



THE SOCIETY OF AMERICAN MILITARY ENGINEERS

ARCHITECTURAL PRACTICE COMMITTEE

NEWSLETTER

HOW TO DESIGN A SUSTAINABLE BUILDING: WHERE DO WE START?

Look on the internet, watch the television, or go to a convention, you'll see a plethora of green items to buy and mountains of green information to absorb. Green wash is everywhere. So if you are expected to design a sustainable building, where do you start?

Here are some tips:

- I. Start first with things that cost nothing and have an impact (these features are better than net-zero... they save energy and cost nothing...they have a positive payback):
 - A. Reduce the building's size by eliminating unneeded space such as extra hallways. Take a look at any standard designs and reconfigure the design to do the same function with less circulation space or have the circulation spaces serve functions.
 - B. In warmer climates use outdoor spaces as weather and function permit.
 1. Perhaps an outside break area that could also serve as a gathering space for large functions eliminating the need for large conference room.
 2. Perhaps outside hallways that connect spaces instead of conditioned hallways.
 - C. Co-use spaces
 1. A conference room that also serves as a classroom.
 2. Dining spaces that also serve as a conference room spaces. Get creative about spaces.
 3. A gracious lobby that serves as a gathering space (instead of a large conference room or auditorium).
 4. Make spaces do double or triple duty.
- D. Share spaces with a building nearby
 1. Chapels can share classroom space with an education center nearby.
 2. Chapels can share infant spaces with a nearby child development center.
- E. On a campus locate buildings to take advantage of such sharing of spaces and parking
 1. Education centers near the commercial buildings can share parking and then students can grab something to eat in the food court before class
- F. Orient the building to take advantage of the natural features of the site - sun, shade or wind
 1. Use the sun to warm spaces.
 2. Use the building shape to funnel the local winds to naturally cool spaces
 3. In hot climates orient the building so that storage and other uninhabited spaces get the hot sun and habitable spaces are oriented away from the sun and take advantage of natural breezes.
 4. In cold climates orient the building so that storage and other uninhabited spaces receive the cold winds and habitable spaces are oriented toward the sun.
 5. In temperate climates study the local wind and sun patterns to select the best options.
- G. Eliminate unnecessary roof spaces (the



Paula J. Loomis
FAIA, FSAME, LEED BD&C,
PMP, APA

INSIDE

Collaboration with AIA	3
Member News	5
Architectural Liaisons	8
"BIM for 'fiscal fitness'"	12
Architectural Book Review	13
Contacts	18

FROM THE COMMITTEE



Homer Guy, AIA, FSAME
Vice Chair for SAME Conferences

SAME: The Society of **Architects** and Military Engineers

SAME is the professional organization where public and private sector architects, engaged in the federal sector, can get acquainted and share ideas on a professional and personal level. The SAME Architectural Practice Committee (APC) was formed in 2012 by public and private sector architects to serve the needs of the Society's architects.

The need for public and private sector architects to get acquainted and share ideas has never been more acute. Public and private architects play a large role in supporting the military's current missions and will play a major role in shaping the next round of Base Realignment and Closure (BRAC) as well as the military installations of the future. Public architects will be searching for input from the private sector on how best to design and deliver BRAC projects. Private architects will be searching for information regarding how to prepare their business to meet the needs of the military.

The SAME Architectural Practice Committee, the newest of SAME's committees, was established to serve both public and private sector architects and to create:

- Better understanding and working relationships between the public and private sectors
- A forum to share ideas
- A source of architectural and business information and mentorship for individual architects and architectural firms

So far, some of our Committee's impacts upon the Society include:

- More architecturally-focused Post meetings that provide Continuing Education for Architects
- Committee conference calls or our free training webinars featuring current architectural practice topics (with free Continuing Education credits)
- Joint Education and Training Conference (JETC) and Joint Education and Training Symposium (JETS) architecture-oriented training sessions

But, the APC knows there is more that can be done and we need to align our efforts with your priorities. So, we are asking for your input and feedback on:

- How can the APC better meet your needs as architects?
- What sort of information do you need and what is the best way to receive the information?

We want to hear from you. You can send your comments to me at homer.guy@jmwaller.com and I'll make sure the APC gets your feedback.

A handwritten signature in blue ink that reads "Homer".

HOW APC WORKS FOR YOU

The Architectural Practice Committee was created to support the community of architects within the Society. Four areas of focus include collaboration with AIA, continuing education opportunities for the profession, Urbahn sessions at SAME regional conferences, and communications of information to the community. Vice chairs for each

focus area have been identified and their goals for 2013 presented below. Additional information is available at the SAME APC web page. Many opportunities for involvement exist, so please consider volunteering in the focus areas that interest you by contacting each Vice Chair directly through the links provided at the APC web page or in the articles below.

COLLABORATION WITH AIA

On behalf of Vergel Gay, FAIA, 2014 Chair, and my fellow colleagues on the Public Architects Advisory Group, I wish to welcome you to the AIA Public Architects Knowledge Community (PAKC). We represent over 3200 AIA members who practice in the public sector at all levels of government across the country – federal, state, county, city. We seek to provide a forum for those in public practice to discuss issues of mutual concern and share knowledge to all in the community.

I have been a member of the PAKC since I joined AIA many years ago – I can honestly attest to the value it has provided me, mostly as a home base of like-minded professionals. When you are a young architect in public practice, it can be difficult to find AIA members of a like mind who have the experience to guide and encourage you. I am grateful for the connections and friendships I have made over the years. These great men and women have served as both mentors and collaborators in helping me move my career

forward and provide additional opportunities to serve the profession of architecture.

In 2010 I was accepted as a member of the Public Architects Advisory Group, jumping me into a leadership position within AIA. Over the past three years I have taken on various roles with the group, learning more about the various facets of the PAKC. This year I am serving as Vice-Chair, with concurrent duties as Chair of the AIA Public Architects Workshop at the 2014 AIA National Convention in Chicago, IL on June 25. I can say that while it's a lot of work (or as I have told others that it's my other full-time job), I have had a lot of fun and fulfillment in pulling together a top-quality program with a mix of presenters from both the military and civilian communities.

Last year AIA adopted a strategic initiative called "Re-Positioning" to help move the Institute into the future. One aspect of Re-Positioning is to broaden the membership of the architecture community, which includes all architects working for the military

services as well as the SAME community. At this time AIA and SAME are completing the tenets of a partnering agreement between the two organizations, with the initial efforts focused between the PAKC and SAME's Architecture Practice Committee. Our hope is to finalize and sign the agreement this summer. Once signed, the two groups will share resources, including webinars and other training opportunities that are more critical for all our members.

To finish off, I ask each of you to reach out to me with your concerns, suggestions, and volunteering to create and grow this linkage between SAME and AIA. I hope to see many of you at future SAME and AIA events, including the AIA National Convention in June. To paraphrase Garrison Keillor, "Be well, Do great work, and Keep in touch".

Essayons!

Edmond G. Gauvreau, AIA
Vice Chair, Public Architects
Knowledge Community

QUARTERLY CONFERENCE CALL

The Architectural Practice Committee will host a quarterly conference call on **Wednesday, April 23, 2014 from 12:00 – 1:30 pm EST.**

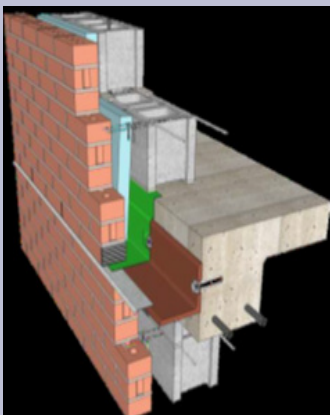
LAST QUARTERLY CALL

Keith F. Lashway, P.E., Director of Industry Development and Technical Services, International Masonry Institute and President, Capital District Post, SAME provided a presentation titled “Lessons Learned in the Masonry Field.”

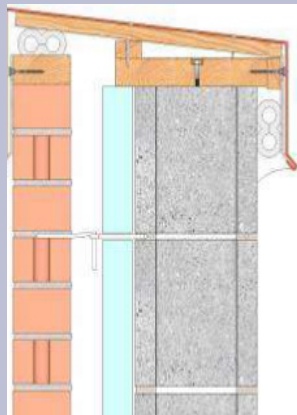
This session was intended to highlight ten often made masonry construction and design mistakes that often lead to on-going building performance issues throughout the course of the building’s life. His presentation included the following topics:

- Brick properties (including mortar choice)
- Modularity (and the pitfalls of non-modular design)
- Moisture penetration resistance
- Movement control (with a healthy dose of wall tie information)
- Structural masonry
- Troubleshooting
- Efflorescence
- Lime runs and other stains
- Quality control (addressed various problems with workmanship)

The entire presentation is available on the APC webpage.



Shelf Angle Detail



Metal Coping Detail

Video conference call-in number: For web connection, go to: <https://www.spiderphone.com/05698937> (This link will help connect both your browser) and dial +1 212-812-2800 and enter 0569 8937 for phone connection.

Time: 12:00 pm to 1:30 pm, Eastern Standard Time; 11:00 am to 12:30 pm, Central Standard Time; 10:00 am to 11:30 am Mountain Standard Time; 9:00 am to 10:30 am, Pacific Standard Time; 8:00 am to 9:30 am, Alaska Standard Time; 7:00 am to 8:30 am, Hawaii Standard Time.



The agenda includes a committee focus area initiatives update, 1 AIA LU/HSW/SD credited presentation, and open discussion.

The AIA credited presentation will be given by **Professor Jim Pocock, from the US Air Force Academy, titled “Design and Construction of the United States Air Force Academy.”**

Dr. Jim Pocock will give a presentation on the design and construction of the Academy. Jim will cover the historical project beginning with site selection and land use analysis, continuing through Skidmore, Owings and Merrill’s master planning and building design. He will illustrate his presentation with photographs of the construction and original architectural drawings, featuring the Cadet Chapel.

Dr. Pocock is a licensed architect and LEED AP with a PhD in Construction Engineering. He served 20 years in the Air Force before retiring as a Lt. Colonel in 2001. He teaches in the Construction Division of the Department of Civil & Environmental Engineering at the U.S. Air Force Academy.

MEMBER NEWS

SAME Sustaining Member Fair 20 November 2013, in the Community Hall (Haus des Bürgers), Ramstein-Miesenbach, Germany

This joint SAME Post event showcasing the technical professional capabilities and inter-disciplinary services of the Sustaining Member firms was sponsored and organized by the Kaiserslautern and Rhein Main Posts. Other Posts sharing in the event were the Spangdahlem and Stuttgart Field Chapters and NATO engineer colleagues. The Society of American Military Engineers (SAME) values its sustaining member partners. The goal of the Post Presidents, Col Scott Warner, Kaiserslautern Post and Col Peter Helmlinger, Rhein Main Post is to bolster sustaining member involvement and visibility within the posts and the European military communities. The sustaining member firms were invited to participate in this event, showcase their organization, its capabilities and its contributions to the military community and civilian sector. It afforded an opportunity to set up an exhibition booth, create displays and offer information, providing an occasion to interact with military engineers, contracting organizations and other guests of the fair in an informal atmosphere.

Importantly, for the first time here in Europe, information concerning the Architectural Practice



Committee (APC), its purpose and commitment, as well as continuing education credits opportunities at events was showcased by Sandra Zettersten, APC Europe Representative (Buchart-Horn GmbH). The APC Newsletter was distributed to attendees. Membership recruitment was a highlight of the event, as well as the snacks and drinks provided to the participants. Opportunities like this strengthen the military-private sector relationship enjoyed over the years, as well as present the contributions that architects provide within the DoD community.

Contributed by Sandra Zettersten, FSAME, AIA, Dipl.-Ing. Architektin, Client Service Director, Buchart-Horn GmbH



Photo: Kaiserslautern Post President, Col Scott Warner, addressing the attendees

CONTINUING EDUCATION

One of the goals of the Architectural Practice Committee continues to be the development of architectural sessions at the SAME national conference and at other major regional conferences, in support of SAME's continued education programs. In addition to assisting with educational events at the National JETC and Regional JETS, the Architectural Practice Committee also coordinates Quarterly Calls open to all.

In addition to an update on current APC activities all of our quarterly calls include a presentation

eligible to receive Continuing Education Credits from the AIA and there is no charge for participating in the calls.

The APC is also contributing webinars to the larger SAME Education Program. In addition to providing valuable information, whenever possible, these webinars will provide AIA continuing education credits.

Future events include a June 2014 webinar on the **new ATFP UFC (4-010-01)**, and a fall presentation focusing on the implementation of BIM across DoD agencies.

Additionally, currently scheduled for 2014, SAME Headquarters will make all of the educational Webinars, including those sponsored by APC, available online at a reduced rate for those who were unable to participate on the original air date.

We are always open to suggestions from SAME Members regarding topics that would be of interest. Please share your ideas with us. Contact **Rad Delaney, AIA, FSAME**, Vice Chair for Continuing Education at

delaneyra@cdmsmith.com

SAME CONFERENCES



2014 JETC, May 21 to 23, Orlando

The Architectural Practice Committee once again will play a major role in providing architectural related educational sessions.

- On Wednesday, May 21 from 2:30 pm to 3:45 pm, APC will host 2013 SAME Urbahn Medal Recipient Lecture and our Committee Panel discussion. This session invites the 2013 SAME National Urbahn Medal Recipient to present his or her work. In addition, there will be a panel discussion on how the Architectural Practice Committee can be most beneficial to you and your organization in practice of DoD facility design and construction.
- On Thursday, May 22 from 10:00 am to 12:00 pm, APC will host a session titled "DoD Facility Design & Construction Strategic Focus and Direction". This session invites the lead architects of the Army, the Navy, the Air Force and the VA to discuss the most important strategic focus and overall directions of facility design and construction for their agencies in the next three years, and have an open dialogue with the industry to exchange ideas and feedback of what it takes to achieve these objectives.
- On Thursday, May 22 from 2:00 pm to 4:00 pm, APC will co-host with Facility Asset Management Committee, a session focusing on BIM; also, co-host with Energy & Sustainability Committee a session focusing on Sustainability UFC updates.

Homer Guy, AIA, FSAME, is the Vice Chair for SAME Conferences. He may be contacted at homer.guy@jmwaller.com.

COMMUNICATIONS



David Packard, RA, PMP
Vice Chair for Communications

With the publication of our fourth quarterly newsletter, we bring the Architectural Practice Committee to the celebration of our first anniversary. Our newsletter is circulated among approximately 700 colleagues throughout the world. While that may not seem like a lot given a total SAME membership of 29,000, it is notable that we are recognized for the impacts we, as a profession, have as members of the construction industry’s MILCON execution team.

Next month, we will meet to take stock of the coming year at JETC. We’ll share some of the experiences we’ve

had during the past year and look forward to the coming year. The events will allow greater participation than last year, so I would really love to get some input on style and content. I’ve seen some great examples at various sites in webland and I’m poised to test our limits in those areas.

David Packard, R.A., PMP is the Communications Vice Chair of the APC. Contact Dave at david.a.packard@usace.army.mil if you are interested in joining the Communications sub-committee or have comments and/or suggestions.

SERVICE BRANCH LIAISONS

Three APC Service Branch Liaisons have been identified to advise the committee on initiatives benefiting service branch architects and to assist in communications between service branch architects and SAME. The Service Branch Liaisons are listed below. These liaisons have been informing their communities on the opportunity

for participation by architects in SAME training activities and are communicating information about professional and career development opportunities within their ranks. Please do not hesitate to contact them and express your topical interests. Join the dialogue!

Branch	Name	Email
Army	Ed Gauvreau, USACE HQ	edmond.g.gauvreau@usace.army.mil
Navy	Kathleen Reid, NAVFAC Atlantic	kathleen.o.reid@navy.mil
Air Force	Rick Sinkfield, AFCEC	ralph.sinkfield@us.af.mil



ARCHITECTURAL LIAISONS

SAME Architectural liaisons help coordinate architectural programs within their local SAME post as well as coordinating shared programs between SAME and local architectural organizations (such as American Institute of Architect chapters, architectural schools, Boy/Girl Scout Architectural troops, local high school programs, etc.). If you would like to be a SAME Architectural Liaison please contact Paula Loomis (paula.j.loomis@usace.army.mil, 202-302-8175) or JJ Tang

(junijan.tang@hdrnc.com). If you are already a SAME Architectural Liaison the SAME Architectural Liaison telecons will occur on the following Mondays in 2014 from 1200-1300 EST – 10 March 2014, 9 June 2014, 22 September 2014 and 8 December 2014. Paula Loomis will provide the call-in number before the telecon.

Thanks to all that have volunteered. You are doing great work!!

Post	Name	Email	Company
Alaska	Harley Hightower, FAIA	hhh@gci.net	Harley Hightower
Albuquerque	Roger Basarich	roger.basarich@merrick.com	Merrick & Company
Atlanta	David Caimbeul, AIA, NCARB, FAC-PPM	dcaimbeul@caimbeulandassociates.com	Caimbeul & Associates
Baltimore	Bill McCarthy	bmccarthy@rtkl.com	RTKL
Dallas	Laura Lavelle	Laura.Lavelle@jacobs.com	Jacobs
Denver	Joe Cruz, AIA, NCARB	joe@ihamail.com	Iron Horse Architects
Hampton Roads	Richard Corner	RichardC@hbaonline.com	HBA Architecture & Interior Design, Inc.
Kentuckianna	Luke Leising	luke@guidondesign.com	Guidon Design
Kittyhawk	Drew Titone	Drew.Titone@Woolpert.com	Woolpert
Lake Michigan	MaryAnn O'Hara	Maryanno@fgmarchitects.com	FGM Architects
Las Vegas	Monica Gresser	mgresser@brazenarchitecture.com	Brazen Architecture
Missouri (Whiteman & Kansas City)	Matthew Turner	mturner@yainc.com	YAEGER ARCHITECTURE
New York City	Suzanne DiGeronimo, FAIA	sdigeronimo@digeronimo-pc.com	DiGERONIMO ARCHITECTS
Northern Virginia	William Santer, AIA	wjs@samaha-arch.com	SAMAHA
Omaha	Robert Hailey, Lt Col AIA, LEED GA	rhailey@hdrinc.com	HDR
Pensacola	Yvonne Lee, Assoc AIA	ylee@stoarchitects.com	STOA Architects
Pikes Peak	Jim Pocock	James.Pocock@usafa.edu	USAF Academy
Seattle	Scott Harm	sharm@belayarchitecture.com	Belay Architecture
St. Louis	Bill Albinson	albinson@teamfourstl.com	TeamFour/Saur
Tampa	Steve Tozer	Steven.Tozer@hdrinc.com	HDR
European Region SAME (Rhein Main, Kaiserslautern, Naples, UK)	Sandra Zettersten, AIA, Dipl.-Ing. Architektin, FSAME	SZettersten@BH-BA.com	Buchart-Horn GmbH

□ continued from page 1

space between the roof and the habitable space). The form of the roof should serve a purpose. If a sloped roof is needed for snow and rain drainage, then use the space under the roof to make the room seem larger or for some other use.

- H. Select exterior building colors appropriate to the climate...darker colors in colder climates to absorb the sun and lighter colors in hotter climates to reflect the sun. Most materials come in a large range of colors with no price difference for the color of the material.
- I. Select mechanical and other building systems that take up less space, thus requiring less square footage (all other things being equal). This less square footage will be an initial savings followed by savings in heating, cooling and maintenance costs for the space saved.
- J. Select native plants that use less water.
- K. Select interior finishes that require less maintenance. For instance ceramic or terrazzo floors takes less time to sweep than carpet. Over the life time of a facility the maintenance saved on ceramic or terrazzo floor can add up.
- L. Use renewable materials that cost the same or less than non-renewable materials that perform the same function and have the same quality. When choosing materials consider the anticipated life of the materials.
- M. Locate buildings that are used together in the same area of base as a complex to save on greenhouse gas emissions and the requirement for vehicles (company or personal vehicles).
- N. Locate buildings near public transit where possible. Encourage public transit use.
- O. Make the environment more efficient for the users. Since employees are the most expensive component of a building, making the employees more efficient is one of the most efficient things a building can do.
- P. Rely on people to help you save. Educate users. Studies show that can save up to 10 percent by remember to turn off lights or use less water. Set up buildings so that user loads can be measured separate and then motivate employees with things such as energy savings competition – the dormitory floor with the most savings gets a pizza party.
- II. Second incorporate energy saving or sustainable features that reduce the cost or have a positive environmental impact over the life-span of the building without any routine maintenance or replacement. (These features will almost always have

NEWEST ARCHITECTURAL FELLOW

Congratulations to Paula J. Loomis, FAIA, FSAME on her elevation as a SAME Fellow. Col Paula Loomis, USAFR (Ret) has been a SAME member since 1986 and currently serves in two key national roles: Vice Chair for Collaboration with the American Institute of Architects on the Architectural Practice Committee and Public Sector Committee Lead on the Energy & Sustainability Committee. Col Loomis served as Virginia Peninsula Post Secretary, Junior Vice President, on the Regional Conference Committee and on the Board of Direction. From 2008-2010 she helped established a Student Post at Hampton University and was liaison between the Student and Peninsula Post.



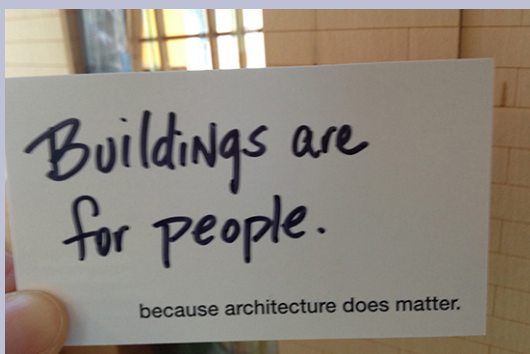
- a lower life cycle cost than components with moving parts or those that require routine maintenance.)
- A. Install the most life-cycle cost effective wall, roof and floor insulation. (The most life cycle cost effective means the amount and type of insulation that have the lowest life cycle cost).
 - B. In temperate climates plant deciduous trees to shade windows in the summer and allow the warming sun in the winter.
 - C. In hot climates use building features to shade windows and openings such as overhangs or porches. Be sure to run a life cycle cost analysis (LCCA) on these features as well to select the most life cycle cost effective feature. Be careful of overhang features in hurricane prone areas (overhangs tend to perform worse in hurricanes).
 - D. In cold climates use unconditioned vestibules or

RANDOM THOUGHTS

BY PAULA LOOMIS

Recently the discussion of quality came up in our office. It was recommended that since the Department of Defense (DOD) is almost finished with the Base Realignment and Closure building surge, the downturn in projects might provide an opportunity to concentrate on quality initiatives. The conversation continued discussing quality design versus initial cost versus life cycle costs. A senior architect offered that quality was not important on military installations since most buildings were industrial.

This comment made me uncomfortable. First, I believe that quality buildings cost the same (or at the most only a small percentage more) than poorly designed buildings to construct. The amount of bricks and more are similar, it's how they are put together that are different. Second, I think that quality design is important for all buildings. I believe people perform better in well-designed facilities. Third, I think our soldiers, sailors, marines, and airmen deserve a quality built environment. Since the difference between poorly designed facilities and well-designed facilities is primarily additional thought, we owe it to them to invest a little more thought.



For further thoughts on the importance of the quality of built environment, see the website ArchitectureDoesMatter.org website and the architectural book review on “The Substance of Style” by Virginia Postrel.

- other methods to protect against the wind.
- E. Install well insulated windows...if you are in an extreme climate (hot or cold) take the time to model triple versus double glazed windows to determine if they are cost effective. (Note: once this analysis has been done for one building on a campus that analysis can guide decisions on other buildings).
- F. Choose exterior materials that have a long thermal lag...i.e. heat up slowing during the day so that the heat reaches the interior of the building hours later. For instance, thick masonry walls heat up during the day but the heat does not reach the interior of the building until 6-8 hours later... often after the sun has gone down. If the building has operable windows, the windows can be opened at the later hours allowing the building to “flush out.” Such operations, either occupant-controlled, mechanically controlled or both can eliminate up to four months of mechanical conditioning.
- G. Saving water with fixtures that turn off when a user is not present. Use aerated fixtures where appropriate.
- H. Select neutral interior colors. The color industry purposefully changes the “in-style” colors every 3-5 years. Choose neutral colors that are appropriate to the style of the building. Those finishes can be kept longer without appearing to be out-of-date, allowing the finishes to be used for their full useful life. If you want to have color in the space, use paint. Paint can be changed easily.
- I. Use campus-wide color pallets – i.e. select 2-3 carpets, 2-3 types of ceramic tile, etc. that go together to be used throughout the base. Then the maintenance teams can keep a minimum of carpet or tile on hand for maintenance repairs (versus keeping multiple carpet and tiles on hand or keeping nor replacements on hand and then trying to find a suitable fix).
- J. Use campus-wide electrical fixture types. Select one or two models of each type of fixture required and use it throughout the base. Maintenance teams can then keep that fixture type on hand for replacements and use the same approach with bulbs.
- K. Try to select features with little or no maintenance.
- L. Select exterior materials that require no routine maintenance.
 - 1. Select wall materials that are integrally colored masonry such as brick, integrally colored CMU or stone. Such materials have a much

longer life cycle than metal or wood, require no painting and plus if they are nicked (by weed wackers or vehicles) the interior color of the masonry is exactly the same color as the exterior finish so the nick barely shows. Also, such masonry materials are typically very environmentally friendly. Finally, because masonry typically requires little maintenance (beside re-tuckpointing every few decades) it is a very life cycle cost effective material.

2. Select roofing materials with a long warranty period such as standing seam metal, clay tiles or a high grade shingle. Long warranty periods indicate sturdy materials that are generally very life cycle cost effective.
- M. Wire the electrical system to allow occupant loads to be monitored separately from facility loads. This will allow energy operators to see how the building is operating separately from how the occupants are using the building. It also allows management to promote occupant conservation.
- III. Third, be judicious with building features that are not covered in items one and two. These are the features that often cost money to maintain and do not last as long as the components discussed in items one and two.
 - A. Select flooring material based on LCCA. Use carpet only where required for noise control and function. Do not use carpet in frequently traveled areas – use stained/sealed concrete, tile or terrazzo. The initial cost on these latter materials may be higher, but they last decades if installed correctly.
 - B. Use items that move or have motors only where required. Use hand operated items when possible (doors and windows). This saves on money and hand operated items are less likely to fail.
 - C. When selecting systems (such as mechanical systems) with moving parts, use manufacturers with long track records. Use systems that the maintenance workers/contractors know how to maintain and repair. Use systems that require minimal maintenance.
 - D. Consider using the same types of mechanical systems across base so that a small number of spare parts need to be kept on hand for maintenance or repairs.
 - E. If you are considering a new technology, ask to see places where the item has been installed for a few years and to interview the owner and maintainers. It is often better to be the third or fourth organization to receive a new technology, than to be first.
 - F. For renewable energy equipment use the same advice as for mechanical systems. Use manufacturers that have been tested. Use systems that are easily maintainable. Perform a life cycle cost analysis.
 - G. Be leery of features with long paybacks. If a feature has a payback period of 15 years, has a life span of 20 years and only offers a warranty for 15 years, the feature is probably not a good gamble. There are a few reasons for this advice.
 1. First, the payback is based on modeled energy savings which assumes a certain level of performance for the material and maintenance. Performance later in the life of a product is rarely as good as one its first day so the actual performance of the feature may not meet the modeled performance. A payback that is 15 years could easily stretch to 20 with poorer performance.
 2. Second, if the manufacturer offers a 15 year warranty, they are anticipating problems in the months following that 15 year period (remember your car that falls apart the month after the warranty expires). Selecting a feature with a payback that is as long (or almost as long) as the warranty is not a good idea.
 - H. Be especially leery of features that have paybacks to match (or almost match) the life span of the building.
 1. With technology progressing so quickly, the feature that you use may be obsolete before it is paid for by its energy savings.
 2. Also from portfolio perspective it might be better to not use the feature that a long payback. The money might be better used on a different project with a shorter payback.
 - I. Don't be mesmerized by the newest technology. Select technology that is proven and will be the best selection for the long run. Allow the newest technology to take the time to "prove itself" before incorporating it into government projects.

The goal of all these measures is to create the building that meets the mission requirements for the users in the most life cycle cost effective manner for the installation. Strive to construct a building that operates its own with no interventions and little maintenance. Not having to call maintenance will keep both the maintainers and users happy as well as reducing overall costs for the owner and contributing to energy conservation. **APC**

BIM FOR “FISCAL FITNESS”

New Air Force fitness center aims for LEED® Platinum certification—and lower than expected construction costs.

story courtesy of Autodesk



Exterior rendering of the Tyndall Fitness Center.

Project Summary

The Tyndall Fitness Center at Tyndall Air Force Base, Florida, won't open its doors until early 2010, but it's already attracting attention. With construction costs under \$17 million, the two-story, 75,278-square-foot fitness center will feature three racquetball courts, two levels of weight and cardio equipment, four group exercise rooms, two full-size gymnasiums, and more. The U.S. Army Corps of Engineers (USACE) is providing program management and construction administration services to the U.S. Air Force on the project. The project was one of two Energy Demonstration Fitness Centers promoted by the Air Force Center for Environmental Excellence (AFCEE), and recently won a Merit Award-Concept Design from the U.S. Air Force. The project is expected to exceed its original target of a LEED Silver rating and instead achieve LEED Platinum certification—the highest possible LEED certification for

environmentally sustainable construction.

Throughout the project, the design team from the firm of PBS&J has relied on building information modeling (BIM) to explore and refine its ideas—quickly and efficiently. PBS&J turned to BIM solutions from Autodesk, including Autodesk® Revit® Architecture software, Autodesk® Revit® Structure software, AutoCAD® Civil 3D® software, and Autodesk® Navisworks® software, to help reduce errors and miscommunication and keep the project on budget and on schedule. With this project on track to be completed under budget, PBS&J sees Autodesk® BIM solutions playing a prominent role on government projects well into the future.

The Team

As the program manager, the USACE reviewed the detailed project designs, managed the budget, and

selected the design and construction teams. The AFCEE and U.S. Air Force also played review roles on the project. Gaining LEED certification was a priority for the USACE, the AFCEE, and the U.S. Air Force from the very beginning. In fact, the AFCEE wanted the fitness center to highlight the military's commitment to achieving cost-effective, high-quality sustainable design. U.S. Air Force personnel at Tyndall Air Force Base collaborated with the design team to help ensure that Tyndall Fitness Center would meet their exercise and recreational needs. Following a competitive bidding process, the USACE tapped PBS&J to provide the architecture and engineering design services on the Tyndall Fitness Center project. Founded more than 45 years ago, PBS&J delivers design projects with a range of services that span disciplines. The firm brings together architects, civil engineers, structural engineers, and mechanical engineers along with planners, surveyors, and technical specialists. PBS&J has a history of working with government agencies on large-scale building and infrastructure projects, from highways to military facilities to transportation hubs. To round out the Tyndall Fitness Center design team, PBS&J engaged TLC

Engineering for Architecture to complete the project's mechanical, electrical, and plumbing (MEP) designs.

According to John Hufnagle, a senior architect with PBS&J, government projects account for more than 80 percent of the firm's work, "We have a tradition of partnering with government agencies to help them complete projects that further their missions. Our increasing emphasis on sustainable design with BIM is now a part of that tradition."

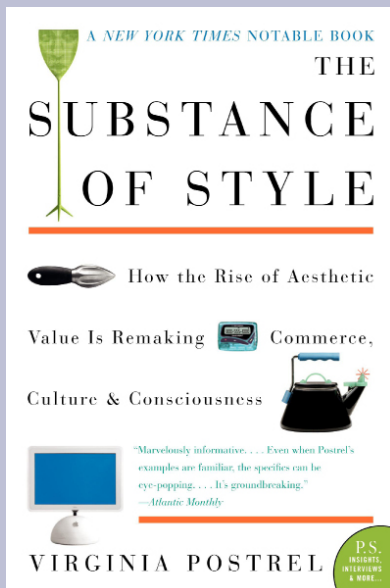
Rashid Siddiqui, PBS&J's national BIM manager, outlines the firm's strategy, "We have a great team, and want them to use state-of-the-art tools. BIM is not only the wave of the future for the industry, it is core to the way we work today."

The Challenge

Before engaging PBS&J, USACE designers developed preliminary concepts for Tyndall Fitness Center. PBS&J was retained to design the center as a design-bid-build project. As the first order of business, PBS&J conducted a week-long scoping and design charette with the USACE, AFCEE, and Tyndall Air Force Base staff. The result of this effort was a project design package that

ARCHITECTURAL BOOK REVIEW

THE SUBSTANCE OF STYLE: How the Rise of Aesthetic Value is Remaking Commerce, Culture and Consciousness by Virginia Postrel



Ms Postrel looks at the importance of style. She argues that the way things look are beginning to matter to the general public – a shift toward aestheticism is underway. She lists examples of well-known companies such as General Electric that are concentrating on not only the way products function, but how they look. She says "To succeed, hard-nosed engineers, real estate developers and MBAs must take aesthetic communication and aesthetic pleasure seriously." She makes a persuasive and well-researched case for the value of design and that it is good for a healthy, forward-looking society. If Ms Postrel is right, architects and similar professionals that can create beautiful as well as functional buildings, spaces, and items will be in demand. Check out the book to see if you agree.

provided a program and conceptual plans that were in budget, and a schedule that enabled the project to meet the design completion date of July 1, 2008. PBS&J successfully reduced the project's program square footage, proposing a design that met the goals of the U.S. Air Force without compromising mission capabilities.

Keeping the Heat Out

The design and construction of an energy-efficient building located in hot, humid Florida presents a number of challenges—and Tyndall Fitness Center was no different. Using Revit Architecture software, the project architects developed and evaluated multiple approaches for shading the building while maximizing the harvesting of natural sunlight to minimize the need for artificial lighting, resulting in both lower “first in” costs and annual operating expenses.

“From the outset, we knew that shading would be important to achieving an energy-efficient design,” says Mark Cuddy, an architect at PBS&J. “When shading plays a prominent role on a building, it has to be appealing because it impacts the overall look and feel of a building. It’s important that the client like the shading strategy before you build. That helps ensure they will be pleased with the end result.”

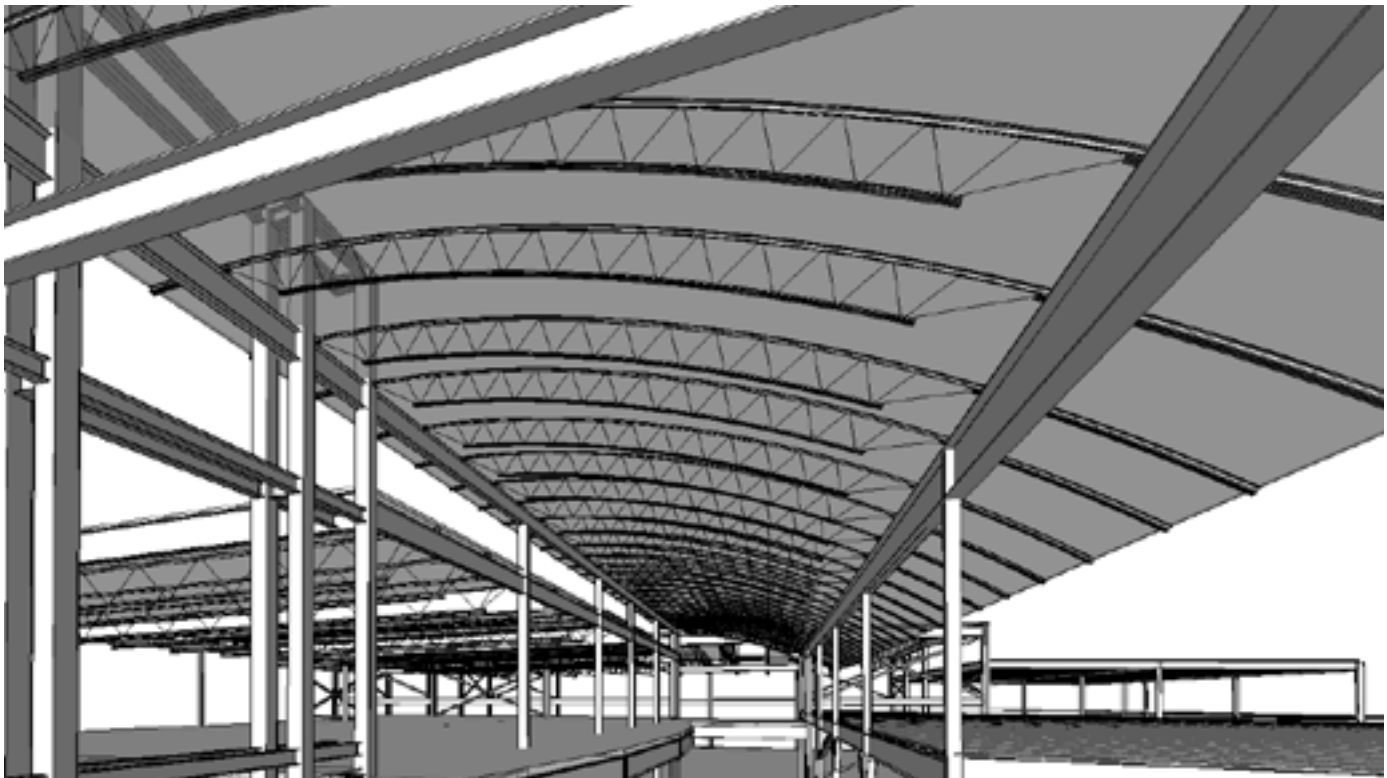
Familiar Obstacles

Beyond project-specific challenges, any large project faces long odds when it comes to staying on schedule and on budget. In part, this is because big projects require large, multidisciplinary design teams.

“When teams rely exclusively on traditional 2D processes, they must devote countless hours to coordinating disparate designs, identifying interferences, and managing changes,” explains Siddiqui. “Even then, conflicts between building systems and structural elements often surface as construction begins, leading to time-consuming requests for information (RFIs) at best—and to construction change orders at worst. We were determined to avoid those problems by using BIM.”

The Solution

Moving quickly to align the design to the project's goals and funding, the architects at PBS&J created a building model for Tyndall Fitness Center using Revit Architecture software. The team based this initial model on the USACE's preliminary drawings, but planned to modify it as they developed an approach that fit the project's goals and budget.



Revit Structure model of supports for sunshades.

Optimizing the Design

To develop an effective concept, PBS&J architects first interviewed key project stakeholders within the Air Force and the USACE to determine the essential operational requirements. Then, they modified the model based on this information. “Revit Architecture software helped us to explore various options more easily,” says Hufnagle. “We maximized usable space and reduced the building footprint by adding a second story.” This enabled the building to sit on a more limited site, avoid the need to alter traffic patterns and minimize site disturbance. Those approaches allowed the team to develop a concept that better matched the existing site constraints and available funding. Hufnagle adds, “BIM helped us explore and advance ideas efficiently.”

Contrasting BIM software with traditional software, Cuddy says, “With Revit Architecture software, you can drill through your ideas and move the design forward faster. For example, as you make changes, the software automatically updates the elevations and floor plan. If you do the same thing in a traditional process, you must add the change to dozens of sheets. Especially at the schematic design phase, when changes are frequent, parametric change management software can help save significant amount of time. I am constantly delighted by what Revit Architecture software can do.”

BIM Goes Underground

As the design concept took shape, the civil engineering team began planning the site, including parking, approaches, and water and sewer connections. Tyndall Air Force Base is an older base, with a significant amount of underground infrastructure, even under the area chosen for the fitness center. “It can be a challenge to design around existing underground infrastructure, especially the fiber optic communication networks common on military installations,” says Laura Ford, a civil engineering technician with PBS&J. “Doing spacing calculations for every place pipes or cables cross is extremely time-consuming with 2D tools.”

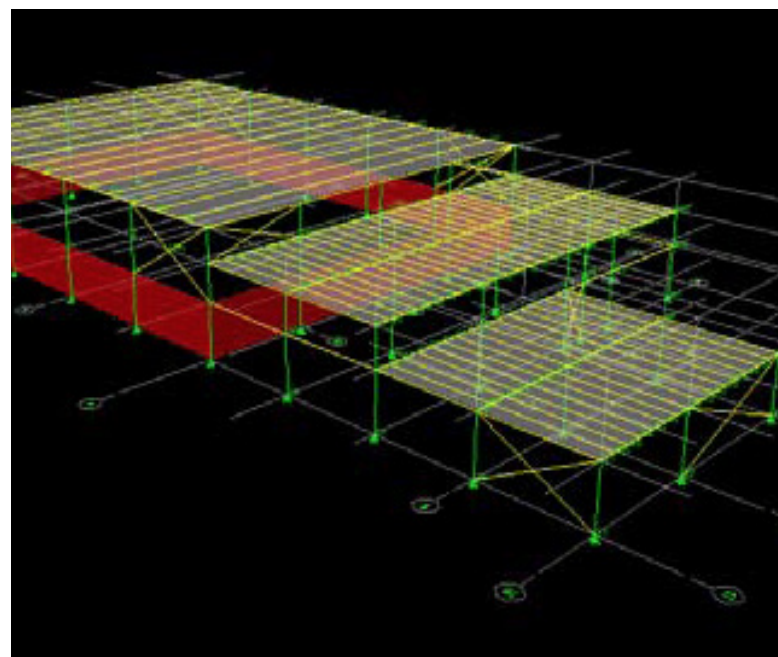
AutoCAD Civil 3D software, Autodesk’s BIM solution for civil engineering, helped the PBS&J team to create a 3D model of the existing underground infrastructure. “With Civil 3D software, we had a dynamic model that more accurately represented underground elements,” explains Ford. “The software also calculated the exact spacing and slope of each pipe as we designed. We were able to place the pipes very quickly, and when we made a change, the whole model updated

automatically. Civil 3D software helped to turn Tyndall Fitness Center into a very straightforward project from a civil engineering perspective.”

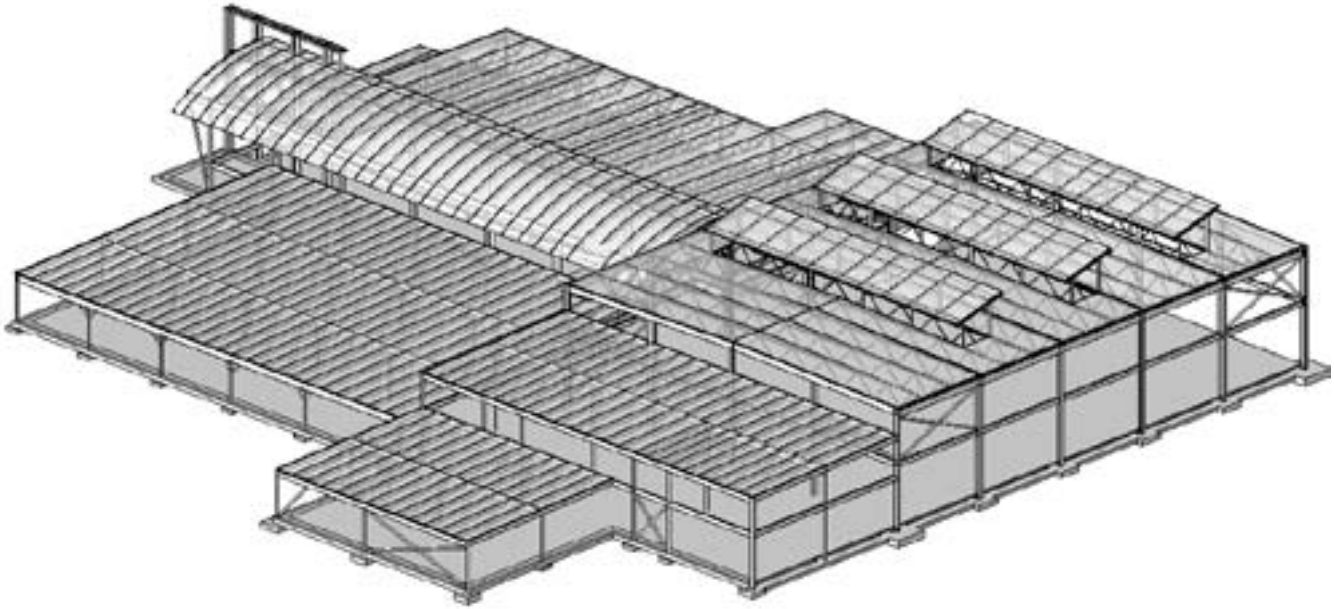
Cool and Bright

From the earliest stages, the Tyndall Fitness Center design incorporated numerous sunshades. Some of the shades attached to the side of the building over the windows. However, the most prominent shades extended from the roof, protecting the gymnasiums and glass curtain walls at the entrance from direct sunlight. While keeping direct light out, the shades allowed natural light in. The shades’ cooling and lighting effects were the most obvious contributors to energy efficiency in the design. Enhancing the appeal of the shades, PBS&J secured the Air Force’s permission to use its iconic eagle symbol in the design of the sun shade over the main entrance.

Throughout the project, the USACE and the Air Force were especially concerned about how the shades would look and function. With the visualization and daylighting study capabilities of Revit Architecture software, PBS&J put them at ease. “With BIM, we can show our clients a 3D model that more realistically represents how the building will look,” explains Siddiqui. “On Tyndall Fitness Center, the clients could see how the shades fit with the overall design. While the clients initially had many questions about the shades, in the end, they were excited by the shades’ contribution to the building’s aesthetic and energy efficiency.”



Screenshot of structural analysis.



Revit Structure model of roof and exterior.

Strength to Support Innovation

The structural engineering team on the project used Autodesk Revit Structure software to complete every aspect of the structural design, and the team credits BIM with helping to accelerate the process. Srikanth Mangalampalli, senior structural engineer with PBS&J and the structural engineer of record on the Tyndall Fitness Center project, explains, “We completed 100 percent of the structural work on Tyndall Fitness Center within Revit Structure software. In the end, we completed the structural work on the project in approximately 20 percent less time than anticipated.”

To help illustrate how the time savings added up on the project, Mangalampalli points to the way changes are incorporated into the Revit Structure model. “When we make a change, Revit Structure software automatically updates all the affected areas of the design and the documentation,” he says. “You save time on the change, and on coordinating the change with the rest of the design team. Take the sunshades, for instance. As the shades evolved, we could design and modify appropriate supports and attachments simultaneously.”

The structural engineers on the project appreciated that they could export their Revit-based model to third-party analysis software for further assessment.

When complete, they imported the changes back into the Revit Structure model. “Converting back and forth between Revit Structure software and our analysis application worked quite well,” says Mangalampalli. “The software’s compatibility with our structural analysis application definitely helped to save time.”

Saving Time on Conflict Detection

As the project progressed, PBS&J held regular coordination meetings to identify and address conflicts and interferences. Before each meeting, PBS&J combined the models from the various teams with Autodesk Navisworks software. Navisworks allowed PBS&J to aggregate and review the designs for interferences.

Cuddy, who led the meetings for PBS&J, notes that spotting interferences with Navisworks is easier than using traditional methods. “With 2D, even significant interferences, such as duct work running through a steel support, can be hard to spot before the construction documentation phase,” he says. “On Tyndall Fitness Center, Navisworks software helped us address conflicts earlier in the design phase. Thanks to Navisworks, I estimate we spent 50 to 75 percent less time identifying interferences. And when we moved into bidding and construction, there were at least 20 percent fewer RFIs

than might be expected on a project of this size.”

While collaborating with PBS&J, the MEP engineers from TLC Engineering soon recognized the advantages of a BIM process during the Navisworks software reviews. “We used AutoCAD® MEP to design the building systems for Tyndall Fitness Center,” says Jeremy Parker, a mechanical engineer with TLC Engineering. “After seeing the power of BIM, we plan to also incorporate Revit MEP software into our workflow. We believe that by using BIM, we’ll be able to do more efficient building performance analysis, especially on large government projects.”

The Result

With construction on Tyndall Fitness Center more than 50 percent complete, the project is exceeding the goals set by the USACE and Air Force for the fitness center. “Originally, we were contracted to design to the LEED Silver standard at minimum, but everyone on the project aimed higher,” says Hufnagle. “We anticipate that the project will achieve LEED Platinum.”

Not only will the project top energy and environmental design expectations, it will likely come in under budget. “The construction budget is 10 percent less than anticipated, which is great for a project that started with funding concerns,” continues Hufnagle. “The Tyndall Fitness Center project demonstrates

that sustainability and affordability can go together, especially with BIM for design and collaboration.”

According to Mangalampalli, BIM allowed the teams to efficiently refine the design in concert and thus deliver outstanding work to the clients. He says, “Using BIM helped our multidisciplinary teams to enhance the design together. Many times, I collaborated in real time with architects around a computer. It is not necessary to explain an idea and hope it’s clear. Everyone can visualize it by looking at the model.”

For PBS&J, the Tyndall Fitness Center project also reinforced the firm’s belief that BIM will help it further the goals of its government clients. “BIM supports government projects by helping them stick to budget and schedule,” adds Siddiqui. “As we saw on the project, BIM also makes it easier to develop and refine more energy-efficient, sustainable designs.”

For More Information

To learn more about how BIM solutions from Autodesk help keep government projects on track, visit www.autodesk.com/government.



Rendering of Tyndall Fitness Center lobby.

CREDITS

EDITOR

DAVID PACKARD, RA, PMP
USACE, Northwestern Division
402.996.3822
david.a.packard@usace.army.mil

GRAPHIC ARTIST

YVONNE LEE, ASSOC. AIA
STOA Architects, Pensacola, FL
832.978.3553
ylee@stoaarchitects.com

FEATURE ARTICLE AUTHORS

PAULA LOOMIS, FAIA
USACE, Headquarters
202.761.7526
paula.j.loomis@usace.army.mil

BIM for “fiscal fitness” article
provided by Autodesk
www.autodesk.com/government

SAME ARCHITECTURAL PRACTICE COMMITTEE CONTACTS

COMMITTEE CHAIR

JJ TANG, AIA
HDR Architecture Inc.
773.380.7900
junjian.tang@hdrinc.com

COLLABORATION WITH AIA VICE CHAIR

PAULA LOOMIS, FAIA
USACE, Headquarters
202.761.7526
paula.j.loomis@usace.army.mil

CONTINUING EDUCATION VICE CHAIR

RAD DELANEY, AIA, FSAME
Philadelphia, PA
267.800.8671
delaneyra@cdmsmith.com

COMMUNICATIONS VICE CHAIR

DAVID PACKARD, RA, PMP
USACE, Northwestern Division
402.996.3822
david.a.packard@usace.army.mil

SAME CONFERENCE VICE CHAIR

HOMER GUY, AIA, FSAME
J.M. Waller Associates, Inc.
210.822.8006
homer.guy@jmwaller.com