Center for Facilities Research (project CFaR029-14). Harris received the CFaR Research Award at the APPA 2015 Conference.

## WE'LL GROW YOUR TREES WHILE YOU GROW YOUR BUSINESS.

We're Bartlett Tree Experts, a 100+ year old tree and shrub care company with global reach and local roots. We provide expert, attentive service, a safety-first record, and a wide spectrum of services, including:

- Tree & Shrub Pruning
- · Cabling & Bracing
- Fertilization & Soil Care



• Insect & Disease Management

• Inventory & Management Plans

Harrestar Contail Costar Lestar Costar Lestar Costar Lestar Costar Lestar Costar Lestar Costar Lestar Lestar Costar Cost

Call 877.BARTLETT (877.227.8538) or visit BARTLETT.COM

## Count on us for the products you count on.

## The brand name products you need, when you need them.

We've spent over 60 years perfecting our process and product offerings, while building a coast to coast supply chain that ensures we get our customers what they need, when they need it. It's why we're focusing those resources and expertise to become your trusted property and facilities maintenance partner. Let us send you our latest Facilities Supply Catalog today.



ferguson.com (888) 334-0004

©2015 Ferguson Enterprises, Inc.



PHOTOS BY RHONDA HOLE





## APPA 2015 CONFERENCE HIGHLIGHTS August 4-6, 2015

2015–2016 BOARD OF DIRECTORS



#### PRESIDENT'S RECOGNITION AND GAVEL EXCHANGE



APPA BOARD OF DIRECTORS WITH MEXICO INITIATIVE GROUP



#### MERITORIOUS SERVICE AWARDS



David Gray (SRAPPA)



Tony Guerrero, University of Washington Bothell (PCAPPA)



Jeri Ripley King, University of Iowa (MAPPA)



Richard (Rick) Battistoni, Saint Michael's College (ERAPPA) James Harrod, University of Wisconsin Hospital & Clinics (MAPPA) David Woodson, University of British Columbia (PCAPPA) Chris Kopach, University of Arizona (RMA) Lisa Potter, University of Colorado Boulder (RMA) James (Jay) Williams Jr., Virginia Military Institute (SRAPPA) David Hatch, North Carolina State University (SRAPPA)



SUSTAINABILITY AWARD



Slippery Rock University and San Diego Community College District

#### AWARD FOR EXCELLENCE



Weber State University

#### **REX DILLOW AWARD**

Eric Gregory, Emory University (not present)

#### EFFECTIVE AND INNOVATIVE PRACTICES AWARD



University of Colorado Boulder Labor, Trades, and Crafts Trainee Program



Western Michigan University Building Information Modeling for Skilled Trades

#### **CREDENTIALING AWARDS**



Penn State University



locky Mountain Region



University of California San Francisco Promoting Water Conservation in Research Laboratories



University of Texas Austin Surplus Property Retail Store or S.M.A.R.T. Store – Surplus Management Asset Recovery Team Store

#### **APPA STRATEGIC AND SPONSORING BUSINESS PARTNERS**

#### **DIAMOND\***

Spirotherm, Inc. TMA Systems, LLC

#### **PLATINUM\***

AssetWorks, Inc. Club Car JLG Olympus Building Services Inc. Schneider Electric Tennant Company W.W. Grainger Inc.

#### **GOLD**\*

esri (Environmental Systems Research Institute, Inc.) INVISTA Patcraft SSC Service Solutions Staples Facility Solutions Tandus | Centiva Waste Management

#### SILVER\*

Able Services Accruent, Inc. Adams FM2 AeraMax Pro **Air Monitor Corporation AQUIS** Armstrong International, Inc. ASSA ABLOY Door Security Solutions **Belfor Property Restoration** EMG **Gilbane Building Company ISSA** J2 Innovations **Miracle Method Surface** Refinishing MTS Seating **NxtWall** 

Pannier Graphics Reechcraft, Inc. Renaissance Roofing SchoolDude.com Seaman Corporation Special-Lite, Inc. Terracon Tremco Inc Unger Enterprises ZON

#### BRONZE

AGF Manufacturing, Inc. **American Hotel Register** Company **Axis Communications BBL Campus Facilities Busch Systems International C&S** Companies **Centennial Contractors** Enterprises, Inc. ChemTreat, Inc. **Construction Specialties, Inc. DaVinci Roofscapes E & I Cooperative Purchasing** Ecolab, Inc. **Evo Market Solutions Ferguson Enterprises** G.D. Barri & Associates, Inc. The Gordian Group **HD Supply Facilities Maintenance** Innovative Reach, Inc. **ISES** Corporation ITEM Ltd. Jensen Hughes Johnson Controls. Inc. Kellermeyer Bergensons Services Klein and Hoffman Marcis & Associates Marvin Windows and Doors Max-R McGard LLC Mitsubishi Cooling & Heating **Musco Sports Lighting** 

Nalco Company **Norix Furniture OMI Industries/Fresh Wave IAQ Onicon Incorporated** Phigenics LLC **PPG Industries, Inc. Precision Concrete Cutting** Resolute **Rovanco Piping Systems** Sightlines, LLC Spartan Chemical Company Swan Corporation Victor Stanley Inc. Western Specialty Contractors WFF Facility Services Wizard Software Solutions, Inc.

#### **FRIEND OF APPA**

Haley & Aldrich, Inc.

#### BUSINESS PARTNER VISIONARY AWARD 2015\*

Jacobs Siemens

#### APPA STRATEGIC AND SPONSORING BUSINESS PARTNERS



AssetWorks, Inc. **Club Car Ferguson Enterprises INVISTA** Marcis & Associates Marvin Windows and Doors Miracle Method Surface Refinishing Mitsubishi Cooling & Heating Nalco Company **OMI Industries/Fresh Wave IAQ** PPG Industries, Inc. **Schneider Electric** SchoolDude.com Spartan Chemical Company Spirotherm, Inc. **Staples Facility Solutions** Tandus | Centiva **Tennant Company** TMA Systems, LLC Tremco Inc. Western Specialty Construction

**STRATEGIC BUSINESS** 

PARTNERS Adams FM<sup>2</sup>

\* Denotes Ambassador Supporter

#### 2015 APPA FELLOW



Glenn Smith, Bryn Mawr College (ERAPPA), second from right, presented by previous APPA Fellows

#### PRESIDENT'S UNSUNG HERO AWARD





Wallace Harris Facility Matters: The Perception of Academic Deans Regarding the Role of Facilities in Higher Education



Lowell Bromander (MAPPA), Kelly Ostergrant (SRAPPA) Steve Hoskins (RMA), Patty Anderson (PCAPPA) J. B. Messer (CAPPA), Roy Ruiz (CAPPA) Steve McClain (CAPPA), Kevin Mann (ERAPPA)

#### PRESIDENT'S AWARD



Lander Medlir

Larry Blake (not present,



Joseph Ha



John Morris The RMA 14ers Club: A Model for Facilities Mentorship



#### **Mexico Initiative Group:**

Dave Button, Jose Gerardo Gomez, Tony Guerrero, Glen Haubold, Ruthann Manlet, Glenn Smith, Peter Strazdas, Mary Vosevich (Not pictured: Bob Andrews, Larry Blake, Larry Zitzow, Anna Cecila Canton, Georgina Martinez Medina, Carlo Vazquez.)

#### DISTINGUISHED LEADERSHIP AND ETHICS AWARD



**Ron Flinn** 

#### APPA VISIONARY SPONSORS AWARD



Siemens Industry, Inc. Building Technologies Division Jacobs

#### EAGLE AWARD



Nina Wollman



Chuck Scott, VP PD



Jeri Ripley King, VP I&R

Ruthann Manlet, Rep to Executive Committee



**Outgoing Board Senior Reps** 



# PGMS has the building blocks for

## a successful career

## PGMS School of Grounds Management has just what you need to help your grounds manager become a more effective professional.

Dynamic education programs, valuable networking events, and insider looks at local grounds operations will give them the resources they need to make the impression you want.

#### Oct. 21-24, 2015, Galt House Hotel, Louisville, Ky.

Details posted at www.pgms.org.







# The APPA Standards Initiative: Creating ANSI Standards for Total Cost of Ownership

By Brooks Baker

ANSI A Standard Standards Dort

PPA International is now launching an ANSI standards strategy, on behalf of the education sector, that will result in a suite of Total Cost of Ownership Standards produced within APPA's TCO Standards Writing Work Group.

This exciting new initiative was launched by the APPA Standards and Codes Council (ASCC), following approval of APPA's Accredited Standards Developer (ASD) status by the American National Standards Institute (ANSI) in early April. A steering group, comprising APPA Past President Doug Christensen (Brigham Young University, retired), Ana Thiemer (University of Texas at Austin) and Dana Smith (retired, National Institute of Building Sciences) was launched on April 30 and tasked by the ASCC to establish a TCO Standards Framework. The draft framework was presented at two, well-attended briefings that occurred at the APPA 2015 Annual Conference in Chicago, where it received much positive comment and response.

The next steps to be taken by the ASCC are to formally announce the formation of the APPA TCO Standards Writing Work Group. APPA is now preparing a formal participation announcement and will be working with ANSI to gather interested stakeholders and members of the Work Group. The Work Group will utilize *APPA's Accredited Procedures for the Development*  *of American National Standards* to seek consensus, finalize, and publish APPA's ANSI TCO standards.

#### WHAT IS TOTAL COST OF OWNERSHIP?

Collectively, facilities and infrastructure at most if not all educational campuses represent the largest of any assets owned by an institution, to include endowments. An ongoing challenge facing educational facilities, and the facilities industry in general, is its ability to define, quantify, and consistently manage a building or facility by following the principles of Total Cost of Ownership, and through all stages of a building's life: project delivery (design and construction phase); maintenance and operations; and recapitalization. Maximizing the efficiency and use of the built environment requires a holistic approach, looking closely at each of these three phases and accurately projecting costs over a building's full life. TCO provides an opportunity for facilities professionals to accomplish one or more of the following:

- Recognition of when to mitigate future excessive costs based on current maintenance and repair costs;
- Knowledge on how to lengthen the life of the investment;
- Wisdom to determine which assets are most economical in their business environment;
- Intelligence on future cash flow projection over any length of time;
- Knowledge to create a virtual annual plan for new and existing investments; and
- Insight on both unnecessary expenditures and resourceful expenditures.



There are three key attributes of TCO:

### PROVIDES CERTAINTY OF DELIVERY AND INVENTORY

Let's look at the Operations and Maintenance (O&M) organization. To perform most effectively, optimally you have in place an accurate listing and database of all building assets. It enables the O&M organization to more accurately assess needs and to establish preventive and predictive maintenance requirements.

#### CERTAINTY OF JUST-IN-TIME DECISIONS

TCO implementation requires a full accounting of a building's assets and tracked performance throughout the building's life. Such collected information can be used to make "just in time" decision-making for existing and future buildings.

#### CERTAINTY OF BEST DESIGN AND BUILD

With data collected from existing facilities, to include life of building materials and systems, it is possible for owners, designers and planners to make informed and cost-efficient decisions with regard to future refurbishing or new building design and construction projects. In short, performance data of existing facilities provides a blueprint for best in class design.

#### THE PATH FORWARD

APPA will now develop a list of interested experts and stakeholders who wish to participate on the APPA TCO Standards Writing Work Group. Under APPA's ANSI-approved operating procedures, participants in the Work Group will be identified under one of three interest categories:

User Interest – Educational institutions that maintain and support facilities, grounds, and physical assets used in the delivery of academic teaching, education, and instruction.

Producers Interest – The Producers interest category is comprised of manu-

facturers or suppliers of products and services used by educational institutions.

General Interest – Participants under this category include those with reasonable interest and experience in education, and who does not qualify as either a Producer or User.

The APPA Standards and Codes Council looks forward to this exciting milestone for APPA and the education sector. For more information, please contact APPA's Associate Vice President John Bernhards via e-mail at *john@appa.org*. (5)

Brooks Baker is a past president and emeritus member of APPA, and serves as chair of the APPA Standards and Codes Council.

Stop Replacing the Auxiliary Drains that Freeze and Break with Auxiliary Drains that Freeze and Break



1	Æ	
COLLECTA	ORAIN	
AUXIL	IARY	
Felan Index International Factor International Factor International International Will J, Melmin International International	。 。	
All Restores Rest 101.0 are 101.0	<b>2</b> 2	

COLLECTANDRAIN

The **COLLECTANDRAIN**<sup>®</sup> Model 5400A provides a temperature controlled environment for the sprinkler system auxiliary drain so freeze-ups are a thing of the past. This winter stop the cycle of replacing drains and install the only auxiliary drain with superior freeze protection.

#### www.testandrain.com

\*Actual photo of ice breaking the valve of an auxiliary drain taken in a parking garage during the winter of 2014.

## Start Small. Just Start Writing.

By Jenna Elmer, SPHR

hat is what I had to tell myself about a month after I was asked to author a chapter for APPA's Body of Knowledge (BOK). I was so intimidated by the idea of writing for such an important publication that I couldn't think of a beginning to the chapter, much less a middle or an end.



Are you interested in writing (or simply updating) a chapter to the APPA BOK? Do you know of an area of facilities that you'd like to see covered in a new BOK chapter? Here's where your expertise could help others in the facilities profession—and get you noticed by your peers. Authorship in a BOK chapter has many rewards—and all you need to get started is a willingness to share your knowledge, and a simple e-mail expressing your interest to Anita Dosik at *anita@appa.org*.

#### **UP TO THE TASK**

Deciding to write for APPA's BOK started with an e-mail request from Jack Hug, the content coordinator for the General Administration and Management section. To say I was flattered would be an understatement. Being asked to author a chapter for the BOK was a proud moment in my career, but I have to be honest—my overwhelming reaction was fear. I was afraid that I wouldn't be able to do it, or worse, that I wouldn't like what I wrote, or worst of all, that no one else would like what I wrote.

Even though I have more than 20 years of experience in my field, have worked for both small and large organizations, and have a passion for helping organizations build great teams, I was still unsure if I was up to the task. My self-doubt made it difficult to know what to write. I e-mailed Jack, telling him that I was overwhelmed by the

> amount of material I had to select from and couldn't focus on what was really important.

#### **MIND SHIFT**

Jack Hug was always there with a word of encouragement, a helpful comment, and a willingness to review even the roughest of drafts. The day I sent the first e-mail acknowledging my fears, Jack responded with some thought-provoking questions. His last question was the one that got me moving: "So, Jenna, if I were leading your facilities organization, I would say to you: How are we going to do this?"

When I read that, I knew that I knew the answer. It was as simple as that. I may not have been sure how to write it out just yet, but I knew what I would tell a manager if they were asking me how to build a great team. I have a passion for building amazing teams. I love helping leaders get the right pieces in place so they can create awesome cultures. I needed to stop asking, "How do I write a chapter for the BOK?" and start asking, "How can I help people build great teams?"

So I started writing to you, the reader. I didn't know how to write a chapter for a book, but I did know how to talk to managers about the subject matter—so I just started writing. I wrote as if I were writing to a new manager who needed a guidebook in one of my areas of expertise. I wrote as if I were telling you some of the lessons I've learned about building great teams. I started with concise thoughts and short paragraphs. I just started writing.

#### THE PROCESS

The whole process took several months. In the beginning, I set aside a few hours a week to write brief paragraphs. As those paragraphs turned into pages, I dedicated a day or two to really immerse myself and ensure that my disjointed ramblings came together to form a coherent story. As I wrote, I found that I really *did* know a lot about the subject matter. I also had friends in the industry who had written on the subject whose work I could reference. And I had some examples from my own experiences to share. As the chapter began to take shape, I felt more confident in my ability to finish the task.

And so I wrote—and wrote, and wrote. I also had great help. My staff was always willing to listen as I bounced ideas off them or to comment on my latest draft. My supervisor was always supportive, ensuring that I had time to tackle the project, and would weigh in with thoughts for the chapter. Jack Hug, my content coordinator and mentor, guided me with great words of encouragement and thought-provoking questions. And I also had a great editor—my awesome, high-school English teacher mother!

#### THE POINT: SHARING YOUR KNOWLEDGE

When the chapter was finally written, I felt an enormous sense of pride. I discovered that I really enjoyed the process of writing. I found that by focusing on the reader, writing became easier. I enjoyed sharing my knowledge with you. Because that is the point of the BOK, isn't it? We are all in APPA as experts in our own little (or big) areas, and we all have something we can share.

I hope there are managers out there who now know a little more about how to build an effective team because they came to the BOK for answers. I hope that I have been able to help a leader on their journey to greatness. I hope that employees will benefit from the great cultures that our facilities leaders are able to build, because those leaders have been given a few new tips, tools, and tricks for building an effective workforce.

And I hope that you will think about

sharing your own knowledge. Have a conversation with a BOK author or the content coordinators. Do you have something that you can contribute? Can you write a chapter for APPA's BOK? I'll bet you can. And I'll bet that there's a lot I can learn from you.

#### So, start small. Just start writing. 🗊

Jenna Elmer is assistant director of human resources at the University of Arizona in Tucson, AZ. She can be reached at *jrelmer@email.arizona.edu*. This is her first article for *Facilities Manager*.



1 6

6nninge

LILLING CONTRACTOR



## forward thinking



Looking to improve the energy efficiency in your school district?

Let the Internet-connected products from Reliable Controls® help you do the math. We deliver high performance energy management and control systems for school districts all across North America.

Visit our website to locate a Reliable Controls® Authorized Dealer near you and let us help you with some forward thinking.

We are the people and technology you can rely on.



www.reliablecontrols.com

## **Rice University's Net-Zero Carbon Path**

By Abbe Bjorklund, P.E, CEM, LEED AP, CPMP

ike many college and university campuses, Rice University in Houston, Texas is striving to balance multiple (and sometimes conflicting) needs and goals:

- Serve a growing campus (25 percent increase in conditioned space planned)
- Provide reliable utility services
- Reduce operating costs
- Address deferred maintenance
- Achieve sustainable, net-zero carbon campus

Through an integrated master planning process, Rice found that it could address all of these needs and goals. Starting in 2012, Rice partnered with Sebesta, Inc. to develop the 30-year Rice Integrated Climate and Energy Master Plan, or RICEMaP. Other institutions can learn from Rice's experiences as they strive to take control of energy, financial, maintenance, and infrastructure factors on campus.

#### THE PROCESS

The master plan included an integrated analysis of the way energy is produced, distributed, and used on Rice's campus.

The process started with establishing a baseline of the age, condition, and capacity of the campus utility production and distribution systems. The campus already had chiller plants, boiler plants, and cogeneration capabilities, but it was anticipated that upgrades and the addition of new equipment over the 30-year master plan horizon would be essential to meeting campus energy needs.



In parallel with the analysis of campus utility production and distribution systems, the RiceMaP team investigated energy usage profiles of campus academic, administrative, residential, and research buildings. Based on detailed energy audits of representative campus facilities, the team developed an achievable target of 30 percent energy reduction, with a simple payback of 2.5 years.

Employing techniques similar to those used in its analyses of the campus buildings, the RICEMaP team discovered ways to improve plant operations. An example is the installation of steam piping to interconnect the campus's North and South plants, which provides more flexibility and efficiency in plant steam production operations, as well as increased reliability.

#### MASTER PLAN

Combining the findings of the utility infrastructure and building efficiency investigations, the team developed an integrated analyses of future energy requirements and associated investments for the campus over the 30-year RICEMaP horizon. They compared four scenarios in terms of capital cost, operating expense, and associated environmental performance:

• Scenario 1: Business as usual. This is the baseline scenario if Rice continues with current facility operations while expanding its facilities to meet future campus growth.



#### Figure 1: RICEMaP 30-Year Present Value Comparison of Four Scenarios

Figure 2: RICEMaP Scenario 3 Net-Zero Carbon Strategy.



- Scenario 2: This scenario examined the impact that investing in campus energy-efficiency and plant operational improvements would have on freeing up utility capacity to meet future growth.
- Scenario 3: Building on Scenario 2, this scenario included installing 6.2 megawatts of cogeneration capacity at the campus's South Plant.
- Scenario 4: Building on scenario 3, this scenario included expanded cogeneration capacity at the campus's North Plant when the current cogeneration system needs to be replaced (estimated for 2024).

Figure 1 compares the 30-year present value of capital cost and operating expense for each scenario and the cumulative greenhouse gas (GHG) emissions (black line).

Scenario 1, the business-as-usual scenario, has the highest overall cost, with a \$282 million net present value over the 30-year study period.

For Scenario 2, it was determined that by investing \$28.4 million in energy-efficiency improvements in campus buildings and infrastructure, Rice could offset the need to add more utility production capacity to support campus growth, and also reduce total campus energy and capital costs, achieving a net present cost reduction of more than \$17 million. This scenario would also reduce cumulative campus GHG emissions over the 30year period by about 30 percent (see black line in Figure 1).

For Scenario 3, investing an additional \$25 million in cogeneration infrastructure (beyond Scenario 2) at the South Plant, plus purchasing \$7.4 million in green power, reduces cumulative campus GHG emissions by 68 percent compared to Scenario 1. Scenario 3 has a total net present cost savings of \$5 million versus Scenario 1.

Scenario 4 has a \$13 million savings compared to Scenario 1, while reducing campus GHG emissions by about 70 percent. Through deploying a combination of renewable energy generation and carbon sequestration strategies (see Figure 2), it was projected that Rice could reasonably achieve its net-zero carbon goal by 2038.

#### **RICEMAP IMPLEMENTATION**

Completed in 2013, RICEMaP provided the campus administration with a clear roadmap and financial justification for investing in building and utility system infrastructure. Campus administration selected Scenario 3 for implementation. Rice has begun to implement the recommended campus building energy-efficiency and utility infrastructure improvements, and has also begun to generate onsite renewable electric energy and to procure it off-site as well.

#### LESSONS LEARNED

There are valuable lessons to be learned from Rice's journey. An integrated approach to facility and utility plant efficiency can free up plant capacity to support future growth, eliminating the need for costly central plant expansion projects. And through long-term planning, future operating cost savings can more than offset investments in campus infrastructure, while improving campus reliability and sustainability. (**§**)

Abbe Bjorklund is a vice president and service line leader for Sebesta, Inc. in Woburn, MA. She can be reached at *abjorklund@ sebesta.com*.



4243 Dunwoody Club Drive, Suite 200, Atlanta, GA 30350

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

#### The summer is over, students have returned to the campus, and with luck you've

successfully navigated any changes needed to address the reality of your new operating budget. Now it's time to focus on longer-term issues such as whether your team is working together well or how you can help an employee who didn't get a good performance review last spring and needs assistance getting on the right track. Here are two books for your consideration.

#### QUICK TEAM-BUILDING ACTIVITIES FOR BUSY MANAGERS, 2ND ED.

Brian Cole Miller, Amacom, New York, 2015,182 pp., softcover, \$18.95.

Facility leaders are no different from other organizational leaders, except that they may be more technically focused and have fewer "soft skills" to deal with staff and team issues. Fortunately for them, Brian Cole Miller has provided an updated edition of *Quick Team-Building Activities for Busy Managers.* 

Depending on your position in the organization and the overall atmosphere in your organization, this book may be right for you. I've found the need for team-building in several situations. I've either had good people who couldn't get along with each other, people who would become better if they didn't compete with each other, or people who were just tired from years of stressful work and needed a time-out.

Although I have frequently sought out professionals to assist with my teambuilding needs, I realize that not everyone has the resources or the support for professional assistance (or the time required). *Quick Team-Building Activities* will fill that void, but I suggest the title should include "budget constrained managers" as well as "busy managers."

The difference between a professional team-building consultant and this book is somewhat obvious. The book requires you to complete four tasks: select the exercise, do the preparation, oversee the



activity, and summarize the results. That said, even using a consultant, the leader must provide some kind of summary to get the point across and helpfully make the team-building exercise stick.

Miller makes the first three tasks—selection, preparation, and oversight easier, with a good introduction explaining how the book works and what kind of effort must be expended to make the subsequent exercises effective. He also spends an equal amount of time outlining what can go wrong with the exercises and how to take corrective action. The corrective action is focused not only on what to do after something has gone wrong, but how to prepare for errors and minimize bad outcomes.

After focusing on the preparation, Miller offers six categories of teambuilding activities that address most workplace issues. There are 50 activities in all, obviously not evenly divided among the six categories. Each activity is laid out in the same manner, which is explained in the beginning of the book. In addition to being quick, the activities do not require much in the way of materials or equipment (perfect for constrained budgets).

Are the 50 activities Miller includes everything that you need to be a successful leader? Perhaps. They represent more than what I used in my career. If they don't address all your needs, they should at least get you started. Whether you have some kind of team-building activity once a month or only when needed, this is a handy reference that can help keep your organization running despite the many challenges of budget, time, and service demands.

#### JUST LISTEN

Mark Goulston, Amacom, New York, 2009, 221 pp., softcover, \$17.95.

There's seldom enough time to get things done, and the growing pressure in educational facilities to "do more with less" and be "customer-focused" on a shoestring budget doesn't help. Add to this the continuing demands to measure what is done in a manner that will prove your organization is adding value or doing things right. As you think about these pressures, what comes to mind? The need for action? Quick thinking? Results?

These may be normal responses to stress. But Mark Goulston argues in *Just Listen* that these responses are your amygdala (reptilian brain) taking over and interfering with your frontal cortex (logical, higher brain)—often resulting in poor decisions, continuing problems, and lack of insight. As humans, we all have these reactions, from our bosses and subordinates to our peers. The way to break this cycle of panic-flight/fightrest-panic is to find a better solution.

In *Just Listen*, Goulston provides us with nine ways to get through to someone who has "amygdala hijack," which often inhibits your ability to help them. He shows us how to move to a higher-order discussion and search for effective solutions that use the frontal cortex. As the title suggests, it is important to listen to what is happening and to how a person is responding, and then shift the conversation to something that will result in a solution rather than the continuation of the problem.

Having shown us how to identify communication problems in a calm, logical manner, Goulston also provides 12 tools to get buy-in for the solution and concludes with seven fixes for challenging situations.

There are some great ideas and techniques provided in *Just Listen*. The examples ring true for different situations I've been in as a facilities officer. They also match a great deal of what is taught in APPA's Leadership Academy: development of individual effectiveness, recognition of interpersonal issues, and managerial and organizational effectiveness. Obviously, as a mass-market business book, *Just Listen* includes many situations that do not necessarily relate to facility operations, but that's a minor issue.

*Just Listen* is an excellent resource for any leader's bookshelf. The index also allows quick look-up of scenarios and solutions if you're like me and can't remember all the techniques, or need a quick refresher before tackling a difficult situation at work.

Ted Weidner is an associate professor at Purdue University and consults on facilities management issues primarily for educational organizations. He can be reached at *tjweidne@purdue.edu*. If you would like to write a book review, please contact Ted directly.



## 

co-sponsors ASHRAE

THE WORLD'S LARGEST HVACR MARKETPLACE | AHREXPO.COM



#### Compiled by Gerry Van Treeck

### **Eaton** announces the release of the

Power Xpert gateway (PXG) 900, an electrical system communications device designed to



deliver easy, remote access to power system parameters and alarms through a Web browser. Engineered to enhance energy performance in commercial, institutional, and industrial facilities, this compact solution allows for access to real-time and historical energy and power data from electrical equipment. Facility and energy management personnel can use this in-depth data to simplify decisions targeting enhanced electrical reliability, efficiency, and safety. For additional information please visit Eaton at *www.eaton.com*.

**LockState** introduces RemoteLock ACS, a cloud-based access

control management system that integrates external door controllers with internal stand-alone WiFi connected locks for a complete access solution. With an easy-to-use and intuitive browser-based interface, the system integrates open architecture hardware from best-in-class manufacturers like Mercury and HID. The RemoteLock ACS includes traditional physical access management hardware typically used for perimeter access points, and integrates internal WiFi stand-alone door locks. Whether you have one door or thousands, the RemoteLock ACS brings solutions. For further information on LockState products visit *www.lockstate.com*. **Dero** has a new publication, *Pocket Guide to Bike Parking*, a well-designed, easy-to-read resource to help get bike parking right the first time. Learn about what makes a good bike rack, short-term and long-term options, capacity and space use, how to choose a site, installation, and more. This update to Dero's original bike parking guide is more accessible than ever, with a



clean design, stunning images, and a

resource page to connect readers to bicycle advocacy organizations around the country. For more information on Dero visit *www.dero.com*.





**CULTEC, Inc.** releases the Recharger 902HD. This ultra-high capacity model is an ideal solution for high-volume stormwater management systems due to its lightweight maneuverability, shipping, and stockpiling benefits and design flexibility. Offering the benefit of minimizing project costs by maximizing storage volume in a given footprint, the Recharger 902HD is an ideal solution for high-volume stormwater management systems. For more information regarding CULTEC visit *www.cultec.com*.



**Universal Lighting Technologies** now offers simple light-emitting diode (LED) replacement options as they continue to expand the EVERLINE family, including T8 LED linear tubes, "LED ready" compatible ballasts and the EVERLINE LED retrofit kit. The newest product is the EVERLINE T8 LED tube—designed

**Siemens** unveils radio frequency identification (RFID) transponders and a mobile handheld reader, expanding its line of Simatic RF600 RFID products with new transponders having large memory capacities, and a compact mobile read/ write device. The new Simatic RF622T and RF622L Ultra High Frequency RFID transponders have capacities of 4 KB and can store large volumes of data while rapidly accessing tagged objects. The carriers are ideal for production control,

to serve as a direct replacement

for conventional linear fluorescent lamps. These tubes are universally compatible with most Instant Start and Programmed Start ballasts. The T8 LED replacement lamps offer more than 30 percent immediate energy savings and installation ease. For more information, visit Universal Lighting Technologies at www.unvlt.com.



asset management, and intralogistics distributed configurations. For more information on Siemens, visit *www. siemens.com*.

New Products listings are provided by the manufacturers and suppliers and selected by the editors for variety and innovation. For more information or to submit a New Products listing, e-mail Gerry Van Treeck at *gvtgvt@ earthlink.net*.

#### **Index of Advertisers**

Adams FM <sup>2</sup>	www.adamsfm2.com	55
AGF Manufacturing	www.testanddrain.com	49
AHR Expo/International Exposition Co	www.ahrexpo.com	58
AMERLUX	www.amerlux.com	5
APPA Publications	www.appa.org/bookstore	72
Armstrong International	www.armstronginternational.com	17
Bartlett Tree Expert Company	www.bartlett.com	37
Club Car	www.clubcardealer.com	3
Ferguson	www.ferguson.com	38
G.D. Barri & Associates	www.gdbarri.com	11
Gale Associates, Inc	www.galeassociates.com	19
Keast & Hood Structural Engineers	www.keasthood.com	23
McGard LLC	www.manholelocks.com	57
Miracle Method	www.miraclemethod.com/collegehousing	51
The Okonite Company	www.okonite.com	.C4
Power Access Corporation	www.automaticdoor.biz	35
Professional Grounds Management Society	www.pgms.org	47
Reliable Controls Corporation	www.reliablecontrols.com	52
SchoolDude.com	www.schooldude.com/APPA	. C3
Veritiv	www.veritivsmartcampus.com	31
Victor Stanley	www.victorstanley.com	.C2
ZON Technology	www.zon-technology.com	13



## FACILITIES & TECHNOLOGY: THE TRANSFORMATION OF "CAMPUS"

PART 1



Published by:





**APPA** is the association of choice serving educational facilities professionals and their institutions. APPA's mission is to support excellence with quality leadership and professional management through education, research, and recognition. APPA's **Center for Facilities Research (CFaR)** engages in a deliberate search for knowledge critical to educational facilities management and to policy making in education. CFaR encourages the study of the learning environment, appropriate management strategies, and their impact on education.

APPA 1643 Prince Street Alexandria, Virginia 22314-2818 www.appa.org www.appa.org/research/cfar/tls.cfm

Sponsorship assistance graciously provided by:



Copyright © 2015 by APPA. All rights reserved.

International Standard Book Number: 1-890956-89-9 Produced in the United States of America

## Introduction: Facilities & Technology: The Transformation of "Campus"

ardly an aspect of higher education remains untouched by technology. Nearly every classroom, library, and lab has been reshaped in some way by fast microprocessors, near-limitless data storage, and creative software.

Furthermore, technology is not finished transforming higher education. Massive open online courses (MOOCs), flipped classrooms, and adaptive learning systems are disrupting the Socratic sage-on-a-stage model of teaching that has dominated since the Middle Ages. Research projects are evolving into multi-institution, multinational collaborations dependent on the visualization and analysis of petabytes of data. Institutional management now depends on the functions of millions of lines of code running in vast enterprise resource management systems.

The campus—the actual physical campus, composed of buildings and grounds, parking lots and sports facilities, dorms and research labs—might appear only slightly affected by technology. Yet, technology is indeed reshaping the planning, design, operations, and management of the entire campus built environment. Campus facilities are designed using advanced modeling systems; they are managed via complicated building automation systems. Moreover, the potential for transformative technological change in facilities is growing rapidly. Sophisticated sensors will soon measure water pressure or current flow at thousands of points. Comprehensive energy management systems will balance electrical generation and consumption across entire campuses. Business intelligence systems will leverage facilities investments.

However, technology will actually change the campus in even greater, more fundamental ways. Technology is transforming the whole idea of "campus."

Not so long ago, almost every interaction between the student and the institution took place on campus

grounds. Today, students can graduate without ever setting foot on an institution's campus. That is, if the institution even has a campus to begin with—a handful of online colleges and universities do not have traditional campuses at all.

Few institutions will go that far. The campus environment will remain essential for the vast majority of colleges and universities, but its role will change. It will serve a strategic purpose, providing a hub for collaboration, a home for research, and a socio-emotional anchor for the campus community. The whole notion of the campus is changing, thanks to innovations in technology.

#### Where we are now

Higher education faces numerous pressures, and these pressures are continuining to take their toll on the campus', physical infrastructure. **Financial pressures** make it difficult for institutions to invest in new construction, renovations, and maintenance. At the same time, **pedagogical shifts** are placing the focus of the classroom on the learner rather than the instructor. This situation is exposing the constraints of traditional building designs and creating the demand for new learning environments.

**Demographic changes** are accelerating, increasing the number of minority and nontraditional students. Colleges and universities are struggling to adapt the campus to these new learners, but clearly the entire institution, the campus infrastructure included, will need to become more flexible and responsive to their needs.

**Competition** plays a mixed role on campus. On the one hand, institutions competing for students can be forced to offer deep discounts, therefore limiting the funds available to update and maintain the built environment. On the other hand, the campus remains a showpiece, with visiting students and parents scrutinizing recreation

centers, residence halls, dining options, and the actual buildings associated with their targeted program or major.

#### How buildings and the built environment are changing

New campus facilities are generally "lighter"—that is, they have less internal mass. They are more like shells in which functions can take place. Buildings can be considered as "event space"—space that is **adapted and configured** for a particular use and then readapted and reconfigured when needs change.

Campus uses increasingly overlap on campus spaces. Facilities were once single-use buildings, but today **boundaries are blurring**. A residence hall might include classrooms and a coffee shop; an academic building might house a variety of units or functions engaged in collaborative projects. Mixed-use buildings require sensitive design as well as flexible management. The needs of different users must be balanced for the good of the whole institution.

The changes swirling around the campus only serve to increase the **importance of the core**. The central heart of the campus anchors the institution. It supports the identity of the college or university and provides a potent socio-emotional symbol for students, faculty, alumni, and the community. Even if institutions choose to reduce their campus functions, shedding nonessential facilities on the periphery, they should invest in the core. Its socio-emotional worth outweighs other costs.

#### Where technology is taking us

Technology is driving higher education to become more connected and more flexible. Students arrive on campus with multiple Internet-connected devices—as many as seven each, according to some surveys. They expect to be **online nonstop**, and they demand ubiquitous highspeed access as an entitlement. Interactions among faculty members and students are likely to become more informal—an ongoing exchange online rather than a potential biweekly encounter across a desk.

Meanwhile, technology is steadily increasing the options available to learners. Most students likely will take advantage of **multiple types of learning experiences** in their college careers. A few courses will be traditional lectures, delivered by a professor at a podium. Many others will be hands-on collaborative classes or even flipped courses, with lectures online and "homework" moved to class time. Some classes, perhaps those outside of the student's major, will be taken online, and some grades might not be for courses at all but will be assessed via an e-portfolio for a student-driven competency-based learning experience.

#### Looking ahead: Big trends in big data

Digging into the technological innovations that will change the campus going forward, the theme of big data is inescapable. In the context of higher education, big data encompasses three major trends.

**Data/systems integration.** The era of stand-alone systems is quickly coming to an end. Colleges and universities recognize that data has limited value when isolated in a single database but enormous potential when systems are integrated and data is consolidated.

**Analytics.** With data resources at their fingertips, institution personnel can use advanced analytics to make predictions, draw conclusions, and support decisions.



**Digital dashboards.** The results of data analysis need to be presented to users in clear easy-to-understand ways. Well-designed real-time interfaces will provide graphical representations of critical information and enable users to drill down to critical details.

These trends are shaping technology across higher education. Learning analytics systems promise to integrate data from multiple student information systems, analyze it for trends and insights, and present it to students and instructors via dashboards and alerts. Administrative systems will consolidate and present financial data to senior administrators, while human resources (HR) systems will do the same for employee information. Senior facilities officers anticipate a day when detailed data about buildings is consolidated, analyzed, and displayed in clear actionable ways.

Although the details of big data vary from use to use, the potential impacts are huge. Students will thrive in courses when they know exactly where they are succeeding and where they are falling behind goals. Facilities organizations will achieve greater efficiencies when they understand exactly where building systems are failing to perform at optimal levels. Integration, analysis, and digital dashboards could result in changes on campus that are as dramatic as the introduction of cheap personal computers or the development of the Internet.

## Understanding the evolving role of technology in the built environment

APPA developed the Thought Leaders series to examine important trends and issues shaping college and university campuses—and few trends are having more impact than technology. For the 2015 symposium, experts in technology joined senior facilities officers as well as leaders in academics, finance, HR, and student affairs to consider where technology is taking higher education.

The group began by considering where technology and facilities stand today. They looked at trends changing college and university campuses and evaluated the state of the art in higher education technology. The symposium then focused on the role of technology in critical campus functions, including student success, research, HR, campus security, and energy management. Big data plays a major role in all of these functions; implementation of new analytics systems will be challenging, but the benefits will include improved campus services, reduced costs, increased efficiency, and a safer, more sustainable campus. Finally, Thought Leaders participants turned their attention to the nuts and bolts of integrating technology and to identify the characteristics of successful facilities organizations and facilities professionals in the future.

The results of the participants' two days of hard work are captured in this report. This whitepaper summarizes the discussions at the symposium and also provides additional context about major points. The purpose of the report is both to inform readers and to prompt discussion on campuses. At institutions across North America, senior facilities officers have come to rely on the annual Thought Leaders publications to generate new ideas about the built environment and facilities management.

#### Conclusion

Technology poses both challenges and opportunities for higher education. Innovation happens so fast that institutions fight to keep up with change. Time, effort, and insight are needed to prioritize the investment of college or university resources. IT departments face nonstop demands from all sides, and at the same time cope with the same slashed budgets as every other campus unit, while facilities organizations must adapt to new operational and strategic environments.

The institutions that embrace and integrate new technology will have an edge in the increasingly competitive higher education landscape. They will better serve learners and support faculty. They will make smarter use of limited resources and advance the safety and sustainability of the institution.

Most important, the colleges and universities that leverage technology will be ahead of their peers in adapting the campus to meet the needs of the 21st century. Institutions must look beyond traditional ideas of the value and function of their built environments. They must see that their campuses extend beyond the physical grounds and buildings into the vast dimensions of cyberspace. The new campus will be more than bricks and mortar; it will comprise lines of code, blinking dashboards, and vast databases. The mission of higher education will advance in positive yet new and unexpected ways as institutions come to understand everything that the "campus" can and should mean.

## Section I: Integrating facilities and technology on campus: Where we are today

he notion of campus is going through a remarkable period of transition and transformation. Once a hub of learning existing in relative isolation—think of the proverbial ivory tower—today the campus accommodates multiple purposes and serves the needs of diverse populations.

The next decade will see the campus change even more rapidly, contracting in some ways and expanding in others. The greatest expansion will be into cyberspace as the current outposts of online teaching and learning grow into full-fledged cyber institutions.

## Pressures on higher education and how they shape the campus

The challenges faced by higher education institutions are well known, but their effects on the physical campus are rarely considered. In fact, the campus is changing as the entire academic environment changes.

Institutions continue to face **financial pressures** as state support remains at historic lows. State funding inched up last year, growing at 5.7 percent between 2013 and 2014, according to the State Higher Education Executive Officers Association. Most state colleges and universities continue to rely on tuition dollars for nearly half of their revenue. However, state support for public institutions does not seem to be rebounding to previous levels, as it did after significant economic downturns in the second half of the 20th century. Campus facilities budgets have suffered along with those of other departments. Research shows increases of about 2 percent per year on average for facilities operations and maintenance budgets since 2007. This 2 percent is less than the inflation rate for the same period, so the real dollars available

#### Data Point: State support of higher education Welcome to the new normal

"The new normal no longer expects to see a recovery of state support for higher education such as occurred repeatedly in the last half of the 20th century. The new normal expects students and their families to continue to make increasingly greater financial sacrifices in order to complete a postsecondary education. The new normal expects schools and colleges to find ways of increasing productivity and to absorb reductions in state support while increasing degree production without compromising quality."

> —State Higher Education Executive Officers Association, State Higher Education Finance: FY 2014, April 2015

have dropped. Facilities departments have increased productivity, but pressures on the organization mean that it is more difficult every year to keep campuses operating at static, let alone, desired levels.

Changing teaching and learning practices shape campuses in significant ways. Institutions today recognize the limitations of traditional lectures and encourage faculty members to adopt more student-focused teaching. The result is a vast **pedagogical shift** on campus. Instead of passive recipients of content, students engage in active learning environments in which they drive their own education. While an exciting trend for students, new learning methodologies present a challenge for campuses. Traditional lecture halls are an ideal environment for traditional lectures, but they are awkward and clumsy for group projects, in-class work, and discussions. Institutions are recognizing the lack of flexibility in their existing classroom inventory and are developing new designs that support instructors in their efforts to challenge learners.

College and university students are themselves changing as **demographic shifts** ripple across higher education. The diversity of college and university students is growing at a rapid rate as minorities become majorities around the country. For example, the University of California system announced last year that it admitted more Latino students (29 percent) than white students (27 percent.) Diversity in the classroom also encompasses gender (women make up about 57 percent of students) and age (40 percent of undergraduates are over age 25). Institutions are working to understand the wants and needs of a more diverse student body, and clearly the campus will play a changing role. Traditional students who enroll at age 18 often live in residence halls and look to the college or university for both friends and activities, but most nontraditional students are less dependent on the campus. The institution can serve nontraditional students, however, by enabling easy access to resources and support and by increasing the flexibility of when and where courses are offered. Nontraditional students may prefer to attend satellite campuses located near employment centers.

Economic theory says that **competition** is supposed to improve services and cut prices, but the situation is more complicated in higher education. The "arms race" among institutions-the competition for the best and brightest students, faculty, and programs—has created situations such as ever-rising sticker prices for private colleges and universities and correspondingly deep discount rates (the average is 48 percent.) The impact on the campus is dramatic. Students and parents making campus visits value what they can see, and they cannot see intangibles such as excellent teachers and cutting-edge research. They can see comfortable new residence halls, vast variety in dining options, rock-climbing walls in the recreation center, and, as important, existent and well-kept buildings in their major of choice. Institutions feel pressured to invest in whatever will attract tuition dollars, and the result can be skewed priorities on campus.

## 30,000-foot view of the college and university campus

Trends in higher education will combine with trends in building design and technology to create the campus of tomorrow. Another important trend is **the fate of the physical campus**. The growth of online education raised fears that the traditional campus was under threat—that the campus could disappear, replaced by a server farm. Although important concerns, campuses are not going away anytime soon. In fact, the majority of institutions need a physical space dedicated to teaching, learning, and research—a physical *core*.

Nevertheless, how the campus is built and operated is indeed changing. Among the many factors changing the campus, three issues stand out:

- 1. Increased demand for flexibility. Campus buildings have traditionally been purpose-built for a single use. This approach allowed for customization but also limited options for the space. Those limits impose a real cost on the institution, which must build new spaces or remodel existing ones as needs change. New facilities will be designed for maximum flexibility. Higher education facilities experts suggest that institutions think of buildings as "event space"—space that is adapted and configured when a purpose arises, then disassembled when that purpose concludes. To this end, buildings are becoming "lighter"—that is, they are shell structures with quickly configurable internal spaces.
- 2. Decline of the empire. The rigid academic divisions that once split the campus are breaking down now. Academia is growing more multidisciplinary; cross-discipline research is increasingly important. This blurring of boundaries impacts campus space; instead of academic buildings with single owners, spaces now have multiple owners. This situation complicates the control and ownership of buildings. For example, while the school of engineering might have had near total control of the space in its building, matters become complicated when academic divisions need to use that same innovation lab. Shared use, shared access, and shared responsibility will be required.

#### **Data Point:** Public-private partnerships on state campuses

#### **Expansion of private sector investment across the United States**

State higher education systems across the country are turning to innovative service and delivery models to meet the needs of their campuses. Recent projects around the country include:

- In 2013, Brown University, the University of Rhode Island, and Rhode Island College, in cooperation with the State of Rhode Island and the City of Providence, announced a \$206 million deal with a private developer to redevelop the former South Street Power Station in Providence. The 1.76-acre project will include a new shared nursing education center, student housing, administrative offices, parking facilities, and retail and restaurant space.
- In 2014, the University System of Georgia announced that it had selected a private partner to develop, construct, manage, and maintain student housing on nine university campuses. The \$517 million, 65-year concession includes the addition of nearly 3 million square feet of housing.
- In 2012, Montclair State University announced a partnership with Energenic-US, LLC to develop a \$90 million combined heating, cooling, and power system for the campus; the company will finance, design, build, and operate the plant under a 30-year agreement.
- In 2012, Ohio State University closed a 50-year, \$483 million deal leasing its parking assets to a private consortium.

— Multiple news sources

3. Growing reliance on the private sector. Colleges and universities have traditionally been self-sufficient units, but institutions today recognize that the private sector can sometimes meet campus facilities needs more quickly and cost-effectively than the institution itself. Both public and private colleges and universities are forging partnerships with developers and other service providers to build residence halls, manage dining services, maintain buildings and grounds, and finance new construction.

**Importance of the core.** With the changes coming to college and university campuses, the core of the campus will **grow in importance**. In fact, the changes elsewhere make it essential that the institution retains a central hub—a core. Often this core is historic and imbued with tradition. It both reflects and reinforces the identity of the college or university. Campuses will likely contract around their core, shedding facilities on the margins or handing them over to the private sector. The institution will get the most value from its campus by bringing as many students as possible into the central hub; this valuable asset should be used for core academics so that its importance is reinforced.

Campus experts suggest a **hub-and-spoke model**: the core of the campus is a fixed space (traditionally a long quadrangle with buildings surrounding it) but as the campus extends outward, the flexibility of structures increases as their iconic status decreases. At the outer ring of the campus, facilities could be the responsibility of the private sector, or they could be intended to have an abbreviated life cycle. The edge of the campus could be designed for

impermanence, in acknowledgment that we cannot anticipate the needs of the academy of 2040, 2065, or 2115.

#### Impact of technology on campus design and

**management.** While most discussions of technology in higher education focus on technology use by students, faculty, and staff, advanced systems also play a growing role in the **design and maintenance of facilities** and are changing the campus. Building systems unheard of even a decade ago are rapidly becoming commonplace. New systems track and manage rainwater harvesting, exterior shading, and renewable energy generation. At the same time, traditional systems such as heating, ventilation, and air conditioning (HVAC) and power have grown more fine-grained, adjustable, automated—and complicated. Integrating and optimizing these systems are technically challenging and time-consuming jobs.

Smart building sensors are one of the most promising new technologies. Part of this broader trend is the "Internet of Things" (IoT)— objects that are connected to, communicate with, and can be controlled via the Internet—smart sensors **track building information** (such as temperature, lighting, or water use) and automate operations. The greatest potential of smart systems is to **prevent failures** before they occur. Sensors can identify spikes in water use that point to a leak or can notify building managers if the pressure in a fire extinguisher tank falls below safe operating levels. Data from different systems can be combined for a detailed and larger picture of how well a building is operating, and analytics systems can suggest maintenance schedules. Ultimately, automation will become streamlined. The system will identify a failed part, order a replacement, and schedule repairs all on its own.

Sensors will also help planners and architects **design more effective buildings**. Sensors can generate enormous quantities of data about how buildings are actually used. Corporations are beginning to use employee tracking systems to better understand how staff members are using offices, conference rooms, and shared spaces. Colleges and universities will likely make use of similar systems to gain insights into the actual use of campus space in the next decade.

#### **Data Point:** The Internet of Things

## Growth in Internet-connected devices predicted to soar

Technology analysis firm the Gartner Group predicts that the Internet of Things (IoT) will grow to 26 billion installed units or specific items in 2020—an almost 30-fold increase from 0.9 billion in 2009.

Defined as "the network of physical objects that contain embedded technology to communicate and sense or interact with their internal states or the external environment," the IoT will outpace the growth of other connected devices such as smartphones and tablets, which will reach about 7.3 billion units in 2020. Gartner says that the IoT installed base will grow to 26 billion units by 2020.

> — Information from: Gartner Group, press release, December 12, 2013

#### **Data Point: Smart sensors and building use** *New technology that provides insights into how space is actually used*

"The loft-like San Francisco office of software maker Atlassian has an open central amphitheater, where all-staff gatherings and midday boot camp exercises are held. But the office's rapid expansion to 300 employees has led to gripes about conference room shortages. 'We're butting up on growing out of the space,' says Jay Simons, Atlassian's president.

"So, early this year, Atlassian installed heat and motion sensors to track when and how often every desk, room and table was used. The result? Desks were used only 20 percent of the workday; conference rooms an average of 40 percent, with peak use at midmorning.

"Simons says tracking employees' movements in an anonymous way will help guide choices to convert desk space into meeting rooms, or to stagger meetings to accommodate a growing staff.

"'If we're using data to make an environment that people can be more productive in, ultimately that saves us money or helps us make more,' he says."

— Excerpt from: Yuki Noguchi, "How a bigger lunch table at work can boost productivity," All Things Considered, May 20, 2015

## 30,000-foot view of IT in higher education

If technology seems ubiquitous on campus today, hold on to your smartphone, because higher education is only going to grow more connected. Students, faculty, and staff expect high-speed access anywhere, and they demand blazing speeds. Students routinely arrive on campus with **multiple connected devices**—according to the 2014 ECAR Study of Undergraduate Students and Information Technology, 92 percent of surveyed students own at least two devices, and 59 percent own three or more. Along with their laptops and smartphones, students bring tablets, wireless printers, digital gaming systems, smart televisions, and e-readers. The load on campus WiFi is immense and growing. Even with a wealth of technology at their fingertips, students are still more likely to use their devices for fun than in the classroom. While course management systems (CMSs) are nearly ubiquitous themselves (99 percent of colleges and universities have one), only about one in two students use the institution CMS in all or most of their courses, according to the EDUCAUSE Center for Analysis and Research (ECAR). Furthermore, the majority of interactions with the CMS use its most basic functions, such as accessing course content or managing assignments. Advanced features, such as interacting with instructors or receiving feedback on course progress, still receive little attention from students. ECAR also reports that students welcome technology in their classes and would embrace more in-depth use of technology by faculty—72 percent said that they prefer courses with some online components.

Students also welcome the use of **learning analytics**. In the ECAR survey, 60 percent of students said that they were very or extremely interested in receiving real-time feedback about their course progress through personalized dashboards in the CMS. Few institutions currently provide this sort of information. Nevertheless, the analytics trend is increasing, and tools to manage and mine the data reserves of colleges and universities will become widespread in the next decade. A recent EDUCAUSE survey found that 84 percent of institutions considered analytics as more important for institutional success today than two years ago.

What is taught and how we teach it. Looking ahead, technology will have a growing effect on the classroom as new generations of faculty advance through the institution, academic software becomes easier to use, and integration problems are solved. Experts predict that students will engage in **multiple types of learning experiences** when earning degrees. Students might take one course in a traditional lecture-based classroom; another course might be a MOOC; and another might be an informal student-driven learning experience assessed via an e-portfolio. Learning will be adaptive, with technology providing the necessary flexibility.

Ready access to technology will also shift the emphasis from absorbing large bodies of facts to **learning how to think**, reason, solve problems, and communicate. Facts

#### **Data Point:**

### Campus spaces for multiple teaching methods

### *Teaching online and on campus, from one mixed-use space*

Three new classrooms at Purdue University allow instructors to teach both online and on-campus students without compromising quality for either audience. Previously, courses in the Engineering Professional Education program were taught in classrooms designed specifically to record lectures. Tables and chairs were bolted to the floor; huge monitors blocked sightlines; and microphones intended to capture questions from on-campus students had such poor sound quality that students online could not understand a word.

Purdue faculty and technical operations staff members developed requirements for the new rooms, including high-quality sound and a more engaging space for students attending class in person. The final design enables faculty members to move around while lecturing, with the class recorded by a student worker in a control room behind an unobtrusive window. The bad microphones and big monitors were replaced with ceiling-mounted microphones and 90-inch screens mounted on the walls. On-campus students are hardly aware that lectures are recorded; they experience the room as any student-focused classroom. Online students get a more dynamic presentation of material and higher-quality recordings. Already the team is contemplating how to increase the flexibility of the spaces and how they can be used for both on-campus and online learners.

— Information from: Dian Schaffhauser, "Designing learning space for both online and on-campus delivery," Campus Technology, June 24, 2015

will always be available at the touch of a button, so students need to learn how to access information, use and understand advanced analytics systems, think logically about problems, and present solutions clearly and concisely.
**Challenges and changes in the IT department.** The IT department is being asked to serve as a strategic partner within the institution rather than a provider of commodities such as e-mail. Successful IT departments are positioning themselves as **trusted campus experts**, aligned with the institutional mission and vision. This strategic role is made possible in part by **outsourcing**, which frees the IT staff from the demands of providing campus basics. Colleges and universities have turned to cloud computing to provide commodity services such as e-mail, calendars, and collaboration. The size of the cloud market in higher education has reached \$4.4 billion, according to a study by government IT experts at MeriTalk.

Outsourcing helps colleges and universities control costs but generally does not reduce staffing levels; staff members are still needed to manage outsourcing contracts and to provide strategic oversight. In fact, nearly half (46 percent) of higher education IT organizations surveyed by EDUCAUSE in 2014 added new staff members, with many of these new hires—38 percent—brought on to fill new roles within the organization. Some of the most in-demand positions are in vendor management analytics and in project and process management. Integration and analytics will be critical in the next decade. IT professionals will need to operate across platforms and functions to solve problems. Getting different systems to work together and share information will be one of the most important tasks of IT; many IT staff members reported in an ECAR focus group that campus leaders did not have a good understanding of the time and expertise required.

#### Data Point: Trends in technology in higher education Important developments in educational technology for higher education

#### Time to adoption: One year or less

Bring Your Own Device (BYOD): Institutional policy that students supply their own devices—such as laptops or tablets—rather than use institution-supplied or -mandated equipment

Flipped classroom: A teaching format where instructional content is delivered online to be studied outside of class while what would have been homework is performed within class

#### Time to adoption: Two to three years

Makerspaces: Spaces equipped with three-dimensional printers, electronics, and tools, where individuals can share resources and knowledge, work on projects, and experiment with technology Wearable technology: Clothing and accessories that incorporate computers and advanced electronic technology

Time to adoption: Four to five years

Adaptive learning technologies: Software and online platforms that adjust to individual student needs as they learn

Internet of Things: Objects that are connected to, communicate with, and can be controlled via the Internet

- New Media Consortium, NMC Horizon Report: 2015 Higher Education Edition, 2015

Look for Part 2 of this series in the November/December 2015 issue of *Facilities Manager*. Download the full report at **www.appa.org/bookstore**  2015

FACILITIES & TECHNOLOGY: THE TRANSFORMATION OF "CAMPUS"

### **APPA's Operational Guidelines Trilogy!**

All three areas of operations are available for purchase from the APPA website at **www.appa.org/bookstore**.



Editor-in-Chief: Alan S. Bigger, APPA Fellow

## The Trilogy covers the following areas of operation:

#### **Custodial**

Task Force Chair: Casey J. Wick, American International School/Dhaka

Includes the original concepts of the five levels of clean, staffing service levels, and information on such specialized facilities areas as residence halls, healthcare facilities, and 33 updated room categories.

#### Grounds

Task Force Chair: Tom Flood, Elon University

A comprehensive guide to maintaining and managing a grounds and landscaping operation. Contains information on sustainable grounds operations; environmental stewardship; staffing guidelines; contracting options; position descriptions; benchmarking, and environmental issues and laws.

#### Maintenance

Task Force Chair: Tom Becker, Philadelphia University

A guide for maintenance in facilities. Subjects include maintenance of buildings; levels of maintenance and benchmarking; case studies; compliance, safety, and sustainability; zero-based staffing buildup; career ladder and job descriptions; and much more.

#### **Individual Books:**

APPA Member: \$85 Non-Member: \$110

#### **3-Volume Set** (15% discount!):

(offer available for print format only.) APPA Member: \$217 Non-Member: \$281

Visit www.appa.org/bookstore

to purchase your copy!



#### $\circ \subset$ \$ $\bigcirc$ IN A CRISIS, **YOUR PLAN IS IN THEIR HANDS** WEATHER MEDICAL INDIVIDUALS PON ON MPUS FIRE OR EXPLOSION LCOHOL/DRUG EMERGENCY HAZARDOUS PLACE FOR SHELTER The people in your school carry Introducing one thing with them every day, and it's not your safety plan. **CrisisManager** CrisisManager is a mobile safety platform that gets your plans out of binders and into the hands of the people who need it. Publish custom plans, update them as situations change, empower everyone in your school to act. With CrisisManager, your safety plan is always with them —on the one device they're never without. www.schooldude.com/APPA **SCHOOLDUDE**

# OKOGUARD<sup>®</sup> Time Proven Reliability

OKOGUARD EPR CABLES INTRODUCED BY OKONITE ALMOST 50 YEARS AGO - HAVE ALWAYS BEEN THE UNEQUALED STANDARD OF EXCELLENCE IN POWER CABLES.

> Okoguard EPR Insulation Screen

Okoguard EPR Insulation

Okoguard EPR Conductor Screen

> Okoguard, the first name in EPR Technology for almost half a century, together with its unique and exclusive all EPR insulation system, has established an unequaled record of unsurpassed performance.

Okoguard's **Time Proven** performance is why a preponderance of colleges and universities around the country trust Okoguard to provide the troublefree power and service life that is essential to uncompromising electrical systems on campuses.

 $\pm$ 

++

Every foot of Okoguard cable bears the imprint of its 137 year old company and Owner/Employees. These employees are proud of its unwavering quality and reliability and know that every cable has been and always will be...**Made In The USA**.





**CONPANY** *Okonite Cables...A higher Standard!* 102 Hilltop Road, Ramsey, NJ 07446 201.825.0300 Fax: 201.825.9026 www.okonite.com